APPENDIX 4.7.4-1 Northern Long-Eared Bat “4D” Rule

Synopsis

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507), the FCC is notifying the public that it received final OMB approval on December 17, 2015, for the information collection requirements contained in the modifications to the Commission's rules in 47 CFR part 5. Under 5 CFR part 1320, an agency may not conduct or sponsor a collection of information unless it displays a current, valid OMB Control Number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the Paperwork Reduction Act that does not display a current, valid OMB Control Number. The OMB Control Number is 3060–0065. The foregoing notice is required by the Paperwork Reduction Act of 1995, Public Law 104–13, October 1, 1995, and 44 U.S.C. 3507.

The total annual reporting burdens and costs for the respondents are as follows:

OMB Control Number: 3060–0065.

OMB Approval Date: December 17, 2015.

OMB Expiration Date: December 31, 2018.

Title: Radio Experimentation and Market Trials—Streamlining Rules.

Form Number: FCC Form 442.

Respondents: Business or other for-profit entities; not-for-profit institutions, and individuals or household.

Number of Respondents and Responses: 495 respondents; 560 responses.

Estimated Time per Response: 4 hours.

Frequency of Response: On-occasion reporting requirements; recordkeeping requirements; and third party disclosure.

Obligation to Respond: Required to obtain or retain benefits. The statutory authority for this information collection is contained in sections 47 U.S.C. Sections 4, 302, 303, 306, and 307 of the Communications Act of 1934, as amended.

Total Annual Burden: 3,049 hours.

Total Annual Cost: $41,600.

Nature and Extent of Confidentiality: There is no need for confidentiality, except for personally identifiable information individuals may submit, which is covered by a system of records, FCC/OET–1, ''Experimental Radio Station License Files,'' 71 FR 17234, April 6, 2006.

Privacy Act: No impact(s).

Needs and Uses: On January 31, 2013, the Commission adopted a Report and Order, in ET Docket No. 10–236 and 06–155; FCC 13–15, which updates part 5 of the CFR—''Experimental Radio Service'' (ERS). The Commission's recent Report and Order revises and streamlines rules for Experimental licenses. The new rules provide additional license categories to potential licensees. The new license categories are: (1) Program Experimental Radio License; (2) Medical Testing Experimental Radio License; and (3) Compliance Testing Experimental Radio License, including testing of radio frequency equipment in an Open Area Test Site.

Federal Communications Commission.

Sheryl Todd,

Deputy Secretary.

[FR Doc. 2015–33250 Filed 1–13–16; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R5–ES–2011–0024; 4500030113]

RIN 1018–AY98

Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), finalize a rule under authority of section 4(d) of the Endangered Species Act of 1973 (Act), as amended, that provides measures that are necessary and advisable to provide for the conservation of the northern long-eared bat (*Myotis septentrionalis*), a bat species that occurs in 37 States, the District of Columbia, and 13 Canadian Provinces.

DATES: This rule is effective February 16, 2016.

ADDRESSES: This final 4(d) rule, the final environmental assessment, biological opinion, and list of references are available on the Internet at *http://www.regulations.gov* under Docket No. FWS–R5–ES–2011–0024 and at *http://www.fws.gov/midwest/Endangered.* Comments and materials we received, as well as supporting documentation we used in preparing this final 4(d) rule, are available for public inspection at *http://www.regulations.gov,* and by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Twin Cities Ecological Services Field Office, 4101 American Blvd. East, Bloomington, MN 55425; telephone (612) 725–3548, ext. 2201; or facsimile (612) 725–3609.

FOR FURTHER INFORMATION CONTACT: Peter Fasbender, Field Supervisor, U.S. Fish and Wildlife Service, Twin Cities Ecological Services Field Office, 4101 American Blvd. East, Bloomington, MN 55425; telephone (612) 725–3548, ext. 2210; or facsimile (612) 725–3609. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

The need for the regulatory action and how the action will meet that need: Consistent with section 4(d) of the Act, this final 4(d) rule provides measures that are tailored to our current understanding of the conservation needs of the northern long-eared bat.

On April 2, 2015, we published a document that is both a final rule to list the northern long-eared bat as a threatened species and an an interim 4(d) rule to provide measures that are necessary and advisable to provide for the conservation of the northern long-eared bat. At that time, we opened a 90-day public comment period on the interim rule, and we committed to publish a final 4(d) rule by December 31, 2015, and to complete review pursuant to the National Environmental Policy Act (NEPA). Previously, on January 16, 2015, we published a proposed 4(d) rule with a 60-day public comment period. Therefore,we have had two comment periods totaling 150 days on two versions of the 4(d) rule.

Statement of legal authority for the regulatory action: Under section 4(d) of the Act, the Secretary of the Interior has discretion to issue such regulations she deems necessary and advisable to provide for the conservation of the species. The Secretary also has the discretion to prohibit by regulation, with respect to a threatened species, any act prohibited by section 9(a)(1) of the Act.

Summary of the major provisions of the regulatory action: This final species-specific 4(d) rule prohibits purposeful take of northern long-eared bats throughout the species' range, except in instances of removal of northern long-eared bats from human structures, defense of human life (including public health monitoring), removal of hazardous trees for protection of human life and property, and authorized capture and handling of northern long-eared bats by individuals permitted to conduct these same activities for other

bats until May 3, 2016. After May 3, 2016, individuals who wish to capture and handle northern long-eared bats for recovery purposes will need a permit pursuant to section 10(a)(1)(A) of the Act.

Incidental take resulting from otherwise lawful activities will not be prohibited in areas not yet affected by white-nose syndrome (WNS). WNS is a fungal disease affecting many hibernating U.S. bat species. Ninety- to one-hundred-percent mortality has been seen in bats affected by the disease in the eastern United States.

Take of northern long-eared bats in their hibernacula (which includes caves, mines, and other locations where bats hibernate in winter) is prohibited in areas affected by WNS, unless permitted under section 10(a)(1)(A) of the Act. Take of northern long-eared bats inside of hibernacula may include disturbing or disrupting hibernating individuals when they are present as well as the physical or other alteration of the hibernaculum's entrance or environment when bats are not present if the result of the activity will impair essential behavioral patterns, including sheltering northern long-eared bats.

For northern long-eared bats outside of hibernacula, we have established separate prohibitions from take for activities involving tree removal and activities that do not involve tree removal. Incidental take of northern long-eared bats outside of hibernacula resulting from activities other than tree removal is not prohibited. Incidental take resulting from tree removal is prohibited if it: (1) Occurs within a 0.25 mile (0.4 kilometer) radius of known northern long-eared bat hibernacula; or (2) cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the known maternity tree during the pup season (June 1 through July 31). Incidental take of northern long-eared bats as a result of the removal of hazardous trees for the protection of human life and property is also not prohibited.

Peer review and public comment: We sought comments on our proposed 4(d) rule from independent specialists to ensure that this rule is based on scientifically sound data, assumptions, and analyses. We also considered all comments and information we received during the comment periods on the proposed and interim 4(d) rules.

Previous Federal Actions

Please refer to the proposed (78 FR 61046; October 2, 2013) and final (80 FR17974; April 2, 2015) listing rules for the northern long-eared bat for a detailed description of previous Federal actions concerning this species. On January 16, 2015, we published a proposed 4(d) rule (80 FR 2371) for the northern long-eared bat and on April 2, 2015, we published an interim 4(d) rule (80 FR 17974) for this species.

Background

The northern long-eared bat is a wide-ranging species that is found in a variety of forested habitats in summer and hibernates in caves, mines, and other locations in winter. WNS is the main threat to this species and has caused a precipitous decline in bat numbers (in many cases, 90–100 percent) where the disease has occurred. Declines in the numbers of northern long-eared bats are expected to continue as WNS extends across the species' range. For more information on the northern long-eared bat, its habitat, and WNS, please refer to the October 2, 2013, proposed listing (78 FR 61046) and the April 2, 2015, final listing (80 FR 17974) rules.

The Act (16 U.S.C. 1531 *et seq.*) does not specify particular prohibitions, or exceptions to those prohibitions, for threatened species. Instead, under section 4(d) of the Act, the Secretary of the Interior has the discretion to issue such regulations as she deems necessary and advisable to provide for the conservation of such species. The Secretary also has the discretion to prohibit by regulation, with respect to any threatened wildlife species, any act prohibited under section 9(a)(1) of the Act with respect to endangered species. Exercising this discretion under section 4(d) of the Act, the Service developed general prohibitions (50 CFR 17.31) and exceptions to those prohibitions (50 CFR 17.32) under the Act that apply to most threatened wildlife species.

In addition, for threatened species, under the authority of section 4(d) of the Act, the Service may develop prohibitions and exceptions that are tailored to the specific conservation needs of the species. In such cases, some of the prohibitions and authorizations under 50 CFR 17.31 and 17.32 may be appropriate for the species and be incorporated into a separate, species-specific, rule under section 4(d) of the Act. These rules will also include provisions that are tailored to the specific conservation needs of the threatened species and may be more or less restrictive than the general provisions at 50 CFR 17.31.

Definitions

This final rule uses several definitions and provisions contained in the Act and its implementing regulations.

The Act and its implementing regulations (50 CFR part 17) define take as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.

The term ''harass'' (50 CFR 17.3) means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

The term ''harm'' (50 CFR 17.3) means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

''Purposeful take'' includes the capture and handling of individual bats. Take in this manner includes both capture and handling to remove bats from human structures and take that is for research purposes (*e.g.,* attaching a radiotracking device). Other purposeful take would include intentional removal of bats from hibernacula or the intentional killing or harassing of bats under any circumstance.

''Human structures'' are defined as houses, garages, barns, sheds, and other buildings designed for human entry.

''Incidental take'' is defined at 50 CFR 17.3 as any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, an otherwise lawful activity. Examples of incidental take (or non-purposeful take as it is sometimes referred to in this rule) include land-management actions, such as implementation of forestry practices, where bats may be harmed, harassed, or killed as a result of those otherwise lawful actions. The actions contemplated in this rule include a wide range of actions for purposes such as right-of-way development and maintenance, forestry, land use for development unrelated to wildlife management, management of lands as habitats other than bat habitat (*e.g.,* prairie), energy production and transmission, and other activities.

Incidental take within the context of this rule is regulated in distinct and separate manners relative to the geographic location of the activity in question. For the purposes of this rule, we have developed a map associated with the occurrence and spread of WNS. This map will be updated by the first of each month as the disease spreads throughout the range of the species and

posted at *http://www.fws.gov/midwest/Endangered.*

''Known hibernacula'' are defined as locations where northern long-eared bats have been detected during hibernation or at the entrance during fall swarming or spring emergence.

''Known, occupied maternity roost trees'' are defined as trees that have had female northern long-eared bats or juvenile bats tracked to them or the presence of females or juveniles is known as a result of other methods.

''Tree removal'' is defined as cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bats.

WNS Zone

The WNS zone, as mapped, provides the boundary for the distinction of implementation of this rule. To estimate the area impacted by WNS, we have used data on the presence of the fungus causing the disease, called *Pseudogymnoascus destructans,* or *Pd,* or evidence of the presence of the disease (WNS) in the bats within a hibernaculum. Our final listing determination provides additional information concerning *Pd* and WNS (80 FR 17993; April 2, 2015). Confirmed evidence of infection at a location within a county is mapped as a positive detection for the entire county. In addition, we have added a 150-mile (241-kilometer (km)) buffer to the *Pd*-positive county line to account for the spread of the fungus from one year to the next. In instances where the 150-mile (241-km) buffer line bisects a county, the entire county is included in the WNS zone.

Over the past 5 years, an average of 96 percent of the new *Pd* or WNS counties in any single year were within 150 miles (241 km) of a county that was *Pd*- or WNS-positive in a prior year (Service 2015, unpublished data). *Pd* is generally present for a year or two before symptoms of WNS appear and mortality of bats begins to occur. Given the relatively short amount of time between detection and population-level impacts, it is important that we protect those buffer areas and the bats within them with the same regulations as those in known WNS positive counties. Therefore, the positive counties, plus a buffer around them, are the basis for the WNS zone map.

Summary Comparison of the Interim 4(d) Rule and This Final Rule

Based on information we received in comment periods on the proposed and interim 4(d) rules (see Summary of Comments and Recommendations below), we revised the provisions of the interim 4(d) rule to better reflect the disproportionate effect that the disease, WNS, has had and will continue to have, we believe, on northern long-eared bat populations.

In the interim rule, we used the term ''white-nose syndrome buffer zone'' to identify ''the portion of the range of the northern long-eared bat'' within 150 miles (241 km) of the boundaries of U.S. counties or Canadian districts where the fungus *Pseudogymnoascus destructans (Pd)* or WNS had been detected. For purposes of clarification, in this final rule, we have changed the term ''white-nose syndrome buffer zone'' to ''white-nose syndrome zone'' or ''WNS zone.'' And we state that the ''WNS zone'' is ''the set of counties within the range of the northern long-eared bat'' within 150 miles (241 km) of the boundaries of U.S. counties or Canadian districts where *Pd* or WNS had been detected.

The interim 4(d) rule generally applies the prohibitions of 50 CFR 17.31 and 17.32 to the northern long-eared bat, which means that the interim rule, among other things, prohibits the purposeful take of northern long-eared bats throughout the species' range, but the interim rule includes exceptions to the purposeful take prohibition. The exceptions for purposeful take are: (1) In instances of removal of northern long-eared bats from human structures (if actions comply with all applicable State regulations); and (2) for authorized capture, handling, and related activities of northern long-eared bats by individuals permitted to conduct these same activities for other bat species until May 3, 2016. Under the interim rule, incidental take is not prohibited outside the WNS zone if the incidental take results from otherwise lawful activities. Inside the WNS zone, there are exceptions for incidental take for the following activities, subject to certain conditions: Implementation of forest management; maintenance and expansion of existing rights-of-way and transmission corridors; prairie management; minimal tree removal; and removal of hazardous trees for the protection of human life and property.

This final 4(d) rule does not generally apply the prohibitions of 50 CFR 17.31 to the northern long-eared bat. This rule continues to prohibit purposeful take of northern long-eared bats throughout the species' range, except in certain cases, including instances of removal of northern long-eared bats from human structures and for authorized capture, handling, and related activities of northern long-eared bats by individuals permitted to conduct these same activities for other bat species until May 3, 2016. After May 3, 2016, a permit pursuant to section 10(a)(1)(A) of the Act is required for the capture and handling of northern long-eared bats. Under this rule, incidental take is still not prohibited outside the WNS zone.

We have revised the interim rule's language concerning incidental take inside the WNS zone. Under this final rule, within the WNS zone, incidental take is prohibited only if: (1) Actions result in the incidental take of northern long-eared bats in hibernacula; (2) actions result in the incidental take of northern long-eared bats by altering a known hibernaculum's entrance or interior environment if the alteration impairs an essential behavioral pattern, including sheltering northern long-eared bats; or (3) tree-removal activities result in the incidental take of northern long-eared bats when the activity either occurs within 0.25 mile (0.4 kilometer) of a known hibernaculum, or cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the maternity roost tree, during the pup season (June 1 through July 31). Take of northern long-eared bats in their hibernacula may include disturbing or disrupting hibernating individuals when they are in the hibernacula. Take of northern long-eared bat also includes the physical or other alteration of the hibernaculum's entrance or environment when bats are not present if the result of the activity will impair essential behavioral patterns, including sheltering northern long-eared bats. Any take resulting from otherwise lawful activities outside known hibernacula, other than tree removal, is not prohibited, as long as it does not change the bat's access to or quality of a known hibernaculum for the species. This final rule makes these revisions because, in areas impacted by WNS, the most important conservation actions for the northern long-eared bat are to protect bats in hibernacula and maternity roost trees, and to continue to monitor populations in summer habitat (*e.g.,* identify where the species continues to survive after the detection of *Pd* or WNS and determine the factors influencing its resilience), while developing methods to abate WNS as quickly as possible.

Under this rule, we individually set forth prohibitions on possession and other acts with unlawfully taken northern long-eared bats, and on import and export of northern long-eared bats. These prohibitions were included in the interim 4(d) through the general application of the prohibitions of 50 CFR 17.31 to the northern long-eared bat. Under this rule, take of the northern

long-eared bat is also not prohibited for the following: Removal of hazardous trees for protection of human life and property; take in defense of life; and take by an employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service. Regarding these three exceptions, take in defense of life was not included in the interim 4(d) rule, but the other two exceptions were, either through the general application of 50 CFR 17.31 or through a specific exception included in the interim 4(d) rule.

Provisions of the 4(d) Rule for the Northern Long-Eared Bat

For a threatened species, the Act does not specify prohibitions, or exceptions to those prohibitions, relative to take of the species. Instead, under Section 4(d) of the Act, the Secretary has discretion to issue regulations deemed to be necessary and advisable for the conservation of a threatened species. By regulation, the Secretary has determined that take prohibitions for endangered species are also applicable to threatened species unless a special rule is issued under section 4(d) for a particular threatened species. Under this 4(d) rule, we have applied several of the prohibitions specified in the Act for endangered species and the provisions of 50 CFR 17.32 (permit regulations) to the northern long-eared bat as described below.

For this 4(d) rule, the Service has completed a biological opinion under Section 7 of the Act on our action of finalizing this rule. In addition, the biological opinion provides for streamlined consultation for all federal agency actions that may affect the northern long-eared bat; therefore, the scope of the biological opinion included the finalization and implementation of the 4(d) rule. The biological opinion resulted in a non-jeopardy determination. Provided Federal action agencies follow the criteria outlined in this rule and implement the streamlined consultation process outlined in the biological opinion, their section 7 consultation requirements will be met. If unable to follow these criteria, standard section 7 procedures will apply.

Exceptions to the Purposeful Take Prohibition

We have exempted the purposeful take of northern long-eared bats related to the protection of human health and safety. A very small percentage of bats may be infected with rabies or other diseases that can be transmissible to humans. When there is the possibility that a person has been exposed to a diseased bat, it is important that they coordinate with medical professionals (*e.g.,* doctor, local health department) to determine the appropriate response. When warranted to protect human health and safety, we have exempted from the take prohibition of northern long-eared bats in defense of one's own life or the lives of others, including for public health monitoring purposes (*i.e.,* collecting a bat after human exposure and submitting for disease testing).

We have also exempted the purposeful take of northern long-eared bats related to removing the species from human structures, but only if the actions comply with all applicable State regulations. Northern long-eared bats have occasionally been documented roosting in human-made structures, such as houses, barns, pavilions, sheds, cabins, and bat houses (Mumford and Cope 1964, p. 480; Barbour and Davis 1969, p. 77; Cope and Humphrey 1972, p. 9; Amelon and Burhans 2006, p. 72; Whitaker and Mumford 2009, p. 209; Timpone et al. 2010, p. 119; Joe Kath 2013, pers. comm.). We conclude that the overall impact of bat removal from human structures is not expected to adversely affect conservation and recovery efforts for the species. In addition, we provide the following recommendations:

- Minimize use of pesticides (*e.g.,* rodenticides) and avoid use of sticky traps as part of bat evictions/exclusions.
- Conduct exclusions during spring or fall unless there is a perceived public health concern from bats present during summer and/or winter.
- Contact a nuisance wildlife specialist for humane exclusion techniques.

We have exempted the purposeful take that results from actions relating to capture, handling, and related activities for northern long-eared bats by individuals permitted to conduct these same activities for other species of bats until May 3, 2016. Under the interim rule, for a period of 1 year from the interim rule's effective date (May 3, 2016), we had exempted the purposeful take that is caused by the authorized capture, handling, and related activities (*e.g.,* attachment of radio transmitters for tracking) of northern long-eared bats by individuals permitted to conduct these same activities for other bats. We have continued the exemption through the expiration date established by the interim rule. After May 3, 2016, a permit pursuant to section 10(a)(1)(A) of the Act is required for the capture and handling of northern long-eared bats,except that associated with bat removal from human structures. We determined that it was important to regulate the intentional capture and handling of northern long-eared bats through the Act's scientific permit process to help ensure that the surveyor's qualifications and methods used are adequate to protect individual bats and provide reliable survey results.

Incidental Take Outside of the WNS Zone Not Prohibited

Incidental take in areas that have not yet been impacted by WNS (*i.e.,* in areas outside the WNS zone) is not prohibited by this final rule. We believe the level of take associated with on-going land management and development actions, including all actions that may incidentally take the northern long-eared bat, do not individually or cumulatively affect healthy bat populations. As noted in our decision to list the northern long-eared bat as a threatened species, WNS is the primary cause of the species' decline, and we would not have listed the northern long-eared bat if not for the impact of WNS. In addition, we conclude that regulating incidental take in areas not affected by WNS is not expected to change the rate at which WNS progresses across the range of the species. In other words, regulating incidental take outside the WNS zone will not influence the future impact of the disease throughout the species' range or the status of the species. For these reasons, we have concluded that the prohibition of incidental take outside of the WNS zone is not necessary and advisable for the protection and recovery of the species. Incidental take, therefore, is not prohibited outside of the WNS zone.

Prohibitions and Exemptions Related to Incidental Take Inside the WNS Zone

Our approach to designing the regulatory provisions for the northern long-eared bat inside the WNS zone reflects the significant role WNS plays as the central threat affecting the species. For other threatened species, habitat loss or other limiting factors usually contribute to the decline of a species. In these situations, regulations are needed to address either the habitat loss or the other limiting factors.

The northern long-eared bat is not habitat-limited and has demonstrated a great deal of plasticity within its environment (*e.g.,* living in highly fragmented forest habitats to contiguous forest blocks from the southern United States to Canada's Yukon Territory) in the absence of WNS. For the northern long-eared bat, land management and

development actions that have been ongoing for centuries (*e.g.,* forest management, forest conversion) have not been shown to have significant negative impacts to northern long-eared bat populations.

As WNS continues to move across the range of the species, northern long-eared bat populations have declined and will continue to decline. Declines in northern long-eared bat populations in WNS-positive regions have been significant, and northern long-eared bats are now relatively rare on those landscapes. As populations decline as a result of WNS, the chances of any particular activity affecting northern long-eared bats becomes more remote. Therefore, in the WNS zone, we focused the regulatory provisions on sensitive life stages at known, occupied maternity roost trees and hibernacula.

We developed regulations that provide some level of protection to the species where it persists in the face of WNS. However, we have provided flexibility so that the regulated public will seek to conserve the species and foster its recovery at sites where it has been lost should tools to address WNS become available or where the species shows signs of resilience. Further, because we believe recovery of this species will require many partnerships across the species' range, minimizing regulatory impacts on activities inconsequential to northern long-eared bat populations provides an important step in building partnerships for the species' recovery.

The northern long-eared bat is a forest-dependent species, typically roosting in trees. In establishing regulations that are necessary and advisable for the conservation of the species, we have tailored species-specific regulatory provisions toward potential impacts to trees. For the incidental take of bats outside of hibernacula, we have specifically established two sets of provisions: the first set applies to activities that do not involve tree removal and the second applies to activities that do involve tree removal. By tree removal, we mean cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation that is likely to be used by the northern long-eared bat.

In this final 4(d) rule, we have limited the prohibition of incidental take of northern long-eared bats to specific circumstances. This does not mean that all activities that could result in the incidental take of the northern long-eared bat will do so. The relative exposure of the species and the species response to a potential stressor are critical considerations in evaluating the potential for incidental take to occur. For example, under the discussion of tree removal, below, we describe what is prohibited by the final 4(d) rule in the WNS zone and provide examples of how other activities could be implemented in a way that avoids the potential for incidental take.

Hibernacula

Northern long-eared bats predominantly overwinter in hibernacula that include caves and abandoned mines. For additional details about the characteristics of the hibernacula selected by northern long-eared bats, see the final listing determination (80 FR 17974; April 2, 2015). Northern long-eared bats have shown a high degree of philopatry (using the same site over multiple years) for a hibernaculum (Pearson 1962, p. 30), although they may not return to the same hibernaculum in successive seasons (Caceres and Barclay 2000, p. 2).

Hibernacula are so significant to the northern long-eared bat that they are considered a primary driver in the species distribution (*e.g.,* Kurta 1982, p. 302). Northern long-eared bats are documented in hibernacula in 29 of the 37 states in the species' range. Other States within the species' range have no known hibernacula, which may reflect that no suitable hibernacula are present, a limited survey effort, or the northern long-eared bat's use of sites not previously identified as suitable.

In general, bats select hibernacula because they have characteristics that allow the bats to meet specific life-cycle requirements. Factors influencing a hibernaculum's suitability include its physical structure (*e.g.,* openings, interior space, depth), air circulation, temperature profile, and location relative to foraging sites (Tuttle and Stevenson 1978, pp. 108–121).

Overwinter survival can be a particularly challenging period in the northern long-eared bat's life cycle. Hibernating bats appear to balance their physical condition (*e.g.,* fat reserves upon entering hibernation), hibernacula characteristics (*e.g.,* temperature variation, humidity), social resources (*e.g.,* roosting singly or in groups), and metabolic condition (*i.e.,* degree of torpor, which is the state of mental or physical inactivity) to meet overwinter survival needs. The overwinter physiological needs of the species include maintaining body temperature above freezing, minimizing water loss, meeting energetic needs until prey again become available, and responding to disturbance or disease. Because of this complex interplay of hibernacula characteristics and bat physiology, changes to hibernacula can significantly impact their suitability as well as the survival of any hibernating bats.

In general, northern long-eared bats arrive at hibernacula in August or September, enter hibernation in October and November, and emerge from the hibernacula in March or April (Caire et al. 1979, p. 405; Whitaker and Hamilton 1998, p. 100; Amelon and Burhans 2006, p. 72). However, hibernation may begin as early as August (Whitaker and Rissler 1992b, p. 56). Northern long-eared bats have been observed moving among hibernacula throughout the winter (Griffin 1940a, p. 185; Whitaker and Rissler 1992a, p. 131; Caceres and Barclay 2000, pp. 2–3). Whitaker and Mumford (2009, p. 210) found that this species flies in and out of some mines and caves in southern Indiana throughout the winter.

Human disturbance of hibernating bats has long been considered a threat to cave-hibernating bat species like the northern long-eared bat. Modifications to bat hibernacula can affect the microclimate (*e.g.,* temperature, humidity) of the subterranean habitat, and thus the ability of the cave or mine to support hibernating bats, including the northern long-eared bat. Anthropogenic modifications to cave and mine entrances may not only alter flight characteristics and access (Spanjer and Fenton 2005, p. 1110), but may change airflow and alter internal microclimates of the caves and mines, eliminating their utility as hibernacula (Service 2007, p. 71). For example, Richter et al. (1993, p. 409) attributed the decline in the number of Indiana bats at Wyandotte Cave, Indiana (which harbors one of the largest known population of hibernating Indiana bats (*Myotis sodalis*)), to an increase in the cave's temperature resulting from restricted airflow caused by a stone wall erected at the cave's entrance. In addition to the direct access modifications to caves discussed above, debris buildup at entrances or on cave gates can also significantly modify the cave or mine site characteristics by restricting airflow and the course of natural water flow. Water-flow restriction could lead to flooding, thus drowning hibernating bats (Amelon and Burhans 2006, p. 72). Thomas (1995, p. 942) used infrared detectors to measure flight activity in hibernating northern long-eared bats and little brown bats in response to the presence of a human observer. Flight activity significantly increased with the presence of an observer, beginning within 30 minutes

of the visit, peaking 1.0 to 7.5 hours later, and remaining significantly above baseline level for 2.5 to 8.5 hours. These results suggest that hibernating bats are sensitive to non-tactile stimuli and arouse and fly following human visits. Boyles and Brack's (2009) model predicted that the survival rate of hibernating little brown bats drops from 96 percent to 73 percent with human visitations to hibernacula. Prior to the outbreak of WNS, Amelon and Burhans (2006, p. 73) indicated that ''the widespread recreational use of caves and indirect or direct disturbance by humans during the hibernation period pose the greatest known threat to [the northern long-eared bat].''

Hibernacula and surrounding forest habitats play important roles in the life cycle of the northern long-eared bat beyond the time when the bats are overwintering. In both the early spring and fall, the hibernacula and surrounding forested habitats are the focus of bat activity in two separate periods referred to as ''spring staging'' and ''fall swarming.''

During the spring staging, bats begin to gradually emerge from hibernation, exit the hibernacula to feed, but re-enter the same or alternative hibernacula to resume daily bouts of torpor (Whitaker and Hamilton 1998, p. 100). The staging period for the northern long-eared bat is likely short in duration (Whitaker and Hamilton 1998, p. 100; Caire et al. 1979, p. 405). In Missouri, Caire et al. (1979, p. 405) found that northern long-eared bats moved into the staging period in mid-March through early May. In Michigan, Kurta et al. (1997, p. 478) determined that by early May, two-thirds of the *Myotis* species, including the northern long-eared bat, had dispersed to summer habitat.

Beginning in mid to late summer, after their young have gained some level of independence, northern long-eared bats exhibit a behavior near hibernacula referred to as swarming. Both male and female northern long-eared bats are present at swarming sites (often with other species of bats). During this period, heightened activity and congregation of transient bats around caves and mines is observed, followed later by increased sexual activity and bouts of torpor prior to winter hibernation (Fenton 1969, p. 601; Parsons et al. 2003, pp. 63–64; Davis and Hitchcock 1965, pp. 304–306). The purposes of swarming behavior may include introduction of juveniles to potential hibernacula, copulation, and stopping over sites on migratory pathways between summer and winter regions (Kurta et al. 1997, p. 479; Parsons et al. 2003, p. 64; Lowe 2012, p. 51; Randall and Broders 2014, pp. 109–110). The swarming season for some species of the genus *Myotis* begins shortly after females and young depart maternity colonies (Fenton 1969, p. 601). For the northern long-eared bat, the swarming period may occur between July and early October, depending on latitude within the species' range (Fenton 1969, p. 598; Kurta et al. 1997, p. 479; Lowe 2012, p. 86; Hall and Brenner 1968, p. 780; Caire et al. 1979, p. 405). The northern long-eared bat may investigate several cave or mine openings during the transient portion of the swarming period, and some individuals may use these areas as temporary daytime roosts or may roost in forest habitat adjacent these sites (Kurta et al. 1997, pp. 479, 483; Lowe 2012, p. 51). Little is known about northern long-eared bat roost selection outside of caves and mines during the swarming period (Lowe 2012, p. 6).

Based on the importance of hibernacula to northern long-eared bats, take is prohibited in and around the hibernacula within the WNS zone, including activities that may alter the hibernacula at any time of the year. Further, we have determined that when the conservation measures for the northern long-eared bat included in this final 4(d) rule are applied to areas within 0.25 mile (0.4 km) of the hibernacula, the potential for negative impacts to individuals is significantly reduced.

Activities Not Involving Tree Removal Are Not Prohibited

Under this final 4(d) rule, activities within the WNS zone not involving tree removal are not prohibited provided they do not result in the incidental take of northern long eared bats in hibernacula or otherwise impair essential behavioral patterns at known hibernacula. In our final listing determination (80 FR 17974; April 2, 2015), we identified a number of activities not involving tree removal that may have direct or indirect effects on northern long-eared bats. These activities have the potential to cause the incidental take of northern long-eared bats and include activities such as the operation of utility-scale wind-energy turbines, application of pesticides, and prescribed fire (this is not an exhaustive list; it is merely representative of activities that may result in take of northern long-eared bats).

At the time of our listing determination and the interim 4(d) rule (80 FR 17974; April 2, 2015), we stated that we had no compelling evidence that these activities would have significant effects on the northern long-eared bat when considered alone. However, we thought these factors may have a cumulative effect on this species when considered in concert with WNS. After additional consideration and our review of public comments received on the proposed and interim 4(d) rules, we did not find compelling evidence that regulating these potential cumulative effects would result in significant impacts at the species level. Effects to relatively small numbers of individuals are not anticipated to impair conservation efforts or the recovery potential of the species.

Wind-Energy Facilities

Wind-energy facilities are found scattered throughout the range of the northern long-eared bat, and many new facilities are anticipated to be constructed over the next 15 years (United States Department of Energy 2008, unpaginated). We reviewed post-construction mortality monitoring studies conducted at various times from 1998 through 2014 at 81 unique operating wind-energy facilities in the range of the northern long-eared bat in the United States and Canada (Service 2015, unpublished data). In these studies, 43 northern long-eared bat mortalities were documented at 19 of the sites. The northern long-eared bat fatalities comprised less than 1 percent of all documented bat mortalities. In most cases, the level of effort for most post-construction monitoring studies is not sufficient to confidently exclude the possibility that infrequent fatalities are being missed, but finding none or only small numbers over many sites and years can suggest the order of what may be missed. Thus while sustained mortality at particular facilities could potentially cause declines in local populations of the northern long-eared bat, if that is in fact occurring, it does not appear to be wide-spread at least when compared to other bat species which are nearly always found in fatality monitoring at wind facilities. At those sites with a northern long-eared bat fatality where multiple years of monitoring data were also available for review (n = 12), fatalities of northern long-eared bats were only reported in multiple years at two of the sites and for the other 10 sites only a single fatality was reported over multiple years of monitoring. For example, one site reported one northern long-eared bat fatality in 2008, but none in 2009, 2010, or 2011. Further, the number of fatalities of northern long-eared bats found at any given site has been relatively small (*e.g.,* most often a single fatality was found, but in all cases no more than six), and typically most sites (62 out of 81) found

no northern long-eared bat fatalities at all. There is a great deal of uncertainty related to extrapolating these numbers to generate an estimate of total northern long-eared bat mortality at wind-energy facilities due to variability in post-construction survey effort and methodology (Huso and Dalthorp 2014, pp. 546–547). Further, bat mortality can vary between years and between sites, and detected carcasses are only a small percentage of total bat mortalities. However, even with those limitations, northern long-eared bats were rarely detected as mortalities, even when they were known to be common on the landscape around the wind-energy facility.

We recognize that several wind energy facilities have completed, or are currently working to complete, habitat conservation plans (HCPs; permit pursuant to section 10(a)(1)(B) of the Act) for other listed bat species where the number of fatalities reported is also very low. When the take of an endangered species is reasonably certain to occur, we recommend that a project proponent secure incidental take coverage pursuant to section 10 of the Act. Over the operational life of a wind energy facility (typically anticipated to be at least 20 to 30 years), the take of listed species may be reasonably certain to occur, even if the level of mortalities annually is anticipated to be quite low. However, this does not mean that prohibiting that incidental take in the case of a threatened species is necessary and advisable for the conservation of such a species. For the northern long-eared bat, we do not anticipate that the fatalities that will be caused by wind energy would meaningfully change the species' status in the foreseeable future.

In addition, the wind industry has recently published best management practices establishing voluntary operating protocols, which they expect ''to reduce impacts to bats from operating wind turbines by as much as 30 percent'' (AWEA 2015, unpaginated). Given the large numbers of other bat species impacted by wind energy (Hein et al. 2013, p. 12) and the economic importance of bats in controlling agricultural or forest pest species (Boyles et al. 2011, pp. 41–42; Maine and Boyles, 2015, p. 12442), we anticipate that these new standards will be adopted by the wind-energy sector and ultimately required by wind-energy-siting regulators at State and local levels. We recommend that wind facilities adopt these operating protocols.

Our primary reason for not establishing regulatory criteria for wind-energy facilities is that the best available information does not indicate significant impacts to northern long-eared bats from such operations. We conclude that there may be adverse effects posed by wind-energy development to individual northern long-eared bats; however, there is no evidence suggesting that effects from wind-energy development has led to significant declines in this species, nor is there evidence that regulating the incidental take that is occurring would meaningfully change the conservation or recovery potential of the species in the face of WNS. Furthermore, with the adoption by wind-energy facilities of the new voluntary standards, risk to all bats, including the northern long-eared bat, should be further reduced.

Environmental Contaminants

Environmental contaminants, in particular insecticides, pesticides, and inorganic contaminants, such as mercury and lead, may also have detrimental effects on individual northern long-eared bats. However, across the wide-range of the species, it is unclear whether environmental contaminants, regardless of the source (*e.g.,* pesticide applications, industrial waste-water), would be expected to cause population-level impacts to the northern long-eared bat either independently or in concert with WNS. Historically, the most intensively-studied contaminants in bats have been the organochlorine insecticides (OCs; O'Shea and Clark 2002, p. 238). During wide-spread use of OCs in the 1960s and 1970s, lethal pesticide poisoning was demonstrated in gray bats (*Myotis grisescens*), Mexican free-tailed bats (*Tadarida brasiliensis*), and Indiana bats (*Myotis sodalis*) (O'Shea and Clark 2002, p. 239, 242). Since the phasing out of OCs in the United States, the effects of chemical contaminants on bats have been less well studied (O'Shea and Johnston 2009, p. 501); however, a few recent studies have demonstrated the accumulation of potentially toxic elements and chemicals in North American bats. For instance, Yates et al. (2014, pp. 48–49) quantified total mercury (Hg) levels in 1,481 fur samples and 681 blood samples from 10 bat species captured across 8 northeastern U.S. States and detected the highest Hg levels in tri-colored bats (*Perimyotis subflavus*), little brown bats (*Myotis lucifugus*) and northern long-eared bats. More recently, Secord et al. (2015) analyzed tissue samples from 48 northeastern bat carcasses of four species, including northern long-eared bats, and detected accumulations of several contaminants of emerging concern (CECs), including most commonly polybrominated diphenyl ethers (PDBEs; 100 percent of samples), salicylic acid (81 percent), thiabendazole (50 percent), and caffeine (23 percent). Digoxigenin, ibuprofen, warfarin, penicillin V, testosterone, and N,N-diethyl-meta-toluamide (DEET) were also present in at least 15 percent of samples. Compounds with the highest concentrations were bisphenol A (397 ng/g), PDBE congeners 28, 47, 99, 100, 153, and 154 (83.5 ng/g), triclosan (71.3 n/g), caffeine (68.3 ng/g), salicylic acid (66.4 ng/g), warfarin (57.6 ng/g), sulfathiazole (55.8 ng/g), tris(1-chloro-2-propyl) phosphate (53.8 ng/g), and DEET (37.2 ng/g).

Although there is the potential for direct and indirect contaminant-related effects, mortality or other population-level impacts have not been reported for northern long-eared bats. Long-term sublethal effects of environmental contaminants on bats are largely unknown; however, environmentally relevant exposure levels of various contaminants have been shown to impair nervous system, endocrine, and reproductive functioning in other wildlife (Yates et al. 2014, p. 52; Köhler and Triebskorn 2013, p. 761; Colborn et al. 1993, p. 378). Moreover, bats' high metabolic rates, longevity, insectivorous diet, migration-hibernation patterns of fat deposition and depletion, and immune impairment during hibernation, along with potentially exacerbating effects of WNS, likely increase their risk of exposure to and accumulation of environmental toxins (Secord et al. 2015, p. 411, Yates et al. 2014, p. 46, Geluso et al. 1976, p. 184; Quarles 2013, p. 4, O'Shea and Clark 2002, p. 238). Following WNS-caused population declines in northeastern little brown bats, Kannan et al. (2010) investigated whether exposure to toxic contaminants could be a contributing factor in WNS-related mortality. Although high concentrations of polychlorinated biphenyls (PCBs), PBDEs, polybrominated biphenyls (PBBs), and chlordanes were found in the fat tissues of WNS-infected bats in New York, relative concentrations in bats from an uninfected population in Kentucky were also high (Kannan et al. 2010, p. 615). The authors concluded that the study's sample sizes were too small to accurately associate contaminant exposure with the effects of WNS in bats (Kannan et al. 2010, p. 618), but argued that additional research is needed. Despite the lack of knowledge on the effects of various contaminants on northern long-eared bats, we recognize the potential for direct and indirect consequences.

However, contaminant-related mortality has not been reported for northern long-eared bats. Additionally, Ingersoll (2013, p. 9) suggested it was unclear what other threats or combination of threats other than WNS (*e.g.,* changes to critical roosting or foraging habitat, collisions, effects from chemicals) may be responsible for recent bat declines.

Prescribed Fire

Prescribed fire is a useful forest-management tool. However, there are potential negative effects from prescribed burning, including direct mortality to the northern long-eared bat. Therefore, when using prescribed burning as a management tool, fire frequency, timing, location, and intensity all need to be considered to lower the risk of incidental take of bats. Carter et al. (2002, pp. 140–141) suggested that the risk of direct injury and mortality to southeastern forest-dwelling bats resulting from summer prescribed fire is generally low. During warm temperatures, bats are able to arouse from short-term torpor quickly. Northern long-eared bats use multiple roosts, switch roost trees often, and could likely use alternative roosts in unburned areas, should fire destroy the current roost. Non-volant pups are likely the most vulnerable to death and injury from fire. Although most eastern bat species are able to carry their young for some time after they are born (Davis 1970, pp. 187–189), the degree to which this behavior would allow females to relocate their young if fire threatens the nursery roost is unknown. The potential for death or injury resulting from prescribed burning depends largely on site-specific circumstances, *e.g.,* fire intensity near the maternity roost tree and the height above ground of pups in the maternity roost tree. Not all fires through maternity roosting areas will kill or injure all pups present.

Bats are known to take advantage of fire-killed snags and continue roosting in burned areas. Boyles and Aubrey (2006, pp. 111–112) found that, after years of fire suppression, initial burning created abundant snags, which evening bats (*Nycticeius humeralis*) used extensively for roosting. Johnson et al. (2010, pp. 115) found that after burning, male Indiana bats roosted primarily in fire-killed maples. In the Daniel Boone National Forest, Lacki et al. (2009, p. 5) radio-tracked adult female northern long-eared bats before and after prescribed fire, finding more roosts (74.3 percent) in burned habitats than in unburned habitats. Burning may create more suitable snags for roosting through exfoliation of bark (Johnson et al. 2009a, p. 240), mimicking trees in the appropriate decay stage for roosting bats. In addition to creating snags and live trees with roost features, prescribed fire may enhance the suitability of trees as roosts by reducing adjacent forest clutter. Perry et al. (2007, p. 162) found that five of six species, including northern long-eared bat, roosted disproportionately in stands that were thinned and burned 1 to 4 years prior but that still retained large overstory trees.

The use of prescribed fire, where warranted, will, in any given year, impact only a small proportion of the northern long-eared bat's range during the bats active period. In addition, there are substantial benefits of prescribed fire for maintaining forest ecosystems. For example, the U.S. Forest Service's Southern Region manages approximately 10.9 million acres (4.4 million hectares (ha)) of land, and the maximum estimate of acres where prescribed fire is employed annually during the active period of northern-long eared bats (April through October) was 320,577 acres (129,732 ha), which is less than 3 percent of the National Forest regional lands. Similarly, the Forest Service's Eastern Region manages 15 Forests in 13 States that include about 12.2 million acres (4.88 million ha), of which 11.3 million acres (4.52 million ha) are forested habitat. The U.S. Forest Service anticipates applying prescribed burning to 107,684 acres (43,073 ha) or about 1percent of the forested habitat across the eastern region annually. In addition, only 17,342 acres (6937 ha) (*i.e.,* 0.15 percent of the forested habitat) of prescribed burning annually is anticipated to occur during the non-volant period on the eastern forests.

Further, there are substantial benefits of prescribed fire for maintaining forest ecosystems, such as providing the successional and disturbance processes that renew the supply of suitable roost trees (Silvis et. al. 2012, pp.6–7), as well as helping to ensure a varied and reliable prey base (Dodd et. al. 2012, p. 269). There is no evidence that prescribed fire has led to population-level declines in this species nor is there evidence that regulating the incidental take that might occur would meaningfully change the conservation status or recovery potential of the species in the face of WNS.

Hazardous Tree Removal Is Not Prohibited

Under this final 4(d) rule, incidental take that is caused by removal and management of hazardous trees is not prohibited. The removal of these hazardous trees may be widely dispersed, but limited, and should result in very minimal incidental take of northern long-eared bats. We recommend, however, that removal of hazardous trees be done during the winter, wherever possible, when these trees will not be occupied by northern long-eared bats. We conclude that the overall impact of removing hazardous trees is not expected to adversely affect conservation and recovery efforts for the species.

Activities Involving Tree Removal

We issued the interim species-specific rule under section 4(d) of the Act in recognition that WNS is the primary threat to the species' continued existence. We further recognized that all other (non-WNS) threats cumulatively were not impacting the species at the population level. Therefore, we apply the take prohibitions only to activities that we have determined may impact the species in its most vulnerable life stages, allowing for management flexibility and a limited regulatory burden.

In this final 4(d) rule, we have determined that the conservation of the northern long-eared bat is best served by limiting the prohibitions to the most vulnerable life stages of the northern long-eared bat (*i.e.,* while in hibernacula or in maternity roost trees) within the WNS zone and to activities, tree removal in particular, that are most likely to affect the species. We have also revised some of the conservation measures. To further simplify the regulation, we have established separate prohibitions for activities involving tree removal and those that do not involve tree removal. Within the WNS zone incidental take outside of hibernacula that results from tree removal is only prohibited when it (1) Occurs within 0.25 miles (0.4 km) of known northern long-eared bat hibernacula; or (2) cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the known occupied maternity trees, during the pup season (June 1 through July 31).

Forest Management

Forest management maintains forest habitat on the landscape, and the impacts from management activities are, for the most part, temporary in nature. Forest management is the practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives (Society of American Foresters, *http://dictionaryofforestry.org/dict/term/forest_*

management). It includes a broad range of silvicultural practices and this discussion specifically addresses tree-removal practices (*e.g.,* timber harvest) associated with forest management. Timber harvesting includes a wide variety of practices from selected removal of individual trees to clearcutting. Impacts to northern long-eared bats from forest management would be expected to range from positive (*e.g.,* maintaining or increasing suitable roosting and foraging habitat within northern long-eared bat home ranges) to neutral (*e.g.,* minor amounts of forest removal, forest management in areas outside northern long-eared bat summer home ranges, forest management away from hibernacula) to negative (*e.g.,* death of adult females or pups or both resulting from the removal of maternity roost trees).

The best available data indicate that the northern long-eared bat shows a varied degree of sensitivity to timber-harvesting practices. For example, Menzel et al. (2002, p. 112) found northern long-eared bats roosting in intensively managed stands in West Virginia, indicating that there were sufficient suitable roosts (primarily snags) remaining for their use. At the same study site, Owen et al. (2002, p. 4) concluded that northern long-eared bats roosted in areas with abundant snags, and that in intensively managed forests in the central Appalachians, roost availability was not a limiting factor. Northern long-eared bats often chose black locust and black cherry as roost trees, which were quite abundant and often regenerate quickly after disturbance (*e.g.,* timber harvest). Similarly, Perry and Thill (2007, p. 222) tracked northern long-eared bats in central Arkansas and found roosts were located in eight forest classes with 89 percent occurring in three classes of mixed pine-hardwood forest. The three classes of mixed pine-hardwood forest that supported the majority of the roosts were partially harvested/thinned, unharvested (50 to 99 years old), and group-selection harvested (Perry and Thill 2007, pp. 223–224).

Certain levels of timber harvest may result in canopy openings, which could result in more rapid development of young bats. In central Arkansas, Perry and Thill (2007, pp. 223–224) found female bat roosts were more often located in areas with partial harvesting than males, with more male roosts (42 percent) in unharvested stands than female roosts (24 percent). They postulated that females roosted in relatively more open forest conditions because they may receive greater solar radiation, which may increase developmental rates of young or permit young bats a greater opportunity to conduct successful initial flights (Perry and Thill 2007, p. 224). Cryan et al. (2001, p. 49) found several reproductive and non-reproductive female northern long-eared bat roost areas in recently harvested (less than 5 years) stands in the Black Hills of South Dakota in which snags and small stems (diameter at breast height (dbh)) of 2 to 6 inches (5 to 15 centimeters) were the only trees left standing; however, the largest colony (n = 41) was found in a mature forest stand that had not been harvested in more than 50 years.

Forest size and continuity are also factors that define the quality of habitat for roost sites for northern long-eared bats. Lacki and Schwierjohann (2001, p. 487) stated that silvicultural practices could meet both male and female roosting requirements by maintaining large-diameter snags, while allowing for regeneration of forests. Henderson et al. (2008, p. 1825) also found that forest fragmentation affects northern long-eared bats at different scales based on sex; females require a larger unfragmented area with a large number of suitable roost trees to support a colony, whereas males are able to use smaller, more fragmented areas. Henderson and Broders (2008, pp. 959–960) examined how female northern long-eared bats use the forest-agricultural landscape on Prince Edward Island, Canada, and found that bats were limited in their mobility and activities are constrained when suitable forest is limited. However, they also found that bats in a relatively fragmented area used a building for colony roosting, which suggests an alternative for a colony to persist in an area with fewer available roost trees.

In addition to impacts on roost sites, we considered effects of forest-management practices on foraging and traveling behaviors of northern long-eared bats. In southeastern Missouri, the northern long-eared bat showed a preference for contiguous tracts of forest cover (rather than fragmented or wide open landscapes) for foraging or traveling, and different forest types interspersed on the landscape increased likelihood of occupancy (Yates and Muzika 2006, p. 1245). Similarly, in West Virginia, female northern long-eared bats spent most of their time foraging or travelling in intact forest, diameter-limit harvests (70 to 90 year-old stands with 30 to 40 percent of basal area removed in the past 10 years), and road corridors, with no use of deferment harvests (similar to clearcutting) (Owen et al. 2003, p. 355). When comparing use and availability of habitats, northern long-eared bats preferred diameter-limit harvests and forest roads. In Alberta, Canada, northern long-eared bats avoided the center of clearcuts and foraged more in intact forest than expected (Patriquin and Barclay 2003, p. 654). On Prince Edward Island, Canada, female northern long-eared bats preferred open areas less than forested areas, with foraging areas centered along forest-covered creeks (Henderson and Broders 2008, pp. 956–958). In mature forests in South Carolina, 10 of the 11 stands in which northern long-eared bats were detected were mature stands (Loeb and O'Keefe 2006, p. 1215). Within those mature stands, northern long-eared bats were more likely to be recorded at points with sparse or medium vegetation rather than points with dense vegetation, suggesting that some natural gaps within mature forests can provide good foraging habitat for northern long-eared bats (Loeb and O'Keefe 2006, pp. 1215–1217). However, in southwestern North Carolina, Loeb and O'Keefe (2011, p. 175) found that northern long-eared bats rarely used forest openings, but often used roads. Forest trails and roads may provide small gaps for foraging and cover from predators (Loeb and O'Keefe 2011, p. 175). In general, northern long-eared bats appear to prefer intact mixed-type forests with small gaps (*i.e.,* forest trails, small roads, or forest-covered creeks) in forest with sparse or medium vegetation for forage and travel rather than fragmented habitat or areas that have been clearcut.

Impacts to northern long-eared bats from forest management would be expected to vary depending on the timing of tree removal, location (within or outside northern long-eared bat home range), and extent of removal. While bats can flee during tree removal, removal of occupied roosts (during spring through fall) may result in direct injury or mortality to some percentage of northern long-eared bats. This percentage would be expected to be greater if flightless pups or inexperienced flying juveniles were also present. Forest management outside of northern long-eared bat summer home ranges or away from hibernacula would not be expected to affect the conservation of the species.

Forest management is not usually expected to result in a permanent loss of suitable roosting or foraging habitat for northern long-eared bats. On the contrary, forest management is expected to maintain a forest over the long term for the species. However, localized temporary reductions in suitable roosting and/or foraging habitat can occur from various forest practices (*e.g.,*

clearcuts). As stated above, northern long-eared bats have been found in forests that have been managed to varying degrees, and as long as there is sufficient suitable roosting and foraging habitat within their home range and travel corridors between those areas, we would expect northern long-eared bat colonies to continue to occur in managed landscapes. However, in areas with WNS, northern long-eared bats may be less resilient to stressors and maternity colonies are smaller. Given the low inherent reproductive potential of northern long-eared bats (one pup per female per year), death of adult females or pups or both during tree felling could reduce the long-term viability of some of the WNS-impacted colonies if they are also in the relatively small percentage of forest habitat directly affected by forest management.

As we documented in the interim 4(d) rule, forestry management and silviculture are vital to the long-term survival and recovery of the species. Based on information obtained during comment periods, approximately 2 percent of forests in States within the range of the northern long-eared bat are impacted by forest management activities annually (Boggess et al., 2014, p.9). Of this amount, in any given year, a smaller fraction of forested habitat would be impacted during the active season when female bats and pups are most vulnerable. Therefore, we have determined that when the prohibitions for the northern long-eared bat included in this final 4(d) rule are applied to forest management activities, the potential impacts will be significantly reduced.

Forest Conversion

In our listing determination for the northern long-eared bat, we noted that current and future forest conversion may have negative additive impacts where the species has been impacted by WNS (80 FR 17991; April 2, 2015). Our assessment was based largely on the species' summer-home-range fidelity and the potential for increased energetic demands for individuals where the loss of summer habitat had been removed or degraded (*e.g.,* fragmentation). We noted that forest conversion ''can result in a myriad of effects to the species, including direct loss of habitat, fragmentation of remaining habitat, and direct injury or mortality'' (80 FR 17993; April 2, 2015). In the interim 4(d) rule we exempted most forest-management activities except for the conversion of mature hardwood or mixed forest into intensively managed monoculture-pine plantation stands, or non-forested landscape (80 FR 18025; April 2, 2015).

Many of the comments on the proposed and interim 4(d) rules noted that habitat is not limiting for the northern long-eared bat. As we documented in the final listing determination (80 FR 1802; April 2, 2015), the extent of conversion from forest to other land cover types has been fairly consistent with conversion to forest (cropland reversion/plantings). Further, the recent past and projected amounts of forest loss to conversion was, and is anticipated to be, only a small percentage of the total amount of forest habitat. For example by 2060, 4 to 8 percent of the forested area found in 2007 across the conterminous United States is expected to be lost (U.S Forest Service 2012, p. 12). The northern long-eared bat has been documented to use a wide variety of forest types across its wide range. Therefore, we agree that the availability of forested habitat does not now, nor will it likely in the future, limit the conservation of the northern long-eared bat.

We have determined that when the prohibitions for the northern long-eared bat included in this final 4(d) rule are applied to forest-conversion activities, the potential for negative additive impacts to individuals or colonies is significantly reduced. As WNS impacts bat populations, unoccupied, suitable forage and roosting habitat will be increasingly available for remaining bats.

Tree-Removal Conservation Measures

Under this final 4(d) rule, incidental take within the WNS zone involving tree removal is not prohibited if two conservation measures are followed. The first measure is the application of a 0.25 mile (0.4 km) buffer around known occupied northern long-eared bat hibernacula. The second conservation measure is that the activity does not cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot (45-m) radius around the maternity roost tree, during the pup season (June 1 through July 31). The rationale for these measures is discussed below.

Conservation Measure 1: Tree Removal Near Known Northern Long-eared Bat Hibernacula

''Known hibernacula'' are defined as locations where one or more northern long-eared bats have been detected during hibernation or at the entrance during fall swarming or spring emergence. Given the documented challenges of surveying for northern long-eared bats in the winter (use of cracks, crevices that are inaccessible to surveyors), any hibernacula with northern long-eared bats observed at least once, will continue to be considered ''known hibernacula'' as long as the hibernacula remains suitable for the northern long-eared bat. A hibernaculum remains suitable for northern long-eared bats even when *Pd* or WNS has been detected.

We have adopted the 0.25-mile (0.4-km) buffer around known northern long-eared bat hibernacula for several reasons: (1) It will help to protect microclimate characteristics of the hibernacula; (2) for many known hibernacula, bats use multiple entrances that may not be reflected in the primary location information (*e.g.,* bats may use other smaller entrances that are often spread out from the main entrance accessed for surveys or other purposes) and the hibernacula may have extensive underground features that extend out from known entrances; (3) in the late summer and fall when bat behavior begins to center on hibernacula (swarming), it appears that northern long-eared bats may roost in a widely dispersed area, which may reduce the potential that any activity outside of this buffer would significantly affect the species; (4) outside of the maternity period, northern long-eared bats have demonstrated the ability to adapt to forest-management-related and other types of disturbances; and (5) regardless of the buffer size, bats will remain fully protected from take while in the hibernacula, when they are most vulnerable.

The microclimate, temperature, humidity, and air and water flow within a hibernaculum are all important variables that could potentially be impacted by forest management or other activities when conducted in proximity to a hibernaculum. A 0.25-mile (0.4-km) buffer will protect the hibernaculum's microclimate. Studies that have evaluated the depth of edge influence from forest edge or tree removal on temperature, humidity, wind speed, and light penetration suggest that although highly variable among forest types and other site-specific factors (such as aspect and season), the depth of edge influence can range from 164 feet (50 m) (Matlack 1993, p. 193) to over 1,312 feet (400 m) (Chen et al. 1995, p. 83). However, the hibernacula often selected by northern long-eared bats are ''large, with large passages'' (Raesly and Gates 1987, p. 20), and may be less affected by relatively minor surficial micro-climatic changes that might result from the limited exempted activities outside of the 0.25-mile (0.4-km) buffer. Further, bats rarely hibernate near the entrances of structures (Grieneisen 2011, p. 10), as these areas can be subject to greater

predation (Grieneisen 2011, p. 10; Kokurewicz 2004, p. 131) and daily temperature fluctuations (Grieneisen 2011, p. 10). Davis et al. (1999, p. 311) reported that partial clearcutting ''appears not to affect winter temperatures deep in caves.'' Caviness (2003, p. 130) reported that prescribed burns were found to have no notable influence on bats hibernating in various caves in the Ozark National Forest. All bats present in caves at the beginning of the burn were still present and in ''full hibernation'' when the burn was completed, and bat numbers increased in the caves several days after the burn. There were minute changes in relative humidity and temperature during the burn, and elevated short-term levels of some contaminants from smoke were noted.

Northern long-eared bat hibernacula can be large and complex and, spatially, may not be fully represented in locational information contained in species records by State or Federal agencies or by natural heritage programs. A 0.25-mile (0.4-km) buffer will help protect the spatial extent of many known hibernacula. For example, one limestone mine in Ohio used by northern long-eared bats had approximately 44 miles (71 km) of passages and multiple entrances (Brack 2007, p. 740). In northern Michigan, bats (including northern long-eared bats) occupied mines that were more structurally complex and longer (1,007 ft ± 2,837 ft (307m ± 865 m) than mines that were unoccupied, and the occupied mines had a total length of passages that ranged from 33 feet to 4 miles (10 meters to 6.4 kilometers) (Kurta and Smith 2014, p. 592).

Only a relatively small proportion of the areas where swarming northern long-eared bats may occur are likely to be affected by tree-removal activity. There are over 1,500 known hibernacula for the species in the United States (Service 2015, unpublished data), several known in Canada, and potentially many others yet to be identified. Lowe (2012, p. 58) reported that the roosts of northern long-eared bats were evenly distributed over distances within 4.6 miles (7.3 km) from a swarming site. If the northern long-eared bat's potential swarming habitat (including foraging habitat during that period) can be approximated as the forest habitat within 5 miles (8.1 km) of hibernacula, that equates to a 50,265 acre (20,342 ha) area per hibernaculum. In any given year, only a small proportion of the forest habitat within the potential swarming habitat is likely to be impacted by tree-removal activities (*e.g.,* generally 2 percent of forests are managed in any given year and over 1,500 hibernacula documented as used by the species). Similarly, forest conversion is anticipated to be relatively small compared to available habitat; therefore, based on our current understanding of potential swarming-habitat, on the scale of 50,000 acres (20,342ha) per hibernaculum, the relatively small foot-print of activities not prohibited by this final rule are unlikely to affect the conservation or recovery potential of the species. Raesly and Gates (1987, p. 24) evaluated external habitat characteristics of hibernacula and reported that for the northern long-eared bat the percentage of cultivated fields within 0.6 miles (1 km) of the hibernacula was greater (52.6 percent) for those caves used by the species, than for those caves not used by the species (37.7 percent), suggesting that the removal of some forest around a hibernacula can be consistent with the species needs.

Outside of the maternity period, northern long-eared bats have demonstrated the ability to respond successfully to forest-management-related and other types of disturbances. Therefore, the limited disturbance associated with incidental-take exceptions outside of the 0.25-mile (0.4-km) buffer on hibernacula is consistent with the conservation of the species. For example, Silvis et al.'s (2015, p.1) experimental removal of roosts suggested that the ''loss of a primary roost or 20 percent of secondary roosts in the dormant season may not cause northern long-eared bats to abandon roosting areas or substantially alter some roosting behaviors in the following active season when tree-roosts are used.''

Prior to WNS, the most significant risk identified for northern long-eared bat conservation was direct human disturbance while bats are hibernating (*e.g.,* Olson et al. 2011, p. 228; Bilecki 2003, p. 55; Service 2012, unpublished data). This final 4(d) rule (within the WNS zone) addresses these impacts.

We have prohibited incidental take of northern long-eared bats under specific tree-removal circumstances; however, that does not mean that all activities involving tree-removal activities within the 0.25-mile (0.4-k) buffer of hibernacula will result in take. For example, a timber harvest might be conducted within 0.25 miles (0.4 km) of a hibernaculum at a time when bats are unlikely to be roosting in trees within the buffer (*e.g.,* winter), which fully protects any bats in the hibernaculum as well as the hibernaculum's suitability for bats (*i.e.,* access, microclimate), and does not significantly change the suitability of the habitat for foraging by northern long-eared bats or perhaps even improves prey availability. In such a case, the timber harvest, although closer than 0.25 miles (0.4 km) to the hibernaculum, is not likely to result in incidental take so we would not recommend that the harvester seek authorization for incidental take pursuant to the Act. For activities planned within 0.25 miles (0.4 km) of hibernaculum, we encourage you to contact the local Ecological Services Field Office (*http://www.fws.gov/offices*) to help evaluate the potential for take of northern long-eared bats.

Conservation Measure 2: Tree Removal Near Known Maternity Roost Trees

Female northern long-eared bats roost communally in trees in the summer (Foster and Kurta 1999, p. 667) and exhibit fission-fusion behavior (Garroway and Broders 2007, p. 961), where members frequently roost together (fusion), but the composition and size of the groups is not static, with individuals frequently departing to be solitary or to form smaller or different groups (fission) (Barclay and Kurta 2007, p. 44). As part of this behavior, northern long-eared bats switch tree roosts often (Sasse and Pekins 1996, p. 95), typically every 2 to 3 days (Foster and Kurta 1999, p. 665; Owen et al. 2002, p. 2; Carter and Feldhamer 2005, p. 261; Timpone et al. 2010, p. 119). In Missouri, the longest time spent roosting in one tree was 3 nights (Timpone et al. 2010, p. 118). Bats switch roosts for a variety of reasons, including temperature, precipitation, predation, parasitism, sociality, and ephemeral roost sites (Carter and Feldhamer 2005, p. 264).

Maternity colonies, consisting of females and young, are generally small, numbering from about 30 (Whitaker and Mumford 2009, p. 212) to 60 individuals (Caceres and Barclay 2000, p. 3); however, one group of 100 adult females was observed in Vermilion County, Indiana (Whitaker and Mumford 2009, p. 212) and Lereculeur (2013, p. 25) documented a colony of at least 116 northern long-eared bats. In West Virginia, maternity colonies in two studies had a range of 7 to 88 individuals (Owen et al. 2002, p. 2) and 11 to 65 individuals, with a mean size of 31 (Menzel et al. 2002, p. 110). Lacki and Schwierjohann (2001, p. 485) found that the number of bats within a given roost declined as the summer progressed. Pregnant females formed the largest aggregations (mean=26) and post-lactating females formed the smallest aggregation (mean=4). Their largest overall reported colony size was 65 bats.

Northern long-eared bats change roost trees frequently, but use roost areas repeatedly and to a lesser extent, reuse specific roosts (*e.g.,* Cryan et al. 2001, p. 50; Foster and Kurta 1999, p. 665). The northern long-eared bat appears to be somewhat flexible in tree-roost selection, selecting varying roost tree species and types of roosts throughout its range. Females tend to roost in more open areas than males, likely due to the increased solar radiation, which aids pup development (Perry and Thill 2007, p. 224). Fewer trees surrounding maternity roosts may also benefit juvenile bats that are starting to learn to fly (Perry and Thill 2007, p. 224). Female roost-site selection, in terms of canopy cover and tree height, changes depending on reproductive stage; relative to pre- and post-lactation periods, lactating northern long-eared bats have been shown to roost higher in tall trees situated in areas of relatively less canopy cover and lower tree density (Garroway and Broders 2008, p. 91).

The northern long-eared bat's tendency for frequent roost switching may help them avoid or respond effectively to disturbance by people outside of the maternity season. The frequent-roost-switching behavior of northern long-eared bat suggests that they are adapted to responding quickly to changes in roost availably (ephemeral roosts), changing environmental conditions (temperature), prey availability, or physiological needs (torpor, reproduction). In a study of radio-tracked northern long-eared bats responding to the disturbance from prescribed fire (Dickinson et al. 2009, pp. 55–57), the bats appeared ''to limit their exposure to conditions created by fire. At no point did they fly outside of their typical home range area, nor did they travel far from the burn itself.'' While some of the bats soon returned to areas recently burned, by day 6 and 7 post burn, they ''appeared to return to pre-burn norms in terms of emergence time, length of foraging bouts, and use of the burn unit and adjacent habitats.'' Carter et al. (2000, pp 139–140), noted that ''During the summer months, bats are able to arouse quickly as the difference between the ambient temperature and active body temperature of bats is less. Most bat species utilizing trees and snags have multiple roosts throughout the forest (Sasse and Pekins 1996; Callahan et al. 1997; Menzel et al. 1998; Foster and Kurta 1999, Menzel et al. 2001), providing alternate roosts should the current roost be destroyed by fire.'' Sparks et al. (2008, pp. 207–208) documented that northern long-eared bats released in the open during the day demonstrated a successful rapid ''flight-to-cover'' response.

Adult females give birth to a single pup (Barbour and Davis 1969, p. 104). Birthing within the colony tends to be synchronous, with the majority of births occurring around the same time (Krochmal and Sparks 2007, p. 654). Parturition (birth) likely occurs in late May or early June (Caire et al. 1979, p. 406; Easterla 1968, p. 770; Whitaker and Mumford 2009, p. 213), but may occur as late as July (Whitaker and Mumford 2009, p. 213). Upon birth, the pups are unable to fly, and females return to nurse the pups between foraging bouts at night. In other *Myotis* species, mother bats have been documented carrying flightless young to a new roosting location (Humphrey et al. 1977, p. 341). The ability of a mother to move young may be limited by the size of the growing pup. Juvenile volancy (flight) often occurs by 21 days after birth (Krochmal and Sparks 2007, p. 651; Kunz 1971, p. 480) and has been documented as early as 18 days after birth (Krochmal and Sparks 2007, p. 651). Prior to gaining the ability to fly, juvenile bats are particularly vulnerable to tree-removal activities. Based on this information, we have determined that the most sensitive period to protect pups at maternity roost trees is from June 1 through July 31 (the ''pup season'').

Known occupied maternity roost trees are defined as trees that have had female northern long-eared bats or juvenile bats tracked to them or the presence of female or juvenile bats is known as a result of other methods. Once documented, northern-long eared bats are known to continue to use the same roosting areas. Therefore, a tree will be considered to be a ''known, occupied maternity roost'' as long as the tree and surrounding habitat remain suitable for northern long-eared bats. The incidental take prohibition for known, occupied maternity roosts trees applies only during the during the pup season (June 1 through July 31).

In addition to protecting the known roosts, we have also included in this conservation measure avoiding the cutting or destroying of any other trees within a 150-foot (45-meter) radius from the known, occupied maternity roost tree during the pup season (June 1 through July 31). Leaving a buffer of other trees around the maternity roost tree will help to protect the roost tree from damage or destruction that may be caused by other nearby trees being removed as well as helping protect the roost tree from wind throw and micro-climate changes. O'Keefe (2009 p. 42) documented that a 39-foot (12-meter) buffer around a maternity roost tree during a harvest in May allowed the roost to be successfully used through late July and that one buffered tree was used 2 years in a row. We have adopted a standard for exception of take that is almost four times that which proved effective in this example, in order to better account for the variation in forest types used by the northern long-eared bat and a variety of slopes that might influence how large a buffer may need to be in order to prove effective. Roost trees used by northern long-eared bats are often in fairly close proximity to each other within the species' summer home range. For female northern long-eared bats, the mean distance between roosts was reported as 63m to 600m from a variety of studies published 1996 through 2014 (Foster and Kurta 1999 p. 665; Cryan et al. 2001, p. 46; Swier 2003, pp. 58–59; Jackson 2004, p. 89; Henderson and Broders 2008, p. 958; Johnson et al. 2009, p. 240; Badin 2014, p. 76; Bohrman and Fecske, unpublished data). Further, within that data, the distance between roosts was reported as small as 5 meters in one study (Badin 2014, p. 76) and 36 meters in another (Jackson 2004, p. 89). As Sasse 1995, p. 23, noted ''some roost sites appeared to be 'clustered' together.'' Therefore, even this modest additional buffer may also protect other roosts trees used by female northern long-eared bats during the maternity period that have not yet been documented. In addition, because colonies occupy more than one maternity roost in a forest stand and individual bats frequently change roosts, in some cases a portion of a colony or social network is likely to be protected by multiple 150-foot buffers during the maternity season.

Currently, since most States and natural heritage programs do not track roosts and many have not tracked any northern long-eared bat occurrences, we recognize that not all northern long-eared bat maternity roost sites are known. Therefore, this measure will not protect an unknown maternity roosts unless it falls under one of the buffers related to protecting a known roost or hibernaculum.

Although not fully protective of every individual, the conservation measures identified in this final rule help protect maternity colonies. This final species-specific rule under section 4(d) of the Act provides the regulatory flexibility for certain activities to occur that have not been the cause of the species' imperilment, while allowing us to focus conservation efforts on WNS, promoting

conservation of the species across its range.

Additional Prohibitions and Exceptions

In this final 4(d) rule we carry forward other standard prohibitions and exceptions that are typically applied to threatened species and are currently applicable under the interim rule for the northern long-eared bat. These prohibitions included the possession of and other acts with unlawfully taken northern long-eared bats, as well as import and export. We also included standard exemptions, including all the permitting provisions of 50 CFR 17.32 and the exemption for employees or agents of the Service, of the National Marine Fisheries Service, or of a State conservation agency when acting in the course of their official duties to take northern long-eared bats covered by an approved cooperative agreement to carry out conservation programs.

Summary of Comments and Recommendations on the Proposed and Interim 4(d) Rules

The northern long-eared bat was listed as a threatened species under the Act, with an interim rule under section 4(d) of the Act, on April 2, 2015 (80 FR 17974). At that time, the Service invited public comments on the interim 4(d) rule for 90 days, ending July 1, 2015. The Service had already received comments for 60 days on its proposed 4(d) rule (80 FR 2371, January 16, 2015). In total, the Service received approximately 40,500 comments on the proposed and interim 4(d) rules. We discuss them below.

Peer Reviewer Comments

1. *Comment:* Peer reviewer(s) commented that the 0.25-mile (radius) around hibernacula is an inadequate buffer. There were additional suggestions for alternative buffer distances as well as more detail on how activities might be limited within those buffers. A specific suggestion of a 1.6-mile buffer was made, with a statement that most forest practices could occur within the buffer provided that the trees were not completely removed (conversion). In addition, a suggestion of 0.5-mile buffer was made.

Our Response: We have revised the approach used in this final 4(d) rule to ensure that hibernating northern long-eared bats in the WNS zone are protected from incidental take independent of the buffer size used in the conservation measure. In addition, all northern long-eared bats both in and outside of the WNS zone are protected from purposeful take (*e.g.,* killing or intentionally harassing northern long-eared bats), including while in the hibernacula where they are most vulnerable. We have retained the 0.25-mile buffer (0.25-mile radius around known hibernacula entrance/access points used by bats) to further protect the hibernaculum and associated forested habitat for several reasons (see discussion above under *Conservation Measure 1: Tree Removal Near Known Northern Long-eared Bat Hibernacula*). Some of the peer-reviewers recommended that within the hibernacula buffer that certain limited activities should be allowed (*e.g.,* timber harvest that only removes a small percentate of the forest habitat when bats are not active). As discussed above under *Conservation Measure 1: Tree Removal Near Known Northern Long-eared Bat Hibernacula,* not all tree-removal activities within the buffer of hibernacula will result in take. For example, a timber harvest might be conducted within the buffer when bats are unlikely to be roosting in trees (*e.g.,* winter) that fully protects any bats in the hibernaculum as well as the hibernaculum's suitability for bats (*i.e.,* access, microclimate), and does not significantly change the suitability of the habitat for foraging by northern long-eared bats or perhaps even improves prey availability. In such a case, the timber harvest, although within the buffer, is not likely to result in incidental take so we would not recommend that the harvester seek authorization for incidental take pursuant to the Act. Because the buffer only applies to actions that result in incidental take of the northern long-eared bat, we determined that there was no need to attempt to exempt activities (*e.g.,* a limited timber harvest) where incidental take is unlikely.

2. *Comment:* Peer reviewer(s) commented that the WNS buffer zone should be removed and protections should occur throughout the range of the species.

Our Response: We have established prohibitions on the purposeful take of northern long eared bats throughout the species range. However, because WNS is the most significant threat known to be imperiling the species, we have determined that in areas where WNS has not been detected, additional prohibitions are not warranted. We recognize that the WNS zone will change over time. We remain committed to regularly updating the WNS zone map as new information about the spread of the *Pd* fungus becomes known.

3. *Comment:* Peer reviewer(s) commented that the WNS buffer zone should be expanded and/or changed to accommodate a more site-specific approach, based on proximity to hibernacula, for example.

Our Response: We reevaluated the approach to the WNS zone in this final rule and determined that the 150-mile buffer used for the interim 4(d) rule appears to be very effective in capturing counties where new *Pd* detections are reported, in particular when looking at the new occurrences over the last 5 years. For more details of this analysis, please see our discussion in the WNS Zone section of this rule.

4. *Comment:* Peer reviewer(s) commented that the Service's definitions relative to forestry practices should be more precise and should use silviculture terminology.

Our Response: We have revised the prohibitions to no longer use specific forestry practices or silviculture terminology. Take of the northern long-eared bat within the context of forest management is not prohibited provided that conservation measures to protect hibernacula and known maternity roost trees are implemented as described in this rule.

5. *Comment:* Peer reviewer(s) recommended that the seasonal restrictions for the northern long-eared bat ''pup season'' be expanded and/or based on climate and geography within the species' range.

Our Response: We recognize that in some areas or in some years the period when young northern long-eared bats are non-volant may be earlier or later than the June and July timeframe. The timing of when northern long-eared bats give birth is likely a complex interplay of a variety of factors affecting fetal development (*e.g.,* condition of the mother, temperature, prey availability), and similar factors may also influence the time required for young to develop the ability to fly. In addition, a study in West Virginia documented that the peak pregnancy and lactation dates shifted post WNS (Francl et al. 2012, p. 36). However, looking across a variety of studies, the June and July timeframe appears to generally capture what is typically reported as the non-volant period for northern long-eared bats across much of their range within the United States. We have determined that a single timeframe for implementing the prohibition on maternity roost tree removal provides clarity for the regulated public. In addition, while it does not modify the incidental take prohibition established in these regulations, our local field offices may be able to provide more refined local estimates of the non-volant period for specific areas. Project planners may choose to use these local estimates for

planning purposes where they are available.

6. *Comment:* Peer reviewer(s) recommended year-round protections for maternity roost trees or conversely that we remove entirely the protections for maternity trees because it is ineffective and serves as a disincentive for conducting surveys.

Our Response: Although northern long-eared bats have been documented to use some roost trees over multiple years, in many cases it is because the tree is dead or dying or has structural defects that provides the roosting features attractive to the species. Further, maternity roost trees are used only briefly (*e.g.,* northern long-eared bats typically change roosts every few days, and only a relatively small percentage of those are used more than once in any one season). Given that maternity roosts trees are ephemeral on the landscape and used for very short periods of time in the active season, we determined that year-round protections for known, occupied maternity roost trees are not warranted. We considered removing the protections for known, occupied maternity roosts as recommended by another peer reviewer, but instead modify the protection so as to minimize the disincentive for conducting surveys. In developing this final rule, we kept protections for known, occupied maternity roosts for two reasons: (1) While it may be unlikely, in cases where a tree was about to be removed, but was known to be occupied by northern long-eared bats, they would have some protections while the young could not fly; and (2) we wanted known, occupied maternity roosts to be given consideration because they help to signal to project planners an area that is likely to be used by northern long-eared bats in the future (as this species has a high degree of site fidelity). We refined the protection for known, occupied maternity roosts to make it as practical to implement as possible in order to minimize the disincentive created for conducting surveys. Many forest managers implement similar types of relatively small seasonal buffers to protect other species of sensitive wildlife (*e.g.,* around nesting raptors) and therefore we do not view this provision as a real disincentive to conducting surveys. Please see the *Conservation Measure 2: Tree Removal Near Known Maternity Roost Trees* section of this rule for additional details. We believe that the seasonal restriction helps to protect the most vulnerable life stages, in this case the non-volant pups, and is adequate for the purposes of this rule.

7. *Comment:* Peer reviewer(s) recommended that pregnant females should be protected as part of the seasonal restriction criteria.

Our Response: We recognize that pregnant females may be in torpor or less able to flee in early spring. However, we did not have information on how pregnancy in northern long-eared bats influenced the degree of torpor or their ability to flee from disturbance. As discussed in this rule, we expect only a small percentage of the species' forested habitat to be affected by activities (*e.g.,* tree removal, prescribed fire) that might impact a pregnant northern long-eared bats in torpor and, therefore, we expect only small proportion of the species' population to be potentially exposed to these activities. Because of the relatively small exposure and uncertainty about how pregnancy affects degree of torpor or ability to flee, we have not expanded the seasonal protections for this purpose. We believe that seasonal restrictions help protect the vulnerable pup stage, when young pups cannot fly, and are adequate for the purposes of this rule.

8. *Comment:* Peer reviewer(s) stated that the conservation efforts will not be effective because the natural heritage data are limited with respect to known maternity roost trees and hibernacula.

Our Response: We agree that the data are limited and this can be challenging from the implementation and/or project planning perspective. However, we have purposefully limited protections where possible, to minimize the potential disincentive to continue to survey for the species. However, we anticipate that information in State natural heritage data bases will continue to improve post-listing.

9. *Comment:* Peer reviewer expressed concern with allowing lethal take of northern long-eared bats from human dwellings.

Our Response: We encourage the non-lethal removal of northern long-eared bats from human structures, preferably by excluding them outside of the maternity period, whenever possible. However, because of the potential for human health considerations, we have not required this as part of the exception to the purposeful take prohibition. We have limited this take to houses, garages, barns, sheds, and other buildings designed for human entry.

Public Comments

General

10. *Comment:* Commenters from many development sectors requested that their activities be included in the suite of exempted activities under the 4(d) rule (specific sectors addressed below).

Our Response: In general, this final rule has been restructured to clarify prohibitions to take rather than to rely on a list of excepted activities. Prohibitions are applied in this final rule where necessary and advisable for the conservation of the species. Therefore, the various ''sectors'' do not need to be identified or ''excepted'' to apply rule provisions.

Forest Management

11. *Comment:* Several commenters recommended that forest conversion be included as an excepted activity. Comments were specific to conversion of hardwood forests to pine plantations, managed pine forest, pine ecosystem, and the Service's characterization of pine stands as monoculture stands representing poor bat habitat.

Our Response: Incidental take resulting from forest management, including forest conversion, is not a prohibited action pursuant to this final 4(d) rule provided conservation measures to protect known hibernacula and known, occupied maternity roost trees are employed. Please see sections above titled Forest Management and Forest Conversion.

12. *Comment:* Commenters stated that forest management must occur to avoid habitat deterioration to poor quality bat habitat. They further stated that forest health depends upon active management including tree removal and clearcutting.

Our Response: We agree that forest management can be very important in creating or maintaining forest successional patterns that help to ensure suitable trees are available for roosting northern long-eared bats. Further, forest management can help to increase prey availability or suitability of foraging habitat. Please see our discussion above under Forest Management for additional details. Incidental take resulting from forest management is not prohibited pursuant to this final 4(d) rule provided conservation measures to protect known hibernacula and known maternity roost trees are employed.

13. *Comment:* Commenters suggested that the Service consider exemptions for sustainable forest practices implemented under a sustainable forest management plan or sustainable forestry certificate program.

Our Response: We considered incorporating other possible conservation measures related to forest management and conversion. However, given the overall small percentage of the species' range potentially affected by

these activities in any given year, it was not clear that additional conditions related to incidental take from forest management or conversion would meaningfully change the conservation outlook for the species. Further, adding protections with uncertain benefits, but with large potential public impacts can hinder support for species conservation. Incidental take resulting from forest management is not prohibited pursuant to this final 4(d) rule provided conservation measures to protect known hibernacula and known, occupied maternity roost trees are employed.

14. *Comment:* Commenters stated that the Service should focus on the elimination of WNS rather than regulating timber harvest in summer habitat.

Our Response: Efforts to address the threat posed by WNS are on-going by the Service and many partners across the species range. Incidental take resulting from forest management or forest conversion is not prohibited pursuant to this final 4(d) rule provided conservation measures to protect known hibernacula and known, occupied maternity roost trees are employed.

15. *Comment:* A commenter stated that the Service should halt commercial timber harvest and another commenter suggested restricting the removal of snags and coarse woody debris in areas populated by the species.

Our Response: The northern long-eared bat is not limited in terms of habitat availability for feeding, breeding, and sheltering in the summer (non-hibernating) months. Please see the discussions under Forest Management and Forest Conversion above in this rule. We have carefully considered the value of habitat protection for the species. We have determined that protection of summer habitat is not required for species conservation except where trees may be occupied by young, non-volant (flightless) pups and for areas immediately surrounding hibernacula where they swarm and feed just prior to hibernation and when they emerge from hibernation in the spring. Due to this swarming behavior and the vulnerability of bats when hibernating, we have determined that take prohibitions are necessary and advisable in winter habitat (hibernacula), where bats are subject to the effects of WNS. In addition, we have determined that protection of known, occupied maternity roost trees is necessary and advisable in order to protect young pups.

16. *Comment:* The Service should increase protections to avoid impacts to bats from the point that they emerge from hibernation to the end of the maternity/pup season. Forest management should only be done in a manner that retains sufficient vegetative cover and protects northern long-eared bats at the maternity colony level.

Our Response: We considered incorporating other possible conservation measures related to forest management and conversion. However, given the overall small percentage of the species' range potentially affected by these activities in any given year, it was not clear that additional conditions related to the incidental take from forest management or conversion would meaningfully change the conservation outlook for the species. Further, adding protections with uncertain benefits, but with large potential public impacts can hinder support for the species conservation. We have determined that protection of known, occupied maternity roost trees during the months of June and July is an adequate conservation measure for the protection of non-volant pups.

17. *Comment:* Commenter(s) suggested an exemption for invasive species management in forested landscapes.

Our Response: Outside of hibernacula, this final rule does not prohibit take from activities other than tree removal. Therefore, incidental take associated with management of invasive species using pesticides or other interventions is not prohibited. Where intervention involves tree removal, conservation measures must be followed to comply with this rule. However, entities that cannot apply the required conservation measures have other means to have take excepted, such as section 10 permits or section 7 incidental take authorization.

Human Structures

18. *Comment:* Commenters suggested expansion of the definition of human structures/dwellings to include bridges, culverts, cattle passes, and other human-made structures.

Our Response: This final rule does not prohibit direct take of northern long-eared bats occupying human structures defined as houses, garages, barns, sheds, and other buildings designed for human entry. While we encourage landowners and project proponents to find other mechanisms to avoid killing or injuring bats that occupy bridges, culverts, and other structures, incidental take is not prohibited by this rule. While bridge and culvert use for the species has been documented, it is relatively uncommon compared to tree or other types of roost sites (*e.g.,* barns) and, therefore, did not warrant specific provisions in this final rule. Within the WNS zone, however, project proponents must apply conservation measures to avoid habitat removal around hibernacula and to avoid cutting or destroying known, occupied maternity roost trees or any other trees within a 150-foot radius from the maternity roost tree during June and July.

19. *Comment:* Commenters stated that take of northern long-eared bat in human dwellings should not be exempted and requested that the Service provide rationale for determining that this exemption is necessary.

Our Response: We encourage the non-lethal removal of northern long-eared bats from human structures whenever possible, preferably by excluding them from the structure outside of the maternity period. However, because of the potential for human health considerations, we have not required this as part of the exception to the purposeful take prohibition. Please see the discussion under Exceptions to the Purposeful Take Prohibition in this rule for additional details. Take of northern long-eared bats to remove them from human structures is not prohibited.

Hazardous Tree Removal

20. *Comment:* Several comments requested clarification and/or expansion of the exception to take for removal of hazardous trees.

Our Response: Our intent is to provide for the removal of hazardous trees for the protection of human life and property. This is not the same as hazard tree removal within the context of forest management or rights-of-way management where hazard trees are identified as trees that are in danger of falling. Incidental take of northern long-eared bats from hazardous tree removal in the context of rights-of-way management is not prohibited by the final 4(d) rule provided conservation measures to protect known hibernacula and known, occupied maternity roost trees are applied.

Minimal Tree Removal

21. *Comment:* Several commenters requested that minimal tree removal be expanded to a larger acreage.

Our Response: Conversion of forested cover to alternate uses is not prohibited under this final rule, provided that conservation measures are followed when those activities occur within the WNS zone. For a discussion of this issue, please see Forest Conversion section in this rule.

22. *Comment:* Several commenters stated that the exemption for minimal tree removal should be expanded to other (non-forest) industry entities and should include all activities that have a

minimal effect on the northern long-eared bat.

Our Response: Conversion of forested acreages to alternate uses is not prohibited under this final rule, provided that conservation measures are followed. This is applicable to all entities that may engage in activities that remove trees or convert forested acres. See the Forest Conversion section in this rule.

Oil and Gas Industry

23. *Comment:* A number of commenters from the oil and gas industry stated that the industry should be included within exemptions from take prohibitions because: (1) Their impact on northern long-eared bat habitat is small compared to forest management impacts; (2) habitat is re-vegetated following pipeline installation; (3) oil and gas exploration and transport are not the stated primary threat to the species (WNS is the primary threat); and (4) adequate regulatory mechanisms exist for mitigating industry environmental impacts.

Our Response: Take of northern long-eared bats attributable to habitat conversion and habitat loss is not prohibited under this final 4(d) rule, provided that developers and project proponents follow conservation measures described herein when activities occur within the WNS zone. See the Forest Conversion section in this rule.

Rights-of-Way

24. *Comment:* Commenter(s) stated that loss of habitat attributable to clearing for linear projects is miniscule compared to habitat conversion due to forest management.

Our Response: Incidental take attributable to maintenance, development, and rights-of-way expansion is not prohibited by this final 4(d) rule, provided conservation measures contained herein are followed when activities occur within the WNS zone.

25. *Comment:* Commenter(s) stated that the exception, as proposed and implemented via the interim rule, should be expanded to greater than 100-feet and should be clarified.

Our Response: Incidental take attributable to maintenance, development, and rights-of-way expansion is not prohibited by this final 4(d) rule, provided conservation measures contained herein are followed when activities occur within the WNS zone.

26. *Comment:* Commenter(s) stated that the exception for rights-of-way should be expanded to include new rights-of-way and transmission corridors.

Our Response: Incidental take attributable to maintenance, development, and rights-of-way expansion is not prohibited by this final 4(d) rule, provided conservation measures contained herein are followed when activities occur within the WNS zone.

27. *Comment:* Commenter(s) disagree with the Service's assertion that vegetation removal within or adjacent to rights-of-way is a small-scale alteration of habitat.

Our Response: It is within the context of the species range and potential for available habitat that right-of-way development, maintenance or expansion are small scale alterations of forest habitat. The extent of conversion from forest to other land cover types has been fairly consistent with conversion to forest (cropland reversion/plantings). Further, the recent past and projected amounts of forest loss to conversion from all sources was and is anticipated to be only a small percentage of the total amount of forest habitat. For example by 2060, 4 to 8 percent of forest area found in 2007 across the conterminous United States is expected to be lost (U.S Forest Service 2012, p. 12). We have not broadened the incidental prohibition related to habitat loss because WNS is the predominant threat to the species. Summer habitat does not now or in the future appear likely to be a limiting factor for the species; therefore, we have focused the protections on vulnerable individuals in summer habitat and protecting the winter habitat, where sensitivity to the effects of WNS is heightened.

28. *Comment:* Commenter(s) requested that the Service expand the rights-of-way exemption to include access roads and infrastructure required to deliver services.

Our Response: Incidental take attributable to maintenance, development, and rights-of-way expansion is not prohibited by this final 4(d) rule, provided conservation measures contained herein are followed when activities occur within the WNS zone. This includes related activities such as access road clearing and facilities related to delivery of services. In the case where tree removal is the activity in question, incidental take is not prohibited provided that the conservation measures herein are followed when those activities occur within the WNS zone.

29. *Comment:* Commenter suggested that the final 4(d) rule should prohibit all tree clearing activities related to the maintenance, repair, and creation of rights-of-way.

Our Response: The northern long-eared bat is not limited in terms of habitat availability for feeding, breeding, and sheltering in the summer (non-hibernating) months. We have carefully considered the value of habitat protection for the species. We have determined that protection of summer habitat is not required for species conservation except where trees are known to be occupied by northern long-eared bats when the young are non-volant (flightless) and for areas immediately surrounding hibernacula where they swarm and feed just prior to hibernation and when they emerge from hibernation in the spring.

Solar Energy

30. *Comment:* Commenter(s) requested that solar energy development be provided an exemption under the 4(d) rule.

Our Response: Solar energy developers will need to consider the impacts of their development and operations in light of the prohibitions of this rule. Incidental take outside of the WNS zone is not prohibited. Incidental take from tree-removal activities within the WNS zone is prohibited under specific conditions related to known hibernacula and known, occupied maternity roost trees (see Activities Involving Tree Removal section above for details).

Agriculture

31. *Comment:* Commenter(s) requested that agricultural activities be included in the suite of exempted activities under the 4(d) rule.

Our Response: We have substantially revised the prohibitions and exceptions in this final rule that may apply to agricultural activities. Agricultural producers/operators will need to consider the impacts of their activities in light of the prohibitions of this rule. Incidental take outside of the WNS zone is not prohibited. Incidental take from tree removal activities within the WNS zone is prohibited under specific conditions related to known hibernacula and known, occupied maternity roost trees (see Activities Involving Tree Removal, above, for details). This final rule has been restructured in a manner that it applies prohibitions where necessary and advisable for conservation of the species. Therefore, agricultural development and operations do not need to be specifically ''excepted'' in order to apply the rule's provisions.

Caves and Mines

32. *Comment:* Commenter(s) requested an exemption for show caves and cave tours.

Our Response: Hibernating bats are very sensitive to disturbance as discussed in greater detail under the Hibernacula section of this document. This final rule prohibits the incidental take of northern long-eared bats in hibernacula inside the WNS zone as well as the purposeful take (*e.g.,* purposefully harassing or killing) of northern long-eared bats in hibernacula both inside and outside of the WNS zone. When this species occupies caves or mines used by people regardless of the purpose, the provisions of this 4(d) rule apply. Show cave or mine activities inside the WNS zone that do not result in the incidental take of northern long-eared bats are not prohibited. In other words, if northern long-eared bats are not being disrupted from their normal hibernation behaviors (*e.g.,* by avoiding areas with hibernating bats, limiting noise and lighting in areas used by bats), we do not consider human use of the cave or mine to be a ''take'' of the bats.

33. *Comment:* Commenter(s) stated that an exemption should be made available for mining, mineral exploration, and coal extraction activities.

Our Response: Incidental take of northern long-eared bats that results from tree-removal activity, including mining operations, is prohibited in some circumstances (see Activities Involving Tree Removal, above). However, hibernating bats are very sensitive to disturbance, as discussed in greater detail under the Hibernacula section of this rule. This final rule prohibits the incidental take of northern long-eared bats in hibernacula inside the WNS zone as well as the purposeful take (*e.g.,* purposefully harassing or killing) of northern long-eared bats in hibernacula both inside and outside of the WNS zone. Inside the WNS zone, the take of northern long-eared bats in mines and man-made tunnels for mineral or coal extraction includes any activity that kills, injures, harms, or harasses the species. Mining, mineral exploration, and coal extraction activities will need to work with the Service to find alternative means to authorize take, such as through a section 10 permitting process or section 7 process where applicable. Mining activities inside the WNS zone that do not result in the incidental take of northern long-eared bats are not prohibited. In other words, if northern long-eared bats are not being killed, injured, or otherwise disrupted from their normal hibernation behaviors by the mining operations, we do not consider those activities to be a ''take'' of the bats.

34. *Comment:* Commenter(s) suggested that activities designed to reclaim abandoned mines or maintain cave environments for the benefit of wildlife species should be exempt under the 4(d) rule.

Our Response: We agree that beneficial reclamation and maintenance should be encouraged. However, exception from take prohibitions through a species-specific 4(d) rule is not the appropriate mechanism for authorizing this activity. Where abandoned mines and cave environments are in use by northern long-eared bats, take associated with maintenance is prohibited; however, we encourage project proponents to work with the Service to implement best management practices to avoid or minimize the effects of their actions in the interest of habitat improvement. We will work with project proponents to determine alternate ways to authorize activities, such as section 10 permits or section 7 incidental take authorization.

Mosquito Control

35. *Comment:* Commenter challenges the Service's assertion that chemicals used in mosquito control (malathion and others of comparable risk to mammals) pose a risk to northern long-eared bats; commenter further requests an exemption for mosquito control activities, especially where there is a public health risk.

Our Response: Please see the Environmental Contaminants section of this rule for details concerning our evaluation of the risks from pesticide applications. After careful consideration of the available information, we do not include in this rule a prohibition on the incidental take of northern long-eared bats as result of pesticide application provided the application is a ''lawful activity,'' that is, it must comply all applicable State laws. Any northern long-eared bat unlawfully taken pursuant to a State pesticide law would be a violation of this final 4(d) rule.

Adequacy and Clarity of 0.25 Mile Hibernacula Buffer

36. *Comment:* Commenter(s) suggested that this buffer is too restrictive for landowners.

Our Response: The Service has determined that a protective buffer around known hibernacula is necessary and advisable for the conservation of the species. Please see the discussion under *Conservation Measure 1: Tree Removal Near Known Northern Long-eared Bat Hibernacula* of this rule for our explanation of the need for this buffer. As described in that section, we have prohibited incidental take of northern long-eared bats under specific tree-removal circumstances; however, that does not mean that all activities involving tree-removal activities within the 0.25-mile (0.4-km) buffer of hibernacula will result in take. For example, a timber harvest might be conducted within 0.25 miles (0.4 km) of a hibernaculum at a time when bats are unlikely to be roosting in trees within the buffer (*e.g.,* winter) that fully protects any bats in the hibernaculum as well as the hibernaculum's suitability for bats (*i.e.,* bat's access, microclimate), and does not significantly change the suitability of the habitat for foraging by northern long-eared bats or perhaps even improves prey availability. In such a case, the timber harvest, although closer than 0.25 miles (0.4 km) to the hibernaculum, is not likely to result in incidental take, so we would not recommend that the timber harvester seek authorization for incidental take pursuant to the Act. Further, while incidental take of northern long-eared bats within that buffer is prohibited (in the WNS zone), it may be authorized on a case-by-case basis with further coordination with the Service at a local level. Take may be authorized through section 10 or section 7 of the Act. In addition, it is our expectation that project modifications may be made that would protect the hibernaculum and allow for the project proponent's objectives to be met.

37. *Comment:* Commenter(s) seek clarification on whether the buffer and prohibition to clearcutting (within the buffer) is a year-round restriction.

Our Response: Yes, the protection of the hibernaculum and a buffer around it is a year round protective measure and applies to all types of tree-removal activities in the WNS zone.

38. *Comment:* Commenter(s) suggested that the buffer around hibernacula be limited to fall swarming and spring emergence when northern long-eared bats are present.

Our Response: We have determined that protective measures must be considered year-round for several reasons, including that habitat lost outside of the spring emergence and fall swarming period could affect the suitability of those habitats later during spring emergence or fall swarming. Further, we have included the buffer on hibernacula for several reasons beyond protecting foraging habitat during fall swarming and spring emergence. In particular, the buffer will help to protect the micro-climate characteristics of

hibernacula and other entrances used by bats that may not be reflected in the primary location information for hibernacula. For example, many caves or abandoned mines used may have entrances used by bats that are not reflected in the general location information for those sites that are used by people; a buffer helps to protect less prominent features that may be important to bats. Projects may be able to be planned or modified within those buffer areas to retain sufficient habitat and avoid harm; however, the Service considers coordination on a case-by-case basis to be important to assure necessary conservation.

39. *Comment:* Several commenter(s) suggested an increased buffer area around hibernacula would be more appropriate.

Our Response: We have revised the approach used in this final 4(d) rule to ensure that hibernating northern long-eared bats in the WNS zone are protected from incidental take independent of the buffer size used in the conservation measure. In addition, all northern long-eared bats both inside and outside of the WNS zone are protected from purposeful take (*e.g.,* killing or intentionally harassing northern long-eared bats), including while in hibernacula where they are most vulnerable. We have retained the 0.25-mile buffer (0.25-mile radius from known hibernacula entrance/access points used by bats) to further protect the hibernacula and associated forested habitat for several reasons (see discussion above under *Conservation Measure 1: Tree Removal Near Known Northern Long-eared Bat Hibernacula*).

40. *Comment:* Commenter(s) expressed concern with implementing measures when they do not have data/information on known hibernacula.

Our Response: The Service recognizes the challenges associated with data sharing and data management. Many states share data management concerns and guard data carefully. We encourage landowners to continue to work with your State natural resources and natural heritage staff to evaluate your ownership for the presence of these important resources. When seeking information on the presence of hibernacula within your project boundary, our expectation is that a project proponent will complete due diligence to determine available data. However, if information is not available, we recognize that the project proponent that has made reasonable efforts to determine whether there are known hibernacula on the property is in the position of not knowing if no data have been provided.

Maternity Roost Tree Restrictions

41. *Comment:* Commenter(s) expressed concerns about having adequate information to identify maternity roost trees.

Our Response: We recognize the challenges associated with data sharing. Please see response to Comment 40. While not required by this rule, the Service recommends summer surveys to definitively locate maternity roost trees.

42. *Comment:* Commenter(s) requested that we clarify that roost trees means maternity roost trees.

Our Response: We have made this final 4(d) rule specific to maternity roost trees.

43. *Comment:* Commenter(s) expressed disagreement with the 0.25 mile buffer around known, occupied roost trees. Some commented that this buffer was too small, while some commented that it was too large.

Our Response: In the interim 4(d) rule (80 FR 17974; April 2, 2015), the buffer around known, occupied roost trees applied only to some types of tree-removal activities (*e.g.,* forest management, rights-of-ways, prairie management) and excluded only clearcuts (and similar harvest methods). Given the relatively small percent of forest habitat anticipated to be impacted by forest management or conversion (see Forest Management and Forest Conversion, above of this rule for more details), we revised the buffer around the known maternity roost trees. As explained in more detail under *Conservation Measure 2: Tree Removal Near Known Maternity Roost Trees,* we have made the buffer more broadly applicable to all tree-removal activities, but have narrowed it in size to provide protection for the maternity roost tree, while minimizing the potential that the protective measure would serve as impediment to conducting new surveys. We have reduced the buffer around known, occupied maternity roost trees to a radius of 150 feet around the known, occupied maternity roost tree.

44. *Comment:* Commenter(s) stated that the Service should require surveys to determine where roost trees are located.

Our Response: The Act does not require a private landowner to survey his or her property to determine whether endangered or threatened wildlife and plants occupy their land. We encourage landowners to voluntarily seek additional information to conserve natural resources in their land use/land management actions; however, we will not require surveys to locate northern long-eared bats and maternity roost trees on private property.

Residential Housing Development

45. *Comment:* Commenter(s) requested that northern long-eared bat take be excepted for the purposes of residential housing development.

Our Response: Take resulting from removal of summer habitat (tree removal) is not prohibited provided the conservation measures set forth in this rule are followed when the habitat removal occurs within the WNS zone. The provisions of this final rule have been restructured to clarify prohibitions rather than rely on a list of excepted activities.

Wind Energy Development

46. *Comment:* Commenter(s) requested that northern long-eared bat take be excepted for the purposes of renewable energy development and operation (wind energy).

Our Response: Incidental take resulting from wind energy development and operation is not prohibited, provided that the conservation measures set forth in this rule are followed to protect hibernacula and known, occupied maternity roost trees. We strongly encourage voluntary conservation measures and best management practices such as feathering or elevated cut-in speeds to reduce impacts to northern long-eared bats and other bats; however, we have not prohibited incidental take attributable to wind energy in this final rule. Please see the Wind Energy Facilities section of this rule for additional details.

Natural Resource Management

47. *Comment:* Commenter(s) requested that northern long-eared bat take be excepted when activities are included in Department of Defense integrated natural resource management plans, providing for activities such as recreational activities, burns, and other temporary but insignificant effects on the northern long-eared bat.

Our Response: Incidental take resulting from activities described as recreational activities and beneficial wildlife habitat management/maintenance is not prohibited, provided that the conservation measures set forth in this rule are followed when the activity occurs inside the WNS zone. We have completed a section 7 analysis on the provisions of this final 4(d) rule to ensure that actions completed in accordance with the final rule are not likely to jeopardize the continued existence of the species. Where these resource management activities do not fit within the final rule, section 7 consultation would need to be

completed to authorize incidental take of the northern long-eared bat.

Compliance and Monitoring

48. *Comment:* Commenter(s) recommended that surveys be required and that landowners be required to report on their activities in order to receive the benefits of the 4(d) rule.

Our Response: While we welcome landowners' efforts to determine where bats may be located on their property, the Act does not require that a landowner survey his or her property to find species. We are not mandating that surveys be completed as part of this rule.

Alternate Section 4(d) Provisional Language

49. *Comment:* One organization commented on behalf of its members and 14 other environmental organizations (collectively referenced as ''the Center'') in support of the adoption of a different 4(d) rule and in opposition of the Service's proposed and the interim 4(d) rules.

Our Response: The remaining paragraphs (under the heading Summary of Comments and Recommendations on the Proposed and Interim4(d) Rules) pertain to the comments we received from the Center. With respect to the overarching comment that our 4(d) rule does not conserve the species, we believe that our final 4(d) rule provides for the ''necessary and advisable'' conservation of the species, as described herein. For further information, please see our Determination section, below.

With respect to the Center's proposed 4(d) language, we note that the proposed language defines specific prohibitions and would make a regulatory determination of ''take'' to include a number of actions. These include cave and mine entry without implementing decontamination protocols; transporting equipment into caves and mines or between caves and mines between the WNS zone and non-WNS zone; cave and mine entry during hibernation periods; activities associated with hydraulic fracturing within 5 miles of a hibernaculum, within 1.5 miles of an occupied roost tree, or within 3 miles of an acoustic detection or bat capture record; noise disturbance activities within a 0.5-mile radius of a hibernaculum during the hibernation period; and disruption of water sources within hibernacula. With respect to protection of hibernacula, take of northern long-eared bats is prohibited. Establishing the causal connection between a variety of activities such as those the Center proposed to be defined as prohibitions is beyond the scope of this rule. We have addressed hibernacula protection provisions in this rule under the section entitled *Conservation Measure 1: Tree Removal Near Known Northern Long-eared Bat Hibernacula.* Protections in this final rule are adequate to protect the species.

In addition to the Center's suggested language for hibernacula prohibitions, they recommended language regarding prohibitions for prescribed burning and aerial spraying. Based on our analysis, we conclude that prescribed burning and aerial spraying do not have a measurable population-level impact on the species and regulation of those activities will not meaningfully impact the species' ability to recover. For further information on prescribed fire impacts, see Prescribed Fire above. For further information on aerial spraying of pesticides, please see the Environmental Contaminants section above.

The final prohibition suggested by the Center was the operation of utility-scale wind projects, specifically during the hours from dusk to sunrise during the fall swarming season, at low wind speeds, and within 5 miles of a hibernaculum. Incidental take resulting from the operation of wind energy facilities is not prohibited by this final 4(d) rule and a complete discussion of known impacts to the species may be found in the Wind Energy Facilities section above.

Finally, the Center provided suggested regulatory text for exemptions from prohibitions that included language for seasonal restrictions, clearing restrictions, mandatory measures for hibernacula protection (gate installation), water quality protection measures, and data collection and reporting requirements. We recognize the effort that has gone into the development of this alternative language. However, we have carefully considered the measures that are necessary for the protection of the species. Our final rule has been developed based on the Service's desire to implement protective measures that will make a meaningful impact on species conservation and recovery. As stated elsewhere in this document (see Determination section, below), we have provided regulatory flexibility while implementing protective measures where we have determined those measures to be necessary and advisable for conservation of the species.

Determination

Section 4(d) of the Act states that ''the Secretary shall issue such regulations as she deems 'necessary and advisable to provide for the conservation' '' of species listed as threatened species. Conservation is defined in the Act to mean ''to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the Act] are no longer necessary.''

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, the Secretary may find that it is necessary and advisable not to include a taking prohibition, or to include a limited taking prohibition. See Alsea Valley Alliance v Lautenbacher, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); Washington Environmental Council v. National Marine Fisheries Service, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002). In addition, as affirmed in State of Louisiana v. Verity, 853 F. 2d 322 (5th Cir. 1988), the rule need not address all the threats to the species. As noted by Congress when the Act was initially enacted, ''once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species,'' or she may choose to forbid both taking and importation but allow the transportation of such species, as long as the prohibitions, and exceptions to those prohibitions, will ''serve to conserve, protect, or restore the species concerned in accordance with the purposes of the Act'' (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Section 9 prohibitions make it illegal for any person subject to the jurisdiction of the United States to violate any regulation pertaining to any threatened species of fish or wildlife listed pursuant to section 4 of the Act and promulgated by the Secretary pursuant to authority provided by the Act. Under this final 4(d) rule, incidental take of the northern long-eared bat will not be prohibited outside the WNS zone. Incidental take also will not it be prohibited within the WNS zone, outside of hibernacula, provided that it occurs more than 0.25 miles (0.4 km) from a known hibernacula and does not result from an activity that cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot (45-m) radius from the maternity tree, during the pup season (June 1 through July 31).

Accordingly, we have determined that this provision is necessary and advisable for the conservation of the northern long-eared bat as explained below.

Although not fully protective of every individual, the conservation measures identified in this final rule help protect maternity colonies. This final species-specific rule under section 4(d) of the Act provides the flexibility for certain activities to occur that have not been the cause of the species' imperilment, while still promoting conservation of the species across its range.

The northern long-eared bat was listed as a threatened species under the Act, with an interim rule under section 4(d), on April 2, 2015 (80 FR 17974). At that time, the Service invited public comment on the interim 4(d) rule for 90 days, ending July 1, 2015. The Service had already received comments for 60 days on its proposed 4(d) rule (80 FR 2371; January 16, 2015). In total, the Service received approximately 40,500 comments on the proposed and interim 4(d) rules. For a complete discussion of the comments, as well as the Service's response to comments, see Summary of Comments and Recommendations on the Proposed and Interim 4(d) Rules, above.

Because the primary threat to the northern long-eared bat is a fungal disease known as WNS, the Service has tailored the final 4(d) rule to prohibit the take of northern long-eared bats from certain activities within areas where they are in decline, as a result of WNS, and within these areas we apply incidental take protection only to known, occupied maternity roost trees and known hibernacula. These protections will help to conserve the northern long-eared bat during its most vulnerable life stages (from birth to flight, or volancy) and during spring and fall swarming (near hibernacula).

In summary, this 4(d) rule is necessary and advisable to provide for the conservation of the northern long-eared bat because it provides for protection of known maternity roost trees and known hibernacula within the WNS zone. In addition, promulgation of this rule allows the conservation community to provide for species conservation where it can affect change, namely during the northern long-eared bat's most vulnerable life stages and where hibernation occurs. This final 4(d) rule allows the regulated public to manage lands in a manner that is lawful and compatible with species' survival, and it allows for protection of the species in a manner that the Secretary deems to be necessary and advisable for the conservation of the northern long-eared bat. By this rule, the Secretary deems that the prohibition of certain take, which is incidental to otherwise lawful activities that take bat habitat, is not necessary for the long-term survival of the species. Furthermore, she acknowledges the importance of addressing the threat of WNS as the primary measure to arrest and reverse the decline of the species. Nothing in this 4(d) rule affects other provisions of the Act, such as designation of critical habitat under section 4, recovery planning under section 4(f), and consultation requirements under section 7.

Required Determinations

Regulatory Planning and Review

(Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant. Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this final 4(d) rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*)

Listing and status determinations under the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*), and any prohibitions or protective measures afforded the species under the Act are exempt from the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996). However, as this final 4(d) rule is being promulgated following the final listing of the northern long-eared bat, we evaluate whether the Regulatory Flexibility Act applies to this rulemaking.

Under the Regulatory Flexibility Act, whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. Thus, for a regulatory flexibility analysis to be required, impacts must exceed a threshold for ''significant impact'' and a threshold for a ''substantial number of small entities.'' See 5 U.S.C. 605(b). Based on the information that is available to us at this time, we certify that this rule will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

On April 2, 2015 (80 FR 17974), we published the final determination to list the northern long-eared bat as a threatened species and an interim 4(d) rule. That rule became effective on May 4, 2015, and the interim 4(d) rule will remain in effect until this final rule becomes effective (see **DATES**, above). The interim 4(d) rule generally applies the prohibitions of 50 CFR 17.31 and 17.32 to the northern long-eared bat, which means that the interim rule, among other things, prohibits the purposeful take of northern long-eared bats throughout the species' range, but the interim rule includes exceptions to the purposeful take prohibition. The exceptions for purposeful take are: (1) In instances of removal of northern long-eared bats from human structures (if actions comply with all applicable State regulations); and (2) for authorized capture, handling, and related activities of northern long-eared bats by individuals permitted to conduct these same activities for other bat species until May 3, 2016. Under the interim rule, incidental take is not prohibited outside the WNS zone if the incidental take results from otherwise lawful activities. Inside the WNS zone, there are exceptions for incidental take for the following activities, subject to certain conditions: Implementation of forest management; maintenance and expansion of existing rights-of-way and transmission corridors; prairie management; minimal tree removal; and removal of hazardous trees for the protection of human life and property.

This final 4(d) rule does not generally apply the prohibitions of 50 CFR 17.31 to the northern long-eared bat. This rule continues to prohibit purposeful take of

northern long-eared bats throughout the species' range, except in certain cases, including in instances of removal of northern long-eared bats from human structures and for authorized capture, handling, and related activities of northern long-eared bats by individuals permitted to conduct these same activities for other bat species until May 3, 2016. After May 3, 2016, a permit pursuant to section 10(a)(1)(A) of the Act is required for the capture and handling of northern long-eared bats. Under this rule, incidental take is still not prohibited outside the WNS zone. Within the WNS zone, incidental take is prohibited only if: (1) Actions result in the incidental take of northern long-eared bats in hibernacula; (2) actions result in the incidental take of northern long-eared bats by altering a known hibernaculum's entrance or interior environment if the alteration impairs an essential behavioral pattern, including sheltering northern long-eared bats; or (3) tree-removal activities result in the incidental take of northern long-eared bats when the activity either occurs within 0.25 mile (0.4 kilometer) of a known hibernaculum, or cuts or destroys known, occupied maternity roost trees or any other trees within a 150-foot (45-meter) radius from the maternity roost tree during the pup season (June 1 through July 31). This approach allows more flexibility to affected entities and individuals in conducting activities within the WNS zone. Under this rule, we individually set forth prohibitions on possession and other acts with unlawfully taken northern long-eared bats, and on import and export of northern long-eared bats. These prohibitions were included in the interim 4(d) through the general application of the prohibitions of 50 CFR 17.31 to the northern long-eared bat. Under this rule, take of the northern long-eared bat is also not prohibited for the following: Removal of hazardous trees for protection of human life and property; take in defense of life; and take by an employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service. Regarding these three exceptions, take in defense of life was not included in the interim 4(d) rule, but the other two exceptions were, either through the general application of 50 CFR 17.31 or through a specific exception included in the interim 4(d) rule. Therefore, this final 4(d) rule will result in less restrictive regulations under the Act than those set forth in the interim 4(d) rule.

We completed an analysis of the forested land area that may be impacted by this rulemaking. There are approximately 400,000,000 acres (161,874,256 ha) of forested habitat across the range of the northern long-eared bat, which includes 37 States and the District of Columbia. This rule may restrict land use activities on approximately 200,000 acres (80,937 ha). This area constitutes less than 0.05 percent of all forested habitat across the extensive range of the northern long-eared bat. Any impact in this very small portion of forested habitat is not expected to affect a substantial number of entities in any given sector, nor result in a significant economic impact on any given entity. For the above reasons, we certify that the final rule will not have a significant economic impact on a substantial number of small entities. Therefore, a final regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. For reasons discussed within this final rule, we believe that the rule will not have any effect on energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(1) This final rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or [T]ribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and [T]ribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or Tribal governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; AFDC work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

(2) This final 4(d) rule will result in less restrictive regulations under the Act, as it pertains to the northern long-eared bat, than would otherwise exist without a 4(d) rule or under the interim 4(d) rule. As a result, we do not believe that this rule will significantly or uniquely affect small government entities. Therefore, a Small Government Agency Plan is not required.

Takings

In accordance with Executive Order 12630, this final rule will not have significant takings implications. We have determined that the rule has no potential takings of private property implications as defined by this Executive Order because this 4(d) rule will result in less-restrictive regulations under the Act than would otherwise exist. A takings implication assessment is not required.

Federalism

In accordance with Executive Order 13132, this final 4(d) rule does not have significant Federalism effects. A federalism summary impact statement is not required. This rule will not have substantial direct effects on the State, on the relationship between the Federal Government and the State, or on the distribution of power and responsibilities among the various levels of government.

Civil Justice Reform

In accordance with Executive Order 12988, the Office of the Solicitor has determined that this final rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain collections of information that require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act. This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have prepared a final environmental assessment, as defined under the authority of the National Environmental Policy Act of 1969. For information on how to obtain a copy of the final environmental assessment, see **ADDRESSES**, above. The final environmental assessment will also be available on the Internet at *http://www.regulations.gov* and at *http://www.fws.gov/midwest/Endangered.*

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

In October 2013, Tribes and multi-tribal organizations were sent letters inviting them to begin consultation and coordination with the service on the proposal to list the northern long-eared bat. In August 2014, several Tribes and multi-tribal organizations were sent an additional letter regarding the Service's intent to extend the deadline for making a final listing determination by 6 months. A conference call was also held with Tribes to explain the listing process and discuss any concerns. Following publication of the proposed rule, the Service established three interagency teams (biology of the northern long-eared bat, non-WNS threats, and conservation measures) to ensure that States, Tribes, and other Federal agencies were able to provide input into various aspects of the listing rule and potential conservation measures for the species. Invitations for inclusion in these teams were sent to Tribes within the range of the northern long-eared bat and a few tribal representatives participated on those teams. Two additional conference calls (in January and March 2015) were held with Tribes to outline the proposed species-specific 4(d) rule and to answer questions. Through this coordination, some Tribal representatives expressed concern about how listing the northern long-eared bat may impact forestry practices, housing development programs, and other activities on Tribal lands.

References Cited

A complete list of references cited in this document is available on the Internet at *http://www.regulations.gov* and upon request from the Twin Cities Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this document are the staff members of the Midwest Region of the U.S. Fish and Wildlife Service.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

■ 2. Amend § 17.40 by revising paragraph (o) to read as follows:

§ 17.40 Special rules—mammals.

* * * * *

(o) Northern long-eared bat (*Myotis septentrionalis*). The provisions of this rule are based upon the occurrence of white-nose syndrome (WNS), a disease affecting many U.S. bat populations. The term ''WNS zone'' identifies the set of counties within the range of the northern long-eared bat within 150 miles of the boundaries of U.S. counties or Canadian districts where the fungus *Pseudogymnoascus destructans* (*Pd*) or WNS has been detected. For current information regarding the WNS zone, contact your local Service ecological services field office. Field office contact information may be obtained from the Service regional offices, the addresses of which are listed in 50 CFR 2.2.

(1) *Prohibitions.* The following prohibitions apply to the northern long-eared bat:

(i) Purposeful take of northern long-eared bat, including capture, handling, or other activities.

(ii) Within the WNS zone:

(A) Actions that result in the incidental take of northern long-eared bats in known hibernacula.

(B) Actions that result in the incidental take of northern long-eared bats by altering a known hibernaculum's entrance or interior environment if it impairs an essential behavioral pattern, including sheltering northern long-eared bats.

(C) Tree-removal activities that result in the incidental take of northern long-eared bats when the activity:

(*1*) Occurs within 0.25 mile (0.4 kilometer) of a known hibernaculum; or

(*2*) Cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the maternity roost tree, during the pup season (June 1 through July 31).

(iii) Possession and other acts with unlawfully taken northern long-eared bats. It is unlawful to possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any northern long-eared bat that was taken in violation of this section or State laws.

(iv) Import and export.

(2) *Exceptions from prohibitions.* (i) Any person may take a northern long-eared bat in defense of his own life or the lives of others, including for public health monitoring purposes.

(ii) Any person may take a northern long-eared bat that results from the removal of hazardous trees for the protection of human life and property.

(iii) Any person may take a northern long-eared bat by removing it from human structures, but only if the actions comply with all applicable State regulations.

(iv) Purposeful take that results from actions relating to capture, handling, and related activities for northern long-eared bats by individuals permitted to

conduct these same activities for other species of bat until May 3, 2016.

(v) All of the provisions of § 17.32 apply to the northern long-eared bat.

(vi) Any employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take northern long-eared bats covered by an approved cooperative agreement to carry out conservation programs.

* * * * *

Dated: January 7, 2016.

Karen Hyun,

Acting Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2016–00617 Filed 1–13–16; 8:45 am]

BILLING CODE 4333–15–P

APPENDIX 4.8.2.1-1 Wisconsin Statewide Comprehensive Outdoor Recreation Plan

WISCONSIN STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN (SCORP) 2019-2023

Did You Know?

Wisconsin has received

$81 million

from the federal
Land & Water
Conservation Fund

95% of Wisconsin residents **participate** in some form of **outdoor recreation**

County Forests

are the largest public land holding in Wisconsin

2.4 million acres

Consumer spending on outdoor recreation in Wisconsin totals

$17.9 billion

60% of Wisconsin residents rely on **public lands and waters** mostly or entirely when participating in their **favorite** outdoor activity

Wisconsin's
urban population
has more than tripled in the last 100 years

1910 = 1 million
2010 = 3.5 million

Participation in most nature-based activities declines as people reach middle age

The exception?

Bird and wildlife watching

which peaks around age 65

Wisconsin's **goals** for outdoor recreation:

Boost participation
Grow partnerships
Provide high-quality experiences
Improve data
Enhance funding and financial stability

Wisconsin residents' TOP 5

nature-based outdoor activities

Favorite

Walking, hiking
Fishing
Hunting
Bicycling
Camping

Most frequent participation

Bird/wildlife watching at home
Hiking/walking/running on trails
Picnicking/tailgating/cookout
Visit a beach/beach walking
Swimming in lakes/ponds/rivers

Most needed in their home county

Hiking, walking, or running trails
Bicycling trails
Public shore access to lakes, rivers and streams
Public campsites
Public shooting ranges

2019-2023
Wisconsin
Statewide Comprehensive Outdoor Recreation Plan

Prepared by:

Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921

This document and related appendices are prepared to comply with the Land and Water Conservation Fund Grants Manual produced by the National Park Service, Department of the Interior. The preparation of this plan was financed, in part, through a planning grant from the National Park Service, Department of the Interior, under provisions of the Land and Water Conservation Fund Act of 1965 (Public Law 88-578, as amended).

This publication is available in alternative format (large print, braille, audio tape, etc.) upon request.
Please call 1-888-936-7463 for more information.
You can also view this document on the Web at: **dnr.wi.gov**, keyword "SCORP."

March 2019

Suggested citation:
Wisconsin Department of Natural Resources. 2019. *Wisconsin Statewide Comprehensive Outdoor Recreation Plan 2019 – 2023*. Madison, WI.

ACKNOWLEDGEMENTS

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Dave Larson - Wisconsin Conservation Congress

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Savannah Ernzen - Facilities and Lands

ACRONYMS

4WD	Four wheel drive
ATV	All terrain vehicle
BCPL	Board of Commissioners of Public Land
DNR	Department of Natural Resources
DOT	Department of Transportation
FWS	U.S. Fish & Wildlife Service
GOMESA	Gulf of Mexico Energy Security Act
LWCF	Land and Water Conservation Fund
NPS	National Park Service
OPSP	Open Project Selection Process
ROA	Recreation Opportunities Analysis
SCORP	Statewide Comprehensive Outdoor Recreation Plan
UTV	Utility task/terrain vehicle (aka, side-by-side)

TABLE OF CONTENTS

FOREWORD

Dear Fellow Wisconsinites:

I am pleased to present Wisconsin's 2019-2023 Statewide Comprehensive Outdoor Recreation Plan. This document will provide you with updated information on the status of Wisconsin's outdoor recreation. This plan also provides guidance for distributing money through the Land and Water Conservation Fund and other grant programs administered by the Department of Natural Resources that support outdoor recreation projects on state properties and in local communities throughout the state.

High-quality outdoor recreation experiences available in Wisconsin contribute to our exceptional quality of life, reflected in sustained economic growth and in outdoor recreation traditions passed down through generations. From city riverwalks to expansive public forests, public recreation lands and facilities enhance our lives, draw millions of visitors, and support businesses large and small. The economic, social, and health benefits of outdoor recreation in Wisconsin far exceed our investment.

Thanks to the vision, economic investments and dedication of earlier generations, the portfolio of outdoor recreation opportunities in our state is unrivaled. From the Brule River to Chiwaukee Prairie, we are blessed with beautiful places to enjoy the outdoors in a plethora of ways. Yet, there are many ways and many opportunities to continue enhancing the recreation offerings throughout Wisconsin and to grow our recreation-based economy.

I'd like to thank all those who answered a survey, attended a public meeting or sent in comments during the development of the plan. The information, ideas and suggestions you provided are integral to the success of this SCORP. I also want to extend my appreciation and recognition for the work, wisdom and counsel of the SCORP Advisory Team. Their collective passion for the outdoors and desire to enhance the recreation opportunities in Wisconsin weaves through these pages.

Many agencies and organizations are involved in shaping outdoor recreation in the state. City, village and county park programs, federal agencies, conservation groups and recreation clubs, chambers of commerce, foresters and biologists, health care providers and countless others all play a role. The Department of Natural Resources is committed to working with agencies, local governments, businesses, organizations, and private citizens to expand and modernize outdoor recreation programs and facilities to serve changing public outdoor recreation preferences.

My hope is that the information presented in this report encourages people and groups to continue cooperatively growing our recreation infrastructure and enhancing opportunities for all our residents – and generations to come – to enjoy Wisconsin's great outdoors.

Preston D. Cole
Secretary, Department of Natural Resources

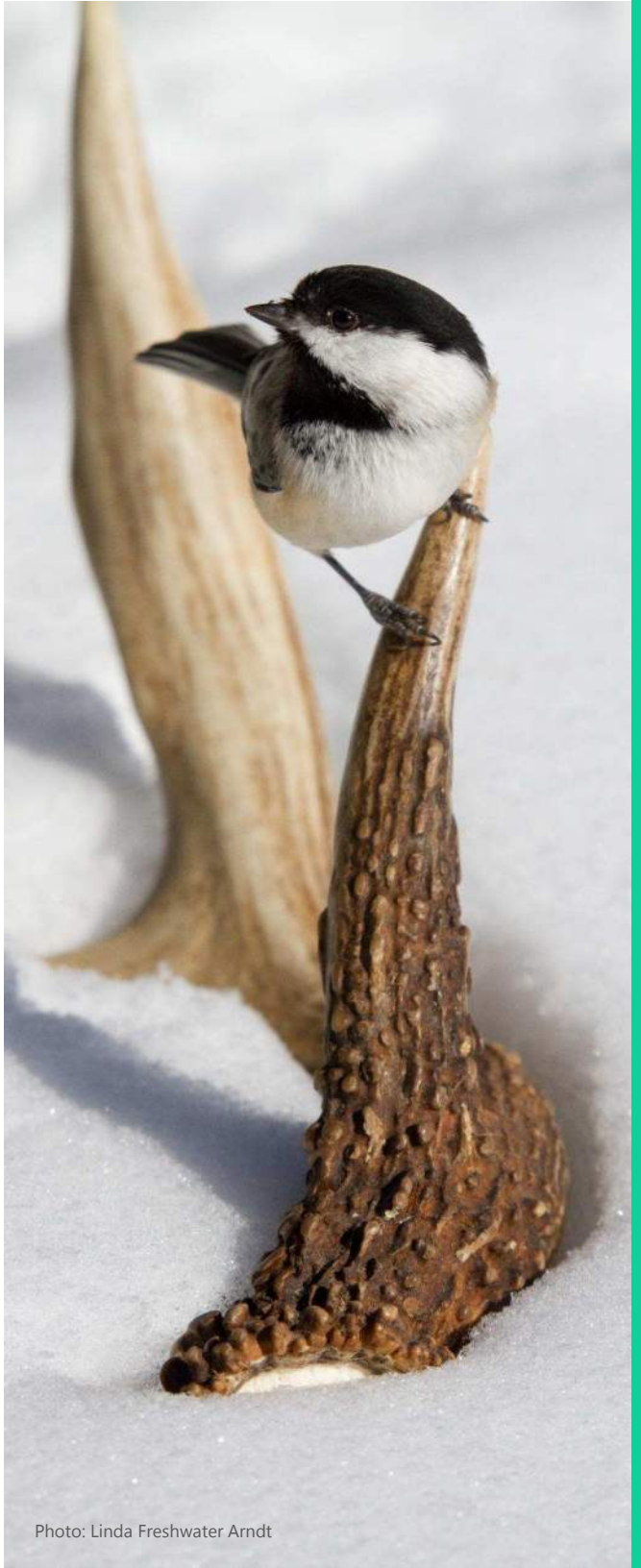


Photo: Linda Freshwater Arndt

Priorities for **LWCF grants** in Wisconsin include projects that:

- Meet the needs of urban areas.
- Provide recreation opportunities that serve diverse populations.
- Develop facilities in areas with limited outdoor recreation opportunities.
- Provide multi-use facilities.
- Meet outdoor recreation needs identified by local communities.

5

This plan lays out **five** overarching goals for outdoor recreation.

1. Boost participation in outdoor recreation

2. Grow partnerships

3. Provide high-quality experiences

4. Improve data to enhance visitor experiences and benefits

5. Enhance funding and financial stability

EXECUTIVE SUMMARY

This document comprises the 2019-2023 iteration of the Wisconsin Statewide Comprehensive Outdoor Recreation Plan (SCORP). The plan provides recommendations to guide public outdoor recreation policy and planning decisions, the use of Land and Water Conservation Fund money that comes to Wisconsin, and other Department of Natural Resources (DNR) administered grant programs.

To support the development of SCORP, a statewide survey of Wisconsin residents was conducted regarding their outdoor recreation participation and frequency, as well as their opinions about future needs. In addition, the DNR undertook an assessment of recreation opportunities and needs in each region of the state. Together, these supporting documents (Appendix 6 and Appendix 8) provide the foundation of the SCORP.

Remarkably, although maybe unsurprisingly, an estimated 95% of Wisconsin adults participated in some type of outdoor recreation in the past year. Activities in which residents most frequently engaged tend to be those that require little preparation or travel time and can provide a high-quality experience in a limited amount of time. Examples include hiking and walking on trails, fishing, bicycling, dog walking, and bird/wildlife watching.

Although this SCORP provides some basic information on a wide variety of outdoor activities, the focus is on those activities that are related to natural resources and where experiences are enhanced with higher quality natural habitats. In this document, these are referred to as nature-based recreation activities.

Top priority needs include providing more places near urban centers to support a variety of nature-based recreation. Of particular note is the demand for more trails (both non-motorized and motorized) and water and shore access for fishing, boating and swimming.

Our effectiveness in meeting future recreation needs will be shaped by many factors including the shifting demographics of our population, the quality of habitats and the impacts from invasive species and changing climate conditions, our ability to improve the compatibility between and among recreation participants, and sustainable financial resources.

Parks and nature preserves, wildlife areas and refuges, and forests and trails connect people to the natural environment. These places, from small neighborhood parks to the large national, state and county forests, are the stages on which we enjoy the outdoors, improve our health, protect our air and water, and provide a large economic boost, particularly to our rural areas.

This document presents the "who, what, where, when, why, and how" of outdoor recreation in Wisconsin.

This SCORP is designed to both provide a broad overview of issues affecting nature-based recreation as well as include information, much of which is in the appendices, that the public and decision-makers can use in evaluating local and regional needs and opportunities.

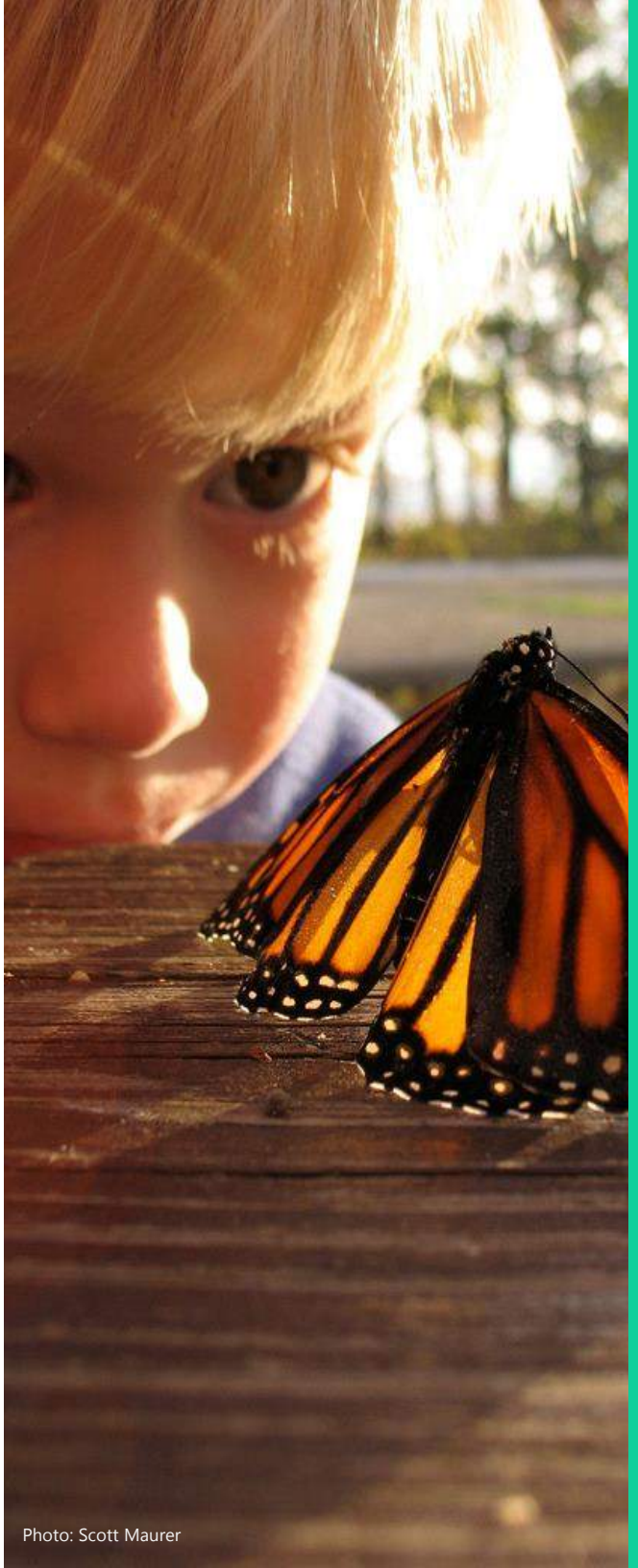
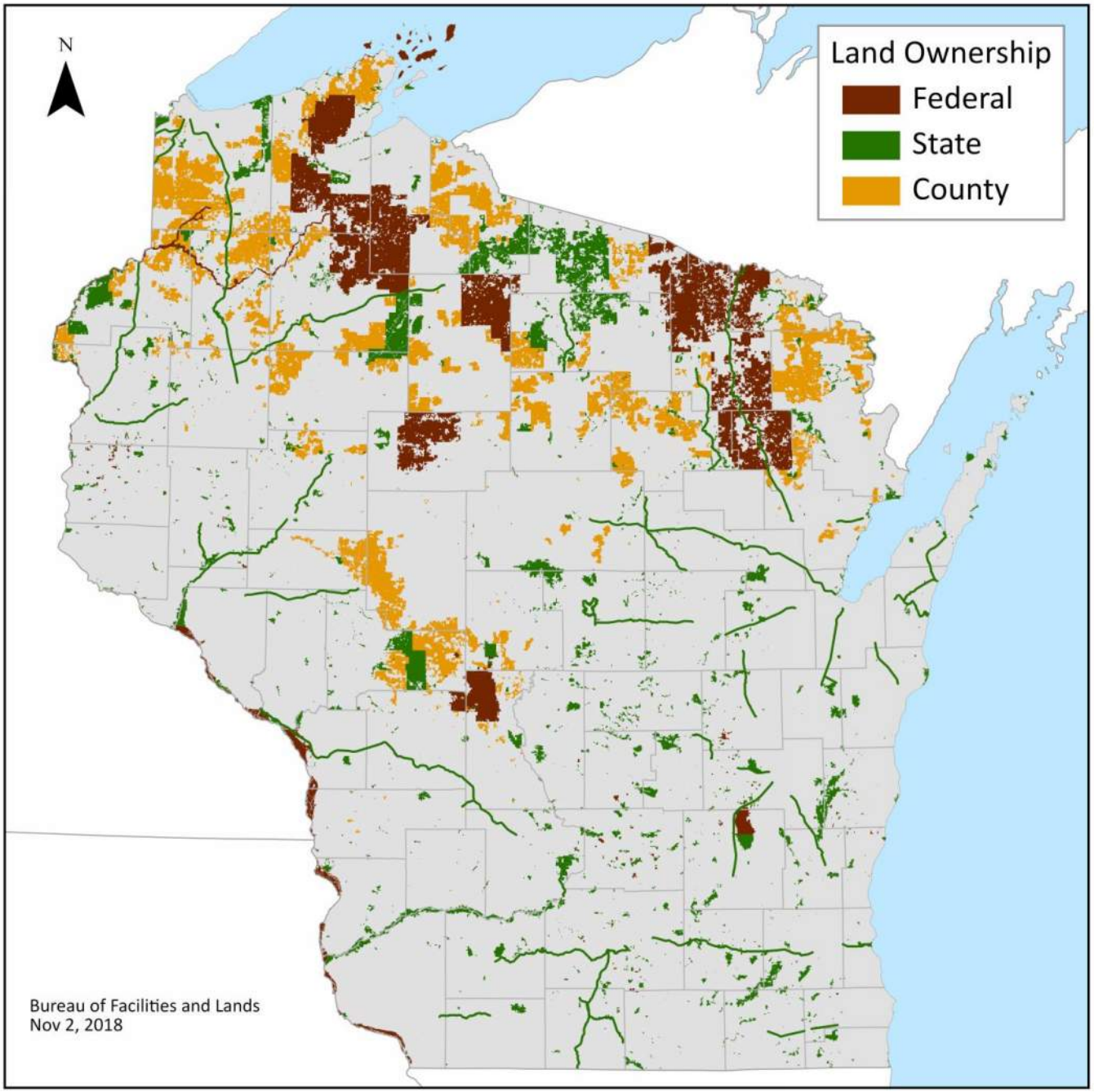
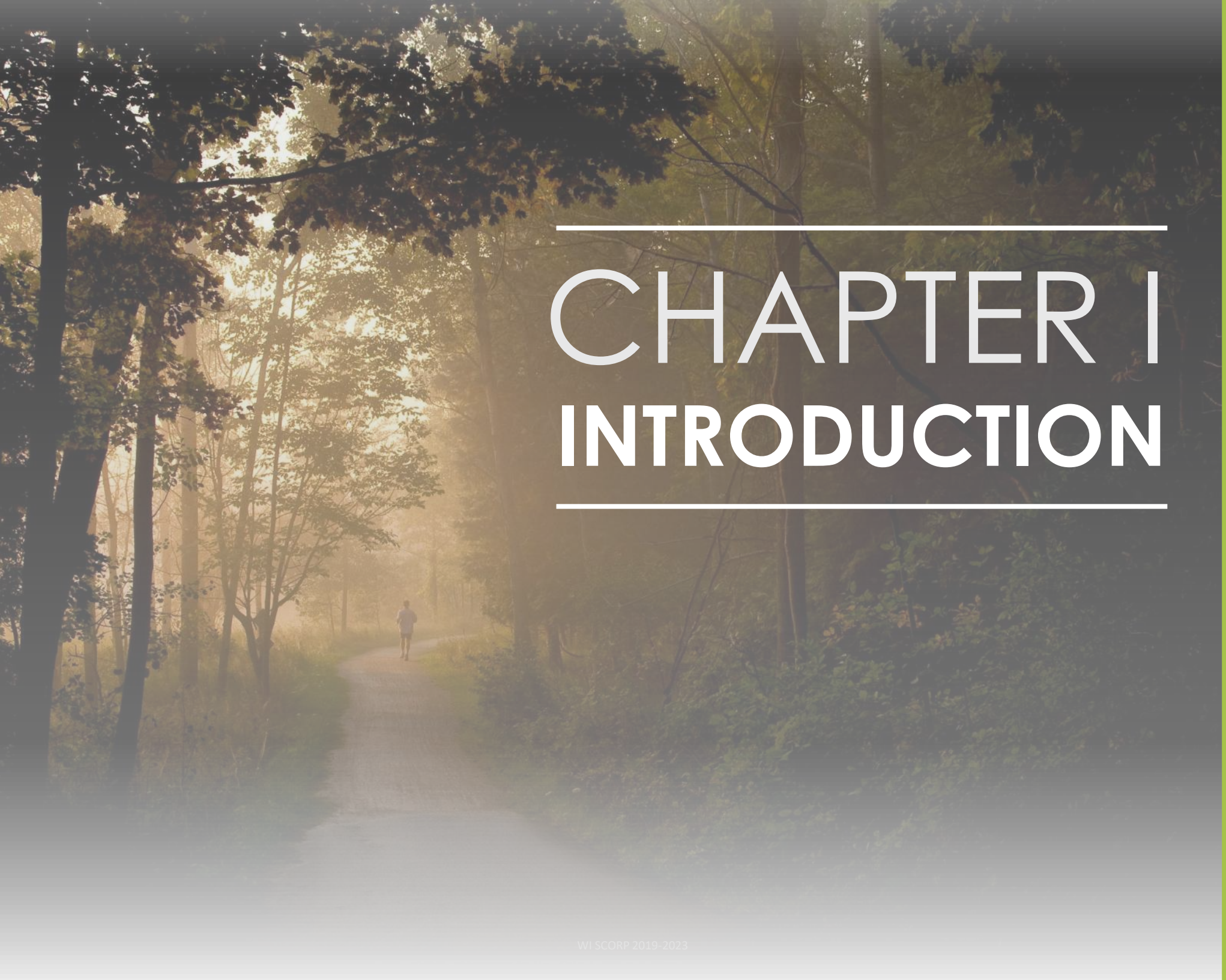


Photo: Scott Maurer

Figure 1: Public lands in Wisconsin



*See **Appendix 3** for maps of public lands by region*



CHAPTER 1
INTRODUCTION


Photo: Tom Davenport


Photo: Liz Herzmann


Photo: Dixie Brumm


Photo: Greg Sanderson


Photo: Greg Sanderson

"Outdoor Recreation Activities"
include all 58 activities that were included in the survey of Wisconsin residents' recreation participation. See Appendix 6.

"Nature-Based Activities"
include a subset of 40 of these "outdoor recreation activities" that require or occur in natural habitats or settings. See Table 1.

BACKGROUND

Wisconsin's economy and the exceptional quality of life our residents enjoy are intertwined with our abundant and rich natural resource base. From deep forests to Great Lake shorelines, from urban trails to secluded campsites, Wisconsinites have unparalleled opportunities to enjoy the outdoors. Whether motivated by the desire to relax, exercise, or be with friends and families, Wisconsinites participate in outdoor recreation with an uncommon passion.

For many citizens, what makes our state special is directly tied to the good times we have at our favorite places to camp, hunt, walk, ride snowmobiles or ATVs, bike, fish, or simply enjoy the peace and quiet of a natural setting.

Public conservation lands in Wisconsin protect some of the state's most notable, scenic and cherished places. Although these places collectively meet many recreation demands, numerous other places – from school forests to land trust preserves to local parks – also play critical roles in providing high quality recreation opportunities to residents and out-of-state visitors.

On behalf of the State of Wisconsin, the Department of Natural Resources has developed this SCORP with the help of many partners and the public. This document brings together a variety of information on the outdoor recreation opportunities in Wisconsin and lays out goals and priorities for the future. What that future ultimately becomes will depend on the collective effort of elected officials, public agencies, private organizations and, most importantly, residents.

Some types of outdoor recreation, notably ball sports, occur on athletic fields and sport courts provided by local units of government. LWCF grants in Wisconsin fund a wide variety of outdoor facilities important to local communities, including athletic fields. Participation in many of these activities varies considerably across the state making their inclusion in a statewide plan difficult.

Other types of recreation take place outdoors but aren't related to natural resources (e.g., walking on sidewalks or roads, driving for pleasure, attending an outdoor music festival). Consistent with past SCORP efforts, many of these activities were included in the survey of state residents' participation in outdoor recreation.

Although this SCORP addresses all types of recreation that occur outdoors (as required by federal legislation), its focus is on "nature-based recreation" activities that are typically provided at larger public lands and require or occur in natural habitats or settings (see Table 1).

***NOTE:** the term "nature-based" is used in other policies, codes and laws. Its use here in SCORP **only applies to this document** and does not influence or affect use of the term in other contexts.*

Table 1: Nature-based activities for this SCORP

- Bicycling – rail-trails, mt. biking, fat-tire/snow biking
- Bird/wildlife watching - at home & away from home
- Camping – tent, RV/pop-up
- Canoeing/kayaking
- Cross-country skiing
- Downhill skiing/snowboarding
- Driving 4-WD vehicles on trails/routes
- Fishing – lake, stream, river
- Gathering berries, mushrooms, etc.
- Geocaching
- Hiking/walking/running on trails
- Horseback riding on trails
- Hunting – big & small game, turkey, migratory bird
- Ice skating
- Motor boating
- Nature photography
- Personal water craft riding
- Picnicking/tailgating/cookout
- Riding ATVs/UTVs on trails/routes
- Riding motorcycles on trails/routes
- Sailing
- Snowmobiling
- Snowshoeing
- Stand-up paddle boarding
- Swimming – lakes/rivers/ponds
- Target shooting – firearms, archery
- Trapping
- Visiting a nature center
- Visiting a beach/beach walking
- Visiting a dog park
- Walking/running dogs on trails
- Waterskiing/tubing/wakeboarding

PURPOSE OF SCORP

The SCORP provides data related to the supply and demand for outdoor recreation in Wisconsin that can help inform local and state-level recreation decision making.

The objectives of this SCORP are to:

- Provide an analysis of outdoor recreation supply and demand.
- Provide information and context that is useful to counties, local units of government, organizations, Native American Nations, and others as they develop plans and policies for recreation opportunities in their communities.
- Ensure Wisconsin's continued eligibility for National Park Service LWCF state-side grants.
- Establish priorities for LWCF grants and guidance for other applicable state and federal funds.

States are required to complete SCORPs every five years to be eligible to participate in the Land and Water Conservation Fund (LWCF) State Assistance Program. SCORPs are intended to evaluate outdoor recreation trends and issues of statewide importance and set forth ideas about recreation's future role in the state. There are several required elements for SCORPs, including identifying priorities for use of LWCF grants. Of the many important issues related to outdoor recreation in Wisconsin, the SCORP highlights the areas of greatest need, thus providing a framework for evaluating LWCF grants.

Towns, villages, cities, counties, tribal governments, school districts and other state political subdivisions are eligible to apply for LWCF grants for acquisition or development of public outdoor recreation areas and facilities. Of course, these government entities best understand their citizens' needs, as well as the opportunities to leverage their local resources and assets. As such, the focus of this SCORP is on providing a range of information, at the county level where possible, to help the public and their elected officials place local conditions, needs, and opportunities into a broader framework.

While this SCORP brings together a range of information on outdoor recreation in Wisconsin, it is not intended to provide guidance at a site or project level, nor does it attempt to address all outdoor recreation issues. Rather, the SCORP identifies general outdoor recreation participation patterns, trends, issues and opportunities, and provides recommendations for future steps.

Collaborative planning at local and regional scales along with cooperative implementation of policies and programs by governments, businesses, health care providers, community organizations, and others will continue to be essential in achieving the priorities described in the SCORP.

The DNR will use the SCORP to help guide decisions related to recreation, including land acquisition, property management and development of facilities.

SCORP REQUIREMENTS

The National Park Service identifies five components required in all Statewide Comprehensive Outdoor Recreation Plans. Table 2 lists where the required elements can be found in this SCORP.

Table 2: Required SCORP components and their location in the SCORP

Component	Requirement Description	Location
Process & Methodology	The plan must describe the process and methodology(s) used by the State to develop the SCORP and meet LWCF program guidelines.	Page 13
Public Participation	The planning process must include ample opportunity for public participation involving all segments of the state's population.	Page 13 Appendix 6 Appendix 8
Comprehensive Information	The plan must: 1) Identify outdoor recreation issues of statewide importance; 2) Evaluate public outdoor recreation demands; and 3) Evaluate available outdoor recreation resources.	Chapter 2 Appendix 6 Appendix 4 Appendix 8
Implementation Program	The plan must have an implementation program of sufficient detail for use in developing project selection criteria for the State's Open Project Selection Process (OPSP).	Page 56 Appendix 9 Appendix 10
Section 303 Compliance	The plan must contain a wetlands priority component consistent with Section 303 of the Emergency Wetlands Resources Act of 1986, including the following: 1) Be consistent with the National Wetlands Priority Conservation Plan, prepared by the U.S. Fish and Wildlife Service; 2) Provide evidence of consultation with the state agency responsible for fish and wildlife resources; 3) Contain a listing of those wetland types which should receive priority for acquisition; and 4) Consider outdoor recreation opportunities associated with its wetlands resources for meeting the State's public outdoor recreation needs.	Appendix 1

Photo: Judy Klippel

LAND AND WATER CONSERVATION FUND

Did You Know?

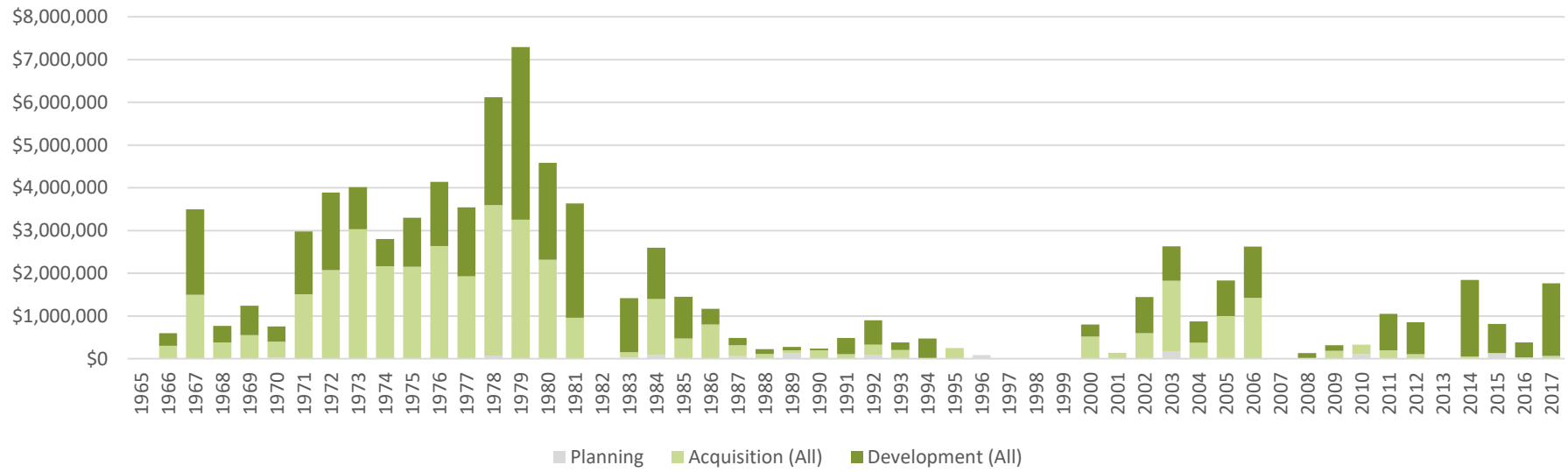
Since 1965, Wisconsin has received **$81 million** from the Land & Water Conservation Fund to support recreation projects throughout the state.

Background

The Land and Water Conservation Fund Act (LWCF) was enacted by Congress in 1965 "to strengthen the health and vitality of the citizens of the United States" through outdoor recreation. A portion of the LWCF supports development of outdoor recreation opportunities in national parks and other federal lands and a portion is passed to states for projects on state, tribal, and local properties. A related federal program is the Gulf of Mexico Energy Security Act (GOMESA), which was passed in 2006. States have flexibility to determine how to use these funds, either on state properties or as pass-through to eligible grant recipients (local governments, school districts, and Native American Nations).

The National Park Service (NPS) administers the program at the federal level. Each state designates an agency responsible for administering the program in partnership with NPS. In Wisconsin, the LWCF program is administered by DNR. In the associated figures presented here, the LWCF and GOMESA funds are combined.

Figure 2: LWCF grants to Wisconsin



Funding

The LWCF is funded through lease and production fees paid to the federal government by energy companies operating in federal waters. The total LWCF appropriation is set annually by Congress. Funds are allocated to all U.S. states and territories via a formula that incorporates population and proximity to leased lands in the Gulf of Mexico. Annual LWCF and GOMESA appropriations have varied dramatically over the years, largely due to fluctuations in oil and gas activity and competing Congressional priorities. Wisconsin's allocations from these funds have varied considerably over the years (Figure 2). In FY2019, Wisconsin received $2.9 million, a significant increase in funding that was due to a change in the GOMESA formula.

LWCF and GOMESA support a wide variety of public outdoor recreation projects. Grant recipients are required to provide a minimum of 50% non-federal matching funds. Projects proposed for LWCF grants must be selected through an open project selection process, which is designed to ensure that available funds are used to address priority outdoor recreation needs at the state and local level. Unique to Wisconsin, the LWCF also supports acquisition and development projects that expand the Ice Age National Scenic Trail and North Country National Scenic Trail.

LWCF Impact in Wisconsin

LWCF grants have touched communities in every one of Wisconsin's 72 counties (see Table 3 – pg. 12). Over 1,800 state and local projects have received LWCF support, leveraging more than $81 million in federal funds. Since the program began, 72% of LWCF projects in Wisconsin have been implemented by local communities, 27% by DNR, and the remaining 1% by the Wisconsin Department of Transportation and Tribal governments. In early years of the program (1960s and 1970s), LWCF grants were used about evenly between land acquisition and development projects (Figure 3). This balance has shifted over time in favor of development projects. In the past 10 years, nearly 90% of LWCF dollars spent in Wisconsin supported a development project in a state or local park.

LWCF grants have supported a wide diversity of recreation facilities including trails, picnic shelters, and athletic fields as well as facilities such as splash pads, dog parks and skateparks. LWCF is a key funding resource for local governments, as it is the only grant program administered by the DNR that funds development of active recreation facilities.

Figure 3: LWCF grant use in Wisconsin

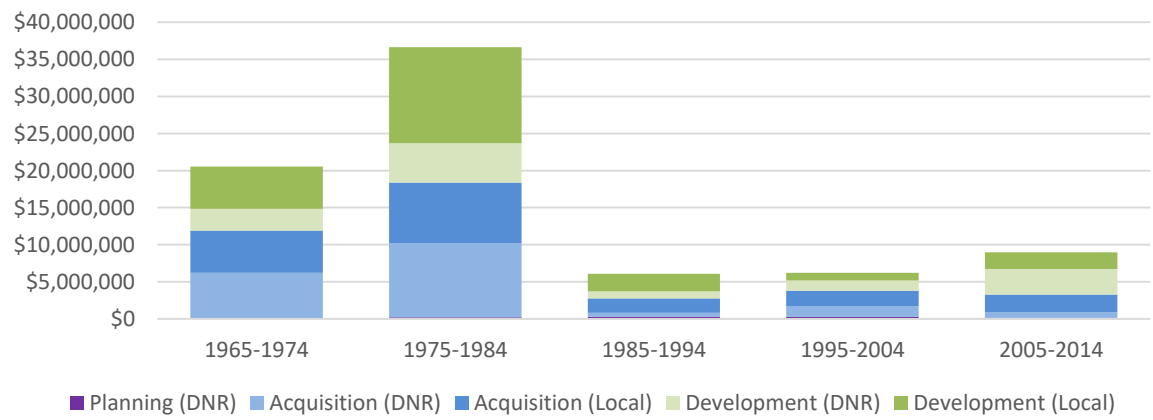


Table 3: LWCF grants by county, 1965 to 2017

County	Total Grant Awards	# Projects	County	Total Grant Awards	# Projects	County	Total Grant Awards	# Projects	County	Total Grant Awards	# Projects
ADAMS	$116,777	5	FLORENCE	$136,911	5	MARATHON	$515,672	27	RUSK	$133,956	8
ASHLAND	$271,775	11	FOND DU LAC	$584,970	29	MARINETTE	$1,269,858	23	SAUK	$4,066,862	72
BARRON	$404,834	14	FOREST	$148,643	7	MARQUETTE	$283,834	9	SAWYER	$471,893	17
BAYFIELD	$378,527	21	GRANT	$1,251,766	34	MENOMINEE	$6,893	1	SHAWANO	$766,796	31
BROWN	$2,473,758	59	GREEN	$252,496	12	MILWAUKEE	$3,476,761	44	SHEBOYGAN	$1,053,706	31
BUFFALO	$142,871	20	GREEN LAKE	$130,912	12	MONROE	$295,229	20	ST. CROIX	$1,993,784	38
BURNETT	$403,144	21	IOWA	$937,708	19	OCONTO	$158,013	9	TAYLOR	$184,632	7
CALUMET	$617,628	25	IRON	$354,284	9	ONEIDA	$921,486	26	TREMPEALEAU	$395,494	22
CHIPPEWA	$2,648,342	42	JACKSON	$419,232	14	OUTAGAMIE	$954,018	39	VERNON	$454,910	12
CLARK	$285,242	12	JEFFERSON	$230,296	18	OZAUKEE	$395,554	15	VILAS	$462,214	28
COLUMBIA	$412,507	19	JUNEAU	$953,072	22	PEPIN	$72,150	8	WALWORTH	$1,185,262	23
CRAWFORD	$1,261,435	10	KENOSHA	$3,289,116	23	PIERCE	$1,034,941	21	WASHBURN	$513,144	6
DANE	$7,991,977	121	KEWAUNEE	$282,454	11	POLK	$2,068,979	29	WASHINGTON	$1,443,211	37
DODGE	$821,513	31	LA CROSSE	$636,281	30	PORTAGE	$1,734,602	31	WAUKESHA	$3,674,591	56
DOOR	$3,907,803	43	LAFAYETTE	$429,494	15	PRICE	$25,053	3	WAUPACA	$677,432	28
DOUGLAS	$691,357	24	LANGLADE	$2,472,965	15	RACINE	$1,420,556	24	WAUSHARA	$147,150	15
DUNN	$429,381	20	LINCOLN	$126,406	6	RICHLAND	$118,157	9	WINNEBAGO	$1,824,796	43
EAU CLAIRE	$1,254,062	37	MANITOWOC	$1,199,544	47	ROCK	$763,578	24	WOOD	$537,189	24

PUBLIC PARTICIPATION AND SCORP DEVELOPMENT

Developing a plan for outdoor recreation requires understanding residents' participation patterns and their perspectives on the future. The DNR gathered public input several ways in developing this document. A 17-member SCORP Advisory Team – consisting of representatives from public agencies, conservation organizations, recreation groups, the University of Wisconsin, and the health care industry – provided invaluable assistance and guidance on a wide range of issues affecting outdoor recreation in the state.

As part of the Recreation Opportunities Analysis, which was undertaken to support the development of this SCORP, the DNR hosted meetings in each region of the state to gather public input on existing recreation opportunities and future needs. Hundreds of people attended these meetings and thousands of people submitted comments. In addition, county park directors and staff were asked to provide input on recreation opportunities, needs and trends at their properties.

Finally, the DNR surveyed a random sample of 6,400 residents to gather statistically-significant data on recreation participation, issues of concern, and future needs. A portion of the survey is shown in Figure 4. Following this data collection effort, the DNR provided the opportunity for the public to complete the same survey online; over 16,500 people did, which presented an additional set of perspectives.

This SCORP builds on the work of earlier iterations and uses the eight regions first delineated in the 2005-2010 SCORP to describe recreation uses, patterns and needs. In drafting this SCORP, the DNR combined the extensive public and Advisory Team input with staff expertise. Staff began their work in 2015 gathering background information and assembling the Advisory Team. Over the ensuing three years the Team provided advice, input and direction on plan's content and the goals, objectives, and desired action items.

In 2017 the DNR received an extension in the timeline from the National Park Service in order to devote considerable effort in developing the Recreation Opportunities Analysis to help inform the SCORP. This effort generated extensive information on existing opportunities and high priority needs for the future, including an assessment of DNR properties that may be well-suited to help meet these needs.

Figure 4: Portion of the SCORP recreation participation survey (Appendix 6)

3. Trail-related activities in Wisconsin

Activity	How many days did you participate in this activity in the last 12 months? 0	1-2	3-9	10-29	30+
Hiking/walking/running on trails	○	○	○	○	○
Walking/running dog on trails	○	○	○	○	○
Horseback riding on trails	○	○	○	○	○
Bicycling on rail trails/developed trails	○	○	○	○	○
Mountain biking on single-track trails	○	○	○	○	○
Riding ATVs/UTVs on trails/routes	○	○	○	○	○
Driving 4-WD vehicles on trails/routes	○	○	○	○	○
Riding motorcycles on trails/routes	○	○	○	○	○

4. Winter activities in Wisconsin

Activity	How many days did you participate in this activity in the last 12 months? 0	1-2	3-9	10-29	30+
Snowmobiling	○	○	○	○	○
Cross-country skiing	○	○	○	○	○
Downhill skiing/snowboarding	○	○	○	○	○
Snowshoeing	○	○	○	○	○
Ice fishing	○	○	○	○	○
Ice skating outdoors	○	○	○	○	○
Hockey outdoors	○	○	○	○	○
Fat tire biking/snow biking	○	○	○	○	○


Photo: Joseph Warren


Photo: Linda Freshwater Arndt

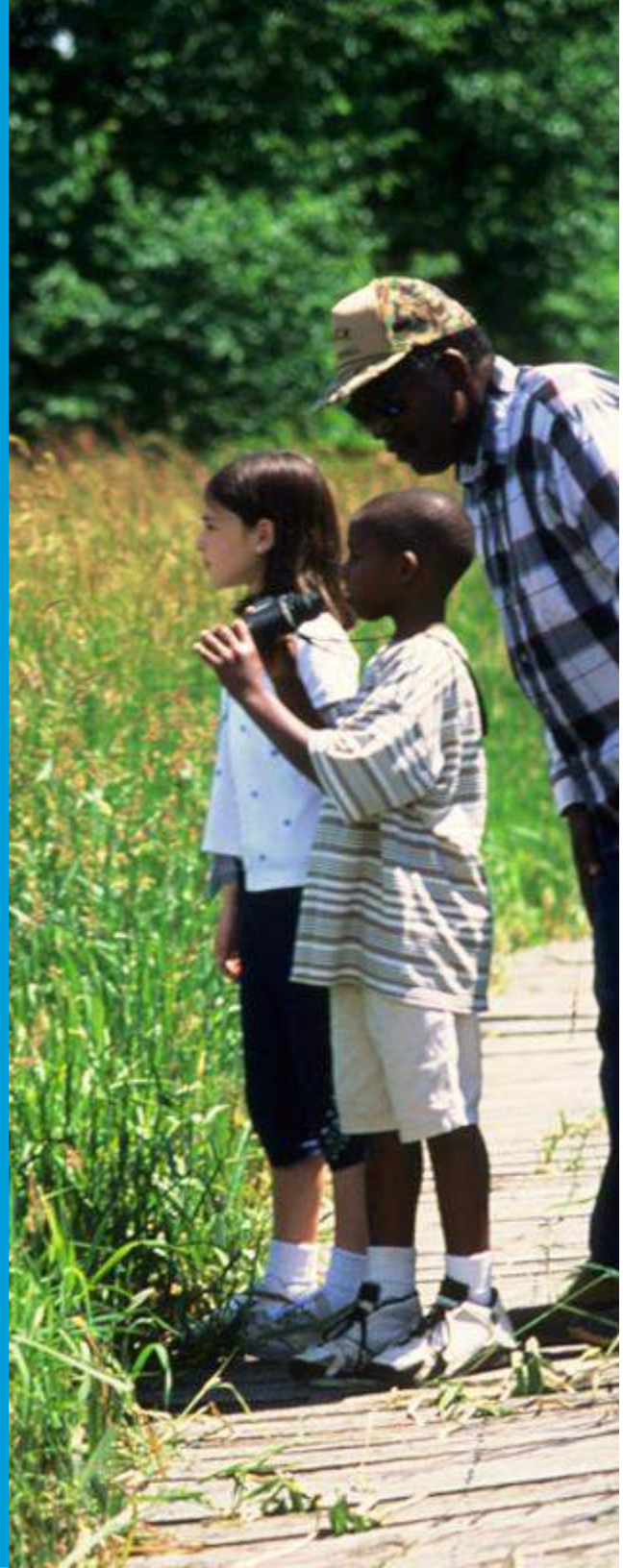

Photo: Wisconsin Bike Fed


Photo: Angie Tornes


Photo: Savannah Ernzen


Photo: Gretchen Marshall

CHAPTER II
RECREATION IN WISCONSIN



OUTDOOR RECREATION: AT THE CROSSROADS OF OUR QUALITY OF LIFE

Outdoor recreation influences many aspects of our lives and the larger communities in which we live. For example, people that participate in outdoor recreation, especially from an early age, tend to have stronger connections to nature and conservation ethics.[1, 2] In turn, these connections often lead to stronger support for the protection of natural resources. Thus, **participation in nature-based activities is likely to be increasingly important in the public's level of support for protecting air and water quality, open spaces, and wildlife.**

As has been described in previous SCORPs and in many other studies, participation in outdoor recreation also plays a critical role in promoting health.[3, 4, 5] Whether walking their dog, canoeing, mountain biking, hunting, camping or engaging in countless other activities, the fresh air, exercise, natural settings and companionship with others helps people feel physically and mentally refreshed. Engaging in outdoor recreation activities is an effective way to aid in preventing and treating many chronic illnesses including obesity, diabetes and cardiovascular disease. In addition, participating in outdoor recreational activities is increasingly recognized for its benefits to people's mental health. A further description on the health benefits of outdoor recreation can be found on page 36.

People often participate in outdoor recreation as a group activity. The shared experiences among family and friends help create social bonds among participants. Participation in outdoor activities also creates social connections among people pursuing the same activities, even if they don't participate together. Interactions between people participating in different recreation activities can provide opportunities to learn about respective needs and desired experiences. A further description on the social benefits of outdoor recreation can be found on page 38.

Generating almost $18 billion in consumer spending, 168,000 jobs, $5.1 billion in wages and salaries, and $1.1 billion in state and local tax revenue, outdoor recreation is a financial engine in Wisconsin.[6] A further description on the economic benefits of outdoor recreation can be found on page 40.

Finally, lands and waters that provide the spaces for outdoor recreation often also have important environmental benefits, including habitats for rare and game species, flood control, carbon sequestration and groundwater replenishment. A further description on the environmental benefits that places for outdoor recreation provide can be found on page 41.

FACTORS AFFECTING RECREATION PARTICIPATION

Many factors influence participation in outdoor recreation. Some, such as the weather, vary daily and seasonally resulting in spur of the moment trips or skipped outings that had been planned well in advance. Other factors – including demographic characteristics, population distribution, and technological advances – evolve over extended periods. A summary of major issues affecting participation in outdoor recreation in Wisconsin follows.

Demographics

Population characteristics such as age and gender play important roles in determining participation levels in many types of recreation.

From childhood to early adulthood, participation in many outdoor activities generally increases.

Younger age groups tend to participate in activities that are more physically demanding, rugged, faster-paced or motorized. Examples include team sports, running, tent camping, hunting, whitewater canoeing, snowmobiling, all terrain vehicle (ATV) riding, downhill skiing, and riding personal watercraft.

People's participation in outdoor activities changes over time. Older age groups tend towards less strenuous and slower-paced forms of recreation such as wildlife watching (in particular bird watching), golf, nature photography, walking, utility task vehicle (UTV) riding and camping with recreational vehicles.

Gender also plays a big role in participation. In general, males participate in more outdoor activities and more frequently than females. Hunting is one of the outdoor activities most skewed towards men; in Wisconsin, almost 75% of hunters are male. Women tend to participate in nature photography and dog-related activities more than men.

Access to Opportunities

Although many people travel to seek out unique recreation experiences, most people have limited time for leisure activities and tend to participate most frequently in activities for which opportunities are located nearby. As a result, urban residents participate in ball sports, bicycling, running, visiting dog parks and other similar activities at higher rates than rural residents. Conversely, rural residents participate in hunting, fishing, trapping, ATV/UTV and snowmobile riding at higher rates than urban residents.

Since many opportunities for nature-based recreation activities are in rural areas, as more and more of our residents move to cities their ease of access to places to pursue activities such as hunting, snowmobiling, ATV and UTV riding and horseback riding will decline. Places near the state's major urban areas that provide opportunities for these activities are often heavily used.

Another obstacle for some people is the cost of travelling to places for recreation or feasible transportation options. Residents with limited incomes can find it difficult to access opportunities to participate in outdoor activities, let alone afford necessary equipment. Although many underserved communities are located in urban settings, access to affordable opportunities also affects lower-income rural residents.

Another factor that influences access is knowledge about how to engage in activities successfully and exposure over time. Family experiences, traditions, and the transfer of know-how can play substantial roles in participation rates. [7, 8, 9, 10]

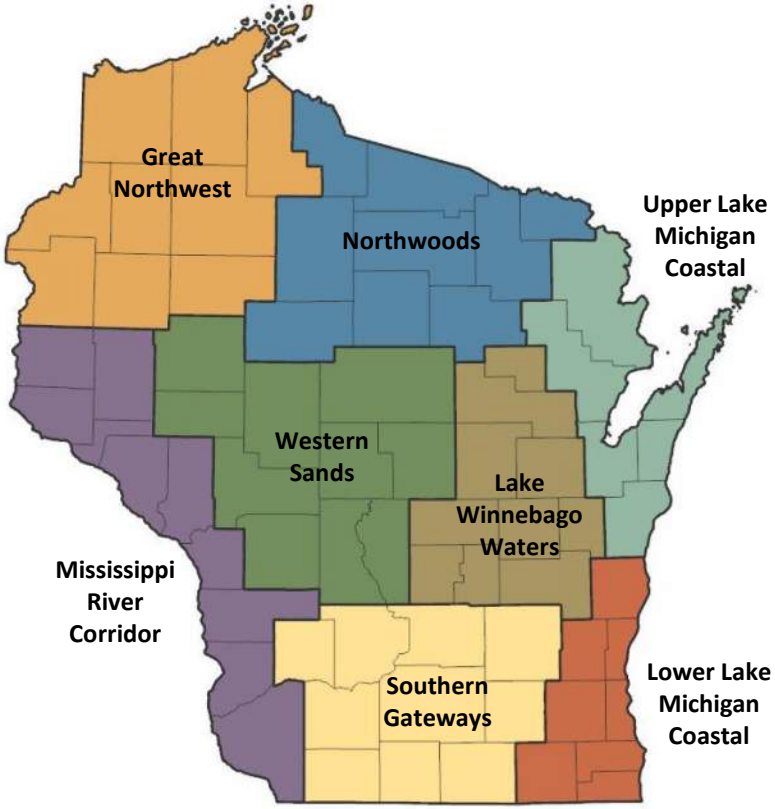
People are more likely to participate in activities in which their parents, other close family members or friends engage. This is most noticeable in activities, like hunting and trapping, that take considerable skill and experience to succeed.

Health

People's health is often related to and influenced by their participation in outdoor recreation. The benefits of outdoor recreation on one's physical and mental health has been well documented recently.

REGIONS OF THE STATE AND THEIR RECREATIONAL OPPORTUNITIES

Figure 5: Recreation regions of Wisconsin



Previous SCORPs divided the state into eight regions based on similarities in their recreation attributes, visitation patterns, natural resources, and general features. This SCORP uses the same eight regions in describing recreational supply and demand.

Great Northwest

The Great Northwest Region has an abundance of natural resources such as Lake Superior, the Namekagon and St. Croix rivers, numerous inland lakes, and large forest blocks. Not surprisingly, tourism is a large and growing industry within the region. In addition to Wisconsin residents, visitors from the Twin Cities and surrounding suburban areas, utilize the region's recreational resources. Seasonal home development, particularly along rivers and lakes, has increased dramatically within the region.

Mississippi River Corridor

The Mississippi River Corridor Region includes the state's western border counties running along the "Mighty Mississippi." The river and its backwater sloughs and wetlands are used for a variety of water-based recreational activities. In addition to the Upper Mississippi River Wildlife and Fish Refuge, a number of popular state parks and natural areas occur along the corridor. A number of clear, cold trout waters are found in the region that draw anglers from throughout the Midwest.

Northwoods

The Northwoods Region has one of the largest concentrations of lakes in the country and has been a tourist and seasonal home destination for over a century. Increasingly, retirees are moving to the region and converting their vacation houses to permanent residences. With a number of popular public lands including the Northern Highland American Legion State Forest and the Chequamegon-Nicolet National Forest, tourism is an important business here. The construction of an extensive bicycle trail network along with a growing number of ATV/UTV routes and trails, has increased visitation.

Western Sands

The Western Sands Region has an abundance of public lands that draw visitors from Milwaukee, Chicago and the Twin Cities. From camping to ATV riding and hunting to bird watching, the county and state forests and the expansive wildlife areas here support a wide diversity of recreation. Although largely rural, easy highway access and relatively inexpensive land prices within the region have increasingly made it a popular location for seasonal home development.

Lake Winnebago Waters

The Lake Winnebago Waters Region is centered on the Lake Winnebago watershed which includes the lakes of Butte des Morts, Winneconne, and Poygan as well as the Fox and Wolf rivers. Together, these waters are the major recreational resource within the region and draw visitors from throughout the state and beyond for boating, fishing, hunting, bird watching and more. The region is home to the popular sturgeon fishing season. Urban and suburban development within the region continue to grow in the Fox River Valley.

Southern Gateways

The Southern Gateways Region contains a variety of environments - rolling hills in the south, the centrally-located Wisconsin River, and large marshes in the east - the combination of which provides a wide array of recreational opportunities. The region also has a number of important geologic features, including Devil's Lake, a craggy glacial lake surrounded by high cliffs and scenic overlooks that is one of Wisconsin's most popular recreation destinations. The rapid development around Madison has also increased demand for urban-based recreation opportunities such as dog parks, bicycle trails and developed sports facilities.

Upper Lake Michigan Coastal

The Upper Lake Michigan Coastal Region is heavily influenced by Lake Michigan. Although many residents and visitors to the region use Lake Michigan for their recreational needs, other water resources such as the Peshtigo, Menominee, and Manitowoc rivers also attract visitors with their abundant fishing and paddling opportunities. Door County contains over 250 miles of picturesque shoreline (more than any other county in the United States) and 10 historic lighthouses, features that attract many tourists and seasonal residents. Peninsula State Park, located along the shores of Green Bay, is one of the most popular state parks in Wisconsin.

Lower Lake Michigan Coastal

The Lower Lake Michigan Coastal Region is the most urban and populous of the eight regions. The urban influence of Milwaukee and its surrounding suburbs has led to an extensive network of trails and associated recreation facilities such as dog parks, athletic fields and sport courts. Despite this urban influence, some areas of the region offer opportunities for undeveloped outdoor recreation. The five units of the Kettle Moraine State Forest are easily accessible not only to the region's residents but also the greater Chicago metropolitan area and are some of the most heavily used public lands in the state.

Betty LaBarbera

My Story: Traditions
Betty LaBarbera

Betty LaBarbera, 91, has been buying a fishing license for as long as she can remember. Residents around Long Lake talk about the old plywood boat that she and her late husband, Joe, frequently rowed around the lake. Other boaters with modern, high-tech rigs slowed to no wake and gave a wide, respectful berth to the couple as they fished and enjoyed the scenery.

Nowadays, Betty's children and grandchildren pick her up for family fishing trips to the same Long Lake cabin that has been in the family since the turn of the last century. They still have the plywood rowboat that grandpa made, but they prefer to fish and swim from the multi-colored pontoon boat, "Grandma Betty's Barge."

The family fishing trips continue to follow a familiar pattern.

> *"First, we buy our license at Din's Market in Dundee," explains Betty, "and a dozen nightcrawlers. Joe is probably looking down from heaven and shaking his head; he'd always dig worms in the garden."*

After filling up on groceries and gas at Din's, Grandma Betty sometimes treats everyone to burgers and ice cream cones at the Hamburger Haus drive-in or a meal at Benson's on the north end. When she's done helping the local economy and reminiscing with old-timers from the Long Lake Fishing Club, it's time to go fishing.

Betty gives her annual lesson in how to put just the right size piece of nightcrawler on the bare hook. When the sun finally sets on another day on the lake, she says, "Whose gonna cook grandma's fish? Remember, we only keep 'em if we're gonna eat 'em."

After a fresh panfish supper, the LaBarbera tradition dictates that everyone in the family pitch in for the evening ritual. While some do the dishes, others start the campfire or prepare the s'mores. When the fire is lit, everyone gathers, and stories are told of memorable days gone by, fishing with friends and family.

The warmth lingers long after the last ember fades.

Mark LaBarbera
Outdoor Heritage Education Center

THE CURRENT STATE OF OUTDOOR RECREATION

WISCONSINITES

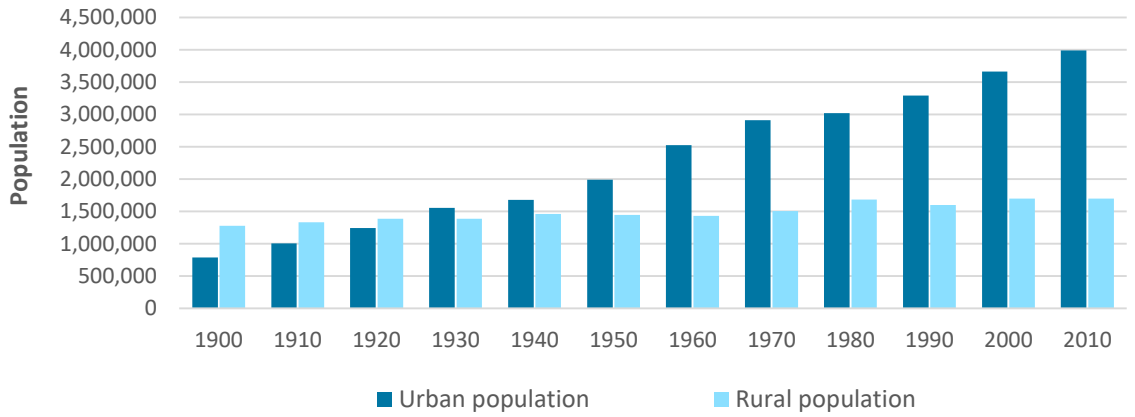
WHO WE ARE

Over the last 50 years, Wisconsin's population has increased at a rate of about 0.6%/year. The state's population is projected to grow from 5.8 million today to 6.5 million in 2040, an increase of about 0.5%/year (Table 4, Figure 7 – pg. 21).

The state's rural population has remained relatively stable over the last century (at about 1.5 million) while the urban population has more than tripled to over 3.5 million (Figure 6). While Wisconsin's urban population is growing considerably faster than the rural population, the state's rural population is relatively strong compared to nearby states that are dominated by very large urban centers.

Following national trends, our population is increasingly urban, more ethnically and culturally diverse, and older (Figure 8 – pg. 22).[11, 12] Although Wisconsin's population is less diverse than other states, populations of people of color continue to grow. The Hispanic population nearly doubled from 2000 to 2015 and now comprises 6.9% of the state's residents. Wisconsin's Black/African American population increased nearly 10% since 2000 and is now 6.7% of Wisconsin's population.[14] Wisconsin's Asian population has grown to be 2.9% of the population while people identifying as two or more races have increased to 1.9% of the state's population. The Native American population now numbers more than 60,000 in Wisconsin.

Figure 6: Wisconsin urban and rural population, 1900 Census - 2010 Census[13]



The increasing diversity of our population will continue. With over 44% identifying as people of color, the Millennial generation is more diverse than any preceding generation.[15] And the next younger age cohort, is even more diverse.

The distribution of Wisconsin's population is concentrated in several areas: the southeast metropolitan area centered on Milwaukee (Milwaukee, Racine, Kenosha, Waukesha, Washington, and Ozaukee counties), Madison and surrounding communities (Dane County), the Fox Valley (Brown, Outagamie, and Winnebago counties), La Crosse (La Crosse County) and the region near the Twin Cities (St. Croix County). Together, although these 12 counties comprise just 11% of the state's land area, they harbor 56% of the state's population (Figure 9 – pg. 22). Current and projected population numbers by county are shown in Appendix 2.

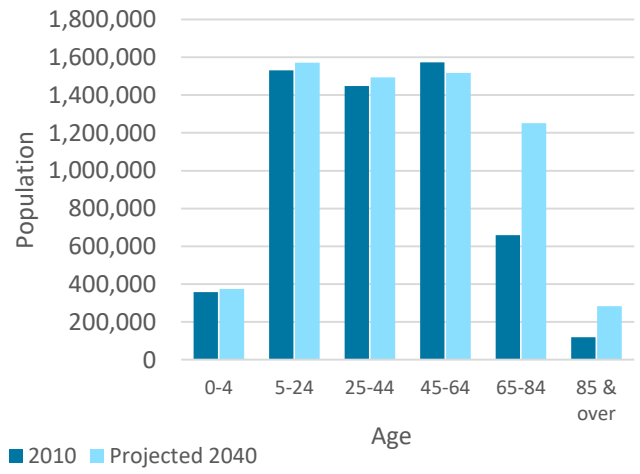
The number of Wisconsin residents living with disabilities continues to climb (Figures 10 and 11 – pg. 23). In part, this is due to the rise in our aging population and the increase in chronic diseases. Over 32% of Wisconsin residents over age 65 report living with one or more disabilities.[16] Many communities are building and upgrading facilities to meet the needs of people with different types of disabilities.

Participation in most outdoor activities declines after age 50; after 70, participation drops considerably (Figure 13 – pg. 25). Much of this decline in participation is likely due to health-related issues.

Table 4: Wisconsin population projected change, 2010 Census - 2040 projection, by age group[11]

Age Group	Numerical Change	Percent Change
0-4	15,497	**4.3%**
5-24	41,060	**2.7%**
25-44	46,235	**3.2%**
45-64	-56,194	**-3.6%**
65-84	592,956	**90.0%**
85 & over	165,095	**139.3%**
TOTAL	**804,649**	**14.1%**

Figure 7: Wisconsin population projected change by age group, 2010 Census – 2040 projection[11]



The Millennial Generation: the country's largest age group

Understanding the lifestyles and interests of younger generations can be helpful in anticipating the activities and experiences that may be popular in the future as these groups age. The Millennial generation (typically defined as those born from 1982 to 2000 and 18 to 36 years old today) is having a large impact on outdoor recreation. Not only are they the largest age group in the country (they surpassed the Baby Boomers in 2015) but they also spend more time and money on outdoor recreation than the average outdoor consumer.[17] This cohort, more than other age groups, generally has the following attributes related to outdoor pursuits:

Committed to health and wellness

More than previous generations, Millennials spend considerable time exercising and are the least obese age group.[18]

Seek experiences over material goods

More than three-quarters of Millennials would choose to spend money on a desirable experience or event over buying something desirable.[19] This may be linked to the sharing of experiences on social media, which may entice others to try similar or other experiences.

Participate in active outdoor pursuits

Younger people typically engage in more active forms of recreation (e.g., hiking, kayaking, and stand-up paddling) than their elders, a pattern that continues with Millennials. However, Millennial participation in newer, more strenuous activities (endurance races, trail running and mountain biking) is particularly notable. This is also linked to their desire to live healthy lives.

Are more likely to rent than own

This approach includes a range of items (e.g., cars, music and bicycles) and provides a greater degree of flexibility and mobility than traditional ownership.[20] Millennials tend to move more frequently than older generations did in when they were young adults and they continue the long-standing pattern of young adults moving from rural areas and small cities to large metropolitan areas (both in-state and out-of-state).

Use social media to share their experiences

Posting pictures, stories, reviews and endorsements on various internet-based platforms is likely to become an even more dominant way that participants communicate about their outings and influence others' participation.

Have pets

Nearly three-quarters of 30 to 39 year old's (the older Millennials) own dogs.[21]

Figure 8: Percent of Wisconsin population age 65 or older by county, 2015 estimate – 2040 projection[22]

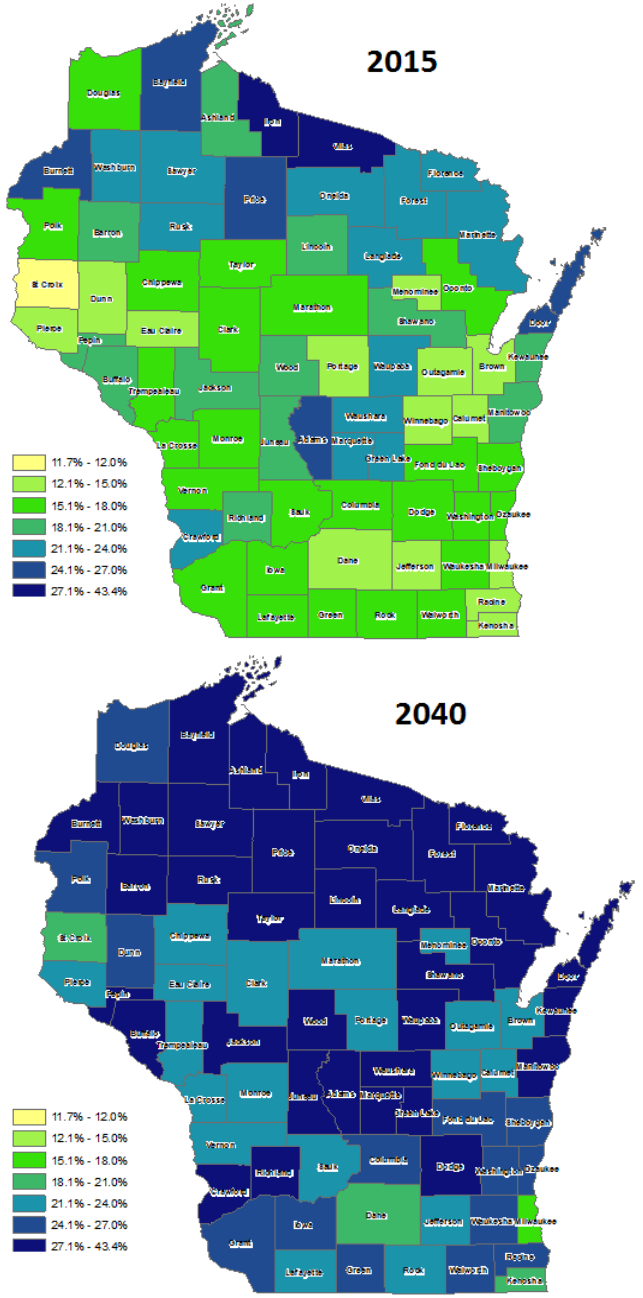


Figure 9: Population density by Census tract, 2010 Census[23]

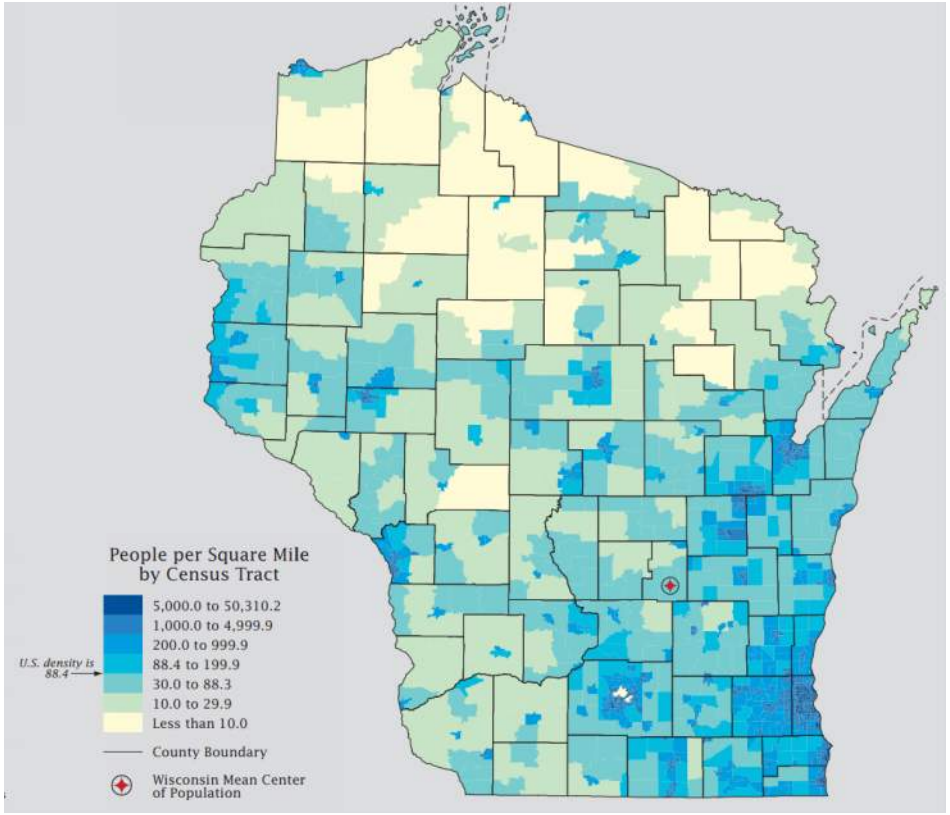


Figure 10: Number of Wisconsinites with a disability[24]

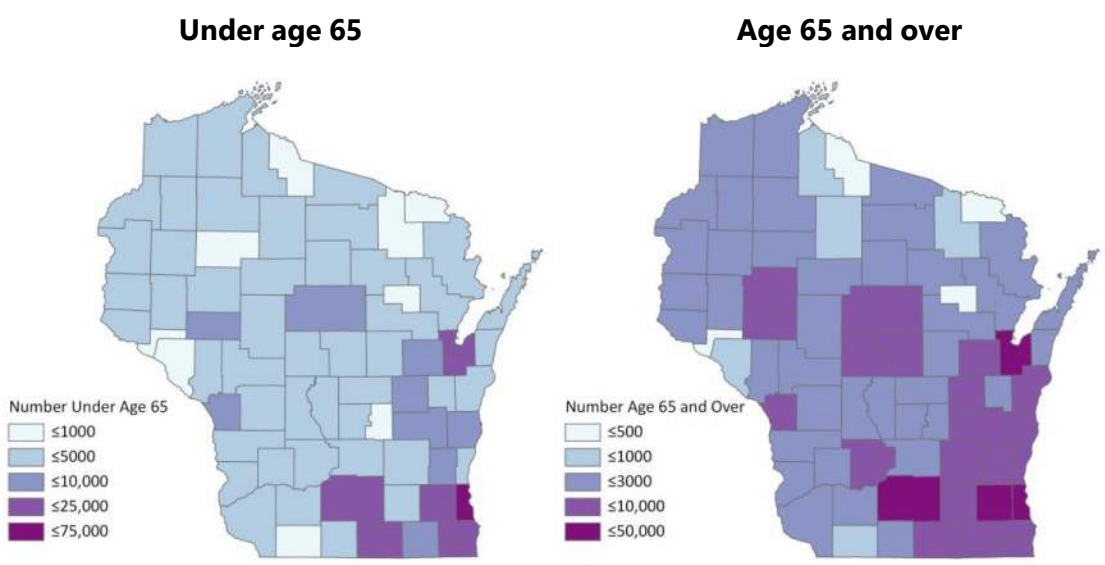
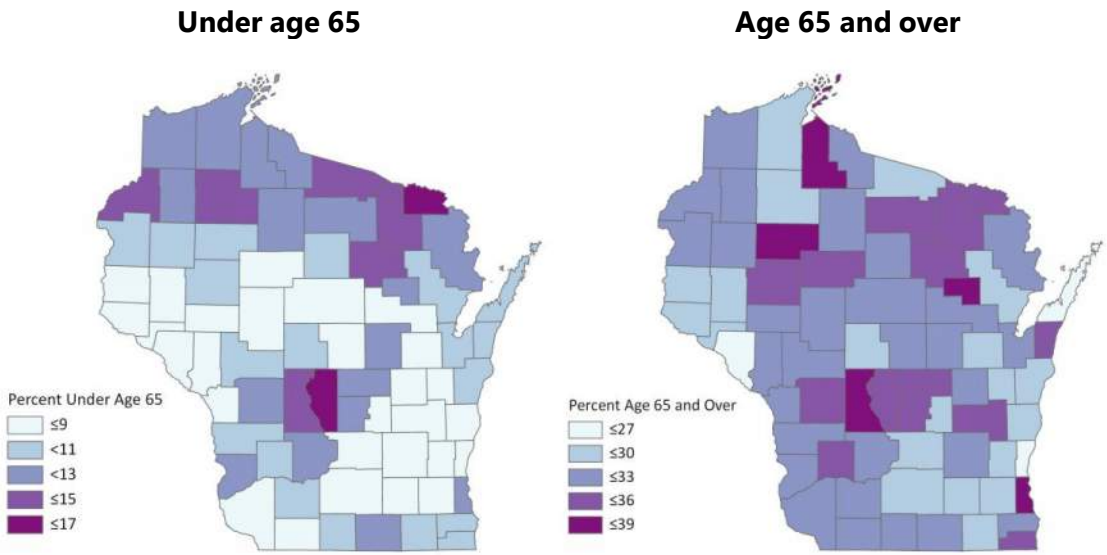


Figure 11: Percent of Wisconsin population with a disability[24]



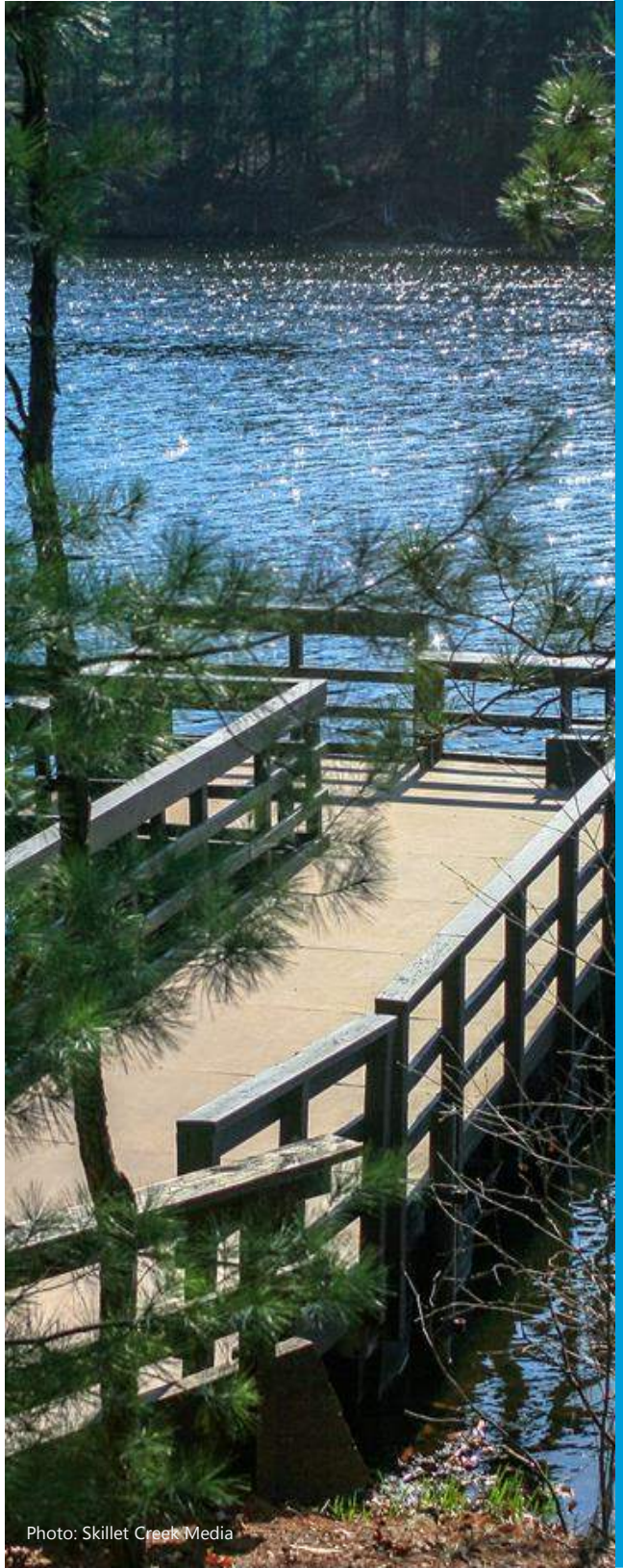


Photo: Skillet Creek Media

Table 5: Wisconsin resident participation rates of *grouped* nature-based recreation activities[25]

Activity group	% of WI residents that participated at least once in last 12 months
Hiking Hiking/walking/running on trails	**68%**
Nature observation Bird/wildlife watching Nature photography Gathering berries, mushrooms, etc.	**66%**
Boating-related Motor boating Canoeing/kayaking Personal water craft (jet-ski) Sailing Stand-up paddle boarding Waterskiing	**61%**
Fishing Lake fishing Stream/river fishing Ice fishing	**49%**
Camping Tent camping RV/pop-up camping	**41%**
Dog-related activities Walking/running dog on trails Visiting a dog park	**38%**
Bicycling Bicycling on rail-trails or other developed trails Mountain biking Fat-tire biking/snow biking	**35%**
Hunting Big game hunting Turkey hunting Small game hunting Migratory bird hunting	**27%**
Motorized trail-based activities ATVs/UTVs on trails-routes Snowmobiling 4-WD vehicles on trails-routes Motorcycles on trails-routes	**25%**

WISCONSINITES WHAT WE DO

Participation Rates

Wisconsinites have historically participated in outdoor recreation at higher rates than the national average. This is likely largely attributable to our abundant natural resource base, the quantity and quality of public lands and waters, and cultural traditions that value the outdoors. It is estimated that more than 95% of state residents participated in some form of outdoor recreation in the past year.

Table 5 shows participation rates of Wisconsin residents for general groupings of nature-based recreation activities. For comparison, 46% of Wisconsin residents participated in ball sports (golf, tennis, basketball, softball, baseball, soccer, and handball).

A list of the 20 most popular specific nature-based activities is presented in Table 6. A full listing of participation rates for recreation activities is found in Appendix 6.

Most residents participate in many outdoor recreational activities. Of the activities that were included in the participation survey, over half of residents noted that they participated in at least 16 different activities in the last year (Figure 12).

Outdoor enthusiasts recreate in many different ways. One common thread is that people often participate in multiple activities on the same trip or outing. Canoeists watch wildlife while paddling down a river. Horseback riders take nature photographs. Motor boaters swim and fish; hunters ride ATVs and camp.

What differs, often dramatically, is the overall type of outdoor experience that people favor. Some prefer quiet, secluded settings where they can experience the sights, sounds, and smells of the natural world with few (if any) other nearby groups or distractions. Popular activities for these people include wildlife watching, fishing, canoeing, tent camping, hiking, hunting and horseback riding.

Others prefer more active, strenuous experiences such as cross-country skiing, trail running, mountain biking and geocaching. Still others prefer the thrill of faster, often motorized activities such as ATV riding, motor boating, personal watercraft riding and snowmobiling (see Appendix 6 for activity clusters).

Figure 12: Number of outdoor recreation activities in which Wisconsin residents participate[25]

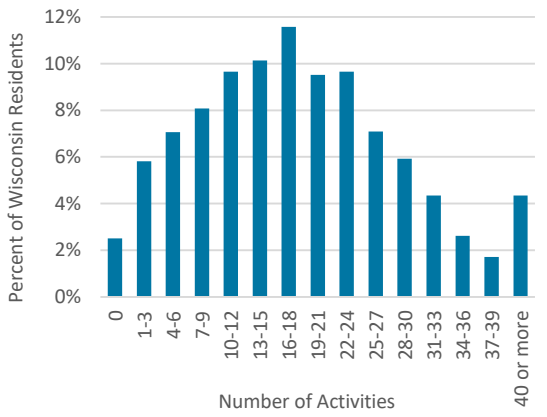
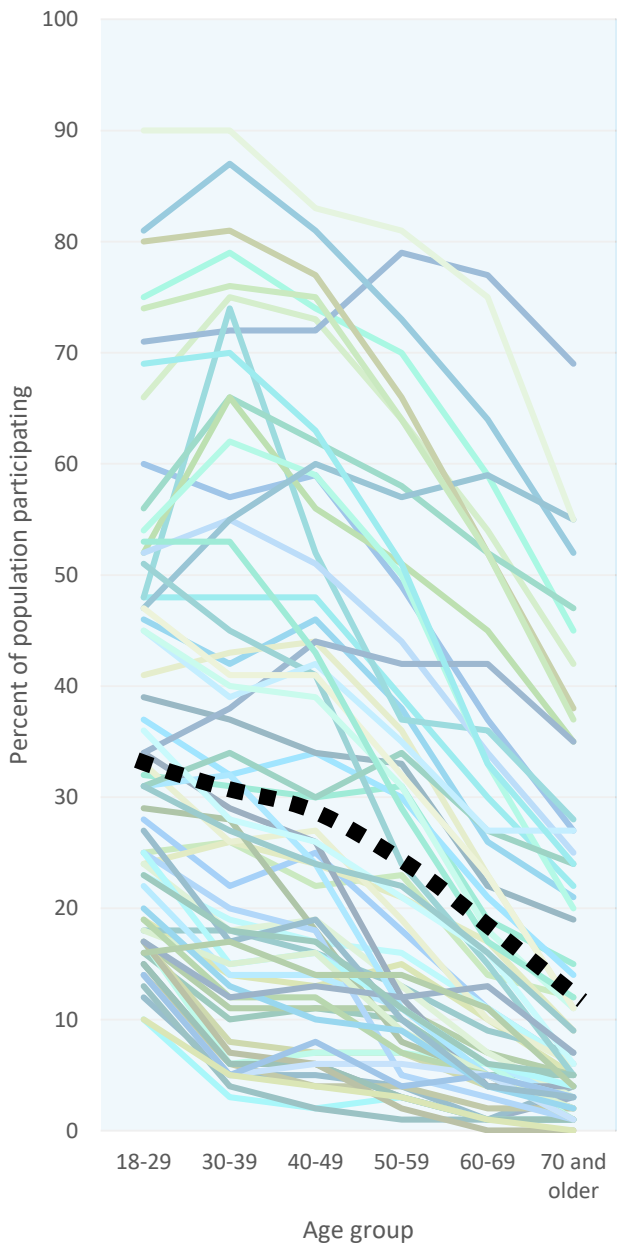


Figure 13: Wisconsin resident participation in outdoor recreation activities, by age group[25]



Age

As mentioned earlier, age plays an important role in participation rates**.** Although participation in most activities decreases with age, there is variation in the degree to which participation drops.

Figure 13 shows **participation rates by age group** (that is, the percentage of the state's population within each age group that participates). Each line depicts a different recreation activity and the average of all the activities is shown as a **dashed black line**.

It is likely that activities with relatively stable participation rates across age groups "pick up" participants in other activities as people age.

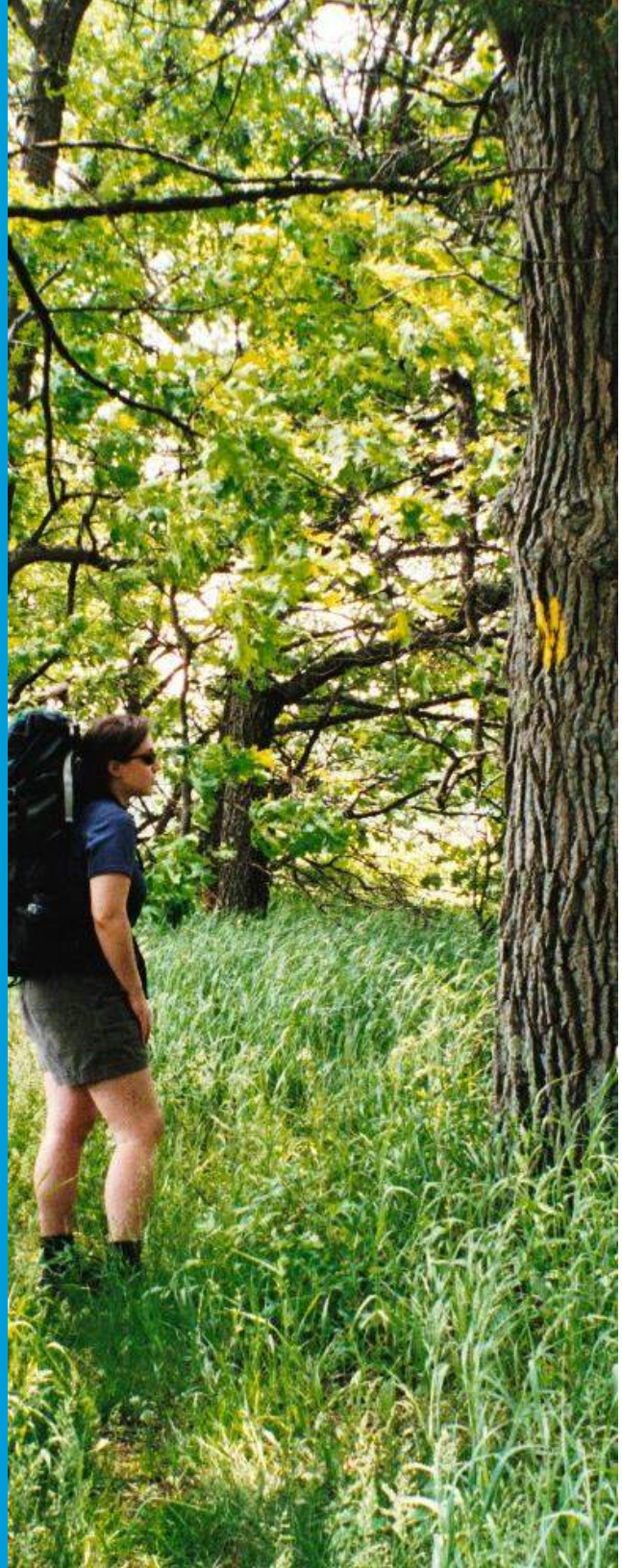
For example, it is likely that some people that downhill ski as young adults shift to cross-country skiing in later years (participation in downhill skiing drops from 27% of the population in the 18 to 29 age group to 4% for the 60 to 69 age group while cross-county skiing only declines from 17% to 13% for the same age groups).

Did You Know?

With over 200,000 registered snowmobiles and over 25,000 miles of trails, Wisconsin is the nation's snowmobiling champion.

Table 6: Wisconsin resident participation rates of the 25 most popular nature-based recreation activities.[25]

Participation Rate	Activity
74%	Picnicking/tailgating/cookout
68%	Hiking/walking/running on trails
65%	Visiting a beach/beach walking
55%	Bird/wildlife watching at home
54%	Swimming in lakes/ponds/rivers
52%	Visiting a nature center
45%	Motor boating
40%	Lake fishing from shore or a pier
39%	Bird/wildlife watching away from home
37%	Lake fishing from a boat/canoe/kayak
37%	Nature photography
34%	Bicycling on rail-trails/developed trails
34%	Canoeing/kayaking
32%	Tent camping
32%	Dog walking on trails
31%	Gathering berries, mushrooms, etc.
29%	Target firearm shooting
23%	Ice fishing
23%	Visiting a dog park
21%	Hunting big game on private land
21%	RV/pop-up camping
21%	Stream/river fishing from shore/wading
21%	Water skiing/tubing/wakeboarding
20%	River fishing from a boat/canoe/kayak
19%	Target archery outdoors



Participation Frequency

Understanding overall demand for recreation requires knowing both the number of people participating and how often they participate. Together, these provide a picture of the total "recreation days" in which residents engage.

As part of the survey on recreation participation, the department collected data on frequency of participation using the following categories: 0 days/year, 1-2 days/year, 3-9 days/year, 10-29 days/year, and 30+ days/year. Results are listed in Appendix 6.

As can be seen in Figure 14 (pg. 27), for some activities (e.g., canoeing/kayaking and tent camping) participants typically engaged in the activity less than 10 days in the last year. For other activities, most notably bird/wildlife watching at home, people that participate tend to participate often. Unsurprisingly, people tend to engage most frequently in activities that can occur near their homes, require little preparation or can provide a high-quality experience in a limited amount of time.

Although the frequency of participation is comparable across many activities, there are several factors to bear in mind. For example:

Hunting, fishing and trapping regulations

The harvest seasons for different game animals can limit participation. For example, most residents can only legally hunt turkeys in the spring during one of the six, one-week periods. Thus, someone who participated in turkey hunting 3-9 days in the last 12 months could have participated during the majority or entirety of their legally allowed days.

Seasonality

Some activities are dependent on conditions associated with seasons. For example, there may be a limited number of opportunities for people to participate in snow or ice-based activities, particularly in the southern part of the state, simply due to a lack of adequate conditions. Thus, although ice fishing, snowmobiling, cross-country skiing, and snowshoeing registered fewer days of average participation than activities such as nature photography or bird/wildlife watching, the people participating in winter activities may be participating in a higher percentage of the available days.

Value vs. Frequency

Activities in which people participate infrequently can still be very important to them. For example, someone may only go camping once per year, but it may be an annual family reunion that is their favorite outdoor activity of the year.

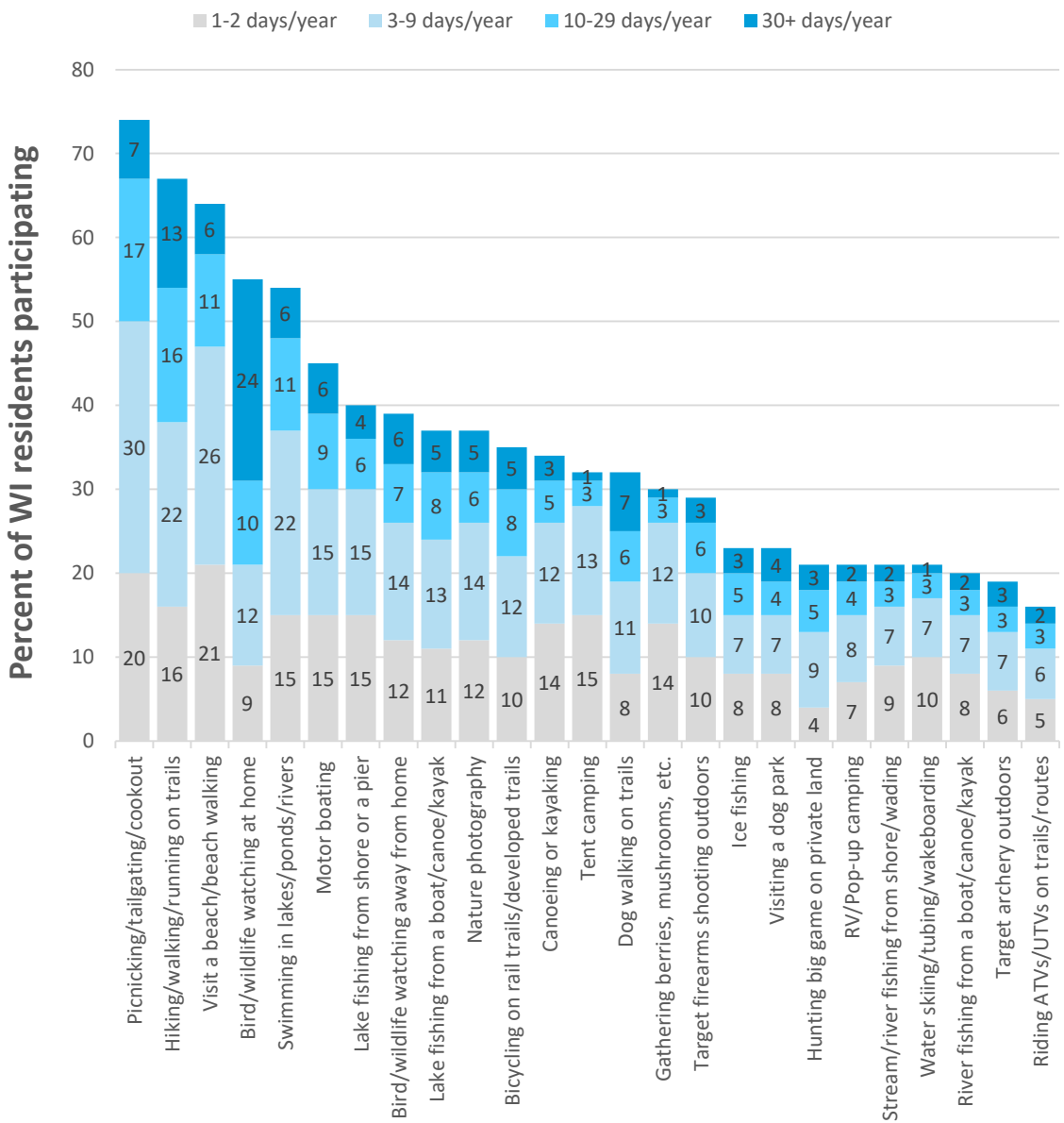
Favorite Outdoor Activities

Of course, frequency of participation can be independent of passion for an activity. That is, people's favorite outdoor activities are not necessarily those in which they participate most frequently.

When asked to name their favorite outdoor activity, the top five responses were:

1. **Walking, hiking**
2. **Fishing**
3. **Hunting**
4. **Bicycling**
5. **Camping**

Figure 14: Frequency of participation in the 25 most popular nature-based recreation activities[25]



My Story: Childhood Explorer
The Spaul Family

Hannah and her husband Mike love spending time outdoors and have taken their son, Oscar, along pretty much everywhere since he was born. Oscar was 3 months old on his first camping trip and was canoeing before he could walk; his mom would hold him while he paddled.

Unsurprisingly, Oscar wants to do everything his parents do so they make sure he has equipment, but in his size. His paddle, fishing pole and net, headlamp and walking stick fit him well. His parents also change things up to keep him interested.

"We might start a scavenger hunt while on a hike or stop for snacks by the lake. And we give him as much control over what he wants to do as we can. Instead of moving at our desired pace, we slow things down and let him appreciate that cool rock or shell he just found," says Hannah.

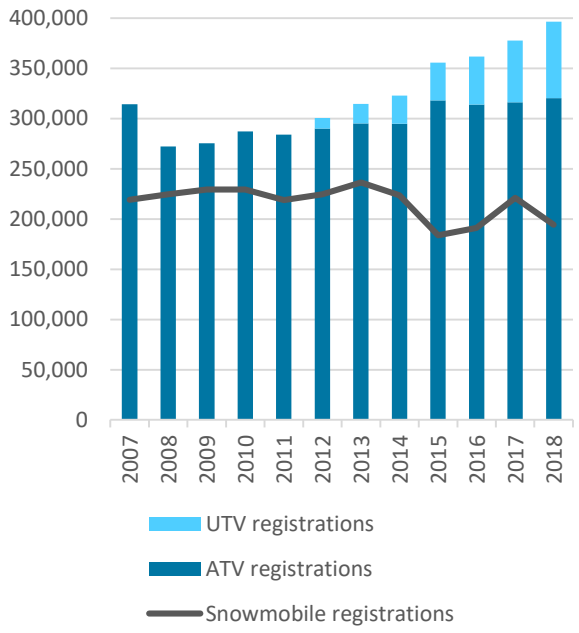
Most kids, unfortunately, don't get this type of exposure to the outdoors or the benefits. Surveys reveal children are not spending enough time outdoors. "I don't think it's just an issue for children. People are not spending much time outdoors, which means they're not taking their children outside either. Some children I know are afraid to go out in nature because they have no experience with it. But most children enjoy spending time outdoors when it's well-facilitated and they have the companions and the supplies they need to be comfortable," says Hannah.

Oscar's favorite place to visit is The Nature Conservancy's Lulu Lake Preserve in southeast Wisconsin. "When we take him canoeing there, he hops off the side of the canoe with his life jacket and his snorkel set. He'll swim around looking at fish until he's blue," reports Hannah.

Oscar is now ten and in fourth grade. He loves swimming, snorkeling, canoeing, fishing and taking short hikes. He digs in the dirt, collects rocks and loves bugs. When asked why she thinks it's important for Oscar to spend time in the outdoors, Hannah responds, "It's healthy, and it encourages independent learning and problem-solving. It's also a great way to unplug and spend time with other people - from family and friends to park rangers and naturalists. Nature adventures and discovery are a big part of our lives, and it's a gift we want to give to Oscar."

Paul Heinen
The Nature Conservancy

Figure 15: ATV, UTV, and snowmobile registrations in Wisconsin, 2007 - 2018[26]



Recreation Trend Example

Motorized recreation

While ATV use has been generally constant in Wisconsin over the last decade, UTV use has increased considerably. This growth is likely due both to the substantial number of Baby Boomers (older riders tend to prefer UTVs more than ATVs) and also because on-going upgrades in UTV features have expanded their appeal and utility.

Given the projected growth in older age groups, there is likely to be an increase in the number of people that will participate in UTV riding.

Participation Trends

Future participation levels will be affected by the size of our population and the rates at which residents engage in different activities. The state's population is projected to grow by about 700,000 additional residents by 2040 and as a result most activities will see increases in the number of participants, even if participation rates for many activities decline as our population ages.

Of course, participation rates in activities rise and fall as trends come and go.[27, 28] Newer forms of recreation provide users with more options for enjoying the outdoors, and in some cases supplement users' recreational experiences. For example, fat-tire bikes can extend biking opportunities into the winter months, kayaking can be another way to fish small streams, UTVs can be a way for groups to get to a favorite hunting spot, and drones can be a new way to photograph nature. As battery technology continues to improve, it is possible that many applications will affect outdoor recreation in the future.

Based on the number of residents that are projected to be in different age groups in 2040, if future participation rates for each age group are the same as today's rates, the largest increases in the number of participants in nature-based recreation are expected for bird watching, picnicking/tailgating/cookout, visiting a nature center, and hiking/walking/running on trails (Appendix 4, Table 17).

Because the methods to survey recreation participation in Wisconsin have changed over time, it is not possible to analyze current and past data to quantitatively identify trends in statewide participation rates or frequencies. To address this, qualitative input was gathered from county recreation providers on their perspectives of how recreation participation has changed over the past five years at their properties. The recreation opportunities in highest demand on county-managed properties are campsites, hiking/walking/ running on trails, mountain biking and recreational biking trails, motorized trails, and shore access to lakes, rivers and streams (Appendix 4, Table 16).

ATV and UTV - What's the difference?

ATV (all terrain vehicle): usually meant for a single rider that straddles a saddle and steers using a handlebar system.

UTV (utility task or terrain vehicle, sometimes referred to as side-by-side): can seat multiple people and riders sit in bench or bucket seats. Driver uses a steering wheel.

See State Statutes 340.01 and 23.33(1)(ng) for legal definitions.

Trends in participation at county parks, forests and trails

Activities with largest increases in participation over the last five years at county properties:

- Bicycling – winter/fat-tire biking
- Camping – RV/pop-up
- Bicycling – mountain biking
- Riding ATV/UTVs
- Canoeing/kayaking
- Bicycling – recreational/rail-trail biking
- Picnic areas/day use/beaches
- Paddle boarding
- Dog walking on trails
- Hiking/walking/running on trails
- Fishing

WISCONSINITES
WHERE WE PARTICIPATE

With 7.5 million acres of land open to the public, there are abundant opportunities for residents and visitors to enjoy outdoor recreation experiences in Wisconsin. Approximately half of this acreage is managed by state and federal agencies, including the Wisconsin Department of Natural Resources, U.S. Forest Service, U.S. Fish and Wildlife Service, and National Park Service. Local and tribal governments also manage a broad portfolio of places available to the public for outdoor recreation, including local parks, school forests and nearly 2.4 million acres of county forest land.

In addition, the public has access to private lands enrolled in some conservation programs and lands where agencies have acquired public access easements. Descriptions of the types of lands open to the public for nature-based recreation and acreages for each county are listed in Appendix 3. In addition, Table 14 in Appendix 4 provides an overview of the recreation opportunities at county-managed properties.

Although public conservation and recreation lands comprise only about 17% of the state (Table 7 – pg. 30), a sizable percentage of residents use public lands for outdoor recreation. When asked about their top two favorite outdoor activities, nearly two-thirds of residents said their participation was "entirely" or "mostly" on public lands or waters. However, 65% of respondents that listed hunting as their favorite outdoor activity used private lands "entirely" or "mostly." This is not surprising since public lands – especially in the southern part of the state – are typically crowded during hunting seasons.

Given the distribution of our population as well as our public lands, it is logical that for some activities there are geographic patterns of visitation. The large public land holdings in central and northern Wisconsin draw visitors for multi-day outings, including camping, ATV/UTV and snowmobile riding, hunting and fishing. Public lands in the southern and eastern parts of the state, which tend to be smaller, are heavily used by people pursuing shorter outings (half-day or less) to hike, walk a dog, watch birds, ride a bike, picnic, fish, hunt, gather edibles and other similar activities.

Frog Bay Tribal National Park
Red Cliff Band of Lake Superior Chippewa


Photo: Michael Defoe

Frog Bay Tribal National Park is the **first tribal national park in the United States.** Established in 2012, the 300-acre conservation area includes a 170-acre park that is open to the public for hiking on several trails that lead to 4,000 feet of Lake Superior shoreline.

The property includes pristine sandy beaches, old-growth boreal forest, and a high-quality coastal estuary that provides critical habitat for many native species. The park provides views of the Apostle Islands including Oak, Basswood, Hermit, Raspberry and Stockton islands.

The Red Cliff Band of Lake Superior Chippewa also provides public camping and hiking opportunities at other properties it manages in Bayfield County.

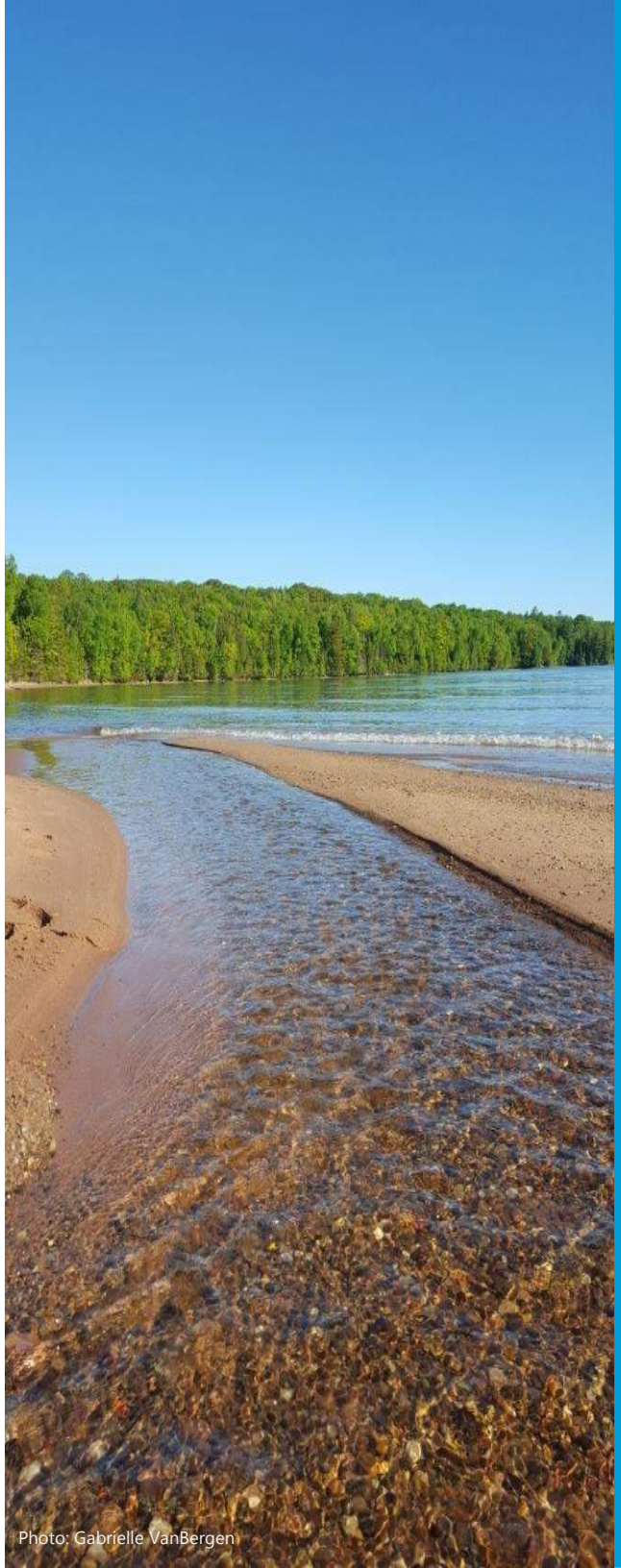
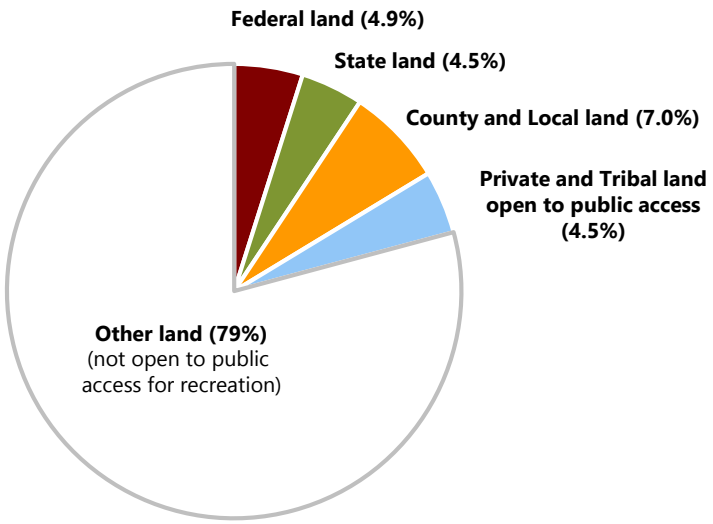


Photo: Gabrielle VanBergen

Figure 16: Lands in Wisconsin open to the public for recreation[29]



Ways to value land purchases for recreation

Governments acquire land for a variety of purposes. In determining where to purchase property for outdoor recreation, agencies must evaluate costs and benefits to determine the most effective and efficient use of public funds.

Lands that are least expensive to purchase often provide limited recreation opportunities, given their location and the type and quality of experiences the land can provide.

When viewed using metrics other than dollars/acre, higher-priced places near population centers may be a more effective use of public funds than less-expensive lands distant from cities. For example, applying metrics such as visitor-days or the economic returns accruing to nearby communities from these visitors' spending may show that recreation lands near urban areas provide a better return on investment than lower-priced lands in remote areas that are less frequently used.

Similarly, the benefits of improved health and quality-of-life will affect substantially more people when places are available near urban areas for outdoor recreation.

Table 7: Lands in Wisconsin open to the public for recreation[29]

Public Ownership		Acres Owned	Percent of the State
Federal	U.S. Forest Service	1,524,500	4.2%
	National Park Service	67,500	0.2%
	U.S. Fish & Wildlife Service	149,500	0.4%
	U.S. Army Corps of Engineers	14,300	0.0%
	Total Federal	**1,755,800**	**4.9%**
State	Department of Natural Resources - Fee title	1,507,000	4.2%
	Board of Commissioners of Public Land	75,900	0.2%
	Total State	**1,582,900**	**4.5%**
County and Local	County Forests	2,395,400	6.7%
	County Parks (estimate)	70,000	0.2%
	City, Village, and Town recreation properties funded by Stewardship matching grants	15,000	0.0%
	City, Village, and Town recreation properties not funded by Stewardship matching grants (estimate)	50,000	0.1%
	School Forests	27,900	0.1%
	Total County and Local	**2,558,300**	**7.2%**
Total *public* lands open to public recreational access		**5,897,000**	**16.5%**

Table 7: Lands in Wisconsin open to the public for recreation (continued)

Private and Tribal Ownership	Acres Open to the Public	Percent of the State
Non-government organization lands funded by Stewardship matching grants	70,000	0.2%
Managed Forest Law land open to the public*	1,081,600	3.0%
Forest Crop Law land**	125,800	0.4%
Forest Legacy program easements	248,200	0.7%
Department of Natural Resources – easements on private lands	55,100	0.2%
Voluntary Public Access (VPA) lands	32,000	0.1%
Red Cliff Band of Lake Superior Chippewa	200	0.0%
Total *private and tribal* lands open to public recreational access	**1,612,900**	**4.5%**

* By statute, open for hunting, fishing, hiking, sight-seeing, and cross-country skiing.
** By statute, open for hunting and fishing.

Total: Land Open for Public Recreation	
State of Wisconsin (acres)	**35,640,000**
Land in the state open for public recreation (acres)	**7,509,900**
Percent of the State of Wisconsin open for public recreation	**21%**

See Appendix 3 for maps and a listing of public lands by county.

Photo: Gretchen Marshall

WISCONSINITES WHEN WE PARTICIPATE

Wisconsin's four-season climate supports a wealth of opportunities for outdoor recreation throughout the year. The seasonal patterns of participation vary across activities; some are popular year-round while others are limited by conditions – like adequate snow or migration events – or by specific dates (for example hunting, fishing and trapping seasons). In addition to participation patterns related to the seasons, there are also ebbs and flows of participation across the days of the week and the times of the day.

Participation in outdoor activities varies from outings of an hour or two (often after work) to half-day or day-long trips (often on weekends) to multi-day vacations. Although people pursue the full gamut of activities in each of these types of getaways, activities differ in the length of time needed to provide a high-quality experience.

For example, participants in activities such as dog walking, trail running, or nature photography can have an excellent experience in as little as a half-hour. Other activities, such as horseback riding, hunting, fishing, canoeing and bicycling are often pursued for two to three hours or longer. Table 8 shows estimates of the frequency of the duration of people's participation in different recreation activities.

Where people go to participate in outdoor activities is, of course, a function of available time and locations of opportunities. One's willingness to travel different distances is often directly related to the time available to participate in an activity. Typically, people are willing to invest a total travel time (getting to and from the destination) no more than the same amount of time they will recreate. If the travel time is much beyond the recreation time, then most people conclude the enjoyment of participating in the outing isn't worth the cost or effort.

Combining travel time and the participation time needed for a high-quality experience provides an indication of what types of activities people typically engage at different distances from home. As an example, since most people walk their dog for 30 minutes to an hour at a time, they typically travel no more than 15 to 30 minutes to a place that would provide a high-quality experience. Thus, most dog walking happens close to home and a map showing where participation takes place would mimic our state's population map.

For other activities, a map of participation would be quite different. Participants in hunting and many motorized activities often spend four to six hours or more a day engaged in these activities; occasionally, participants spend several days in a row on trips. Participants are typically willing to spend four or more hours travelling to locations that provide first-rate experiences. And, of course, camping involves multi-day trips. For these types of activities, a map showing where participation occurs would be more influenced by the locations and characteristics of existing opportunities rather than where people live.

Table 8: Frequency of estimated hours per day participants typically engage in selected nature-based recreation activities*

Recreation Activity	Hours of participation within a day											Multi-day
	0.5	1	1.5	2	2.5	3	4	5	6	7	8+	
Water skiing/tubing/wakeboarding												
Swimming in lakes/ponds/rivers												
Dog walking on trails												
Target firearm shooting												
Target archery												
Trapping												
Hiking/walking/running on trails												
Nature photography												
Mountain biking												
Gathering berries, mushrooms and other wild edibles												
Visiting a beach/beach walking												
Cross-country skiing												
Lake/river fishing from a boat/canoe/kayak												
Lake/river/stream fishing from shore/wading/pier												
Motor boating												
Horseback riding												
Canoeing or kayaking												
Bicycling on rail-trails or other developed trails												
Bird/wildlife watching away from home												
Hunting small game												
Ice fishing												
Riding motorcycles on trails/routes												
Riding ATVs/UTVs on trails/routes												
Snowmobiling												
Driving 4-WD vehicles on trails/routes												
Hunting big game												
RV/pop-up camping												
Tent camping												

Estimated Frequency	
Rarely (less than 2% of trips) or not applicable	
Infrequent (3% to 9% of trips)	
Occasional (10% to 19% of trips)	
Common (20% to 39% of trips)	
Most common (40% or more of trips)	

**These estimates are based on department staff consultations with outdoor organizations and their professional judgement.*

My Story: Empowered
Sarah Lisiecki

The outdoors is a space for me. A space where there aren't expectations or "shoulds" and a space where I can go to be a happier, healthier, more creative version of the person I was when I went in. As a woman, I spend a lot of time being told how to behave, feel, act and believe.

The outdoors offers me a place to transcend those "shoulds" and focus on who I am at the core and who I want to be as my future self.

Being outdoors – hiking, biking, climbing, kayaking, trail running, camping – allows me to be physically challenged and to confront fear and be brave. Here I feel empowered yet find a peacefulness that is unique to time spent without walls. It allows me to see my body for all it can accomplish and not what it can't. It allows my mind to be relaxed, yet focused.

In the outdoors I build my thoughts, find my peace, overcome and gain confidence. People in the outdoors foster a community; there is something special about these places that brings people together.

Being outdoors and void of distractions help me deepen friendships, family relationships and my relationship with myself.

Maybe it's the struggle followed by the reward or maybe it's being reminded of what's essential and having the opportunity to relish beauty uninterrupted.

Sarah Lisiecki

WISCONSINITES
WHY WE PARTICIPATE

Table 9: Top ten reasons to get outside, US residents, Age 6+[33]

Reasons to get outside	% of respondents
Get exercise	64%
Be with family and friends	55%
Keep physically fit	50%
Observe scenic beauty	49%
Be close to nature	47%
Enjoy the sounds and smells of nature	47%
Get away from the usual demands	40%
Be with people who enjoy the same things I do	31%
Experience excitement and adventure	32%
Experience solitude	20%

Table 10: Top ten reasons to not get outside, US residents, Age 6+[33]

Reasons to *not* get outside	% of respondents
Too busy with family responsibilities	21%
Outdoor recreation equipment is too expensive	18%
Do not have anyone to participate with	17%
Do not have the skills or abilities	16%
Have a physical disability	14%
My health is poor	11%
Places for outdoor recreation cost too much	10%
Too busy with other recreation activities	10%
Places for outdoor recreation are too far away	10%
Do not have enough information	7%

Considerable research has been conducted by various organizations to understand what motivates people to participate in outdoor recreation and what obstacles exist. The results of these research efforts consistently identify social and health benefits as primary drivers of participation. At heart, many people spend time outdoors simply to have fun and get away from daily stresses.

In addition to the reasons that draw people to outdoor activities listed in Table 9, another motivation is the desire to eat locally-grown, sustainable, organic food. This has led some people to take up or increase their participation in hunting, fishing and gathering wild edibles – cultural traditions that have been practiced and maintained by Native Americans and settlers of the region since before Wisconsin achieved statehood.

Although many people understand the health and social benefits of ongoing experiences in nature and are interested in pursuing outdoor activities, there can be a substantial gap between "concept and reality."[30] Competing priorities for time, lack of easy access to places or people to go with, and cost of equipment are often cited as obstacles to participation. Although some types of equipment can be expensive, it should also be noted that the price of computers, phones, Internet and phone service, cable television and other technology can also be costly. For example, Americans spent $36 billion on video games in 2017.[31] This is more than the combined spending on all fishing and hunting equipment ($34 billion).[32]

Table 10 lists top reasons people identify for not getting outside.


Photo: TJ Brusoe


Photo: TravelWisconsin


Photo: Mark LaBarbera

Photo: Mark LaBarbera

My Story: AccessAbility
Monica Spaeni

As daylight faded and the northern Wisconsin forest darkened in the early evening, Monica saw 300 pounds of shadow move closer to her wheelchair. The hungry bruin moved through the trees slowly, pausing often.

Unlike most other hunters, she wasn't in the relative safety of an elevated tree stand. Seconds seemed like minutes and minutes seemed like hours as Monica sat still, her senses tingling with excitement. Monica was focused solely on the bear moving among the shadows. It stepped into an opening nearby. Monica's heart raced. She raised her .308 and shot, killing the bear and filling her freezer.

Her guide, Wayne, and friend, Steve, made it possible for her to hunt bear despite her spinal cord injury.

Monica was in a wheelchair because of a skiing accident when she was chaperoning her child's field trip. She resisted feelings of self-pity and did not settle for a sedentary life.

After the diagnosis that she would not walk again, Monica focused on how she and others could enjoy a life filled with accessible outdoor recreation activities.

It didn't take long for Monica to discover the Action TrackChair, a motorized all-terrain wheelchair that allows anyone to go afield where normal wheelchairs cannot. Soon, Monica was tracking through corn stubble on pheasant hunts, navigating rough trails to fish streams, and traversing wooded terrain in pursuit of whitetails. Dog park trails near home were easy for her motorized wheelchair as she exercised her dog.

She did not stop there. She wanted others to have access to the all-terrain chairs. With help from the local chapter of Pheasants Forever, AccessAbility was born and has grown into an independent, non-profit organization that is building a fleet of chairs throughout the state that can be used by anyone at no cost.

What started as a ski accident that threatened to limit her mobility and future recreation opportunities, has turned into a series of accomplishments that has improved opportunities and access for not just Monica, but so many others.

Mark LaBarbera
Outdoor Heritage Education Center

WISCONSINITES HOW WE BENEFIT

Chronic Diseases and Their Costs

Wisconsinites currently face chronic health issues related to society's increasingly sedate lifestyle.

Despite the growing awareness of the problem, the obesity rate for adults in our state has doubled since 1990.[34]

Maybe more troubling, 25% of adolescents are overweight or obese.

In addition, more than 350,000 Wisconsinites have been diagnosed with diabetes.[35] And in both Wisconsin and the United States, heart disease is a leading cause of death; one-third of all deaths in the state were due to cardiovascular disease.[36] A table of some health care indicators, by county, is presented in Appendix 2.

Chronic diseases exact a substantial cost on the state's economy. The direct costs of these diseases to just the Medicaid system are estimated to total $1.15 billion annually in Wisconsin; if costs to the private sector were included, the amount would be significantly higher.[37]

Health benefits

Most people participate in outdoor activities for enjoyment and because it helps them feel energized and revitalized. The fresh air, exercise, natural settings and companionship with others helps people feel physically and mentally refreshed. Participating in outdoor recreational activities, or simply being in peaceful natural settings, can have substantial benefits to one's mental health. Outdoor exercise has been shown to reduce stress, boost the immune system, diminish the risk of disease and increase life expectancy.

And from walleyes to ducks to mushrooms, "consumptive activities" can be a nutritious source of lean, organic, sustainable food. For many years the DNR has hosted a Learn to Hunt program that links novice hunters with experienced ones. The program is increasingly popular with young urban residents interested in connecting with the state's hunting heritage and harvesting locally-grown, healthy food.

As the physical and mental health benefits of spending time outdoors are better understood, the health care community is developing creative ways to encourage patients to get outside. In one of the better-known examples, some physicians are recommending "park prescriptions" to patients with various chronic diseases.[52]

The health care cost savings generated by participating in outdoor recreation, particularly more strenuous activities, is just beginning to be explored. Given the physical and mental health benefits of outdoor recreation, several programs in Wisconsin (along with many other states) have embarked on campaigns to draw people outside and become more active. Three of these efforts are highlighted on the adjacent page.

Did You Know?

OutWiGo is a statewide initiative encouraging people to improve their overall health and wellness by being active in the outdoors.

Since launching in May 2018, over 2,000 residents have pledged to be active in Wisconsin's Parks, Forests and Trails. OutWiGo aims to reach additional users through outreach, partnership events and social media marketing.

Learn more at:
https://dnr.wi.gov/topic/parks/outwigo.html

OutWiGo

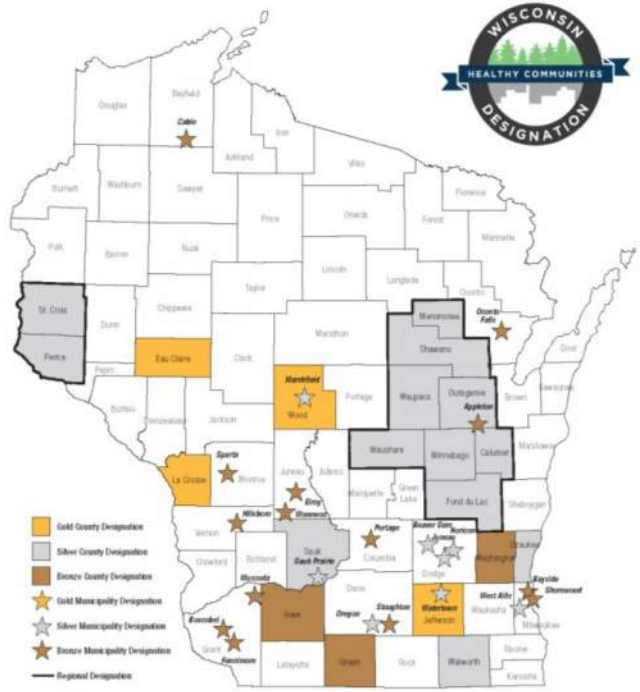
Wisconsin Healthy Communities Designation[38]

This new program encourages achievements in health improvement in Wisconsin by recognizing communities that focus multiple, connected efforts – including health behaviors, clinical care, social and economic factors, and the physical environment – to improve the health of their residents. The program's inaugural round of gold, silver or bronze designations was announced in September 2018 and included 31 communities (Figure 17).

One of only four gold designations went to Jefferson County, which was recognized for its efforts to reduce obesity rates through outdoor exercise strategies (among other programs geared to improving resident's health). The county's Parks Department has been a leader in providing natural-resource-oriented parks and trails that make it easy for residents to get outside, exercise, and enjoy the woods, prairies, and rural landscape. Examples include expanding the popular Glacial River Trail, constructing a new bicycle trail from Watertown to Oconomowoc, increasing recreational offerings in parks, and developing a series of water trails for paddlers.

These and other efforts appear to be paying off; the county's health ranking jumped from 33rd in the state in 2012 to 12th in 2018.

Figure 17: Healthy Communities Designations, 2018



Wisconsin Active Together[39]

Wisconsin Active Together is an initiative that provides recognition awards to community groups or coalitions that are making it easier for people to walk, bike and be active and meet basic criteria to demonstrate that commitment. The initiative was developed in 2017 by a diverse group of state-level and community-based partners that identified the need to support more local-level action on strategies that make physical activity easy, safe and fun in community settings.

Wisconsin Active Together focuses on coalitions and processes working on policies, systems and environments that build physical activity into routine daily life.

The first set of communities recognized were:

Appleton
Fond du Lac
Fox Valley
La Crosse Region
New Holstein
Watertown
Wausau

Marathon County Strategic Plan

Marathon County recently adopted their 2018-2022 Strategic Plan with an overarching goal to be the healthiest, safest, and most prosperous county in Wisconsin. Their plan recognizes that:

> "Health is not merely restored at the doctor's office, but instead starts in our families, in our schools and workplaces, in our playgrounds and parks, and in the air we breathe and the water we drink. We recognize that health and well-being are lifelong pursuits and that our communities can support positive, healthy lifestyles."

Marathon County Parks, Recreation, and Forestry Department plays a key role in helping meet this goal. With 13 parks and over 30,000 acres of county forest, residents have abundant opportunities to enjoy outdoor recreation and stay active as part of efforts to improve their health. In addition, the lands managed by the Parks, Recreation, and Forestry Department improve air and water quality in the county.

Social benefits

Participation in many nature-based outdoor activities is often a group activity. Families and friends tend to camp, bicycle, ride snowmobiles, ATVs and UTVs, horseback ride, bird watch and hike in groups (see Table 9 - pg. 34: 55% of people stated that they participated in outdoor recreation to "be with family and friends").

The bonds that form through the collective outdoor experiences shared by groups are part of the "social glue" that brings people together. And the stories that accompany particularly memorable outings – whether because of a rare bird sighting, attempting an activity for the first time, reeling in a trophy fish, getting lost in the woods, or the inevitable mishaps that leave people laughing – often become family legends that are retold over and over.

Group activity: Rock climbing

Not only does rock climbing provide participants with sizeable physical and mental benefits, but by its very nature it is a communal and cooperative activity. Participants depend on each other for their personal safety and enjoyment of the experience. Climbers often form tight social bonds that span differences in age, gender, education, ethnicity and cultural backgrounds.

Wisconsin is home to some of the best outdoor climbing and bouldering opportunities in the Midwest. Devil's Lake, Governor Dodge, Interstate, and Willow River state parks draw thousands of participants annually.

Participation in climbing and bouldering has steadily increased both nationally and in Wisconsin. Climbing at Devil's Lake, by far the most popular location in the state, is estimated to have quadrupled over the last several decades. New opportunities are in demand throughout the state.

Outdoor recreation can also be an opportunity for people to meet and better understand each other's perspectives, needs, and motivations. Like sports, the arts, religion, social clubs and school, outdoor recreation can bring together diverse groups of people interested in a common pursuit and provide a forum to interact, learn new customs, and better understand each other. This in turn can strengthen community cohesion and connections to natural resources.

Recent research has indicated a connection between greenspace and the amount of time spent in nature with reduced crime and how people view their surroundings.[40] In Wisconsin, local park programs are increasingly customizing new outdoor recreation facilities to reflect the heritage and current ethnic diversity of the surrounding community. These city parks can serve two purposes – one as an outdoor recreation facility and also as a source of cultural education.

The link between physical activity and academic achievement in a range of school-age children has been the topic of ongoing research. Several studies have shown a positive connection between children's participation in physical pursuits, including nature-based outdoor activities, and improved educational outcomes.[41]

Outdoor recreation groups

Wisconsin has numerous clubs representing hunters, bicyclists, birders, horseback riders, and many other participants. These groups have been exceptionally key players in organizing events, volunteer work days, educational and outreach programs, and in advocating for policies and funding to support outdoor recreation. Participation in these groups is on the rise. For example, the number of snowmobile clubs has grown from 575 to 615 over the last ten years.


Photo: Gretchen Marshall


Photo: Gretchen Marshall


Photo: Gretchen Marshall


Photo: Jennifer Girling

My Story: The Outdoors – from Passion to Occupation

Chase Cummings, Pepin County Land Conservation & Planning Director

The Tri-County School Forest is a 280-acre parcel in rural Waushara County that provides an excellent educational setting for students as well as recreational opportunities for the community. Area students from kindergarten through high school visit the property multiple times each year. The school forest is also open to the public to hunt, snowshoe, bicycle, cross-country ski, and picnic.

Rain or shine, Chase Cummings has always enjoyed being outside and connected with natural resources. For Chase, learning was easier in the woods or fields where he could see, hear, and feel his surroundings. It would be an understatement to say that he was very excited to visit the school forest each year.

When he reached high school, Chase became an Environmental Education (EE) Counselor at the forest. In his role, he coordinated field trips for the district's teachers and led a variety of lessons for other kids. Chase had to learn to identify different plants and animals, display leadership ability, and be a good communicator – skills that have benefited him in his career. The EE Counselor program helped give him the boost of confidence needed in more challenging experiences, such as public speaking, that are common elements of his career.

After high school, Chase pursued a degree in Soil and Waste Resources and now works as the Pepin County Land Conservation & Planning Director. Building on his experience at the school forest, in 2011 Chase started Conservation Field Days for 5th and 6th grades in Pepin County.

> *Students and teachers look forward to their twice-yearly trips out in the field learning about natural resources and their management; it has grown into a very successful program.*

As a kid growing up, Chase was fortunate to have opportunities to connect with the outdoors. With the Field Days program he created, he's passing that good fortune on to the next generation and planting the seeds for future conservationists.

Gretchen Marshall
Wisconsin School Forest Program

My Story: Small business success
Suzann and Montgomery "Mo" Mouw

How does outdoor recreation drive the tourism economy in Wisconsin? The story of ROAM Adventure Basecamp, located in Seely and offering a modern twist to trailside camping, shows how a couple's passion and love for outdoor recreation and the Northwoods led to a successful new business.

The Chequamegon Area Mountain Bike Association (CAMBA) develops, maintains and promotes over 300 miles of user-friendly biking, skiing and hiking trails in northwest Wisconsin. The extensive trail network was the primary reason Suzann and Mo Mouw have owned a trailside second home in the Hayward area since 2004.

After they acquired 96 acres of land on the American Birkebeiner ski trail in the heart of the CAMBA trail system, Suzann and Mo thought it would be nice to share their love of trailside living with others. Mo states, "though there are a number of campgrounds in the area, none catered specifically to bikers and skiers - thus, the idea of ROAM was hatched."

Started in 2017, the business provides both traditional tent camping sites and trendy, comfortable "tiny house" cabins with easy access to the trails. At the end of the day, guests can unwind in the campsites, eco-friendly cabins, or around a campfire with friends in a secluded natural setting.

The overwhelming feedback they receive from guests is their appreciation of being trailside with direct access to Wisconsin's premier Northwoods trail system. "No more loading gear every time they start an adventure."

The backbone of Wisconsin's tourism industry is small business owners and small family-run operations.

"On any given weekend we bring over a hundred plus people to the area that likely would have gone somewhere else if we did not offer our services," states Mo. Suzann and Mo's ROAM Adventure Basecamp is just one of many examples of how individuals turn their passion for the outdoors into a thriving business that generates travel, creates jobs, and drives economic impact in Wisconsin.

by David Spiegelberg
Wisconsin Department of Tourism

Economic benefits

From manufacturers of outdoor gear to resorts and restaurants, outdoor recreation is a financial powerhouse throughout Wisconsin. People's participation in outdoor recreation results in several types of economic activity. The most obvious is the travel-related spending that occurs on trips. These costs can include gas, meals, supplies (e.g., fuel for motors, bait, and shotgun shells), equipment rentals, overnight accommodations, entry fees, guide services, and various souvenirs. Of course, the amount of spending associated with travel varies considerably. Spending varies due to the distance participants travel, type of activity, personal preferences and other factors.

Typically, people engaged in many nature-based outdoor activities (e.g., bird watching, fishing, hunting, hiking, bicycling, horseback riding or cross-country skiing) spend about $20 to $50/party on day trips (see the sidebar on page 41 for citations).

People participating in motorized activities (snowmobiling and ATV/UTV riding in particular), and overnight trips tend to spend considerably more on a daily basis. It is not uncommon for these participants to spend more the $100/person each day on travel-related expenses.[56]

Another major form of economic activity associated with participation is the purchase and upkeep of outdoor gear. Although most of the supplies and equipment that residents purchase, including from local stores, are made in other states or countries, Wisconsin is home to many manufacturers of equipment used in nature-based recreation. Examples include fishing rods and lures, bicycles, motorboats and boat engines, canoes and kayaks, firearms and bows, and saddles.

In looking at the financial benefits that accrue to an area due to people's participation in outdoor recreation, it is important to highlight money that "moves into" an area from visitors.

In Wisconsin, estimates of overall economic activity related to outdoor recreation range considerably due to differences in the accuracy of data collected, recreation activities and expenditures included, how indirect and induced regional impacts are calculated, the geographic scale of analysis and other factors.

Importantly, outdoor recreation has long been one of the key mechanisms by which economic activity and wealth is transferred from urban areas (and out-of-state visitors) to the state's rural communities.

A tabulation, by county, of the broader tourism industry's economic impact in Wisconsin is provided in Appendix 5.

Did You Know?

Wisconsin hosts dozens of **manufacturers** of outdoor recreation equipment – from fishing rods to sailboats and canoes to bicycles.


Photo: Maggie Kailhofer

Not only does the state's economy benefit from the spending generated by people participating in outdoor recreation, but additional financial benefits are generated by the places that are protected to provide high-quality experiences for residents and visitors.

The property values of privately-owned lands near federal, state, county and local parks, trails, fish and wildlife areas, forests, natural areas and other protected places are typically higher and more stable than other private properties. A recent study for the U.S. Fish & Wildlife Service found that, all else being equal, homes within a half-mile of wildlife refuges are valued on average 3% to 9% higher than houses further away.[53] In Wisconsin, a study found that lots adjacent to the Mountain-Bay State Trail in Brown County sold for an average of 9% more than similar property not located next to the trail.[54.]

The places that provide outdoor recreation opportunities also contribute to nearby communities' quality-of-life, which in turn has a direct impact on their ability to attract businesses. The experiences available at parks, trails and other recreation lands and waters are key selling points that communities use to entice companies to locate and expand their operations.

In today's economy, high technology and service-sector industries are prime sources of wealth creation and growth; their workers are typically interested in a diverse range of outdoor activities. Communities that can tap into their natural resource base to provide opportunities for active experiences – from biking to rock climbing to kayaking – stand to benefit economically.[55]

Finally, providing opportunities for outdoor recreation complements other natural resource-based industries in the state, most notably the forest industry in the north. Similarly, several utility companies manage flowages throughout the state for power generation and flood control. They also provide the public with boat access sites and associated facilities on some of Wisconsin's most popular waterbodies.

Did you know?

Places open for public recreation also provide a wide range of high-quality habitats that support a diversity of native plants and animals. Indeed, some of the most ecologically important places in the state – Devil's Lake and Peninsula state parks, Kettle Moraine State Forest, the Apostle Islands and Horicon Marsh – are also among our most popular recreation destinations. It is estimated that over 75% of the Species of Greatest Conservation Need in Wisconsin are found on public lands in the state.[59]

In addition to their habitat values, places open for public recreation also provide a range of ecological services including: flood control, groundwater replenishment, water and air filtration, nutrient capture, refuges for insects that pollinate agricultural crops, carbon sequestration, and temperature moderation.[57]

A recent study found that the benefits generated from ecosystem services on lands acquired by the Minnesota DNR ranged from $19 to $154 per acre, annually.[58] It is likely that public lands in Wisconsin provide similar values.

Outdoor recreation: big business in Wisconsin!

Some examples of the economic impact of outdoor recreation in Wisconsin:

- Consumer spending on outdoor recreation in Wisconsin totaled **$17.9 billion** which resulted in 168,000 directly-related jobs, $5.1 billion in wages and salaries, and $1.1 billion in state and local tax revenue.[42]
- Properties in the Wisconsin State Park system draw an estimated 14 million visitor-days that generate more than **$1.0 billion in annual expenditures** in local communities.[43]
- **$19 million** in trip and equipment expenditures associated with waterfowl hunting in Wisconsin.[44]
- **$1.5 billion** in retail sales, 36,000 jobs and $235 million in state and local tax revenue generated by wildlife watchers in Wisconsin.[45]
- **$425 million** in output and personal incomes related to bicycle manufacturing in Wisconsin.[46]
- **$1.6 billion** annual total spending and economic impact generated by trout fishing in the Driftless Area (much of which is in Wisconsin).[47]
- **$1.4 billion** in sales generated by Wisconsin's horse industry.[48]
- Research conducted for the Wisconsin Department of Tourism indicates that day visitors to tourism events (which includes outdoor recreation trips) spend an average of **$64 per visitor** and overnight visitors spend **$144 per visitor**.[49]
- Wisconsin ATV riders spend on average **$164 per day** while out-of-state riders spend an average of **$573 per trip** to Wisconsin.[50] A more recent study found that ATV riders spent between $355 and $427 per trip while visiting the network of trails in Jackson County.[51]

Photo: Greg Sanderson

ISSUES, CONCERNS, AND FACTORS INFLUENCING THE FUTURE OF OUTDOOR RECREATION

This section summarizes key topics that are expected to affect the future demand for outdoor recreation opportunities, as well as the nature of experiences, in Wisconsin.

Demographic Changes

The continued evolution of our population's demographic characteristics will drive changes in recreation participation. As our population continues to age, urbanize and diversify, participation rates and frequencies in outdoor recreation will change. Existing data suggest that the increase in older residents will drive an increase in the popularity of activities such as hiking, dog walking, bicycling, UTV riding, nature photography and bird watching.

Condition of Recreation Facilities

Ongoing maintenance is key to protecting public investments in outdoor recreation and ensuring that existing facilities continue to provide satisfying experiences for the public. Although many recreation facilities are modest in design and scale, they require ongoing maintenance to remain safe, useable and enjoyable. The flip-side of a long history of outdoor recreation infrastructure in Wisconsin is a large portfolio of older infrastructure in need of upgrades to meet user expectations and heavier use (e.g., conversion of pit toilets to plumbed toilet/shower buildings). Adequate funding is key to adequate maintenance. For example, in 2017, all projects supported with LWCF grants on state properties involved repair or renovation of existing facilities.

Technology Advances

Technological advances affect all aspects of our lives, including outdoor recreation. From electric bikes to WiFi in campgrounds, technology is changing recreational experiences and providing new ways for people to engage in the outdoors. These changes require recreation providers to develop and implement new policies, manage an increasing number of uses (many of which can conflict with more traditional ones) and adapt to shifting conditions and demands. Adequate funding is also key to support modernization of outdoor recreation infrastructure to meet public expectations.

Social media provides a means to share experiences quickly and widely, which can help recreation providers attract a broader audience and better understand the features and attributes that drive demand. Attention and interest on social media can also result in visitation spikes.

Access to Public Lands

A longstanding issue complicating efforts to provide opportunities for several types of outdoor recreation in Wisconsin is the distribution of where many of the state's residents live and the locations of most public conservation and recreation lands. In large part driven by historical land use patterns and the economic fallout of the Great Depression in the 1920s and 1930s, over half of the lands open to the public (over 3.1 million acres) are located in just ten northern counties. Over half of the state's population resides in just nine counties, all in the southern or eastern part of Wisconsin.

This inverse distribution of public land and people means that for many residents wanting to participate in activities that require larger expanses of land they often must travel multiple hours. And as peoples' lives become busier and they have less time to devote to outdoor recreation (and the travel time required), the use of many public lands near urban centers – for example, Kettle Moraine State Forest, Devil's Lake, High Cliff and Kohler-Andrae state parks, and Richard Bong State Recreation Area – has grown significantly.

Photo: Susan Braun

Access to Private Lands

A generation or two ago, a higher percentage of our population lived in rural settings (see Figure 6 on page 20) and people who lived in cities were likely to have a relative or close friend that lived in the country. Consequently, many residents could get permission to hunt, fish, hike, pick berries or other activities on land owned by someone they knew. More and more residents now live in urban or suburban settings and no longer have direct contact with rural landowners.

In addition, there has been a loss of public access to industrial forest land in recent decades as paper companies, which historically owned over a million acres in the state and allowed public access, have sold most of their land holdings to timber investment management organizations or real estate investment trusts. These new owners typically have not re-enrolled their lands into programs that allow public access (Managed Forest Law).

Two programs administered by the DNR facilitate public access to private land for recreation purposes:

Managed Forest Law (MFL) Program

The program reduces property taxes for eligible landowners in return for implementing a certified forest management plan for their property. Landowners can choose to allow public access for hunting, fishing, hiking, sight-seeing, and cross-country skiing (for which they receive a greater financial benefit).

Voluntary Public Access (VPA) Program

Landowners who are willing to allow the public to hunt, fish, trap and watch wildlife on their property can enroll in this program and receive a modest payment. Recently, 32,000 acres had been enrolled.

Compatibility

The overwhelming majority of outdoor recreation occurs without significant conflicts between participants in the same or different activities. However, on occasion, conflicts emerge that can impact participant's satisfaction. Often, an underlying cause of recreation conflict is simply the density of use in an area. Even activities that are prone to conflict with one another (e.g., water skiing and fishing on the same lake) can co-exist if the number of interactions is minimal. Yet, as the number of participants in an area increases, overcrowding can easily emerge and result in conflicts and displacement of visitors. Many outdoor recreation providers increasingly must devote resources to address conflicts.

Aspects that can influence compatibility include:

- Expectations of participants about interactions with others.
- Skill and experience level of participants.
- Duration and intensity of interactions.
- Tolerance levels of participants, including social values and beliefs.

Techniques that can increase compatibility and decrease conflicts include:

- Education, outreach, and signage.
- Community engagement and self-policing by groups and clubs.
- Regulations and enforcement.
- Separation of participants in time and/or space.

Invasive Species and Habitat Quality

People have moved living things - sometimes purposefully, sometimes inadvertently - for millennia. Occasionally when non-native species are brought into a new area, they will spread rapidly and widely. When this happens, major impacts can occur to native wetland and upland ecosystems, farm and ranch lands, lakes and streams, and other settings. Invasive plants, animals, and pathogens can alter ecological relationships among native species and can affect ecosystem function, economic value of ecosystems, and human health.

Invasive plants and animals can significantly affect recreational experiences. Hunters, hikers and birdwatchers can find they are no longer able to walk in their favorite areas. Thorny multiflora rose, dense stands of buckthorn and other invaders can fill in the understory of once open native forests and grasslands. As habitats are modified by invasive plant species, wildlife that depend on native vegetation are affected. Invasive animals such as the mute swan can also change wildlife opportunities by chasing away waterfowl from the waterbodies they occupy.

Fishing outings can result in disappointment when aquatic invasive species modify lake and stream habitat. Eurasian water-milfoil clogs boat motors and invasive animals, such as the rusty crayfish, devour aquatic plants, reducing habitat for native fish at every stage of their life cycle.

Weather Patterns and Changing Climate

Weather patterns directly affect participation in outdoor recreation – a rainy weekend can result in cancelled camping or bicycling plans, while a very snowy winter in the north can attract lots of snowmobilers and skiers from Madison, Milwaukee and Chicago.

The changing patterns of our climate over extended periods of time may also affect the type and timing of participation. If, as predicted, spring arrives earlier and autumn later, opportunities for many types of outdoor recreation activities will be extended while others may be reduced. For example, reduced snow cover may lead some cross country skiers to shift to fat-tire biking, which doesn't require as much snow pack for an enjoyable experience.

Species' ranges and migration periods are projected to continue shifting as well.[60] This is likely to affect activities such as bird watching, hunting, and fishing over time.

Funding for Providing and Operating Places

Purchasing lands, developing and maintaining recreation facilities, managing habitats, enforcing regulations, and the other tasks associated with operating Wisconsin's recreation infrastructure is costly. Federal, state, and local agencies spend millions of dollars managing public lands each year.

Funds to maintain and operate conservation lands and recreation facilities come from a variety of sources, including hunting, fishing and trapping licenses and stamps, park entrance fees, trail passes, excise taxes on hunting and fishing equipment, grants and donations.

In addition to LWCF funds, over the last 25 years the DNR, local units of government, and non-profit conservation organizations have used funds from the Wisconsin Knowles-Nelson Stewardship program to help pay for many of the lands and facilities that provide recreation opportunities around the state.

The Stewardship funding is currently $33.25 million per year, allocated as follows:

- DNR land acquisition: $9.0 million (1/3rd for purchasing land, 2/3rd for purchasing easements)
- DNR property development: $3.75 million
- Grants to counties to acquire lands for county forests: $5.0 million
- Matching grants to local units of government (LUGs) for property development and land acquisition: $6.0 million
- Matching grants to non-profit conservation organizations for land acquisition: $7.0 million
- Recreational boating aids: $2.5 million


Photo: Savannah Ernzen


Photo: Dan Thoftne

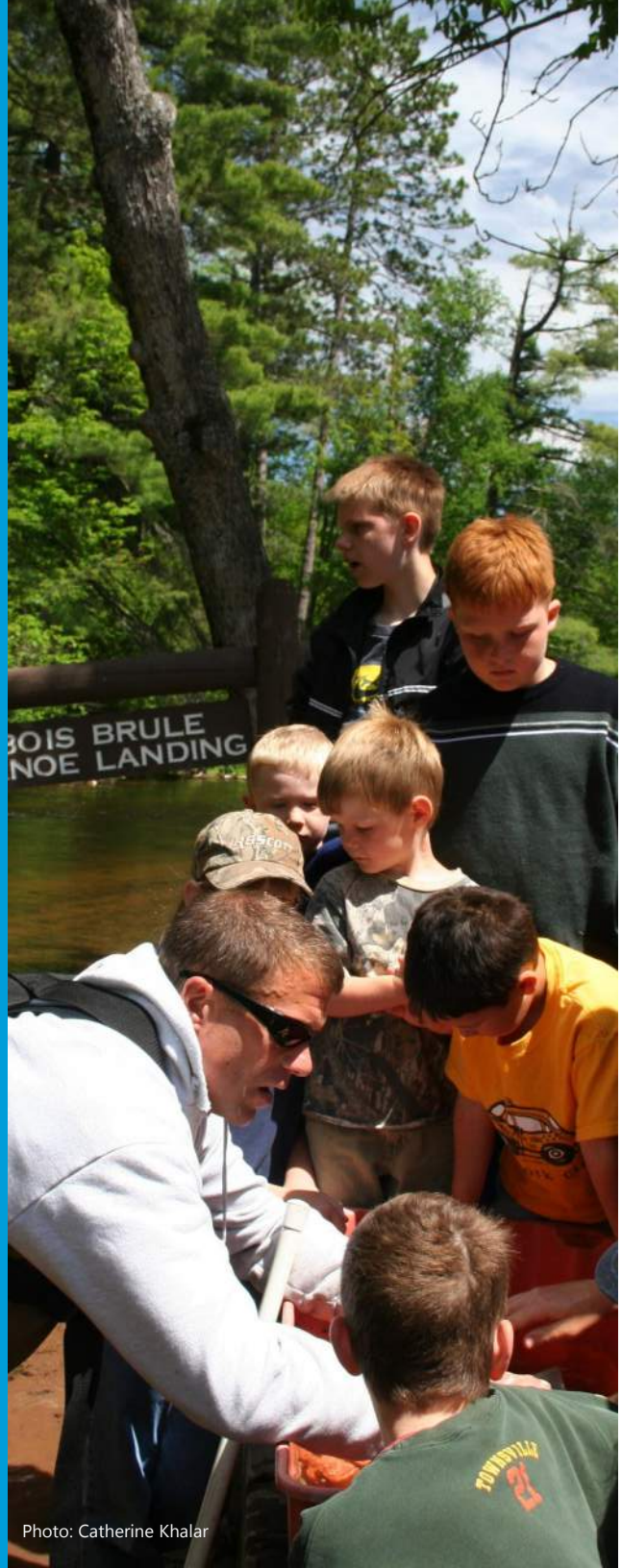


Photo: Catherine Khalar

GAPS AND NEEDS IN OUR EXISTING RECREATION OPPORTUNITIES

In developing the following statewide needs and gaps in our recreation opportunities, the department incorporated information from:

- The SCORP recreation participation survey question regarding needed recreation opportunities in residents' home county (Appendix 6).
- Recreation Opportunities Analysis, which identified recreation needs for each of the eight regions of the state (Appendix 8).
- The SCORP survey of county park directors, which asked about needs at the county level (Appendix 4).
- The SCORP Advisory Team and department staff.

Statewide Recreation Needs:

Places near population centers

Because of the inverse distribution of our population and public lands as well as the limited amount of time people have to participate, there is a very large need to provide more places for people to participate in outdoor recreation near where they live. In particular is the need to provide opportunities for residents to visit places after work or for a couple of hours on a weekend. Places that provide opportunities for hiking, all types of bicycle riding, dog walking, picnicking, and different water-related activities such as fishing, canoeing and kayaking are likely to be heavily used.

Trails

By nearly every measure, the largest need throughout the state is for more trails that enable people to experience natural settings, visit the vibrant downtowns of our cities and villages, commute to work, and access favorite sites. All types of trails are in demand – hiking, bicycling, horseback riding, snowmobiling, ATV/UTV and motorcycle riding, and 4WD vehicle trails.

Water access – shoreline and boat launches

Lakes, streams and rivers are a defining feature of Wisconsin. From the Great Lakes to the Mississippi River, from the thousands of inland lakes and the tens of thousands of miles of flowing water, residents and visitors have been drawn to the water's edge to fish, hunt, launch any manner of watercraft, bird watch and beach walk. Access to water remains a universal need throughout the state.

Camping opportunities

With a large cohort of retirees travelling in RVs combined with an adventurous younger generation, demand for camping has grown in recent years and is likely to remain popular for years to come. Given the divergence in desired experiences – some campers wanting access to hot showers and WiFi while others wanting neither – recreation providers will need to collaborate and coordinate on providing the camping experiences best suited to different public lands.

Statewide Recreation Needs: (cont.)

Dog parks and exercise areas

Taking care of a dog has many benefits, not the least of which is the exercise people get in walking their pets. With the steady rise in dog ownership (75% of people in their thirties own a dog) and an urbanizing population has come an increasing demand for places to walk, play with, socialize and train our canine friends. Many municipal and county dog parks are among their most visited properties.

Target shooting ranges

Many hunters and shooting sports participants live in rural areas or belong to gun clubs and practice their craft on their or the club's property. However, as our population continues to urbanize there is a growing need for places where people can practice gun and archery marksmanship and safety. By their nature, firearm ranges generate considerable sounds and siting new ranges has been a challenge in more populated areas of the state.

Statewide Policy Needs:

Better understand place-based recreation and associated outcomes

The survey conducted for this SCORP on recreation participation generated considerable data on which outdoor activities residents pursue and how often (see Appendix 6). What is not well known is where these "participation days" actually take place – that is, where, when, and why they occur at different places. Questions for which more detailed, property-specific, place-based data are needed include:

- How many people visit the place or property?
- When and what are the patterns of visitation?
- What recreation activities do they pursue?
- How far do visitors travel to reach the property and why did they visit the particular property (as opposed to other options)?
- What would improve their satisfaction?
- What are the economic, health, and social benefits associated with their visit?

With a more complete understanding of property use and the features and attributes that draw people, agencies can make more informed decisions about what types of recreation facilities to build and maintain at different places. And the public can better understand their "return on investment."

Better understand the nature-based recreation preferences of our diversifying population

Data are needed on the recreation preferences of our changing population. For a range of reasons, people of varying ages, residential settings, incomes, and social, racial, ethnic and cultural identities participate in different types of outdoor activities in different places. More information is needed on the types of activities and settings sought by the diversity of Wisconsin residents. In addition, data on how and where to most effectively provide quality experiences for people with varying backgrounds and cultures are needed.

Enhance and stabilize funding for outdoor recreation

Funding for conservation and recreation is derived from many sources and the overall total has fluctuated considerably from year to year. This has complicated efforts to plan, develop, and maintain recreation facilities. Some states have implemented funding sources that provide a more stable source of money for conservation and recreation projects. In addition to more consistent funding, there is a need to broaden the network of people and sources that help pay for the management of public lands in the state.

Expand collaborations among recreation providers

Each recreation provider has unique capabilities and their lands offer different types of experiences, features, facilities, and opportunities. There would be substantial benefit in continuing and expanding collaborations among federal, county and local governments. Focus should be placed on identifying ways to coordinate recreation experiences in each region of the state, minimizing duplicative efforts, and maximizing the benefits of recreation investments.

Together, providing well-planned, safe and enjoyable recreation opportunities that visitor's value will increase support for local communities and businesses, strengthen tourism, respond to evolving demographic and visitor needs, reduce user conflicts and improve natural settings.

Regional Recreation Needs (high needs identified in the **Recreation Opportunities Analysis** – see Appendix 8)

Great Northwest Region

ATV/UTV riding
Bicycling - bicycle touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping - developed and primitive
Canoeing or kayaking
Fishing
Four-wheel vehicle driving
Hiking, walking, trail running, backpacking
Hunting - big game
Motor boating (inc. waterski/tubing, personal watercraft)
Off-highway motorcycle riding
Swimming in lakes and rivers

Western Sands Region

Bicycling - bicycle touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping - developed and primitive
Canoeing or kayaking
Cross country skiing
Dog walking
Fishing
Hiking, walking, trail running, backpacking
Horseback riding
Hunting - big game
Picnicking
Snowshoeing
Swimming in lakes and rivers

Mississippi River Corridor Region

Bicycling - bicycle touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping - developed and primitive
Canoeing or kayaking
Cross country skiing
Dog walking
Fishing
Gather mushrooms, berries, etc.
Hiking, walking, trail running, backpacking
Hunting - big game
Nature photography
Participating in nature-based education programs
Picnicking
Snowshoeing
Visiting a beach, beach walking

Northwoods Region

ATV/UTV riding
Bicycling – bicycle touring/road riding and mountain biking/off-road biking
Camping – developed and primitive
Canoeing or kayaking
Fishing
Four-wheel vehicle driving
Hiking, walking, trail running, backpacking
Hunting – big game
Off-highway motorcycle riding
Participating in nature-based education programs
Snowmobiling

Southern Gateways Region

ATV/UTV riding
Bicycling – bicycle touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping – developed and primitive
Canoeing or kayaking
Fishing
Gather mushrooms, berries, etc.
Hiking, walking, trail running, backpacking
Motor boating (inc. waterski/tubing, personal watercraft)
Picnicking
Snowshoeing
Swimming in lakes and rivers

Upper Lake Michigan Coastal Region

Bicycling – bicycle touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping – developed and primitive
Canoeing or kayaking
Fishing – all types
Hiking, walking, trail running or backpacking
Horseback riding
Motor boating (inc. waterski/tubing, personal watercraft)
Visiting a beach, beach walking

Lake Winnebago Waters Region

Bicycling – bicycling touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping – developed and primitive
Canoeing or kayaking
Cross country skiing
Dog walking
Fishing
Hiking, walking, trail running, backpacking
Hunting – big game
Motor boating (inc. waterski/tubing, personal watercraft)
Nature photography
Participating in nature-based education programs
Picnicking
Swimming in lakes and rivers
Visiting a beach, beach walking

Lower Lake Michigan Coastal Region

Bicycling - bicycle touring/road riding and mountain biking/off-road biking
Bird or wildlife watching
Camping - primitive
Canoeing or kayaking
Cross country skiing
Fishing
Gather mushrooms, berries, etc.
Hiking, walking, trail running, backpacking
Motor boating (inc. waterski/tubing, personal watercraft)
Nature photography
Picnicking
Snowshoeing
Swimming in lakes and rivers

CHAPTER III
LOOKING AHEAD

Wisconsin has beautiful places, a four-season climate, healthy and diverse habitats, and citizens that care deeply about the environment and enthusiastically participate in a wide range of outdoor recreation activities.

Together, these provide the framework for identifying goals for the future.

Photo: Mike Grota

STATE OF WISCONSIN'S GOALS FOR OUTDOOR RECREATION

1. Boost participation in outdoor recreation
2. Grow partnerships
3. Provide high-quality experiences
4. Improve data to enhance visitor experiences and benefits
5. Enhance funding and financial stability

BOOST PARTICIPATION

Increase Wisconsin residents' participation and frequency of participation in outdoor recreation.

Objectives

- Increase the economic, social, and public health benefits resulting from residents' and out-of-state visitors' participation in outdoor recreation in Wisconsin.
- Enhance residents' overall quality of life.

Desired Actions

- Increase promotion and marketing of places that provide high-quality outdoor experiences.
- Continue improving the Public Access Lands maps and online mapping application.
- Continue upgrading and developing recreation facilities to meet demand.
- Evaluate visitor use at different types of public lands and waters.
- Identify and implement strategies to improve access, reduce barriers, and provide desired experiences, particularly for groups that have traditionally had lower participation rates or limited access.
- Expand efforts among federal, state, county, and local governments to coordinate and collaborate on providing recreation opportunities that leverage the unique features and facilities available at their lands and waters.
- Identify and implement programs to encourage more residents to participate in outdoor recreation, particularly as they age.

Photo: Joseph Warren

GOAL 2

GROW PARTNERSHIPS

Continue to strengthen connections and partnerships across the spectrum of agencies, organizations, and businesses with a vested interest in outdoor recreation.

Objectives

- Improve the effectiveness of public and private recreation providers in delivering high-quality experiences for residents and out-of-state visitors.
- Enhance the success of industries that manufacture outdoor recreation equipment and businesses that provide a range of facilities, retail opportunities and travel-related services associated with outdoor recreation.
- Facilitate support and advocacy for policies, programs and funding to enhance outdoor recreation opportunities.
- Integrate and coordinate SCORP, local outdoor recreation plans, and other agencies' and organizations' recreation plans.

Desired Actions

- Strengthen collaborations across public and private owners of land that provide recreation opportunities. Identify ways to provide more and enhanced participation opportunities across the collective portfolio of public and private lands.
- Continue building partnerships between outdoor recreation providers and the health care industry to improve residents' physical and mental health.
- Bring together manufacturers of outdoor gear & equipment with recreation providers to identify ways to market Wisconsin-made products and increase participation.
- Cultivate collaboration between outdoor recreation groups and non-traditional partners.
- Increase outdoor recreation opportunities by coordinating recreation interest groups, health care providers, recreation providers, elected officials and others to collaboratively develop outdoor recreation projects.

PROVIDE HIGH-QUALITY EXPERIENCES

Provide opportunities and settings – across the full range of public and private recreation lands – that, collectively, meet the state's recreational needs.

Objectives

- Encourage participation across all types of recreation.
- Provide recreation opportunities that properties are well-suited to provide.
- Seek to improve compatibility and lessen conflict among and between recreational uses.
- Maintain and enhance the ecological health of recreation properties and enrich people's connection with nature.
- Tailor recreation opportunities provided at places to match local conditions, needs, and requests.

Desired Actions

- Provide collections of recreation experiences that are matched to property conditions, needs and opportunities and that maximize compatibility.
- Identify and proactively address potential obstacles, conflicts and issues related to providing high-quality outdoor recreation experiences.
- Assess satisfaction of participants in a range of outdoor activities.

GOAL 4

IMPROVE DATA TO ENHANCE VISITOR EXPERIENCES AND BENEFITS

On an ongoing basis, gather, analyze and distribute data on recreation participation in Wisconsin and associated economic, health and social benefits.

Objectives

- Improve the public's and elected officials' understanding of the economic, health and social benefits from public and private investments in outdoor recreation.
- Improve property managers' and administrators' understanding of both property-specific patterns of use and potential ways to improve visitor experiences.
- Improve public and private providers' understanding of regional recreational demands.
- Inform the next iteration of the Wisconsin SCORP.
- Better understand the recreation facilities and amenities that draw visitors to different types of properties.

Desired Actions

- Develop a standard protocol to assess visitation and satisfaction that can be applied to a wide variety of outdoor recreation properties.
- Gather data at an initial set of places on numbers of visitors, activities pursued, patterns of visitation, levels of satisfaction, travel-related spending and, as feasible, other information related to property use and management.
- Apply information related to property visitation to the DNR's property planning process for decisions related to individual properties and broader regional needs.
- In support of the development of the next iteration of the Wisconsin SCORP, assess overall outdoor recreation participation in Wisconsin and associated issues through a statewide survey.

ENHANCE FUNDING AND FINANCIAL STABILITY

Broaden and strengthen the funding sources for developing and managing outdoor recreation facilities and lands.

Objectives

- Provide a robust, long-term, and stable funding framework for outdoor recreation facilities and lands in Wisconsin.
- Identify ways for all participants in outdoor recreation to contribute equitably to the development and management of recreation opportunities.

Desired Actions

- Facilitate collaboration among federal, state, tribal, and local governments and other partners to fully utilize available LWCF and state funding to maintain, develop, and enhance outdoor recreation facilities.
- Develop and distribute materials that describe the economic, health and social values of outdoor recreation.
- Continue building and encouraging public property friends groups.
- Survey outdoor recreation participants to identify their support for different options to fund the development and operation of recreation facilities.
- Explore opportunities for public land management agencies to cooperatively develop creative funding solutions and efficiencies to meet recreation needs.

GOAL 5

Photo: City of Madison

LAND & WATER CONSERVATION FUND PRIORITIES IN WISCONSIN OVER THE NEXT FIVE YEARS

As required by federal guidelines, Wisconsin has developed an Open Project Selection Process (OPSP) that provides criteria and standards for grant selection to distribute LWCF funds. The OPSP assures equal opportunity for eligible project applicants to participate in the benefits of the LWCF State Assistance Program.

Wisconsin has developed a project selection process that evaluates and selects projects based on quality and conformance with its priority rating system. Grants cover 50% of eligible project costs. The adjacent information provides guidance for how the State of Wisconsin will utilize LWCF monies to help achieve its recreation goals and objectives.

Wisconsin Open Project Selection Process (OPSP)

As described in Wisconsin Administrative Code (ch. NR 50.06), Wisconsin divides its LWCF allocation between state projects and pass-through grants to local governments, school districts, and Native American tribes. For state projects, LWCF project selection occurs via the DNR capital budget development and property planning process.

Proposed projects are evaluated and prioritized on three criteria: compatibility with the property master plan, compatibility with the six-year facility plan, and available matching funds.

Local projects are selected through a competitive grant process. Applications are accepted once per year. DNR grant staff score applications on a series of criteria that reflect statutory requirements, administrative code, and program policies. Projects are awarded funds in rank order until funds are fully utilized. Program application materials are reviewed and revised annually (Appendix 9). The DNR works closely with selected project sponsors to conduct final reviews and submit proposed grants to NPS for review. Each grant must be approved by the NPS.

LWCF Grants:

Eligible Applicants

- Towns, villages, cities, counties, tribal governments, and school districts are eligible.

Eligible Projects

- Land acquisition or development projects that will provide opportunities for public outdoor recreation.
- Property with frontage on rivers, streams, lakes, estuaries and reservoirs that will provide water-based outdoor recreation.
- Property that provides special recreation opportunities, such as floodplains, wetlands and areas adjacent to scenic highways.
- Natural areas and outstanding scenic areas, where the objective is to preserve the scenic or natural values, including wildlife areas and areas of physical or biological importance. These areas shall be open to the general public for outdoor recreation use to the extent that the natural attributes of the areas will not be seriously impaired or lost.
- Land or development within urban areas for day use picnic areas.
- Land or development of nature-based recreation trails.
- Development of basic outdoor recreation facilities.
- Renovation of existing outdoor recreation facilities which are in danger of being lost for public use.

Funding Priorities

- Meet the needs of urban areas.
- Provide recreation opportunities that serve diverse populations.
- Develop facilities in areas with limited outdoor recreation opportunities.
- Provide multi-use facilities.
- Meet outdoor recreation needs identified by local communities.

See **Appendix 9** for more information on grant guidance

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Since 1965, the following 532 entities have received grants from the
Land and Water Conservation Fund
to help fund recreation projects throughout Wisconsin.

Native American Nations

Menominee Indian Tribe
Oneida Indian Tribe

State agencies

Department of Natural Resources
Department of Transportation
University of Wisconsin

Counties

Adams
Barron
Bayfield
Brown
Burnett
Calumet
Chippewa
Clark
Columbia
Dane
Dodge
Door
Douglas
Dunn
Eau Claire
Florence
Fond du Lac
Forest
Green Lake
Iron
Jackson
Jefferson
Juneau
Kenosha
Kewaunee
La Crosse
Lafayette
Langlade
Lincoln
Manitowoc
Marathon
Marinette
Marquette
Milwaukee
Oconto
Oneida
Outagamie
Ozaukee
Pepin
Pierce
Polk
Portage
Price
Racine
Richland
Rock
Sauk
Sawyer
Shawano
Sheboygan
St. Croix
Taylor
Trempealeau
Vernon
Vilas
Washburn
Washington
Waukesha
Waupaca
Waushara
Winnebago
Wood

Cities

Abbotsford
Adams
Algoma
Alma
Altoona
Antigo
Appleton
Arcadia
Ashland
Baraboo
Barron
Bayfield
Beaver Dam
Beloit
Berlin
Black River Falls
Blair
Bloomer
Boscobel
Brillion
Brodhead
Brookfield
Buffalo
Cashton
Cedarburg
Chilton
Chippewa Falls
Clintonville
Cuba City
Darlington
De Pere
Delafield
Dodgeville
Durand
Eagle River
Eau Claire
Edgerton
Fennimore
Fond du Lac
Fort Atkinson
Galesville
Glenwood City
Grand Chute
Green Bay
Green Lake
Hartford
Hillsboro
Hudson
Hurley
Independence
Janesville
Jefferson
Juneau
Kaukauna
Kenosha
Kewaunee
Kiel
La Crosse
Ladysmith
Lake Geneva
Lake Mills
Lancaster
Lodi
Madison
Manawa
Manitowoc
Marinette
Marion
Marshfield
Mauston
Mayville
Medford
Menasha
Menomonie
Merrill
Middleton
Milwaukee
Mineral Point
Mondovi
Monona
Monroe
Montello
Mosinee
Muskego
Neenah
New Berlin
New Holstein
New London
New Richmond
Oak Creek
Oconomowoc
Oconto
Oconto Falls
Omro
Onalaska
Oshkosh
Osseo
Park Falls
Peshtigo
Pewaukee
Platteville
Plymouth
Port Washington
Portage
Princeton
Racine
Reedsburg
Rhinelander
Rice Lake
Richland Center
River Falls
Seymour
Shawano
Sheboygan
Sheboygan Falls
Shell Lake
Shullsburg
Sparta
Spooner
Stanley
Star Prairie
Stevens Point
Stoughton
Sturgeon Bay
Sun Prairie
Superior
Tomah
Tomahawk
Two Rivers
Verona
Viroqua
Washburn
Watertown
Waukesha
Waupaca
Waupun
Wausau
Wautoma
Wauwatosa
West Bend
Westby
Weyauwega
Whitehall
Whitewater
Wisconsin Dells
Wisconsin Rapids

Villages

Allouez
Alma Center
Aniwa
Arena
Argyle
Arpin
Ashwaubenon
Athens
Auburndale
Baldwin
Balsam Lake
Bangor
Barneveld
Bay City
Bear Creek
Belmont
Big Bend
Birnamwood
Black Creek
Black Earth
Bloomington
Blue Mounds
Bonduel
Bowler
Boyceville
Brandon
Brownsville
Butler
Cambria
Camp Douglas
Campbellsport
Casco
Cassville
Cazenovia
Cecil
Cedar Grove
Clayton
Clear Lake
Cleveland
Cobb-Highland
Cochrane
Coleman
Colfax
Coloma
Combined Locks
Coon Valley
Cross Plains
Dane
Darien
De Soto
Deerfield
Deforest
Dickeyville
Dorchester
Dresser
East Troy
Edgar
Eleva
Elk Mound
Ellsworth
Elmwood
Endeavor
Ephraim
Ettrick
Fall Creek
Fall River
Forestville
Fox Lake
Francis Creek
Fredonia
Friendship
Friesland
Gays Mills
Germantown
Gilman
Glenbeulah
Grafton
Grantsburg
Greendale
Gresham
Hammond
Hancock
Hatley
Highland
Hollandale
Hortonville
Howard
Howards Grove
Hustler
Iola
Iron Ridge
Junction City
Kellnersville
Kendall
Kewaskum
Kimberly
La Farge
Lake Delton
Little Chute
Lomira
Lone Rock
Luxemburg
Lyndon Station
Maribel
Mcfarland
Melrose
Mishicot
Montfort
Monticello
Mount Horeb
Mukwonago
Muscoda
Nashotah
Nelsonville
New Glarus
Niagara
North Hudson
Norwalk
Oakfield
Oregon
Orfordville
Pardeeville
Pepin
Plainfield
Plover
Poplar
Port Edwards
Prentice
Randolph
Redgranite
Rib Lake
Roberts
Rosendale
Rothschild
Rudolph
Sauk City
Saukville
Scandinavia
Sharon
Sherwood
Shorewood
Sister Bay
Slinger
Soldiers Grove
Somerset
Spring Green
Spring Valley
St. Cloud
St. Nazianz
Stockbridge
Stockholm
Stoddard
Strum
Suring
Taylor
Theresa
Tigerton
Trempealeau
Turtle Lake
Twin Lakes
Viola
Warrens
Waunakee
West Salem
Weston
Westport
Weyerhauser
White Lake
Whitelaw
Whiting
Wilton
Winneconne
Wittenberg
Woodville

Towns

Allouez
Angelica
Armstrong Creek
Bass Lake
Belle Plaine
Bellevue
Bellevue
Bone Lake
Brussels
Caledonia
Caledonia
Clay Banks
Clayton
Clinton
Cottage Grove
Dunn
Eagle Point
Eau Pleine
Fitchburg
Florence
Genesee
Gilmanton
Gordon
Grant
Green Lake
Greenfield
Greenville
Harrison
Holland
Iron River
Ixonia
Jacobs
Knight
Kronenwetter
Lafayette
Lebanon
Liberty Grove
Liberty Grove
Lima
Menasha
Merton
Middleton
Minocqua
Mt. Pleasant
Norway
Oakdale
Onalaska
Oregon
Oulu
Pewaukee
Pleasant Spring
Richmond
Shelby
Sheldon
St. Lawrence
Suamico
Sullivan
Troy
Wabeno
Washington Island
Waumandee
Wescott
Weston

Schools and park commissions

Algoma School Dist.
Arbor Vitae Woodruff Park Comm.
Arkansaw Joint School Dist. No 1
Bayfield School Dist.
Beaver Dam Unified School Dist.
Black River Falls School Dist.
Bloomer School Dist.
Bowler School Dist.
Butternut School Dist.
Cassville School Dist.
Chilton School Dist.
Chippewa Falls School Dist.
Cornell School Dist.
Cuba City School Dist.
D.C. Everest School Dist.
DeForest Area Schools
Dodgeville School Dist.
Durand School Dist.
East Troy School Dist.
Elk Mound Area School Dist.
Elkhart Lake School Dist.
Flambeau School Dist.
Florence School Dist.
Germantown Junction School Dist.
Glidden School Dist.
Greendale School Dist.
Hazel Green School Dist.
Holmen Public Schools
Hudson School Dist.
La Crosse School Dist.
Ladysmith-Hawkins School Dist.
Lake Holcombe School Dist.
Lake Tomahawk Parks Committee
Lodi School Dist.
Luck School Dist.
Markesan Joint School Dist.
Marshall School Dist.
McFarland School Dist.
Menomonie School Dist.
Monona Grove School Dist.
Monroe School Dist.
Montello School Dist.
Mt. Horeb Joint School Dist. No 6
Muskego-Norway School Dist.
N. Fond Du Lac School Dist.
Nekoosa School Dist.
New Auburn School Dist.
New Richmond School Dist.
Northwood School Dist.
Onalaska School Dist.
Ondossagon School Dist.
Oregon School Dist.
Pepin School Dist.
Phillips School Dist.
Plum City School Dist.
Portage School Dist.
Potosi-Tennyson Park Commission
Prentice School Dist.
Princeton School Dist.
Pulaski School Dist.
Rib Lake School Dist.
Ripon Public School District
Seneca School Dist.
Seymour School Dist.
Shiocton School Dist.
South Milwaukee School Dist.
Southwestern WI Community Sch Dist.
Sparta School Dist.
St. Croix Falls School Dist.
Stanley-Boyd Area Schools
Sun Prairie School Dist.
Thorp School Dist.
Turtle Lake School Dist.
Unity School Dist.
Verona Area School Dist.
Wabeno Joint School Dist. No 1
Washburn School District
Whitnall School Dist.
Wild Rose School Dist.
Wilmot Union High School Dist.
Wisconsin Dells School Dist.
Wrightstown Comm. School Dist.

2019-2023

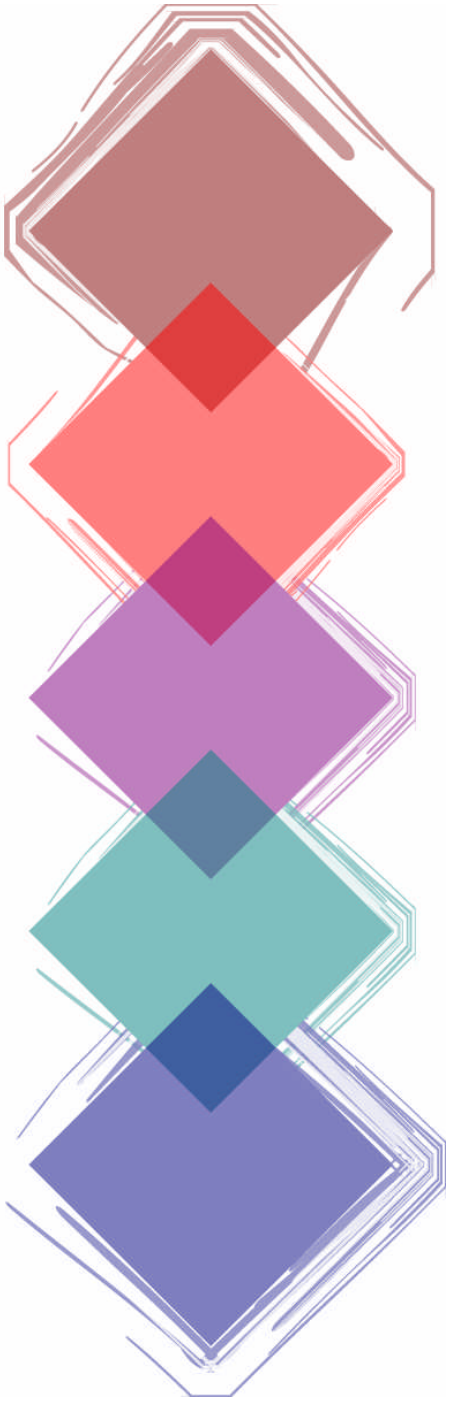
Wisconsin

Statewide Comprehensive Outdoor Recreation Plan

DNR publication number: LF 114.2 (2019)

Photo: Ben Pierson

APPENDIX 4.8.2.3-1 **Town of White River Comprehensive Plan**



Town of White River

Comprehensive Plan: 2006 to 2025

Background Element

Adopted by Town Board On: November 28, 2006

Acknowledgements

Town of White River

Town Board

Lyle Anderson, Chair
Doyle Blakeman, Supervisor
George Mika, Supervisor

Comprehensive Plan Committee

Matt Granger
Jerry Heino
Mary Kieber
Donna Kurilla
George Mika
Steve Yoshikane

Other Town Officials

Barbara Richardson, Clerk
Kathie Lusua, Treasurer

Funding

This plan was prepared with funding from the Town and a multi-jurisdictional planning grant the Town received from the Wisconsin Land Council along with the following jurisdictions: Towns of Ashland, Chippewa, Gingles, Gordon, Jacobs, La Pointe, Marengo, Morse, Peeksville, Sanborn, Shanagolden; City of Mellen; and Village of Butternut.

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Wisconsin Coastal Management Program

NOAA

Vierbicher Associates, Inc.; Madison, Wisconsin

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Foreword

Chapter Contents

In 2002, all of the jurisdictions in Ashland County worked in concert to submit a grant to the Wisconsin Land Council to help fund the preparation of comprehensive plans for each consistent with the new planning legislation adopted in 1999. The application was funded in 2003. The County hired Vierbicher Associates to assist with the county-wide plan, and plans for 15 of the 16 individual jurisdictions.

What is a Comprehensive Plan?

A comprehensive plan is a document that describes a long-term vision that a community wants to achieve. It is a broad brush look at the entire community in terms of where it is now and where it would like to be in the coming years. It looks at the many parts of the community, how the community functions, and its role in the region.

The future vision is depicted with maps showing future conditions and with goals, objectives, and policies. Tasks and activities are also identified that need to be achieved to help implement the plan. By law, this comprehensive plan must look out at least 20 years.

"A comprehensive plan is intended to provide a rational basis for making local land use decisions and to serve as a blueprint for community-wide effort to achieve its vision."

Having described what a comprehensive plan is, it's also appropriate to describe what a comprehensive plan is not. Because a comprehensive plan is strategic in scope, it does not focus on physical design elements. It does not design a park for example, although the plan may identify a need for the park and prescribe some parameters for creating one. Neither is a comprehensive plan an engineering document intended to fix safety problems at a particular road intersection, for example. The fine details of design and engineering and many others will flow from the basic direction described in the plan.

How Will This Plan Be Used?

Prior to the passage of the comprehensive planning legislation in 1999, most comprehensive plans in Wisconsin were not used as intended. In practice, many communities used their plans sporadically and inconsistently. Other plans were soon forgotten following adoption.

After January 1, 2010, land use decisions including zoning, subdivision regulations, and official mapping will have to be consistent with this plan (Exhibit 1-1). This means that land use regulations of these types must be revised or prepared so as to implement the vision articulated in this plan. Not only do the regulations have to be consistent with the plan, all individual decisions affecting land use must be consistent with the plan.

Each rezoning after 2010, by law, has to be consistent with the community's comprehensive plan, including the future land use map.

Organization of Plan Documents

The comprehensive plan for Ashland County, as well as each individual jurisdiction, consists of two documents. The first document is the background report. It contains information that describes what is and what has been. It is organized into the following chapters:

- Housing
- Transportation
- Utilities and Community Facilities
- Agricultural, Natural, and Cultural Resources
- Economic Development
- Intergovernmental Cooperation
- Land Use
- Demographics

The second document is referred to as the policy document. It focuses on future conditions including

- Community Vision
- Goals, Objectives, and Policies
- Issues and Opportunities
- Plan Based Forecasts
- Future Land Use
- Future Transportation
- Future Utilities & Community Facilities

Collectively, the background document and policy document constitutes the comprehensive plan for the community.

Participatory Photography

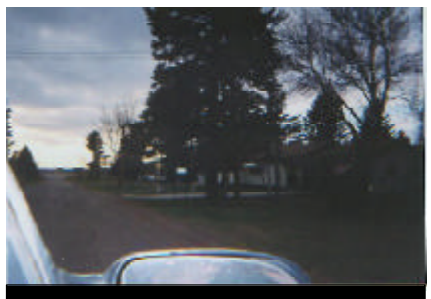
During the initial stages of the Comprehensive Planning process, the Town participated in a photography exercise that documented existing conditions. Participants were instructed to take pictures of things in their community that they either liked or did not like. These pictures were then used as a starting point to identify what the Town should look like in the future. Through the process of developing each element, these pictures were referred to and helped to guide decision-making. The photographs that were taken are included on the following page.

Town of White River Like/Dislike Photos

Family farms, rolling hills, fields and woodlots - represents rural character

Local apple orchard being established - represents rural character

One of the townships rivers for recreation and scenery - rural character



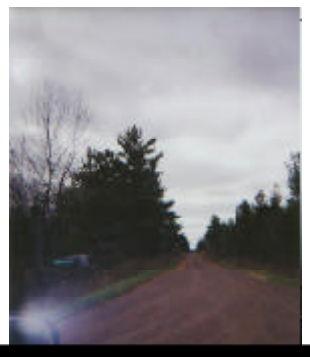
Village of Marengo - represents rural character

Ashland County Fairgrounds - represents rural character

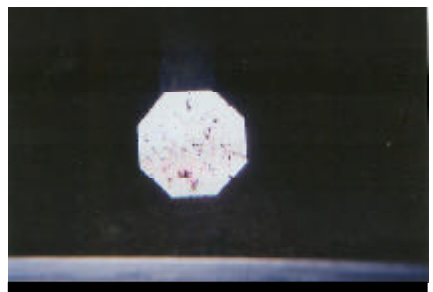
Farming community which we'd like to keep - rural character

Small businesses in the community using resources to provide jobs

Old historic building - represents rural character



95% of White River town roads are gravel



Vandalism to our stop signs

Its a stinky mess

We want to keep farming in this community

It brings and keeps opportunities in our township

Shows paper company land which provides raw forest products, jobs, and public hunting

Rural grade school - better for children

Entrepreneurs can have their businesses locally

White River Dam creates a flowage area for recreational activities

Local fire department for fast and better service

Recreational trails are available in the Township

White River dam creates electricity, plus a reservoir for recreation

Introduction

Housing is a very important issue for the State of Wisconsin and the people who live here. Housing costs are the single largest expenditure for most Wisconsin residents. According to the U.S. Department of Labor (1997), Midwest households, on average, spend 31 percent of their incomes on housing, compared with 19 percent for transportation, and 14 percent for food.

Over two-thirds of Wisconsin households are homeowners and it is likely that their home is their most valuable asset and largest investment. Appreciation in home value continues to be a major source of wealth in the United States, and nearly 60 percent of the net worth of the typical homeowner is equity in the home.

> "The term *housing* refers not only to owner-occupied housing, but also rental, cooperative, and condominium ownership arrangements. The term also refers not only to single family detached units, but also to multifamily units, duplexes, townhouses, manufactured homes, and accessory apartments."

While many Wisconsinites enjoy good housing situations, others are struggling in varying degrees. According to Wisconsin's 2000 *Consolidated Plan: For the State's Housing and Community Development Needs*, households in the low-income range have great difficulty finding adequate housing within their means and that can accommodate their needs, despite the state's stable economic health. Families that can not afford housing frequently become homeless. The federal government has cut back drastically on housing assistance, leaving state and local communities to grapple with these social issues.

The social benefits of housing are important, but difficult to quantify. In addition to being a place to sleep, relax, raise a family, store possessions, receive mail and telephone calls, decent shelter is important for one's self-respect. Furthermore, as people develop responsibility and pride in their homes, it is likely that they will participate more frequently in community activities, attend church, and vote.

In addition to its importance for social reasons, housing plays a critical role in the state and local economies. It is likely that housing is the largest land use in the community and the community's largest capital asset. According to a study prepared by the Wisconsin Realtors Foundation in 1992, the value of the state's housing stock was worth nearly $1 trillion dollars. In 1990, the construction industry employed 83,000 workers (not including lawyers, real estate, financial, and insurance workers), making it the state's second leading industry in employment. The study estimated that housing contributed about 12 percent to the state's gross product. Housing is also a major source of revenue for local communities in the form of property taxes.

The number of houses and apartments that families with low-wage incomes can afford to rent is shrinking, burdening more families with high housing costs and threatening many with homelessness, according to a Department of Housing and Urban Development report entitled *The Widening Gap: New Findings on Housing Affordability in America*.

> "Housing affordability is an issue that affects the entire state. However, some areas are especially hard-pressed to offer affordable housing."

The following findings are based primarily on data from the U.S. Census Bureau's latest American Housing Survey:

- Despite a period of robust economic expansion, the housing stock affordable to struggling families continues to shrink. The number of such affordable rental units decreased by 372,000 units - a 5 percent drop - from 1991 to 1997. Struggling families are defined as those with incomes at or below 30 percent of the area median.

- Rents are rising at twice the rate of general inflation. According to U.S. Bureau of Labor Statistics data, in 1997 rents increased 3.1 percent while the overall Consumer Price Index (CPI) increased by only 1.6 percent. In 1998, rents increased 3.4 percent while the overall CPI increased 1.7 percent.

- As the affordable housing stock shrinks, the number of renters at or below 30 percent of median income continues to grow. Between 1995 and 1997, the number of struggling renter households increased by 3 percent, from 8.61 million to 8.87 million - one of every four renter households in America.

The gap between the number of struggling Americans and the number of rental units affordable to them is large and growing. In 1997 for every 100 households at or below 30 percent of median income, there were only 36 units both affordable and available for rent.

Housing Overview

Wisconsin's Smart Growth legislation outlines 14 local, comprehensive planning goals, one of which is to provide an adequate supply of housing for individuals of all income levels throughout each community. Related to this goal, is that of encouraging neighborhood design that supports a range of transportation options. The location of housing directly impacts adjacent land use patterns and individual choices with regard to transportation.

The term housing refers not only to owner-occupied housing, but also rental, cooperative, and condominium ownership arrangements. The term also refers not only to single family detached units but also multi-family units, duplexes, townhouses, manufactured homes, and

accessory apartments,[1] which offer independent apartment living as an accessory to single-family homes.

Many forces influence the type and distribution of housing units and tenure patterns within a community. A number of relationships must be examined in order to understand the housing framework in White River and plan for the type of housing that will be in demand over the next 20-year period.

Current trends have the potential to perpetuate land use patterns as follows:

- Continued conversion of agricultural land to residential development.
- Continued dispersed development.
- Single large lot development and large lot conventional subdivisions.
- Continued loss of open space.
- Intrusion on environmental areas.
- Increasing conflict between agriculture and rural, non-farm residences.
- Unsystematic commercial development.
- Little intervention in the market.
- Increases potential problems with septic systems in areas with a concentration of subdivisions.
- Increases traffic problems associated with sprawl.

"An important part of assessing the local housing market is to understand current conditions as well as factors that influence residential patterns."

An important part of assessing the local housing market is to understand current conditions as well as factors that influence residential patterns. By reviewing existing conditions and the factors that influence these conditions and assessing what things are right with housing along with housing concerns, we can develop a preferred picture of the local housing market in 20 years. Generally, the housing stock should reflect the demographics and economic structure of the community.

The median housing value in the Town is $65,000 (2000 Census). Currently in other towns there are homes on the market for $39,900 in Agenda Town to $269,000 in the Town of La Pointe. Asking prices for land in Ashland County are currently ranging from $13,900 for 40 acres in the Town of Peeksville, to $89,500 for 80 acres in White River, to $249,000 for 3.13 acres in the Town of La Pointe. These prices will vary depending on the size and condition of the homes as well as on the location of the lot.

Number of Housing Units

The 2000 Census indicates that there are 312 housing units in the Town of White River. This figure compares to 298 in 1990, which reflects a loss of 14 units or 4% percent over the last 10-year period.

"The 2000 Census indicates that there are 312 housing units in the Town of White River."

[1] Housing Wisconsin: A Guide to Preparing the Housing Element of a Local Comprehensive Plan. March 2000. UW-Extension.

The following table illustrates housing trends in the Ashland County region over the period 1990 to 2000. The figures indicate that residential growth in northern Wisconsin is generally lower than that of the state levels. The Town of White River is adding housing units at a similar rate as surrounding towns

Table 1. Number of Housing Units – White River Town Area			
	1990	2000	Percent Change
State of Wisconsin	2,055,774	2,321,144	12.9%
Ashland County	8,371	8,883	6.1%
Agenda Town	309	328	6.1%
Ashland Town	245	277	13%
Butternut Village	200	220	10%
Chippewa Town	*287*	*280*	*-2.4%*
Gingles Town	232	273	17.7%
Gordon Town	359	397	10.6%
Jacobs Town	488	507	3.9%
La Pointe Town	586	692	18.1%
Marengo Town	154	191	24%
Mellen City	*445*	*436*	*-2%*
Morse Town	304	380	25%
Peeksville Town	115	125	8.7%
Sanborn Town	432	531	22.9%
Shanagolden Town	*184*	*157*	*-14.7%*
White River Town	***298***	***312***	***4.7%***

Source: US Census Bureau, Census 2000 Data Set SF-1

Housing Types

The most common type of dwelling unit in White River, and in the rest of the county, is the 1-unit detached, or single-family dwelling (Table 2).

Table 2. Units in Housing Structure – Town of White River		
Housing Type	Number	Percent
1-unit detached	236	78.1%
1-unit attached	1	0.3%
2 units	4	1.3%
3 or 4 units	4	1.3%
5 to 9 units	0	0.0%
10 to 19 units	0	0.0%
20 or more units	0	0.0%
Mobile Home	57	18.9%
Boat, RV, Van, Etc.	0	0.0%
TOTAL	302	100%

Source: US Census Bureau, Census 2000, Data Set SF-3

The homeowner vacancy rate in White River is a little more than one percent. The rental vacancy rate is 3.1 percent. Some level of vacancy naturally occurs in the housing market. In the Town of White River seasonal housing units represent 4.2 percent (13), of all vacancies. According to the Federal Department of Housing and Urban Development (HUD), a generally accepted vacancy standard for owner-occupied structures is 3 percent and 5 percent for renter-occupied dwellings. At these levels, it is assumed that the local housing market is functioning efficiently. However, these standards do not necessarily relate to whether or not the mix of housing types is meeting demand.

Tenure

Table 4 shows that about 80 percent of the Town's housing stock are owner-occupied while renters occupy approximately 10 percent of households. Vacant units represent almost 10 percent of the housing units in the town. A number of factors influence tenure patterns including age and household income.

Table 3. Town of White River Housing Occupancy

Tenure	1990	% (1990)	2000	% (2000)
Owner Occupied	215	72.1%	250	80.1%
Renter Occupied	41	13.8%	31	9.9%
Vacant Units	42	14.1%	31	9.9%
For seasonal, recreational, or occasional use	*15*		*13*	
Total Units	**298**		**312**	

U.S. Census Bureau, Census 2000 Data Set SF-1, Census 1990 Data Set STF-1

Housing Values and Rental Rates

Change in median home price is an indicator of housing demand as is the distribution of housing values relative to income levels. The latter helps us understand whether or not housing prices match people's ability to pay. As the data in Table 4 illustrates, housing values as well as contract rent levels have rapidly increased over the last decade. Rental rates seem to be rising fairly quickly in most sections of Ashland County, although in a few cases they have stayed stable, or have even dropped a small amount. Nationally, studies show that housing cost is rising faster than income.

Table 4. Median Housing Values (MHV) and Median Contract Rent Levels				
	1990 MHV	2000 MHV	1990 Median Contract Rent	2000 Median Contract Rent
State of Wisconsin	$62,500	$112,200	$331	$473
Ashland County	$37,300	$60,400	$217	$317
Agenda Town	$48,900	$78,500	$150	$250
Ashland Town	$37,500	$57,000	$200	$250
Butternut Village	$31,300	$48,900	$170	$263
Chippewa Town	$43,200	$76,700	$138	$375
Gingles Town	$45,000	$78,100	$213	$394
Gordon Town	$38,300	$53,800	$169	$200
Jacobs Town	$29,000	$39,200	$167	$216
La Pointe Town	$63,800	$165,000	$275	$275
Marengo Town	$46,300	$63,000	$225	$113
Mellen City	$24,900	$39,600	$163	$219
Morse Town	$43,100	$75,800	$150	$225
Peeksville Town	$40,000	$80,000	$325	$425
Sanborn Town	$35,000	$49,300	$99	$164
Shanagolden Town	$36,700	$70,000	$238	$275
White River Town	***$43,000***	***$65,000***	***$175***	***$310***

Source: Source: U.S. Census Bureau: 1990 Census Median Contract Rent (STF 1), 1990 Median Value of Specified Owner Occupied Housing Units (STF 1), 2000 Census Median Contract Rent (SF 3), 2000 Census Median Value of Specified Owner Occupied Units (SF 3).

Income

According to 2000 Census figures, the median household income of White River Town residents is $38,250. The median housing value is $65,000. The distribution of income in the Town of White River is provided in Table 7.

Assuming that the income needed to afford Fair Market Rent (FMR) in the Town of White River is comparable to Ashland County the following tables can be referred to when determining the FMR for the Town (Table 5). According to the tables, rents are at or above the fair market rate, about 11 percent do not have the income needed to support a one-bedroom home; and approximately 29 percent are unable to afford a three-bedroom home. Affordability concerns are even more pronounced for persons with fixed incomes.

Table 5. Income Needed to Afford FMR*				
Location	One Bedroom	Two Bedrooms	Three Bedrooms	Four Bedrooms
Ashland Co.	$14,240	$17,480	$22,240	$25,120

Source: National Low-Income Housing Coalition (NLIHC)
**Data is not available at the place level.*

Housing that costs no more than 30 percent of a renter's income is generally considered to be affordable. The monthly fair market rent price that has been set by the National Low-Income Housing Coalition can be seen below in Table 6.

Table 6. 2004 Fair Market Rent by Number of Bedrooms					
Location	Efficiency	One Bedroom	Two Bedroom	Three Bedroom	Four Bedroom
Ashland County	$320	$356	$437	$556	$628
Wisconsin	$387	$481	$605	$783	$883

Source: National Low-Income Housing Coalition

Extending the general standard of paying no more than 30 percent of household income as it relates to home ownership, we can develop roughly comparable scenario about household ability to make a monthly mortgage payment (see Table 7 for household income breakdown). However, the scenario will differ based on the down payment brought to the transaction and private mortgage insurance (PMI) that may be required as well as other items that become part of an escrow account. Following is a sample scenario to provide an understanding of ability to pay.

Assumptions:
Household income = $38,250 (median income in White River)
Median home value = $65,000 (median home value in White River)

Monthly household payment including mortgage and escrowed PMI, taxes and homeowners insurance = $494.71

$494.71 x 12 (months) = $5,936.52 (annual mortgage, PMI, taxes and insurance)

Household income ($38,250)/$5,936.52 (annual payment) = 15.5 percent of total household income.

Table 7. Household Income	Number	Percent
Less than $10,000	14	5.1%
$10,000 to $14,999	17	6.2%
$15,000 to $24,999	50	18.3%
$25,000 to $34,999	41	15%
$35,000 to $49,999	74	27.1%
$50,000 to $74,999	42	15.4%
$75,000 to $99,999	13	4.8%
$100,000 to $149,999	12	4.4%
$150,000 to $199,999	2	0.7%
$200,000 or more	8	2.9%
TOTAL HOUSEHOLDS	**273**	**100%**
MEDIAN HOUSEHOLD INCOME	**$38,250**	

U.S. Census Bureau, Census 2000 Data Set SF-3

Housing Stock

Another aspect of housing is quality. The appearance of the housing structures within the community gives a powerful first impression to a visitor and contributes to the quality of life experienced by residents (Tables 8 & 9).

Table 8. Housing Characteristics – Town of White River	
Total Housing Units	281
Average family size	3.84
Average household size	3.17
Owner Occupied	250
Renter Occupied	31
Seasonal	13
Vacant	31
Median Housing Value	$65,000
Median Contract Rent	$310

Source: U.S. Census Bureau, Census 2000 Data Set SF-1

Table 9. Age of Housing Stock	
Built 1999 to March 2000	2 / 0.7%
1995 –1998	33 / 10.9%
1990 – 1994	26 / 8.6%
1980 – 1989	41 / 13.6%
1970 – 1979	69 / 22.8%
1960 – 1969	27 / 8.9%
1950 – 1959	16 / 5.3%
1940 – 1949	24 / 7.9%
Built in 1939 or earlier	64 / 21.2%
Median Year Built	1973

Source US Census Bureau. Census 2000 Data Set SF-3

Housing for Special Populations
In addition to typical housing units, the Town should also consider the housing needs of special populations, including the elderly and those needing supportive services. Highlighted below are important statistics regarding the aging of Wisconsin's population and the need for long-term care (Exhibit 1 and Table 10).

The Types of Special Housing Table lists the various types of special housing and provides a short description of each. The following sections talk about these housing types in more detail and the extent to which they are available in and around the Town.

Exhibit 1. A Snapshot of Wisconsin's Aging Population
♦ In 2020, 1 in 6 people will be age 65 or older
♦ Between 2000 and 2010, the population aged 85 and older is expected to grow an additional 29 percent.
♦ 80 percent of the adult long-term care population are over 65 years of age.
♦ About 11 percent of state residents 65 and older have long-term support needs that would allow them to receive care in a nursing home.
As one ages, the need for long-term care becomes more important: ♦ 3 percent of those 65 to 74 years old need comprehensive long-term care ♦ 11 percent of those 75 to 84 years old need comprehensive long-term care ♦ 39 percent of those 85 and older are estimated to be in need of nursing home level of care

Source: Wisconsin Department of Health & Family Services

Table 10. Types of Special Housing in Wisconsin			
	General Description	Wisconsin	
		Facilities	"Beds"
Nursing home	A nursing home is a facility providing 24-hour services, including room and board, to 3 or more unrelated persons, who require more than 7 hours a week of nursing care.	411	44,319
Facility for the Developmentally Disabled (FDD)	A FDD is facility licensed to treat residents who are developmentally disabled, primarily due to mental retardation or cerebra palsy.	37	2,017
Adult Family Home (AFH)	An AFH is a place where up to four adults who are not related to the operator reside and receive care, treatment or services that are above the level of room and board and that may include up to seven hours per week of nursing care per resident. Counties certify AFHs with one and two beds and the state certifies those with three to four beds.	693	2,684
Community Based Residential Facility (CBRF)	A CBRF is a place where five or more adults, who are not related to the operator or administrator, and who receive care above intermediate level nursing care, reside and receive care, treatment of services that are above the level of room and board, but includes no more than three hours of nursing care per week per resident.	1,361	21,468
Residential Care Apartment Complex (RCAC)	A RCAC is a place where five or more adults reside in individual apartment units and where not more 28 hours per week of supportive services, personal assistance, and nursing services.	129	5,369

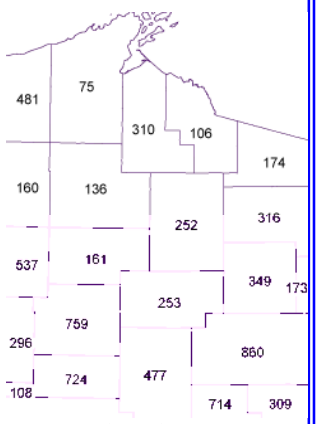
Source: Wisconsin Department of Health and Family Services

Nursing Homes

Within Wisconsin there are more than 400 nursing homes serving more than 44,000 state residents. Statewide, the vast majority of nursing home residents (79 percent in 2001) are admitted directly from an acute care hospital following an illness or injury. Although nursing home occupancy rates are traditionally quite high, they vary widely from a high of 100 percent to a low of 67 percent.

In Ashland County, there are 3 nursing homes with a total capacity of 310 beds. Two are located in the City of Ashland and the other is located in Mellen (Table 11). Exhibit 2 shows the nursing home capacity in the region.

Exhibit 2. Nursing Home Beds in (Northwest) Wisconsin: 2001



Source: Wisconsin Department of Health and Family Services

Table 11. Nursing Homes in Ashland County: 2001

		Bed Capacity	Residents
Ashland Health/ Rehabilitation Center	1319 Beaser Ave, Ashland	120	83
Court Manor Health/Rehabilitation	911 3rd St. West, Ashland	150	150
Mellen Manor	450 Lake Drive, Mellen	40	40
	Total	310	219

Source: Department of Health and Family Services Accessed from http://www.dhfs.state.wi.us/provider/nh_FDDsDir01.htm July 2003
Note: Data is as of December 31, 2001

Assisted Living Facilities

Assisted living facilities are residential settings for people who need some level of health care, but not 24-hour access to nursing services. These include adult family homes (AFHs), community based residential facilities (CBRFs), and residential care apartment complexes (RCACs).

- ***Adult Family Homes (AFHs)*** During 2002 there were 693 AFHs throughout the state with a total capacity for over 2,600 individuals. While AFHs serve a wide range of clients, the three largest groups are those with disabilities, those with mental illness, and those with physical disabilities.
- ***Community Based Residential Facilities (CBRFs)*** In terms of those served, CBRFs serves the second largest number of state residents requiring special housing options. More than 87 percent of all CBRFs are relatively small (less than 20 beds). The elderly make up the largest group served by CBRFs followed by those with Alzheimer's/irreversible dementia.

Relevant Plans, Policies, Studies and Programs

The balance of the Housing Element focuses on county, state and federal policies, plans and studies relating to the housing development environment.

Housing: A State Perspective
The State of Wisconsin has developed the Consolidated Plan for the State's Housing and Community Development Needs to maintain eligibility for funding from the federal Department of Housing and Urban Development (HUD). The current Consolidated Plan became effective in April 2000 and is valid through March 2005.

The Consolidated Plan serves as a guide for implementing the State's strategy for the delivery of housing and community and economic development resources.
The Plan suggests that, in general, the supply of housing available to the state's low-income population does not meet the demand for such housing. Very low-income older adult households continue to be impacted by severe housing cost burden, as do persons with disabilities.

The state receives four types of funds to support the development of housing affordable to persons with low and moderate incomes as follows:

- Community Development Block Grant (CDBG);
- The HOME Program;
- Emergency Shelter Grants (ESG); and
- Housing Opportunities for Persons With Aids (HOPWA)

The state's priority housing needs are outlined through the following six goals.

- Promote the affordability of housing to all consumers, especially those with severe cost burdens to increase and maintain affordable housing.
- Encourage the production of new units, including the development of large family units and housing for older adults accompanying support services.
- Preserve and increase the availability of safe, sanitary housing for low and moderate income renters to include lead based paint hazard reduction and enhanced training and resources for these activities.
- Provide housing assistance for special needs groups to include homeless prevention activities, expansion of transitional housing programs and increased emergency shelter operating funds.
- Continue policies and activities that promote fairness and accessibility for all housing consumers, including enforcement and compliance with fair housing laws.
- Continue efforts to assist with housing disaster relief.

Housing: A National Perspective
Each year, Harvard University's Joint Center for Housing Studies produces a report titled The State of the Nation's Housing. The 2002 report states that despite upward trends in price, lower-income households have made the transition to homeownership in recent years. Spurred by the strong economy, favorable interest rates and innovations in mortgage finance, the share of home purchase loans going to lower-income households and/or households living in lower-income communities increased steadily over the last 10 years.

The emergence of a dual mortgage delivery system in which new types of lending organizations provide distinctly different mortgage products to lower-income markets that those commonly offered in higher-income markets. Government-backed loans and lending by subprime and manufactured housing specialists account for nearly two-thirds of recent increases in low-income ownership rates. Conventional lending – that is, mortgages with the lowest rates and most favorable terms – accounted for 37 percent of the growth in lower-income lending, compared with 81 percent of loans to higher-income borrowers in higher-income neighborhoods. Innovative financing has enabled many households to become homeowners but, at the same time, these loans are at higher cost.

Section 42
Also contributing to the development of rental housing is the **Affordable Housing Tax Credit** or Section 42 (section 42 of the IRS code as part of the Tax Reform Act of 1986). The Affordable Housing Tax Credit is a dollar-for-dollar reduction of federal income taxes owed by owners/investors of affordable rental housing for tenants with incomes at specified levels. To receive the tax credit, an owner/investor must maintain a minimum percentage of rent-restricted units for tenants with limited incomes for at least 15 years.

Introduction

> "Understanding the link between transportation and land use is critical to the development of policies and strategies of an effective Comprehensive Plan."

Although the nine required Comprehensive Plan Elements are all very much inter-related, understanding the link between transportation and land use is critical to the development of policies and strategies of an effective Comprehensive Plan. Land use decisions inevitably influence transportation needs, and transportation systems clearly influence future land use patterns. This relationship is particularly evident in the development patterns of the last several decades - with the shift in the majority of our nation's population and new business growth from urban to suburban areas being both *fueled by* the construction of new highways and arterial streets, and *fueling* the construction of more highways, increased capacity, and alternative transportation systems to meet increased demands. The goals, objectives, and polices that come out of the Transportation Element should focus on transportation alternatives that will most efficiently serve existing and planned land uses and community needs and desires.

Town residents depend on the transportation facilities in their community and the region to connect them to other areas of the state and to the rest of the nation and the world. The type, quality, and location of transportation facilities are an important component in residents quality of life and in developing and maintaining a sustainable economy.

There is a significant relationship between transportation and land use. New development or changes in existing land uses, whether incremental or sudden, directly affects the safety and functionality of roadways and the demand for additional transportation facilities. On the other hand, the creation of new or improving existing transportation corridors can have a significant distribution affect on the type and timing of development within a community and/or a region. Thus, this element and the Land Use Element should support and complement one another.

For the foreseeable future, the private automobile will continue to dominate all modes of transportation. However, it is important to recognize that people have different needs and capabilities and that a good transportation system should include a variety of transportation choices.

Existing Conditions

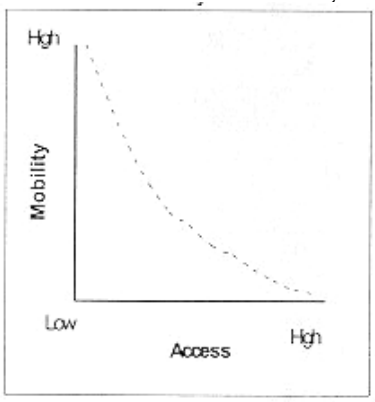
Local Road Network

Roadways serve two competing functions: access to individual properties and traffic mobility. These needs compete in that as the number of property accesses increases along a route, traffic mobility decreases.

Access Management

The primary purpose of the road network is to provide access to properties and mobility. These functions often compete. As the number of access points rise, traffic mobility decreases. This concept is often referred to in the industry as access management (Exhibit 1).

Exhibit 1. General Relationship Between Access and Mobility



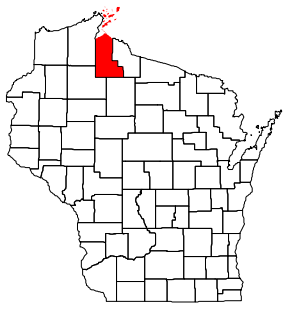
Driveway design and spacing has a substantial impact on the existing road system and preserving the flow of traffic on the surrounding road system in terms of safety, capacity, and speed. State highways and major arterial streets are typically targets of access management efforts. Access management is also of concern on main county roads when there is a transition from a rural environment to a village, town, or city. Cooperation between land use and transportation interests is vital to a well-functioning transportation network and street and driveway patterns are important determinants of community character. Although the Town does not have jurisdictional authority over state and county highways, development around these highways impacts the amount and type of traffic using the facility. In addition, the extent to which the Town's road system accommodates local travel directly impacts the amount of traffic that is diverted onto state and county roads.

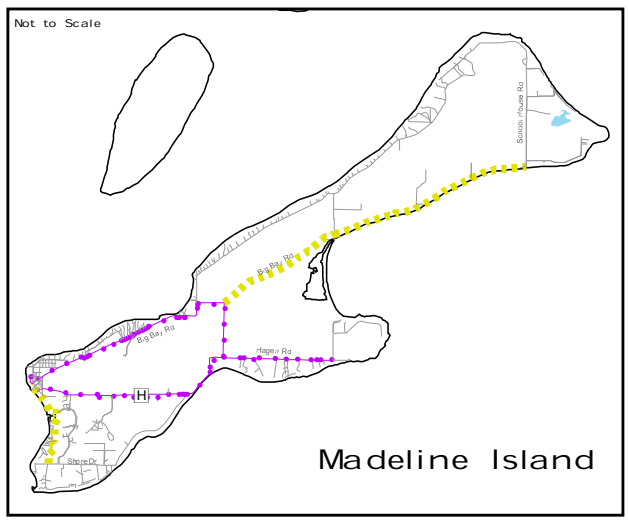
Road Classifications

To help for current and future traffic conditions, it is useful to categorize roads based on their primary function. Arterials accommodate the movement of vehicles, while local streets provide the land access function. Collectors serve both local and through traffic by providing a connection between arterials and local roads. The following map shows the various roads in the Town and how they are classified according to the Wisconsin Department of Transportation (WisDOT).

Ashland County

Road Classification





City of Ashland
GINGLES
SANBORN
WHITE RIVER
MARENGO
ASHLAND
City of Mellen
MORSE
GORDON
JACOBS
SHANAGOLDEN
PEEKSVILLE
AGENDA
CHIPPEWA
Village of Butternut

Johnson Rd
Pine Flat Rd
Government Rd
Hagstrom Rd
Schwiesow Rd
Elm Hoist Rd
Potato River Rd
Henry Johnson Rd
Mineral Lake Rd
Kornstead Rd
Calm Lake Rd
Lake Drive
W. Lake Drive
Conley Rd
Namakagon Rd
Trout Rd
Hannes Rd
Forest Rd 182
Forest Rd 168
Bay Rd
Roddis Line Rd
Boiler Rd
Bear Lake Rd
Black Lake Rd
Birkholtz Cutt-Off
Creamery Rd
Agenda Rd

2 A 13 112 118 E C 169 77 GG M N F B

Legend

- Principal Arterials - Other
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads

0 2.5 5
Miles

VIERBICHER ASSOCIATES
Committed to Quality Service Since 1976

Source: Wisconsin Department of Administration and Wisconsin Department of Transportation

Ashland County

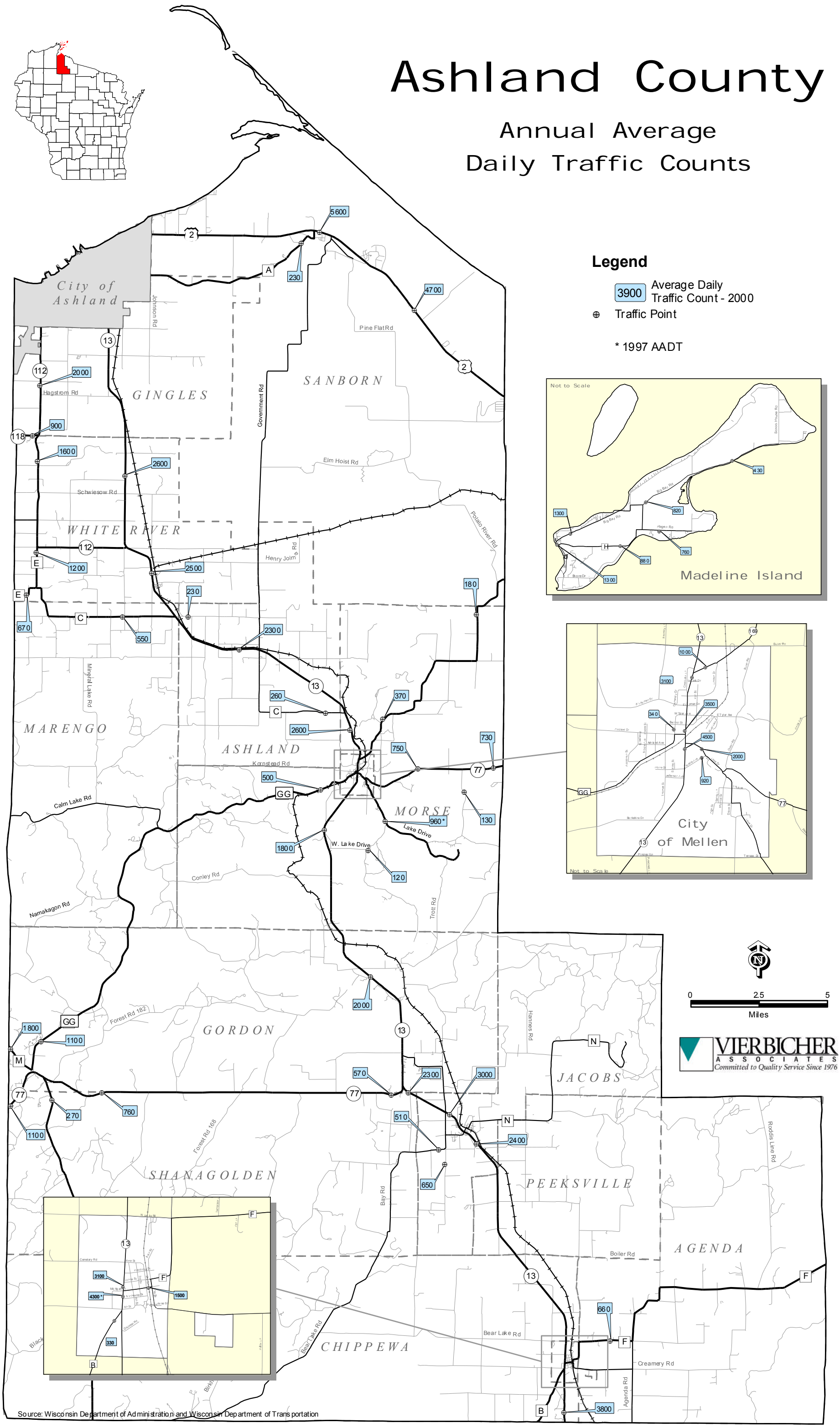
Annual Average Daily Traffic Counts

Legend

3900 Average Daily Traffic Count - 2000

⊕ Traffic Point

* 1997 AADT



0 2.5 5 Miles

VIERBICHER ASSOCIATES
Committed to Quality Service Since 1976

Source: Wisconsin Department of Administration and Wisconsin Department of Transportation

Principle Arterials – State Highway 13 runs through the Town. According to WisDOT there are almost 7-miles of roadway that is designated as a principle arterial in the Town.

Minor Arterials – There are no Minor Arterials within the Town.

Collectors – State Highways 118, and 112 as well as County Road E are Major Collectors in the Town. Maple Ridge Road is a Minor Collector. There are almost 14-miles of collector road in the Town.

Local Streets – All other public roads in the Town that are not classified by the WisDOT are considered to be local roads. There are 66-miles of local road in the Town.

Existing Traffic Volume Counts

WisDOT studies Average Annual Daily Traffic (AADT) counts for roadways at selected locations on a three-year cycle. Traffic volumes reported by WisDOT in May 2003 contain data collected from Ashland County in May 2000. The counts are depicted on the Annual Average Daily Traffic Count map. Traffic counts in White River were taken along County Road E and State Highways 118, 112, and 13. It is likely that the traffic volume in the Town as well as the County as a whole will remain the same in the future as it is now.

Pavement Condition

The surface condition of local roads is an important aspect of a local transportation network. Ensuring a safe, comfortable, and efficient transportation system requires a large public investment, and often requires balancing priorities and making difficult decisions about where to invest resources. The Pavement Surface Evaluation and Rating (PASER) system was developed by the Wisconsin Transportation Information Center to help communities evaluate the condition of the community's roads and set priorities for road maintenance and repair. The PASER system involves visual evaluation of pavement surface, and provides standard ratings to promote consistency. PASER ratings follow a scale from 1 to 10, 1 being poor and 10 representing excellent road conditions. Pavement ratings were collected for the Town of White River in 2003, however that data is not available at this time. Many of the roads in Ashland County are unimproved roads and therefore will not have pavement ratings.

PASER Rating System

1-2	very poor, reconstruction needed
3-4	poor to fair, structural improvement and leveling needed
5-6	fair to good, preservative treatments (sealcoating) required
7-8	good to very good, routing maintenance, cracksealing and minor patching
9-10	excellent, like new condition, no maintenance required

The following are road segments within the Town that have been identified as having low PASER ratings.

PASER Ratings; Town of White River 2001			
Name	**From/To**	**Length (mi)**	**PASER Rating**
Blakeman Road	Jolma Rd – Charles Johnson Rd	2	4
CTH C	Heino Rd – CTH E	0.72	3
Dark Corner Road	Blakeman Rd – Town Park Rd	0.21	4
Ensinger Road	Herb Adler Rd – Fairground Rd	0.07	4
Fairground Road	Fairground Rd – Schraufnagel Rd	0.2	2
Fire Dept Road	Lahti Rd – Schraufnagel Rd	0.08	3
Hangard Road	STH 13 – Termini	0.26	4
Heino Road	CTH C – Termini	0.44	3
Herb Adler Road	Ensinger Road – Schraufnagel Rd	0.06	3
Hunt Road	CTH E – Termini	0.04	4
Jolma Road	Jusula Rd – Emil Ovaska Rd	2.21	3
Little Road	Ensinger Rd – Herb Adler Rd	0.75	2
Long Road	Termini – Block Rd	0.16	2
Marengo River Road	CTH C – Richardson Rd	2.26	3
Mike Road	Schraufnagel Rd – Lahti Rd	0.08	3
Miller Road	Marengo River Rd – Termini	0.09	4
Olby Road	Termini – Little John Rd	0.93	2
Park Road	Tapani Rd – Park Rd	0.50	2
Schiestle Road	STH 13 – Termini	0.26	4
Schraufnagel Road	STH 13 – Herb Adler Rd	0.38	3&4
T Anderson Road	CTH E – Termini	0.04	2
Tapani Road	Termini – Park Road	0.58	4
TN Road 12	Blakeman Rd – Schiestl Rd	0.30	1
TN Road 16	Fire Dept Rd – Termini	0.12	3
TN Road 67	Kinkel Rd – Termini	0.05	3
TN Road 69	Emil Ovaska Rd – Termini	0.25	2
Town Line Road	Mike Rd – Termini	0.19	4
Town Line Road	Town Line Rd – Olby Rd	0.4	2
Van Ornum Road	Jolma Rd – Termini	1.00	4
Yonkovich Road	Termini – STH 12	0.80	4 & 2

Source: Wisconsin Information System for Local Roads. Wisconsin Department of Transportation.

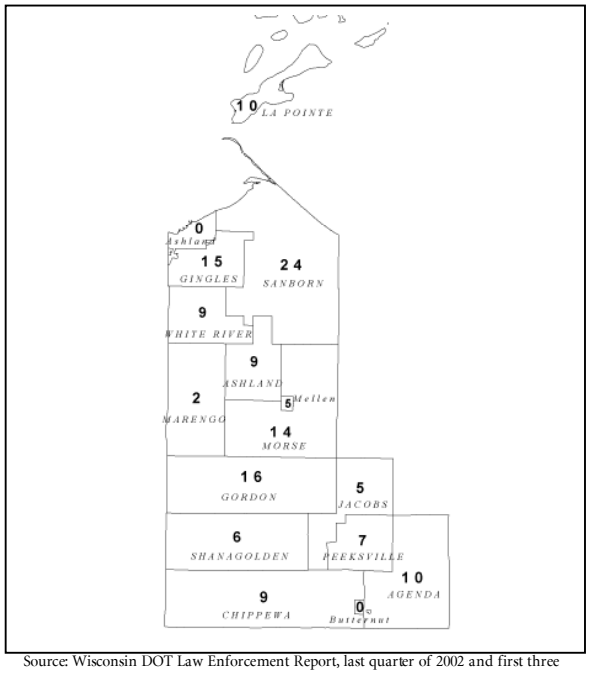
Accident Reporting

The WisDOT prepares an accident report for every quarter of the year. Exhibit 2 illustrates the total number of accidents that occurred between the last quarter of 2002 and the first three quarters in 2003. In the Town of White River there were 9 accidents that were reported to WisDOT by law enforcement officials. The Town does not believe that they are any intersections or stretches of road that are more dangerous then others that could possibly be the cause of the accidents.

Rustic Road Conditions

Created in 1973 and sponsored by WisDOT, the Rustic Roads Program provides a tool for communities to preserve byways and back roads that contribute to the aesthetic, cultural, and historic fabric of the state. Throughout the state, there are over 680 miles in the system with 84 designated roadways.

Exhibit 2. Ashland County Accident Count Map



Source: Wisconsin DOT Law Enforcement Report, last quarter of 2002 and first three quarters of 2003.

The goals of the Rustic Roads program are:

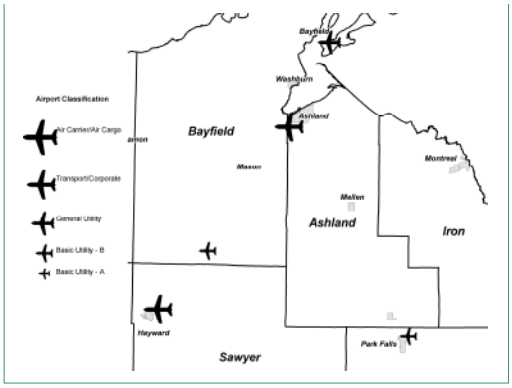
- To identify and preserve, in a naturally and essentially undisturbed condition, certain designated roads exhibiting unusual or outstanding natural or cultural beauty.
- Produce a linear, park-like system for auto, bicycle, and pedestrian travel. Identify roadways for quiet and leisurely enjoyment of local residents and the general public.
- Maintain and administer these roads for safe, public travel while preserving their scenic and rustic qualities. Establish appropriate maintenance and design standards.
- Encourage zoning and land use compatibility, utility regulations and billboard control.

An officially designated Rustic Road remains under local control. The Town has the same authority over a Rustic Road as it possesses over other highways under its jurisdiction. A Rustic Road is eligible for state aids just as any other public highway. There are not any officially designated Rustic Roads in Ashland County.

Air Transportation

Airports, aviation, and aviation-related industries play a significant role in the economic success of many Wisconsin communities. Within Ashland County there are 2 airports (Exhibit 3). John F. Kennedy Memorial in the Town of Gingles is a Transportation/Corporate (TC-C) Airport and on Madeline Island there is a GU Airport.

Exhibit 3. Ashland County Area Airports



Source: Wisconsin Department of Transportation

The City of Ashland and Ashland County jointly operate the John F. Kennedy Memorial Airport, and Bayfield County contributes some funds to help support its operation. The airport has two paved runways, both of these runways are adequate for twin-engine aircraft. The airport is primarily used for business and recreational uses. Roughly half of the flights to the airport come from businesses and industries such as C.G. Bretting, Larson Juhl, M&I Bank, Duluth Clinic, Xcel Energy, and others. It is believed that the airport will continue to grow and be an important component of the County's economic plan. In August of 2003 Governor Jim Doyle approved a $510,000 project that will develop a new hangar area and associated taxiway as well as installation of Precision Approach Path Indicators at the John F. Kennedy Memorial Airport. Construction of the new hangers will be privately funded. Facilities at the airport include a 5,200-foot primary runway and a 3,500-foot secondary runway. There is also an airport in nearby Park Falls in Price County called the Park Falls Municipal Airport, it is an FAA Classified General Utility (GU) airport.

FAA Airport Classification System:

The airport classification scheme was developed for planning efforts that expand upon the traditional classification system for defining the role of an airport. The classification process took into account existing conditions and planned near-term improvements as contained in airport master plans and/or airport layout plans. The classification system divides airports into four categories.

- Air Carrier Cargo (AC-C) airports are designed to accommodate all aircraft. Airports in this category are usually referenced by the types of air carrier service being provided.
  - *Short-haul air carrier*
  - *Medium-haul air carrier*
  - *Long-haul air carrier*

- Transportation/Corporate (TC-C) airports are intended to serve corporate jets, small passenger and cargo jet aircraft used in regional service and small airplanes used in commuter air services.

- General Utility (GU) airports are intended to serve virtually all small general aviation single and twin-engine aircraft, both piston and turboprop, with a maximum takeoff weight of 12,500 pounds or less.

- Basic Utility (BU) airports are intended to serve all small single-engine piston aircraft and many of the smaller twin-engine piston aircraft with a gross takeoff weight of 12,500 pounds or less.

Based on projections contained in the Wisconsin State Airport System Plan-2000, the following table depicts the classifications of airports in the area (Table 1).

Table 1. Forecast General Aviation Operations and Classifications for Airports in State Airport System in Region: 2000 to 2020

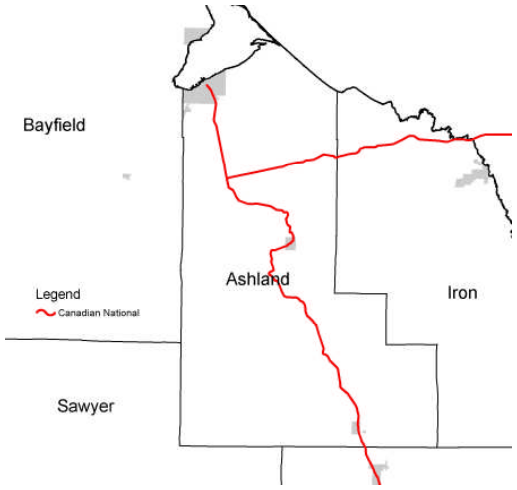
Airport Name	2000	2010	2020
Park Falls - Park Falls Municipal	BU-B 2,300	BU-B 2,300	BU-B 2,300
Ashland – John F. Kennedy Memorial	AC/C 15,900	AC/C 15,900	AC/C 15,900
La Pointe - Madeline Island Airport	GU 2,000	GU 2,000	GU 2,000
Rhinelander – Rhinelander/Oneida County	AC/C 37,000	AC/C 38,000	AC/C 40,000
Cable – Cable Union	BU-B 3,000	BU-B 3,000	BU-B 3,000
Hayward – Sawyer County	T/C 19,000	T/C 19,000	T/C 19,000

Source: Wisconsin State Airport System Plan – 2020

Railroad Facilities

With increased rail efficiency and truck-rail intermodal trends, traffic on some Wisconsin railroads the State Department of Transportation has forecasted some railroad lines to see continued growth in the future. However according to *Transportation Investment, Economic Development, and Land Use Goals in Wisconsin* (June 2002) due to lack of a freight-rail customer base, consolidation of rail service providers, rail abandonment, and rail-to-trails conversion initiatives most counties in Northern Wisconsin feel that rail service is lacking in their county. The Canadian National Railroad travels through the Town of White River (Exhibit 4).

Exhibit 4. Ashland County Railroad Facilities



Bicycle and Pedestrian Facilities

Bicycling and pedestrian facilities play an important role in moving people within a community for purposes of necessity and/or pleasure. These types of mobility are often overlooked yet many individuals choose these modes for their primary transportation. The bike trails within the county are generally along roads that the county has designated as bike routes. These designated routes provide residents and tourists alike the chance to enjoy the regions natural beauty.

Improvements to bicycle/pedestrian facilities typically occur in conjunction with road projects and road improvement schedules are tied to local, county and state capital improvement budgets. There are no bike or pedestrian trails in the Town and there are currently not any plans to create any.

In addition to any county or local plans that may be developed, the State has adopted several pedestrian and bicycle transportation plans:

- Wisconsin Bicycle Transportation Plan 2020
- Wisconsin Pedestrian Policy Plan 2020
- Wisconsin Translinks 21: A Multimodal Transportation Plan for Wisconsin's 21st Century
- Wisconsin Department of Natural Resources State Trails Network Plan

Currently the Wisconsin State Trails Network Plan does not identify that there are any trails proposed in the region.

Winter Activities
Winter sports are an important activity in Ashland County and have a significant impact on the economy. Local residents and tourists both enjoy taking part in the many snow-related sports.

Cross Country Skiing Trails
Ski trail information and maps are available from the Wisconsin Department of Tourism. Near Clam Lake there is an 11-mile West Torch River Ski Trail. Copper Falls State Park has 8-miles of trail, and Penokee Mountain maintains 11-miles of trail. In the Chequamagin-Nicolet National Forest there are a total of 205-miles of trails. Maps of the National Forest trails are available at the trailheads.

Snowmobile Trails
Wisconsin snowmobilers are proud of the statewide trail system that ranks among the best in the nation. This trail system would not be possible without the generosity of the thousands of landowners around the state, as 70 percent of all trails are on private land. Trails are established through annual agreements and/or easements granted by these private property owners to the various snowmobile clubs and county alliances throughout the state.

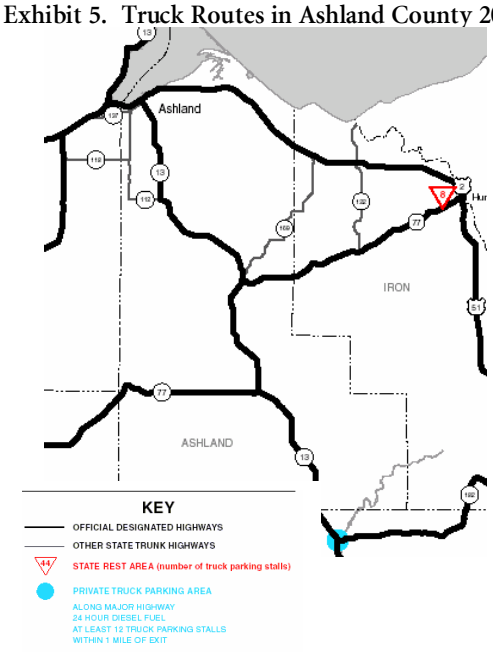
Snowmobiling and associated trail systems are an important asset to the area. Specifically, they assist in expanding the range of recreational opportunities in the Town. They also serve as a winter time attraction, assisting the area to promote its image as a year-round tourism destination. There are several snowmobile and ATV clubs in the area. According to the Wisconsin Department of Tourism Ashland County has 204 miles of County and Community Trails and Chequamegon-Nicolet Great Divide Trail National Forest contains 160 miles of trails. The Department of Tourism can provide further information regarding the location of snowmobile trails in the region.

Water Transportation
Today, water transportation continues to serve as the most efficient method for moving bulk commodities. Wisconsin's commercial ports are major economic hubs that generate thousands of jobs. The nearest commercial port is Duluth-Superior Port. The port is the Great Lakes' largest harbor. Each year it hosts about 1,100 lake carriers and oceangoing ships.

Water transportation also provides communities recreational opportunities such as water-skiing and fishing. There is one public water access point in the Town located on the White River Flowage. Elsewhere in the County, in the City of Ashland there is the Ashland Municipal Marina, as well as many other boat launch sites on lakes throughout the County. The Madeline Island Ferry travels between Bayfield and Madeline Island transporting both passengers and vehicles. In the winter there is a windsled that is able to bring passengers to and from the island.

Trucking
Trucks handle almost 90 percent of all freight tonnage shipped from Wisconsin, serving businesses and industries of all sizes and in all parts of the state. The state has an 112,000-mile network of state highways and local roads, including the 3,650-mile Corridors 2020 network of four-lane backbone and key connector routes. State Highways 13, and 112 are officially designated truck routes in Ashland County. Interstate Route 2 is also designated as truck route. Truck traffic is permitted on county roadways within the Town as long as materials being carried do not exceed legal axle weights enforced by the state. State Highway 112 is a county designated truck route that travels though the Town. State Highway 13 travels north to south in the Town and is a state designated truck route (Exhibit 5).

Exhibit 5. Truck Routes in Ashland County 2003



Wisconsin DOT, 2003

Mass Transit
The Town does not have access to public transportation. According to the Department of Transportation the nearest available transit system is located within Bayfield County.

There are two private transportation services in the County. One taxi service only serves the City of Ashland while another will travel throughout the County and will transport people to different areas as necessary. In addition, a bus that generally services the City of Ashland is available on an as needed basis to residents of the Town of Marengo, Mellen City, Glidden, and the Village of Butternut. Currently the County is in the process of trying to coordinate with other places to offer transportation to Park Falls on selected days to residents of the Village of Butternut and Glidden. The County also coordinates with groups of volunteers in the County who are able to provide transportation to people going to doctor appointments. From January through September of 2003 the volunteers assisted with providing transportation for about 180 people.

Paratransit
Paratransit services provide transportation for those people whose needs are not met by traditional transit options. Paratransit service is required by the Americans with Disabilities Act (ADA) as a supplement to any fixed route public transportation system. Typically, paratransit is provided on an as needed basis, rather than a scheduled route. Eligibility to use paratransit services requires that an individual be unable to use the existing transit

service. Since there is no mass transit system in the Town, paratransit service is not required.

Highway Projects and Maintenance
The Ashland County Highway Department does not have any projects scheduled before 2008. WisDOT does not have any projects scheduled for the Town of White River in the years from 2004 to 2009.

Review of Existing Transportation Plans
There are a number of statewide transportation planning efforts that will have a bearing on the presence or absence of transportation facilities and services in the region. Most of these efforts developed umbrella policy documents that provide general goals and policies covering the state. The following section provides a brief overview of the plans that have been completed or that are in a draft phase and how they might affect area residents and the preparation of this plan (Exhibit 6). The overall goals and objectives of these plans will be taken into consideration if and when the Town undertakes any planning efforts that either directly or indirectly impact the area's transportation system.

Exhibit 6. Existing State Transportation Plans	
Translinks 21	WI Department. of Transportation
Wisconsin Bicycle Transportation Plan 2020	WI Department of Transportation
Wisconsin State Highway Plan 2020	WI Department of Transportation
Wisconsin State Airport System Plan 2020	WI Department of Transportation
State Recreational Trails Network Plan	WI Department of Natural Resources
State Pedestrian Plan	WI Department of Transportation

- *Translink 21* – Prompted by the federal Intermodal Surface Transportation Efficiency Act (ISTEA), *Translink 21* is a broad plan intended to guide transportation investments through the year 2020. From this plan, individual plans for highways, airports, railroads, bikeways, pedestrian and transit continue to be shaped.

- *Wisconsin Bicycle Transportation Plan 2020* - This plan provides a blueprint for integrating bicycle transportation into the overall transportation system. The plan analyzes the condition of all county and state trunk highways and shows the suitability of roadways for bicycle travel. Guidelines are available for accommodating bicycle travel when roadways are constructed or reconstructed.

- *Wisconsin State Highway Plan 2020* - The State Highway Plan 2020 outlines investment needs and priorities for the state's investment needs and priorities for the state's 1,800 miles of State Trunk Highway through 2020. Given the financial realities of maintaining this extensive road network, the plan establishes priorities for funding. Most of the funding is allocated to Corridors 2020 backbone and collector routes.

- *Wisconsin State Airport System Plan 2020* - This plan provides for the preservation and enhancement of public use airports that are part of the State Airport System over a 21-year period. Overall, the Plan recommends no new airports and no elimination of existing facilities.

- *State Recreational Trails Network Plan* - The plan identifies a network of trail corridors through out the state referred to as the "trail interstate system" that potentially could consist of more than 4,000 miles of trails. These potential trails follow highway corridors, utility corridors, rail corridors, and linear natural features.

- *Wisconsin State Pedestrian Policy Plan 2020* – Wisconsin Department of Transportation. The plan outlines statewide and local measures to increase walking and promote pedestrian safety. It provides a vision and establishes actions and policies to better integrate pedestrians into the transportation network.

- *Best ManagementPractice Guidelines for the Wisconsin Portion of the Lake Superior Basin – March 2003* - This set of guidelines is meant to be a working document that is focused on reducing nonpoint pollution. This best management practice guideline is intended to building on the conservation projects of the past and incorporate newer technologies and ideas. The document is divided into sections based on different activities that have been identified as being important. These sections include project planning, roads, forestry, agriculture, critical area stabilization, habitat and development.

Funding Opportunities
WisDOT administers a number of programs to defray the cost of enhancements to local transportation systems. Eligibility options may increase through coordination due to population thresholds associated with some programs. In addition, cost savings and a more seamless transportation network between and around communities may be realized as a result of joint efforts. A complete list of programs is available at www.dot.state.wi.us and should be consulted to understand the full array of programming.

Local transportation enhancements program: The program requires a local match of 20 percent and allows for bicycle and pedestrian facility system enhancements such as the development of a bicycle commuting route, landscaping and other scenic beautification.

Elderly and disabled transportation capital assistance program: This annual grant program provides capital funding for specialized transit vehicles used to serve the elderly and persons with disabilities. The program covers 80 percent of the total cost of equipment.

State Urban/Rural/Small Urban Mass Transit Operating Assistance Program: This program provides funds for eligible project costs to public bus and shared-ride taxi programs. Eligible public transportation services include transport by bus, shared-ride taxicab, rail or other conveyance, either publicly or privately-owned, that provides general or special service on a regular and continuing basis. Local units of government are eligible to apply.

State of Wisconsin Department of Transportation Six Year Highway Improvement Program: The state highway system consists of 744 miles of Interstate freeways and 11,147 miles of

state and US-marked highways. While the 11,794 miles of state highways represent only 11 percent of the 110,594 miles of public roads, they carry over 29 billion vehicle miles of travel a year, or about 58 percent of the total annual statewide travel. The remaining 99,160 miles are maintained and approved by local units of government.

Utilities and Community Facilities

Town of White River

Introduction

Community facilities are buildings, lands, services and programs that serve the public. Examples of community facilities are parks, schools, and fire and police protection. Public works such as water supply, sewer systems, storm water facilities and power generation and distribution make up the physical components of a community. Together, community facilities and infrastructure allow the Town to function, grow and add to the community's quality of life.

"Together, community facilities and infrastructure allow the Town to function, grow and add to the community's quality of life."

This Plan Element takes inventory of existing facilities and services currently provided by both the public and private sectors, identifies the capacity of these services and unmet needs and evaluates the need for improvements or additional facilities over the next 20-years. The inventory divides utilities and facilities into two categories.

- Utilities/Infrastructure – the physical systems, networks and/or equipment necessary to provide for and support the basic needs of urban land uses, including systems, networks and equipment, but excluding transportation infrastructure.

- Community Facilities - public buildings and grounds that provide space, services or programs, or from which services or programs are co-ordinated, that are aimed at improving the quality of life, safety, or general welfare of community residents.

Utilities and Community Facilities

Water System

Private wells serve homes and businesses in the Town. Due to the rural nature of the area there are no plans for a water system to connect homes in the Town. Unlike public water systems, protection and maintenance of private wells is largely the responsibility of homeowners. The entire community needs to work together to develop a protection plan that safeguards everyone's water supply. Good construction and proper location are critical in ensuring a safe drinking water supply. Care needs to be taken to locate the well far from potential pollution sources. NR 812, Wis. Adm. Code requires new wells to be located:

- 25 feet from septic tanks
- 25 feet from the high water mark of a lake, pond or stream
- 50 feet from livestock yards, silos, and septic drainfields
- 100 feet from petroleum tanks
- 250 feet from a sludge disposal area or an absorption, storage, retention or treatment pond
- 1,200 feet from any existing, proposed or abandoned landfill site

Wastewater Facilities

There are currently no sewer or public utilities in the Town of White River. Residences and businesses rely on private septic systems and wells. Septic systems are wastewater treatment systems that use septic tanks and drainfields to treat and dispose of the wastewater in the soil. Septic systems are generally used in rural areas that have large lot areas where sanitary sewer services are not available. Ashland County reviews and permits the wastewater treatment systems. The Town does not have any plans to create a sewer district or build a wastewater facility.

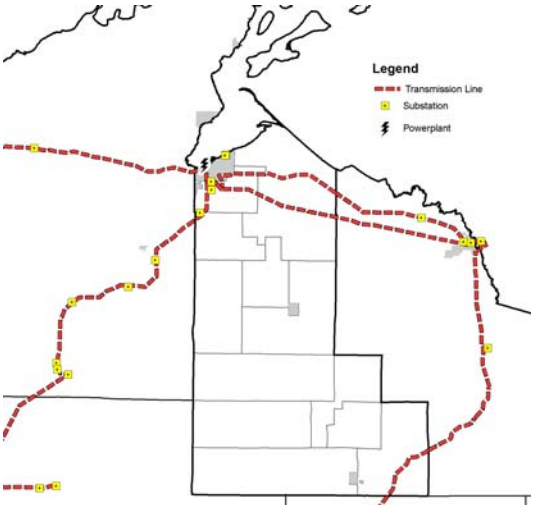
Stormwater Management

The town does not own or operate storm water management facilities. The Town does not expect growth to occur at a density that would require developing any new facilities in the future.

Telecommunication

There are no cell towers located in the Town of White River. The Town does not have any plans to pursue cellular towers, however if a carrier wanted to located a new cell tower in the Town, the Town would work with Ashland County and the cellular carrier to ensure the tower is locate in an appropriate place that meets all regulations.

Exhibit 1. Transmission Lines



Source: Public Service Commission

Electric and Natural Gas
Xcel Energy provides electrical services to the Town of White River. There is a transmission line and a substation that are located on the north western corner of the Town that is owned by Xcel Energy (Exhibit 1).

Solid Waste Disposal/Recycling

Refuse and Recyclable: The Town contracts with Waste Management for garbage pickup recyclables are picked up at the Town Hall.
Leaves, Wood, and Compost: There is not a composting site within the Town.

Library Services
Library resources are an important part of the community base. No exact social standard can be applied to any one community as the needs and desires of citizens vary widely. Data for the individual library branches in Ashland County is not available, however data is given on a countywide basis. There are four libraries that are part of the Northern Waters Library Service, which services the entire county. The libraries are located in the City of Ashland, La Pointe, Mellen, and Odanah. The library located at Northland College is also available for public use within the County.

According to the annual Library Statistics Report compiled by the Wisconsin Department of Public Instructions the libraries are operated by approximately five librarians and about five other paid staff. The libraries are open an average of 35.5 hours in the summer months and 37 hours in the winter months. In 2002 the libraries housed 64,988 book and serial volumes and had 286 periodical titles available. There are 16 computer terminals accessible to the public, 12 of those computers offer access to the Internet. Many audio, electronic and video materials are also available to borrowers. The library also offers many programs to adults and children. In 2002 a total of 4,735 individuals within the County attended those programs (Table 1).

The libraries receive funding from state, and county appropriations. The total operating expenditure in 2002 was $572,055. A majority of those funds were from either municipal or county appropriations, which are an average per capita tax of $39.80.

Table 1. Library Capacity 2002 - Ashland County

Amenities	Planning Standard*	Existing Amount	Preferred Amount	Surplus/ (Deficit)
Book Stock	3.5 - 5 per capita	64,899	38,021	26,878
Facility Space	0.7 - 0.8 sq. ft. per capita	16,826	7,604	9,222

* *Source: Urban Land Institute standards should be used as a flexible guide and adapted to the particular needs of the community. Department of Administration 2002 county population estimates (10,863) were used to calculate this table.*
Note: Professional and experts were consulted by ULI

Parks and Open Space

One of the principle assets of a community is its recreational opportunities. There are snowmobile and ATV trails that are located in the Town that connect to many different trails throughout the County. There is not any county, national, or state forest land in the Town but there are approximately 3,184 acres of open managed forest land and 283 acres of closed managed forest land. There are also 360 acres in the Town that are under Forest Crop Law (Table 2).

Table 2. Existing Parks and Trails 2004 - Town of White River

Park/Trail	Location	Acreage/Miles
Forest Crop Law	Various locations	360 Acres
Managed Forest Land (open)	Various locations	3,184 Acres
Managed Forest Land (closed)	Various locations	283 Acres

Source: Wisconsin DNR

Police Service

Ashland County is serviced by a 911 Emergency Response System that is operated by the Sheriffs Department. The Ashland County Sheriffs Department patrols the Town and surrounding areas. The City of Mellen, Town of La Pointe, Bad River Reservation, and the City of Ashland all have their own police services. During the day there are two deputies that patrol the county and respond to calls. At night there are three deputies that patrol the County. The department employs 11 full time patrol officers, one sheriff, one undersheriff, and one lieutenant. There is also one investigator, 18 full time corrections and dispatch personnel, and seven additional part time dispatch staff. The Department is located in the City of Ashland (Table 3).

Table 3. Sheriff Department 2003 - Ashland County Sheriffs Department

Amenities	Existing Amount
Deputies	11
Vehicles	14

Source: Ashland County Sheriffs Dept

Table 4. Calls For Service - Ashland County

Call Volumes*	
2003	5,681

Source: Ashland County Sheriffs Dept

**Does not include Bad River Reservation, Town of La Pointe, City of Mellen, or the City of Ashland*

The calls for service represent calls made on a countywide basis and include both civil and criminal complaints. These calls for service do not represent calls made only from White River (Table 4).

Snowplowing Services
The Town provides snowplowing of private driveways at the cost of $50 per driveway for a year.

Emergency Medical Services
The Town of White River receives emergency rescue services from the City of Ashland.

Fire Protection
The Town of White River is serviced by a volunteer fire department made up to 20 volunteers. There are 2 pumpers, 2 tankers and 1 van available for their use in emergencies. Each year the department receives between 5 to 10 calls for assistance.

Town Hall
The Hall serves as the headquarters for the Town Board and various other committees. The Town Hall is available to Town residents for various functions.

Health Care Facilities
Some communities in Wisconsin have been designated by the U.S. Department of Health and Human Services as a Health Professional Shortage Area. Either a geographic area or a specific population can be designated as an HSPA. This designation is used to determine eligibility for at least 34 federal programs, and state programs. According to the Wisconsin Office of Rural Health portions of Ashland County have been designated as HSPA. About 20 percent of the U.S. Population live in areas designated as a shortage area. The Town of White River is not included in this designation.

Health care facilities available to Town residents include the Ashland Clinic, Grandview Health System Clinic, Marshfield Clinic, Memorial Medical Center, Flambeau Hospital, Chequamegon Clinic, Main Street Clinic and many other health care providers for specialized treatment. The County Human Services Department is available to serve social and health needs.

Nursing Homes

There are three nursing homes in Ashland County (Table 5). There are no nursing homes in the Town of White River.

Table 5. Nursing Homes

Nursing Home	Location	Number of Beds	Ownership Type
Ashland Health / Rehab Center	1319 Beaser Ave, Ashland	118	Corporation
Court Manor Heath Rehab	911 3rd St. West, Ashland	150	Corporation
Mellen Manor	450 Lake Dr., Mellen	40	Limited Liability Partnership

Source: Department of Health and Family Services

Additional facilities noted by the residents of White River include Forest Haven Elder Care and Shiloh Suites, Shiloh House 1 and Shiloh House 2.

Cemeteries

There is a cemetery near the Sanborn Church which owns the cemetery.

Childcare Facilities

Within Ashland County there are a total of 33 certified, and 30 licensed daycare programs with capacities ranging from 8 to 46 children. In the Town of White River there are not any licensed day care programs, but there are two certified programs (Table 6). A regulated program has either been licensed through the state or certified by Ashland County. A program's capacity does not necessarily reflect the number of children that are currently enrolled in programs. The capacity reflects the amount of children the program could possibly serve at any one time. Data generally shows that childcare demand outstrips supply locally, statewide and nationally. The cost of care plays a big part in household decisions about childcare arrangements.

Table 6. Ashland County Certified and Licensed Childcare Providers - 2004

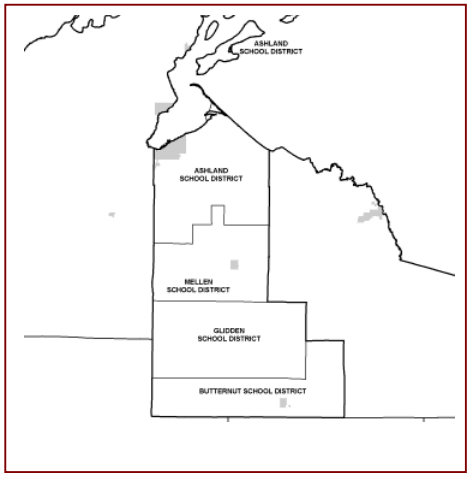
Location	Licensed	Certified
City of Ashland	26	28
City of Mellen	2	-
Village of Butternut	-	1
Town of Jacobs (Glidden)	2	-
Town of White River (Marengo)	-	2
Town of Ashland (Highbridge)	-	2
TOTAL	**30**	**33**

Source: Ashland County Health and Human Services Department

Schools

The Ashland School District currently serves school aged children in the Town of White River (Exhibit 2). Information about school aged children and the district schools they attend can be found in Tables 7 and 8. There is currently a school located within the Town boundaries. Currently, school enrollments are dropping. This is causing most schools within the county to reevaluate their services and determine the best way to provide for its residents and their school aged children. The Town will continue to work and communicate with the school districts to ensure that both district and Town needs are being met. The Town feels that the Marengo Valley School is an asset to the community. Another school that children within the Town are able to attend is Our Lady of the Lake Catholic School, an intermediate to primary education facility.

Exhibit 2. Ashland County School Districts



Source: US Census Bureau, 2000

Table 7. White River School Enrollment 2000		
Town of White River	**Number**	**Percent**
Nursery School, Preschool	13	4%
Elementary school (K-8)	178	59%
High school	90	30%
College or graduate school	19	6%
TOTAL	**300**	**100%**

Source: 2000 US Census, Data Set SF-3

Table 8. Schools Attended by White River Students	
School	**Location**
Ashland High School	Ashland, Wisconsin
Ashland Middle School	Ashland, Wisconsin
Lake Superior Intermediate	Ashland, Wisconsin
Lake Superior Primary	Ashland, Wisconsin
Marengo Valley Elementary	Marengo, Wisconsin

Source: Department of Administration

Universities and Technical Schools
In Wisconsin there are 16 technical college districts. The Town is located in the Wisconsin Indianhead Technical College district. The district includes 11 counties. Its campuses are located in Ashland, New Richmond, Rice Lake, and Superior. A 9-member board governs the district.

Other nearby post-secondary schools include Northland College, a four-year institution that is located in the City of Ashland, and Gogebic Community College which is a two-year institution located in Ironwood, Michigan.

Agricultural Resources

America's farmland and open space are under ever increasing pressure from growth and development. Each year countless acres of rural land are developed. In partial response, the President has created "The President's Council on Sustainable Development". Between June 1993, and June 1999, the PCSD advised former President Clinton on sustainable development and developed bold, new approaches to achieve economic, environmental, and equity goals. From this effort, the United States Department of Agriculture (USDA) has committed itself to a number of new principals on sustainability.

Benefits to preserving rural land are sometimes hard to measure. For example, it is difficult to place a value on scenic areas. Lacking prices, it is difficult to develop economic benefit measures for preserving open space and agricultural land. However, while agricultural production can create environmental problems, properly managed farmlands provide non-market benefits including improving water and air quality and preserving wetlands. Farmland creates aesthetically pleasing landscapes and can provide social and recreational opportunities. Conserving land for agriculture also helps preserve farming as part of the rural economy.[1]

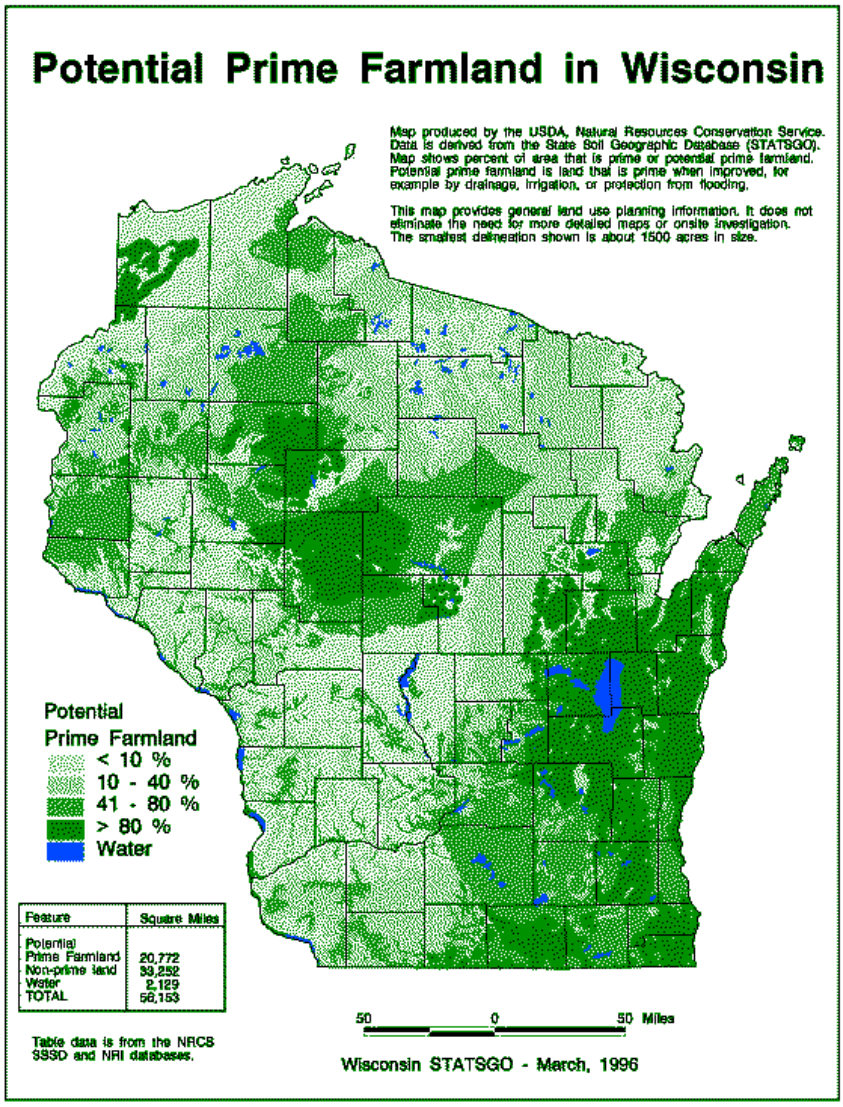
Agriculture can co-exist with development and expanding populations while at the same time providing opportunities for growing new crops. However, farmers are often faced with changing their business practices to survive in urbanizing areas as the products and services they offer are no longer as valuable, or traditional delivery and marketing mechanisms are no longer feasible. To adapt to urbanization and its associated rising land values and increased contact with new rural residents, farmers must modify their operations to emphasize higher value products, more intensive production, or a more urban marketing orientation.[2] In the northern section of Ashland County there are a number of specialty crops. Most notable are the apples that are currently being grown in the area. In the City of Ashland, there is a farmers market that only allows the sale of organic foods.

National studies and county level plans have concluded that, on average, residential development requires approximately $1.24 in expenditures for public services for every dollar generated in tax revenue. By contrast, farmland or open space generates 38 cents in costs for each dollar in taxes paid.

[1] Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land, Economic Research Service, U.S. Dept. of Agriculture. Agricultural Economic Report 803, June 2001.
[2] Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land, Economic Research Service, US Dept. of Agriculture. Agriculture Economic Report 803, June 2001.

Predominantly focused in the upper Midwest, America's prime farmland regions coincide with our traditional notions of America's farm belt. While not containing as much prime farmland area as some other upper Midwest states, Wisconsin is still home to many acres of prime land. According to 1996 findings by the USDA/NRCS, Wisconsin is home to 20,772 square miles or 13,294,027 acres of prime farmland. This area represents approximately 38 percent of the State's entire area. Most of this land area can be found in the southern and eastern portion of the State (Exhibit 1). An additional concentration of prime farmland can also be found in the central portion of the State.

Exhibit 1.

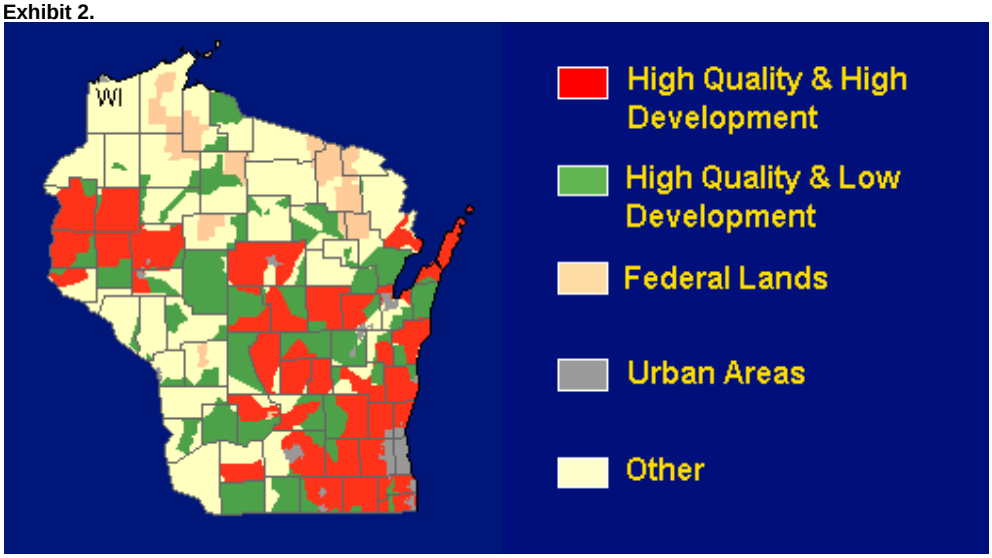


The highest concentrations of prime farmland can be found in the south central area and some of the northern portion of Ashland County. The northern coastal plain area of the County has a longer growing season due to its proximity to the lake and therefore, is a more viable area to grow crops than the southern portion of the County, which has a shorter growing season.

As further development is considered in the Town, careful consideration of the lands potential productivity must be understood in order to protect this valuable community resource.

Exhibit 2 portrays high quality farmland in Wisconsin by highlighting sub-county geographic areas that meet two threshold tests that define the importance and vulnerability

Exhibit 2.



of the land they encompass:

High Quality farmland includes areas that, in 1992, had relatively large amounts (greater than their respective statewide averages) of prime or unique farmland.

High Development includes areas that experienced relatively rapid development (greater than their respective statewide averages and having at least 1,000 acres of urban conversion) between 1982 and 1992.

Other includes all areas not meeting the two threshold tests.

Unique farmland was defined to include areas where unique soil and climate conditions support the growth of specialty crops.[3]

[3] Data is from the National Resources Inventory of 1992, by the National Resources Conservation Service of the U.S. Department of Agriculture. The urban built-up areas are defined by the Bureau of Census, U.S. Department of Commerce (1991). © 1996 American Farmland Trust

Best Management Practices
There are Best Management Practice (BMP) Guidelines that have been identified for the Wisconsin Portion of the Lake Superior Basin. Within this document (*Best Management Practice Guidelines for the Wisconsin Portion of the Lake Superior Basin, March 2003)*, there are identified practices and management actions that will improve farm operations, reduce farm runoff to surface water, restore areas manipulated by farm activities, improve cover in riparian corridors, and improve fish and wildlife habitat. It is advisable that jurisdictions in Ashland County review these BMPs when projects begin on farmland or in natural areas.

Exclusive Agricultural Zoning Ordinances
At the State level, efforts to protect agricultural lands have been underway for many years. Principal among the State's many programs aimed at farmland and agricultural protection is the authority granted to counties and local governments to adopt Exclusive Agricultural Zoning Ordinances. According to the Wisconsin Department of Agriculture, Trade, & Consumer Protection, the authority to create Exclusive Agriculture Districts has been granted by the legislature to help local units of government best prevent conflicts between agricultural and nonagricultural land uses. By establishing an exclusive agricultural use district, a local government effectively decides that agricultural uses of land are appropriate in that district. An exclusive agricultural zoning ordinance can be adopted by any county or municipality in a county that has a certified agricultural preservation plan in effect. Ashland County does not have an agricultural zone.

Department of Agriculture, Trade and Consumer Protection
Preserving Wisconsin's valuable farmland is important to the Department of Agriculture, Trade, and Consumer Protection. This program assists counties in creating county agricultural preservation plans, which lay the groundwork for municipalities and the county to develop exclusive agriculture zoning districts. Farmers also can participate by signing an individual, long-term agreement. The farmland preservation program provides state income tax credits to farmers who meet the program's requirements: to meet soil and water conservation standards, and to use the land only for agriculture.

It can be noted that while exclusive agricultural zoning has been available for many years, Ashland County has yet to take advantage of it.

The 1997 U.S. Census of Agriculture revealed a number of interesting findings related to the growth and development of Ashland County.

- Land in Farms – decreased 9.2 percent from 51,208 acres in 1992 to 46,503 acres in 1997.
- Average Size of Farms – decreased 259 acres in 1992 to 250 acres in 1997.
- Full Time Farms – decreased 6.1 percent from 198 farms in 1992 to 186 farms in 1997.

The amount of land, the number of fulltime farms, and the average size of farms, all experienced a decrease. The trend leads to speculation that more farms are being operated as a hobby by long time residents and/or newcomers to the area.

While the number of farming operations in Ashland County is currently decreasing, the land values of the local farmsteads are increasing. In 1987, the average total farm value

(land and buildings), was at $95,648. In 1997, the average value had grown to $165,770, an increase of 73 percent over the ten-year period.

It appears that agriculture will continue to play a limited role in the County in the future. If current trends are allowed to continue, questions on development patterns of agricultural lands in the County may need to be addressed. This will have a bigger impact as development in the northern coastal plane reaches the most viable farming land in the County.

In the northern part of the State, the most predominant type of crop is trees. This is also the case in Ashland County. There are many more forested acres of land here than of cultivated land. Countywide, many towns do not have much farmland within their boundaries. The City of Mellen and the Village of Butternut have small amounts of agricultural land within their boundaries. Many residents have noted that an increasing number of landowners are deciding to return the land that is now agricultural cropland into forested land. Some of those property owners are using the land as sport hunting and others are interested in utilizing their forestland as a managed crop area.

The Town has a strong desire to preserve and protect its rural character. Specifically, the Town wishes to comply with S. 16.965(4), Wis. Stats.: Goal #4 - "Protection of economically productive areas, including farmland & forests."

Available Funding
The following is a possible grant source for agriculture-related activities in the Town.

Agricultural Development and Diversification (ADD) Grant – Department of Agriculture, Trade and Consumer Protection (DATCP)
Provide grants to fund demonstration projects, feasibility analysis, and applied research directed toward new or alternative products, technologies, and practices that will stimulate agricultural development and diversification of economic activity within agriculture.
Program Contact: Mike Bandli, DATCP mike.bandli@datcp.state.wi.us

Natural Resources

A definite ethic of caring for the land has existed in Ashland County since the first settlers in the early 1800s. Water is a very important resource within the County. The majority of the County's land includes forested land at 526,600 acres, agricultural land at 33,377 acres, including 548 miles of streams, 4,855 acres of lakes, and 170,000 acres of wetland.

Land Management Factors (LMF)

With cooperation from the University of Wisconsin Center for Land Use Education (CLUE), communities in Ashland County participated in two Saturday afternoon mapping workshops. Individuals from each of the jurisdictions met to discuss factors that influence land management and growth throughout the county. These factors were then mapped, in addition to land uses, and became countywide Land Management Factor maps. The maps indicate natural features that have an impact on land management and growth. They identify areas that can best accommodate new growth by first identifying the natural, cultural, and regulatory factors that restrict, limit, or modify new development. The maps were then used individually by each community to develop a future land use map.

Coastal Resource Management

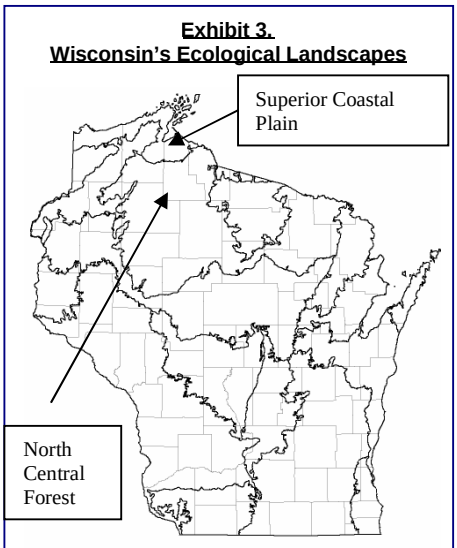
As part of the Comprehensive Plan, the County received grant funds from Wisconsin Coastal Resource Management to incorporate Coastal Resource Planning into the Plan document. The Coastal Resource Area map located in this element depicts the coastal resource area and the watersheds that are found within it. The Coastal Resource Area map clearly shows the boundary of the planning area. This boundary has also been included on each of the maps that are found in this element. The Coastal Planning Area is 340,421 acres in size. The coastal boundary is also the boundary for the Lake Superior Basin.

It is the intent of Coastal Resource Planning to identify applicable planning measures and natural resources, as well as goals, objectives, and policies that relate to Coastal Management Planning.

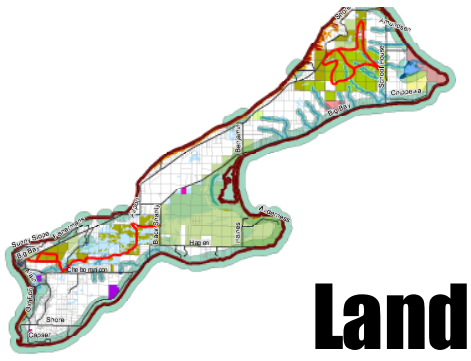
General Setting:

The Town is located within the North Central Forest, as defined by the Department of Natural Resources (Exhibit 3).

Exhibit 3.
Wisconsin's Ecological Landscapes

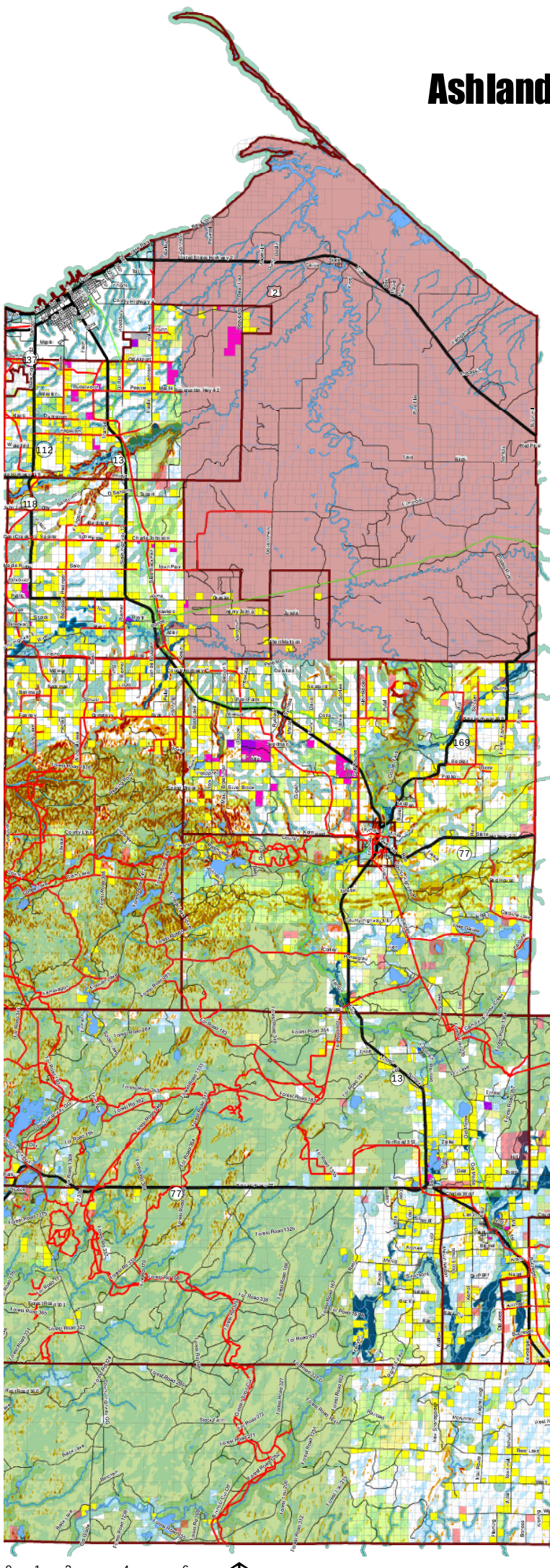


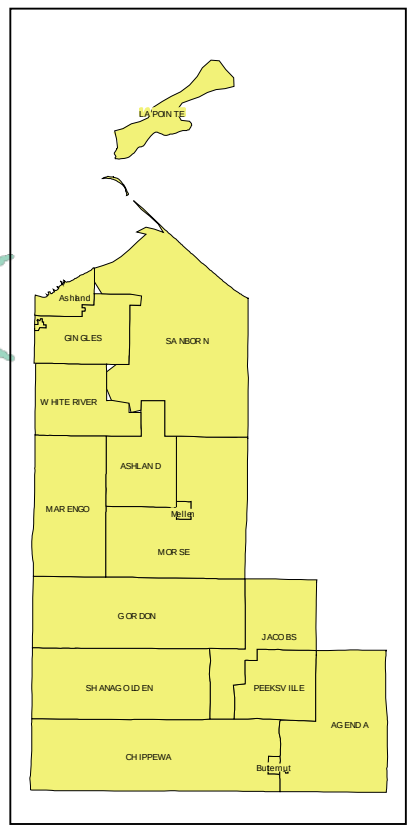
Source: Wisconsin Department of Natural Resources

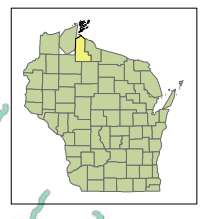


Land Management Factors

Ashland County, Wisconsin







Comprehensive Planning
2005 - 2025

www.uwsp.edu/cnr/landcenter/landproject/ashland.html

Map Description

This map displays land management factors (LMF) for Ashland County, Wisconsin. The LMF map identifies areas that can best accommodate new growth by first identifying the natural, cultural, and regulatory factors that restrict, limit, or modify new development. For example, development is restricted from surface waters and road right-of-ways, while development can occur on steep slopes with engineering modifications.

This map makes no policy recommendations. The map is intended to be used by local units of government to help guide their local land use policy regarding where and how future development should occur.

Land Management Factors can be helpful to:
1. Identify areas where growth should be restricted, limited, or modified
2. Identify areas that can best accommodate development
3. Move the debate from "Where should we grow?" to "How should we grow?"

The menu of land management factors were identified by the Strategic Mapping Focus Group on September 11, 2004. The Focus Group consists of nine members representing various local planning committees throughout Ashland County. The Center for Land Use Education provided facilitation and mapping skills to compile this map.

Legend

Note: For cartographic purposes public lands, forest crop lands, managed forest lands, and tribal lands were made transparent. Colors of environmental features where they overlap with these transparent features may vary from that shown on the legend.

Land Management Factors

- Residential
- Commercial
- Industrial
- Institutional
- Major Highways
- Roads
- Railroads
- Trails
- Surface Water
- Surface Water Setback (75ft)
- DNR Wetland Inventory
- 100 - year floodplain
- 500 - year floodplain
- Slopes > 20 Percent
- Slopes > 12 Percent
- Wilderness Preserve
- Public Lands
- Tribal
- Managed Forest Law (open)
- Managed Forest Law (closed)
- Forest Crop Law
- Shoreland Zone (1000/300ft)

Sources

Surface water features from Wisconsin Department of Natural Resources (DNR) 1:24,000-scale hydrography data model (version 3). Mapped from several 1:24,000-scale sources. Contact Bradley Duncan, DNR GIS Data Specialist for more information. Bradley.Duncan@dnr.state.wi.us.

Shoreland zone and 75 foot hydrology setback created from DNR hydrography data model (version 3) by Douglas Miskowiak, Center for Land Use Education. The data in this map is not intended to be used for regulatory purposes. The actual locations of the ordinary high water mark, 75-foot setback, and shoreland zone need field verification.

Wetland features from Wisconsin Department of Natural Resources (DNR) Fisheries Management and Habitat Protection Digital Wisconsin Wetland Inventory. Polygons digitized from 1:24,000-scale Wisconsin Wetland Inventory maps. Wetlands shown are those greater than five acres.

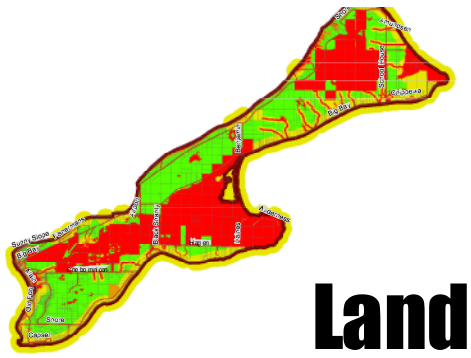
Floodplains derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA). Mapping specifications are consistent with those requirements for mapping at a 1:24,000-scale. Hardcopy FIRM maps were either manually digitized or scanned and vectorized.
Floodplains digitized from .tiff documents obtained from DNR. Rubber sheeting techniques employed to best fit floodplains to Ashland County aerial photography. Floodplains digitized by Todd Goold, Point North Inc., September 25, 2003.

Steep slopes created using the 30 meter digital elevation model and ArcMap8.3 spatial analyst extension and surface analysis slope functionality.

Tribal lands from the Wisconsin Department of Natural Resource, 1998.

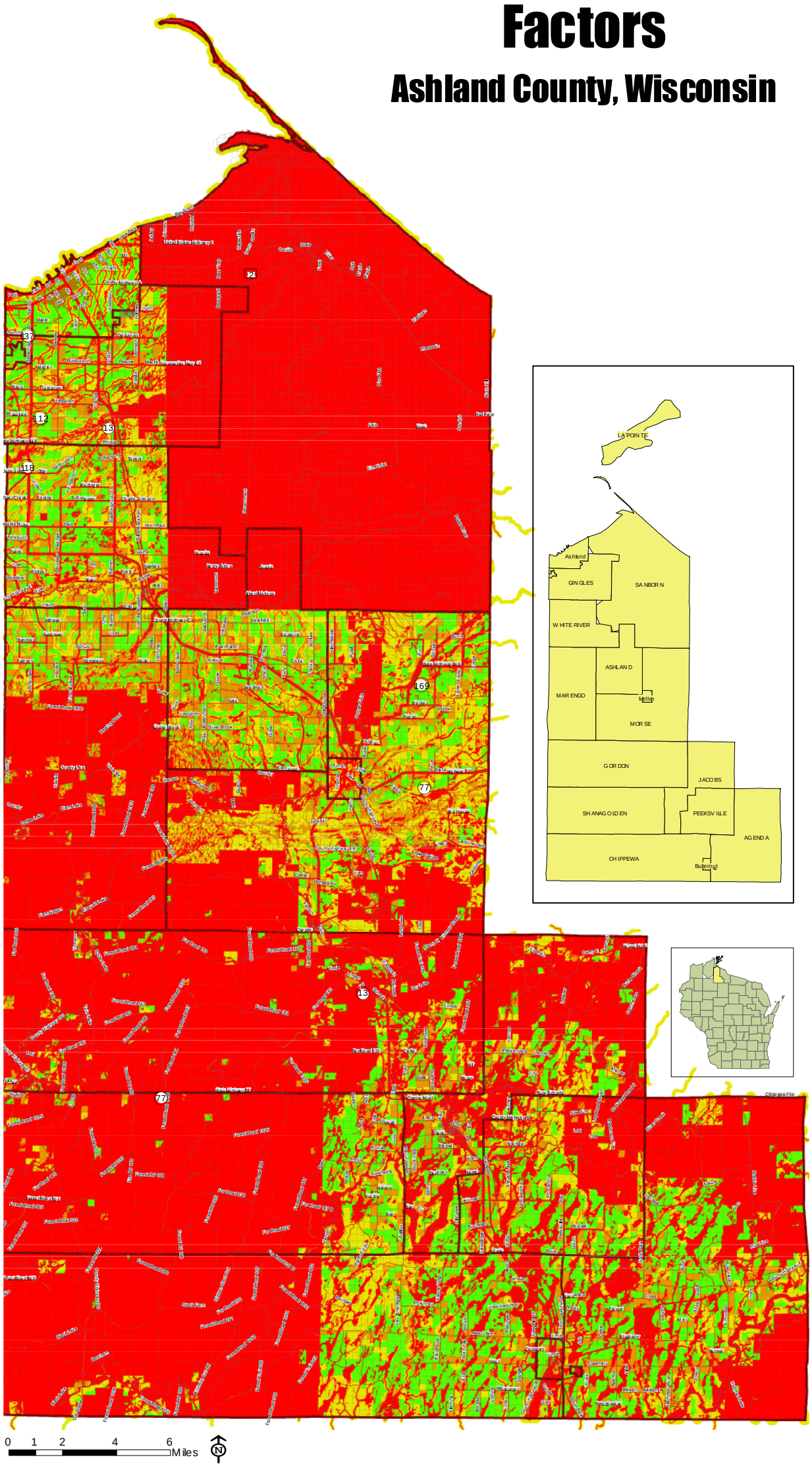
Developed parcels based from citizen land use field surveys from Vierbicher and Associates. Land use attributes overlain on ownership parcels by Douglas Miskowiak, Center for Land Use Education.

Map created by Douglas Miskowiak,
Center for Land Use Education (CLUE)
September, 2004.



Land Management Factors

Ashland County, Wisconsin



ASHLAND COUNTY

Comprehensive Planning 2005 - 2025

www.uwsp.edu/cnr/landcenter/landproject/ashland.html

Map Description

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Legend

Land Management Factors

- Major Highways
- Roads
- Trails
- Railroads
- Surface Water
- Tribal
- Surface Water Setback (75ft)
- Public Lands
- Wilderness Preserve
- Slopes > 20 Percent
- DNR Wetland Inventory
- 100 - year floodplain
- 500 - year floodplain
- Industrial
- Institutional
- Commercial
- Residential
- Slopes > 12 Percent
- Managed Forest Law (open)
- Managed Forest Law (closed)
- Forest Crop Law
- Shoreland Zone (1000/300ft)
- Remaining Land

Factors displayed in red are those that do or should RESTRICT future development.

Factors displayed in orange are those that do or should LIMIT future development.

Factors displayed in yellow are those that should MODIFY future development.

Land shown in green DO NOT restrict, limit, or modify future development.

Sources

Surface water features from Wisconsin Department of Natural Resources (DNR) 1:24,000-scale hydrography data model (version 3). Mapped from several 1:24,000-scale sources. Contact Bradley Duncan, DNR GIS Data Specialist for more information. Bradley.Duncan@dnr.state.wi.us.

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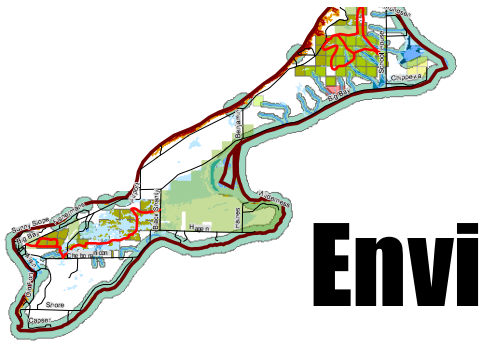
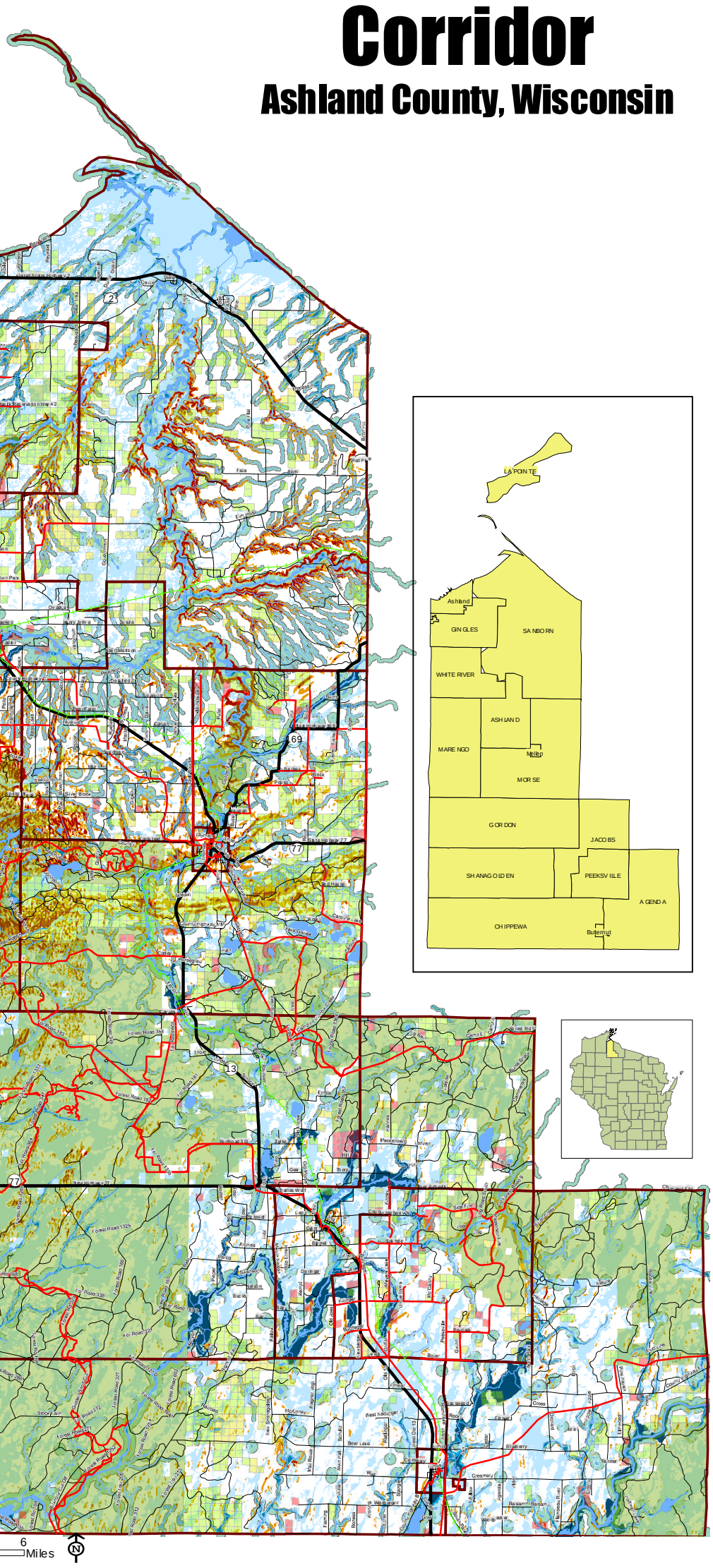


Environmental Corridor

Ashland County, Wisconsin



Comprehensive Planning
2005 - 2025

www.uwsp.edu/cnr/landcenter/landproject/ashland.html

Map Description

This map displays environmental features that contribute to an environmental corridor concept for Ashland County, Wisconsin. The environmental corridor displays areas to consider for enhanced environmental management or protection. This map makes no local policy recommendations. The map is intended to be used by local units of government to help guide their local land use policy and enhance inter-governmental cooperation regarding natural and cultural resources.

Environmental corridors can be helpful to:
1. Enhance recreational opportunities
2. Protect water quality
3. Provide wildlife habitat
4. Safeguard aesthetic values
5. Provide opportunities for development

The menu of environmental features were identified by the Strategic Mapping Focus Group on September 11, 2004. The Focus Group consists of nine members representing various local planning committees throughout Ashland County. The Center for Land Use Education provided facilitation and mapping skills to compile this map.

Legend

Note: For cartographic purposes public lands, forest crop lands, and managed forest lands were made transparent. Colors of environmental features where they overlap with these transparent features may vary from that shown on the legend.

Environmental Features

- Surface Water
- Surface Water Setback (75ft)
- Shoreland Zone (1000/300ft)
- DNR Wetland Inventory
- 100 - year floodplain
- 500 - year floodplain
- Slopes > 20 Percent
- Slopes > 12 Percent
- Public Lands
- Trails
- Managed Forest Law (open)
- Managed Forest Law (closed)
- Forest Crop Law
- Wilderness Preserve

Context Layers

- Major Highways
- Roads
- Railroads
- Minor Civil Divisions

Sources

Surface water features from Wisconsin Department of Natural Resources (DNR) 1:24,000-scale hydrography data model (version 3). Mapped from several 1:24,000-scale sources. Contact Bradley Duncan, DNR GIS Data Specialist for more information. Bradley.Duncan@dnr.state.wi.us.

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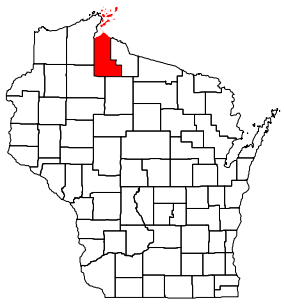
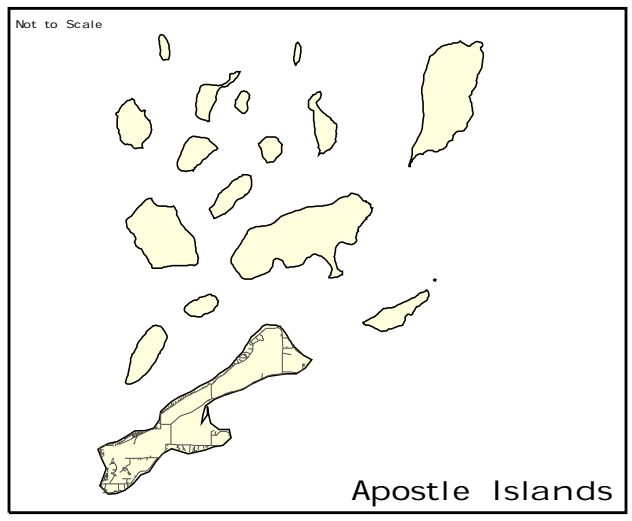
Ashland County

Coastal Resource Area





Fish Creek
City of Ashland
GINGLES
SANBORN
Montreal River
White River
Lower Bad River
WHITE RIVER
Potato River
Marengo River
ASHLAND
Tyler Forks
MARENGO
City of Mellen
MORSE
Upper Bad River
Tyler Forks
GORDON
JACOBS
West Fork Chippewa River
SHANAGOLDEN
East Fork Chippewa River
PEEKSVILLE
Butternut Creek
AGENDA
CHIPPEWA
VILLAGE OF BUTTERNUT
Upper North Fork Flambeau River
Lower North Fork Flambeau River
Upper South Fork Flambeau River

Legend

- Coastal Resource Area
- Lake Superior Basin Boundary
- Watershed Boundaries

0 2.5 5
Miles

VIERBICHER ASSOCIATES
Committed to Quality Service Since 1976

Source: Wisconsin Department of Administration

Attributes and Characteristics of the Superior Coastal Plain

The Towns of La Pointe, Sanborn, Gingles, White River, and sections of Marengo, Ashland, and Morse are located in the ecological landscape that is centered on the low plains of Lake Superior's south shore. Two large pockets of this low plain occur in Wisconsin: one between the City of Superior and Port Wing and the other between Ashland and the Montreal River. The Bayfield Peninsula ridge splits these low plains. This ecological landscape includes the near-lake portion of the ridge, as well as the Apostle Islands. An escarpment rising several hundred feet above the plain marks this ecological landscapes southern boundary. Underlying this landscape is a thick band of clay deposited when lake levels were considerably higher. Outcroppings of sandstone bedrock occur along the northern margin of the Bayfield Peninsula and along the shores of some of the Apostle Islands.

There are very few natural lakes within this landscape but many small rivers and streams dissect the lake plain and peninsula. Soils are moderately well drained (on the peninsula) to poorly drained (where the red clay is near the surface). Before European settlement, white pine, balsam fir, white spruce, and paper birch were the dominant trees in the area. This was the only area in the State to support sizable tracts of boreal forest. Trembling (quaking) aspen is now dominant throughout the landscape as a result of past disturbance and management for earlier succession forests. Boreal forest remnants consisting of spruce, fir, white pine, and associated hardwoods (aspen, balsam poplar, white birch, and red maple) still exist.

The majority of this ecological landscape remains forested, with only a small amount of the land being used for agriculture. Urban development threatens some coastal wetlands. The Kakagon-Bad River Sloughs are of special ecological concern. Public lands within this area include the Apostle Island National Lakeshore, Chequamegon National Forest, Brule River State Forest, St. Louis River Streambank Protection Area, Superior Municipal Forest, and several State Parks and Natural Areas.

DNR Legacy Places

In 2000, the DNR comprised a list of places that were believed to be critical in meeting conservation and recreation needs. The criteria were applied to identify specific places using data on the distribution of various ecological, population, and geographical features. The Legacy Places were then categorized under which ecological landscape they fall under (Exhibit 3). Values were then given to each of the places based on size, the amount of protection initiated, the amount of the area that still needs protection, its conservation significance, and its recreation potential.

Big Bay State Park – Madeline Island. (Photo: DNR)

In the Superior Coastal Plain area, there are several LegacyPlaces. Some key characteristics of this area are the coastal estuaries, sandscapes, boreal conifer-hardwood forest, shoreline cliffs, red clay soils, and concentrations of migratory birds. The extensive, high quality coastal wetlands and estuaries in this area provide critical habitat for many migratory songbirds, waterfowl, shorebirds, and rare plants. In addition to the important wetland areas, the shoreline also consists of many sandstone cliffs and clay bluffs that are home to many rare plant species.

The Bad River Legacy Place consists of the area that the Bad River flows through. Starting in the Penokee-Gogebic Range it quickly drops through deep forests down to lowland forests and then out to sloughs where it flows into Lake Superior. Many other high quality waters feed this river, notably the White, Marengo, Burnsweiler, Potato, and Tyler Forks Rivers. The lower stretches of the Bad and White Rivers flow through the Bad River Indian Reservation. Copper Falls State Park is a Legacy Place because of the areas of canyons, streams, and waterfalls that are found within the Park.

At the mouth of the Bad River are some of the largest and highest quality coastal wetland in the Great Lakes region. This is characterized as the Chequamegon Point-Kakagon Slough Legacy Place. Along with these wetlands is a long narrow sandspit, Chequamegon Point-Long Island, which provides critical nesting and resting habitat for many migratory waterfowl, shorebirds, and songbirds. This vast wetland complex of sloughs is also an important spawning and nursery area for many fish species.

Big Bay State Park is also considered a Legacy Place. This large area is located on the Eastern Coast of Madeline Island and contains a coastal barrier spit, beach and dunes, xeric pine forest, lagoon, and a diverse array of peatlands. Coastal fen, coastal bog, shrub swamp, and tamarack swamp border the lagoon. An abandoned sandspit, now three-quarters of a mile inland from Lake Superior, separates a much more acid complex of peatland types, including open bog, muskeg, and black spruce swamp, from the more mineral-rich types to the east. The primary coastal spit is mostly forested, with all three pine species native to the State present.

Soils

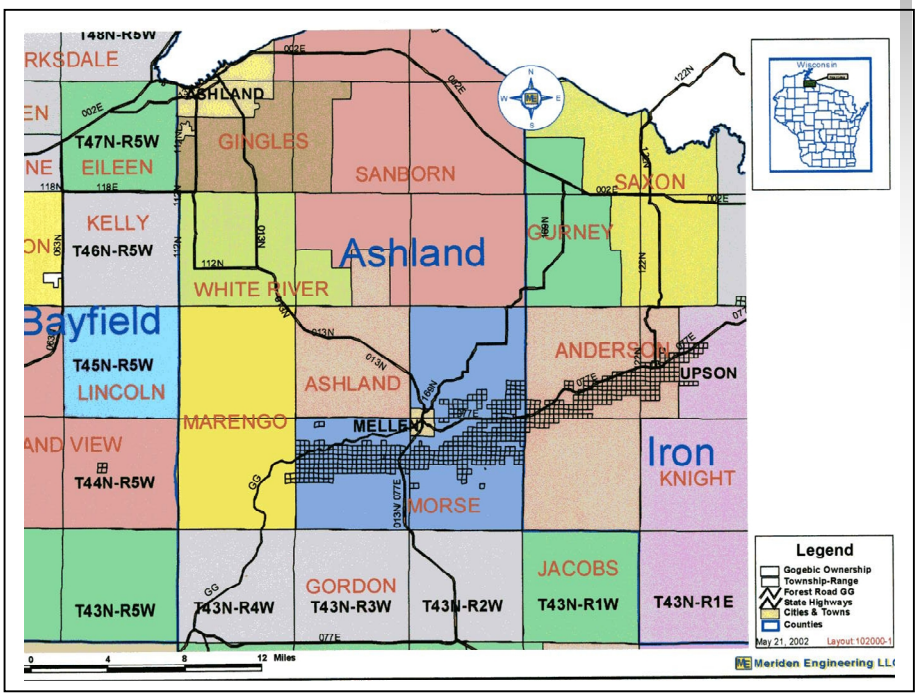
Currently, there is limited soil data available for Ashland County. According to the Ashland County Forest 10-Year Plan (1996), the soils of the County are largely derived from the weathering of the glacial drift deposits and show a great variation within relatively short distances. Water action, wind, and the accumulation and incorporation of organic material since the glacial period have modified the soils. Soil types within the County are not generally found in extensive continuous areas of any one soil classification, but are scattered in smaller groupings. The majority of the soils in the County are loamy and silt, soils over loamy till, and sandy loam soils over outwash plains. The basic soil components are sand, gravel, silt, clay, and organic material. The different soil types are composed of various combinations of each component. Soils in the Town of White River may include forested silty soils, forested loamy soils, or forested sandy soils (UW Extension Wisconsin Geological and Natural History Survey, 1993). A soil survey for Ashland County should become available in 2005.

Mineral Resources

Metallic

Bedrock in some areas of northern Wisconsin contains metallic minerals. In some localized areas, significant concentrations of these metallic minerals may be appropriate for economic development, depending on local geology, price of metal, and environmental review and permitting processes. The potential and pace for metal mining in northern Wisconsin is affected by the geology of the region, by the prices for metals on national and international commodities markets, and by the time involved in completing the State's environmental review and permitting processes. When a mining company has completed exploration drilling of a metallic mineral deposit and has determined that the prospect contains economically viable amounts of recoverable minerals, the company must decide whether to initiate the formal metallic mining permitting process. This process involves receiving licenses and permits from the DNR.

Exhibit 4. La Pointe Iron Company Land Ownership



Source: La Pointe Iron Company& Meriden Engineering LLC

There is a large amount of iron ore that remains in the County. The area where the metal is concentrated is known as the Gogebic Iron Range and a majority of either the land or the mining rights to the area is owned by the La Pointe Iron Company (Exhibit 4). The Company has developed a conceptual iron/taconite mining development area that includes land in the Towns of Marengo and Morse. There are areas that are found in Bayfield and Iron Counties; however, the majority of the property is located in Ashland County. The mining plans for the area are still in the planning stages and the La Pointe Iron Company has expressed interest in working with the County and its residents to create future plans for this land.

Nonmetallic

Another asset of Ashland County and the Town of White River is the potential accessibility of non-metallic resources. These resources can provide for economic activity within the Town. However, these resources also represent potential erosion concerns and groundwater infiltration concerns. These must be carefully managed so as to avoid any potential negative impacts through their development and use. If accessed and used, it is critical that mitigation plans be put into place in order to ensure a pre-disturbance landscape in appearance and usability once they have yielded their resources. Additional concerns about noise, hours of operation, dust, and blasting impacts are also common.

NR135 of the Wisconsin Administrative Code establishes a statewide program regulating nonmetallic mine reclamation. As of September 2001, nonmetallic mines may not operate without a reclamation permit. The program is administered at the local level. These mines are required by law to develop a reclamation plan that will designate an approved land use once mining operations have ceased. Mines need to be in compliance with NR216 and they need to secure stormwater permits. Both private and municipally owned mines are required to obtain such coverage. Registration allows for identification, preservation, and planning for future development of marketable resources. According to Ashland County there are no active non-metallic mines in White River. There are a total of 38 non-metallic mines in the County, seven of which are inactive.

Water Resources

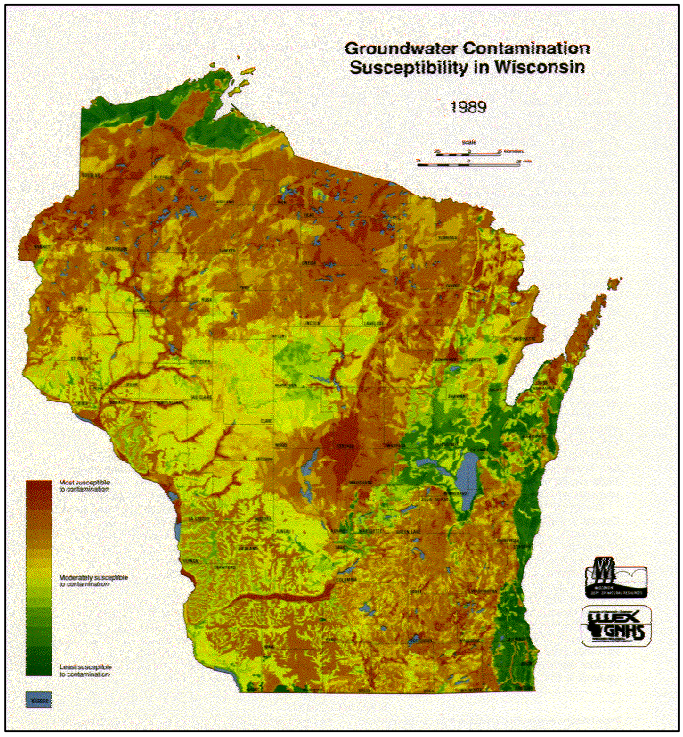
Within Ashland County, there are 85 lakes, 96 flowages, and 548.1 miles of streams, of this number there are 257.7 miles of streams that are classified as trout streams. There are two different watersheds in Ashland County. Streams located in the northern basin flow into Lake Superior, and streams in the southern portion of the county (south of the Great Divide) flow into streams that eventually enter the Mississippi River.

As part of this comprehensive planning process, a document entitled *Ashland County's Water Resource: Issues and Recommendations* was prepared by the Center for Land Use Education. This document was prepared to highlight critical water issues the region is facing, and recommend multiple strategies that could be implemented to address these issues. The entire document can be found in Appendix A of the Agricultural, Cultural, and Natural Resources Element in the Countywide Plan.

Ground Water

Wisconsin is a state with a large quantity of groundwater. There have not been any concerns about the availability of good quality groundwater in or near the Town. According to the Ashland and Bayfield County Land and Water Resource Management Plan, groundwater is found under nearly the entire county and is generally of very good quality.

A Wisconsin Geological and Natural History Survey map delineates groundwater susceptibility to contamination based on five physical resource characteristics. These characteristics are the type of bedrock, depth to bedrock, depth to water table, soil characteristics, and surficial deposits. Based on these characteristics, the area near the Town is moderately susceptible to contamination.



The Department of Natural Resources maintains a Groundwater Retrieval Network Database, which includes monitoring data from public and private water supply wells. A review of this database indicates that there has been a number of monitoring results that exceed the preventative action limit (PAL) for:

- Nitrate (NO3): Water normally contains a very small amount of nitrate, but elevated nitrate levels indicate contamination. Some common sources of nitrate contamination include individual septic systems, sewage treatment plants, fertilizers, and animal waste.
- Coliform: Coliform bacteria are found in the feces of humans and other animals, as well as in surface water. Their presence in groundwater (wells) shows that unfiltered or poorly-filtered surface water or near-surface waters have found their way into the groundwater or entered through an opening in, around, or at the top of the well casing.

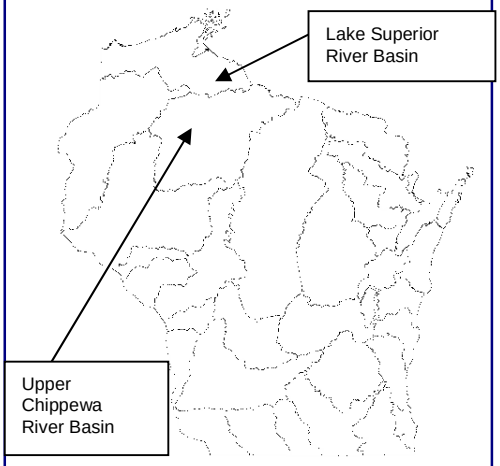
There are also some wells that exceed limits for metals in the water. Metals in groundwater can be naturally occurring or the result of human activities. For example, iron is a common, naturally occurring metal, while cadmium and chromium are associated with metal plating operations. Other elements are often found affiliated with metals. Although exceeding the PAL is not a violation of the groundwater rules, it does serve as a "trigger" for remedial actions to reduce the concentration of the substance below the PAL.

Surface Water

The Town is located in the Lake Superior River Basin (Exhibit 5), which includes the watersheds of Fish Creek, Lower Bad River, Montreal River, White River, Marengo River, Tyler Forks, and Upper Bad River. There are several streams, lakes, and rivers in the region that are experiencing problems as a result of increased amounts of sediment due to erosion. The County encourages that BMPs be utilized when activities affecting transportation or

building occur. There are also many other activities that could impact the stability of the soil in an area. Current research indicates that the percentage of forest cover within a watershed will significantly affect peak flows within the area. Erosion and resulting sedimentation within the region is due to high peak flows (*Ashland County Water Resources*).

Exhibit 5. Wisconsin Basins



Source: Wisconsin Department of Natural Resources

The County has prepared a lake classification guide. Lakes have been placed into the following classes (not all lakes have been given a classification):

- Class 1 lakes are large and highly developed. Minimum allowed lot sizes here are 30,000 square feet, minimum lot width is 150 feet, and minimum lot depth is 200 feet.
- Class 2 lakes are less developed and more sensitive to development pressure. Minimum allowed lot sizes here are 40,000, minimum lot width is 200 feet, and the minimum lot depth is 200 feet.
- Class 3 lakes are usually small, have little or no development, and are very sensitive to development pressures. It is important to note that the County has given rivers and streams the same standards as Class 3 lakes. Minimum allowed lot sizes here are 62,500 square feet, minimum lot widths are 250 feet, and the minimum lot depth is 250 feet.

There are no lakes located in the Town of White River.

Floodplains

The floodplain is land that has been, or may be, covered by floodwater during the 100-year flood. It is also described as the flood level that has a one percent chance of occurring in any given year. Floodplain locations are determined by FEMA. If a property is located within a floodplain that has been identified by FEMA then that property owner is required to purchase flood insurance for their home. Development in the floodplain reduces the floodplain's storage capacity, causing the next flood of equal intensity to crest even higher than the last. The Town of White River has some areas located in a floodplain (See Wetland and Floodplain Map).

Wetlands

Wisconsin's wetlands provide a variety of critical functions, they provide habitat for wildlife, store water to prevent flooding, and protect water quality. However, wetlands continue to be destroyed and degraded, as they are drained and filled for agriculture, development, roads, and are impacted by pollutants.

According to the Wisconsin Wetlands Inventory, Ashland County contains 168,388 acres of wetland, comprising 25.2 percent of the County's total land area, and 3.1 percent of the State's wetlands. This data is based on aerial photography and includes only wetlands larger than two acres. As a result, the wetland acreage numbers are likely to undercount the existing wetland area. For wetland locations please see the Wetland and Floodplain Map.

The DNR has profiled larger wetland areas that are found in the County. The Bad River-Kakagon Slough is mainly located in the Town of Sanborn and on the Bad River Reservation. It contains major wetland communities including emergent marsh, coastal fen, coastal bog, tamarack swamp, and shrub swamp. There are 18 rare elements of either bird, fish, or plant habitat that have been identified. These rare elements are included in the Wisconsin Heritage Inventory, that is located later in this element. The second identified large wetland complex is the Long Island-Chequamegon Point area. This is Lake Superior's most extensive, and least disturbed coastal barrier spit. Many types of plants and animals are found here. There are 15 rare elements of beetle, bird, community, grasshopper, and plant that have been identified for the area. These can also be found in the Wisconsin Heritage Inventory. The third large wetland area that has been identified is the Big Bay Wetland, located in the Town of La Pointe. This area is located within a state park and a town park and has been designated as a state natural area. There are 22 rare elements of bird, butterfly, community, and plants that are found here. These rare elements are listed in the Wisconsin Heritage Inventory.

Phase II of the DNR's *Coastal Wetland Assessment* prioritized wetland areas in the State. The assessment ranks ecological significance and the priority that each of the wetland are ranked for the need of future surveys. Out of the 28 wetland sites on Lake Superior, the assessment concentrated on five of the wetlands located in Ashland County. The wetland areas are:

- Kakagon–Bad River Slough
- Outer Island Sandspit and Lagoon
- Big Bay Wetlands
- Stockton Island Tombolo
- Long Island-Chequamegon Point
- Hoffman Lake

In both of the rankings, the wetlands in Ashland County fell in the top 20 for known ecological significance, and the need for future field surveys due to data gaps.

Point Sources

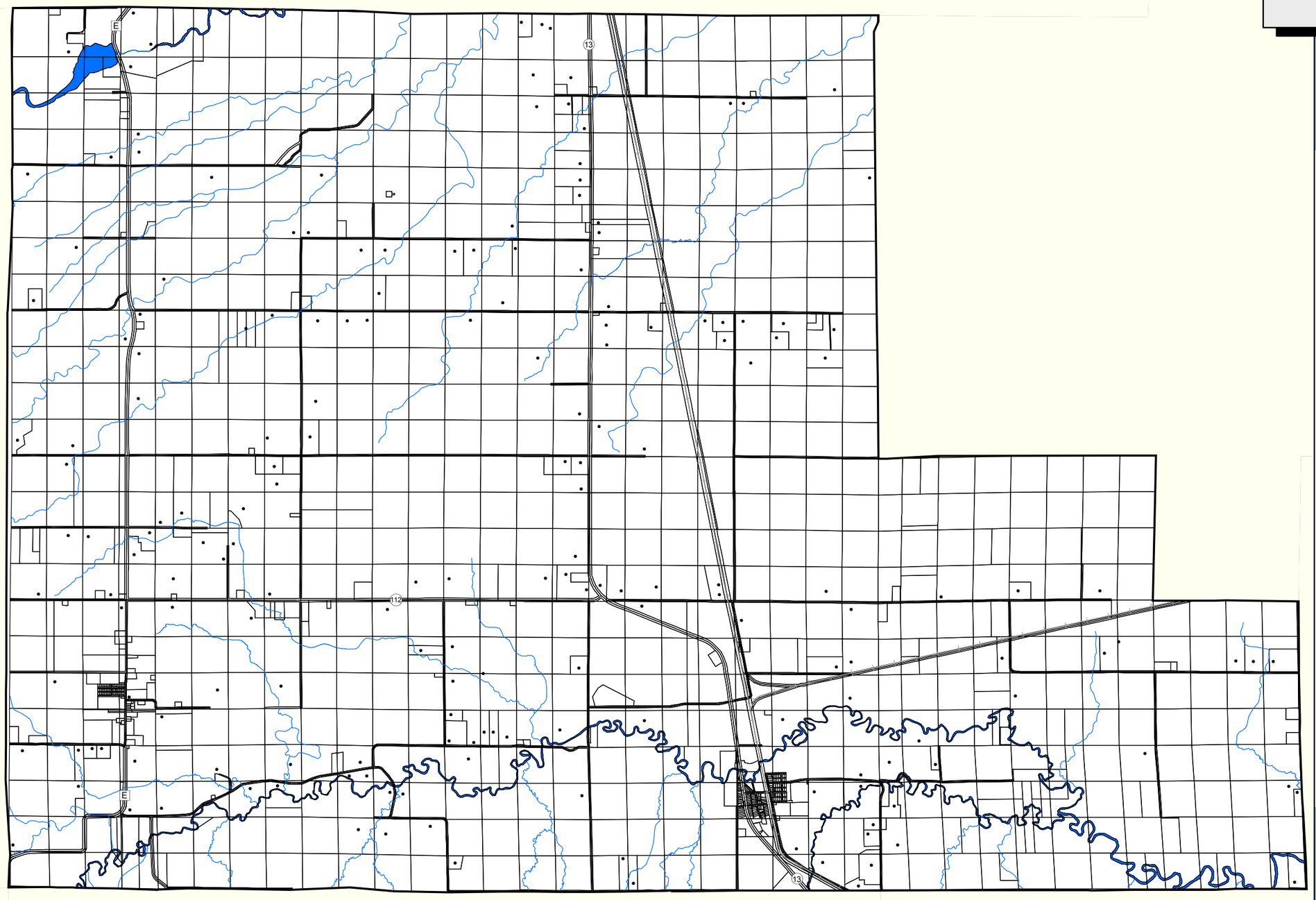
The DNR regulates the discharge of pollutants to waters through the administration for the Wisconsin Pollutant Discharge Elimination System (WPDES). Ashland County has six facilities with WPDES permits:

- Ashland Sewage Utility
- Village of Butternut
- Glidden Sanitary District
- Madeline Sanitary District
- Columbia Forest Products
- Xcel Energy

(Source: *Ashland County's Water Resource)*

Surface Water
Town of White River: 2004

Ashland County
Comprehensive Plan Map



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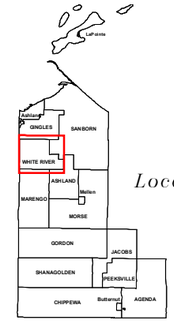
Surface Water



Locational Map

0 0.25 0.5 1

Miles

NORTH

Base Map: Ashland County

Data Source: Town of White River

Map Created: June 23, 2006

Map Edited:

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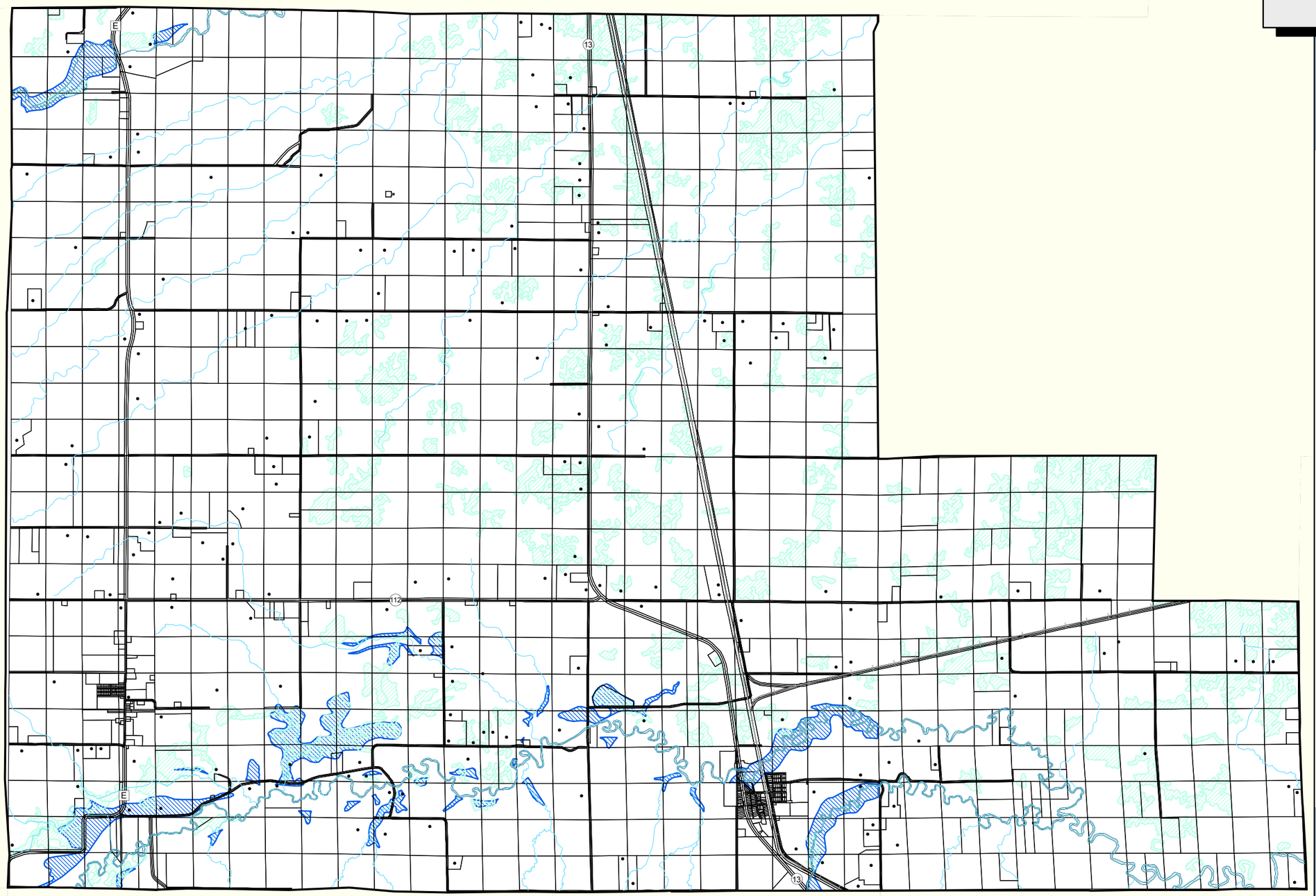
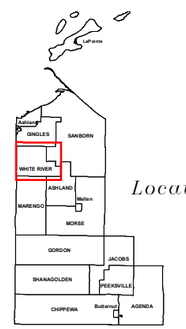
Floodplain and Wetlands Town of White River: 2004

Ashland County Comprehensive Plan Map



Legend

- Approximate 100-year floodplain
- wetlands
- Suface water



Locational Map

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Miles

NORTH

Base Map: Ashland County

Data Source: Town of White River

Map Created: June 23, 2006

Map Edited:

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Forest Resources

The Department of Natural Resources has identified 16 million acres of forestland (46 percent of Wisconsin's total land area) and millions of urban trees that significantly contribute to the quality of life in Wisconsin. These forests are important for their recreational opportunities, wildlife habitat, air quality enhancement, water protection, biodiversity, products, and a variety of other values. However, 70 percent of the forestland is in private ownership making sustainable forest management more complex. The DNR defines forest land as l*and area that is at least 16.7 percent covered by forest trees or was in the past, and is not currently developed for non-forest use.*

As part of this comprehensive planning process, a document entitled *Ashland County's Forest Resource: Trends, Issues, and Actions* was prepared by the Center for Land Use Education. This Document was prepared to highlight forest resource trends in Ashland County, identify critical forest issues the region is facing, and recommend multiple strategies that could be implemented to address these issues. Much of this information is included in this element; however, the document can also be found in Appendix B of the Agricultural, Cultural, and Natural Resources Element in the Countywide Plan.

There are two forest tax laws in Wisconsin, the Managed Forest Law (MFL) and the Forest Crop Law (FCL). These programs provide private property owners with tax reductions in exchange for entering into long-term contracts with the Department of Natural Resources to ensure proper forest management. The public also benefits from the additional opportunities for recreation, wildlife habitat, and watershed protection that proper forest management provides.

Changes were made to the Managed Forest Law in April 2004. Under these changes, forest landowners will pay taxes of approximately $1.30 per enrolled acre if the property is open to public access for hunting, fishing, sightseeing, hiking, and cross country skiing. They will pay approximately $6.50 per enrolled acre if the property is closed to public access. Land that is enrolled after this legislation passes will be allowed to close up to 160 acres. Another change that has been made is that 80 percent of the yield tax will be returned to the municipality and the County will receive 20 percent.

According to the Wisconsin DNR (2003), there are 360 FCL acres in White River, and there are 3,467 acres that are enrolled in MFL. 283 acres of this land is closed to the public and the remainder is open to public access.

Wisconsin has 32 river basins, which are divided into 23 management "basins" or Geographic Management Units (GMUs). These geographic areas are the basis for carrying out resource management work in the Watershed Management, Fisheries Management and Habitat Protection, and Drinking Water and Groundwater Management Programs. Ashland County is located within two different GMUs. The northern portion of the County is located within the Lake Superior GMU.

According to the DNR, forests in the GMU have been relatively stable for the past 13 years. The most recent survey of this GMU indicates that the forestland makes up 69 percent of the total area. The number of live trees over ten feet tall in the forest increased by nearly

150 million, between 1983 and 1996, to 1 billion. The most common forest type is aspen-birch. The tree species found in the greatest volume is the aspen, followed by hard maple, balsam fir, soft maple, white pine, and red pine. Private individuals own 43 percent of the timberland area. The forest industry owns eight percent of the timberland, 47 percent of the timberland is owned by various levels of government, and two percent is owned by Native American tribes.

The other GMU that encompasses the southern portion of the County is the Upper Chippewa GMU. The most recent survey of the area indicates that forestland makes up 64 percent of the total land area of the GMU, an increase of approximately 100,000 acres since the previous survey. The number of live trees over ten feet tall in the GMU forest has increased by nearly 300 million, between 1983 and 1996, to 1.8 billion. Maple-basswood is the most common forest type and the tree species that are found in greatest volume are the hard maple, aspen, soft maple, basswood, and balsam fir. Approximately 49 percent of the forestland in this GMU is owned by private individuals. Forest industries own nine percent of the forestland, 39 percent of the timberland is owned by various levels of government, and three percent of the land in the GMU is owned by Native American tribes (DNR).

County Forest Land

The County is currently in the process of updating their County Forest 10-Year Plan (1996). The objectives of the County Forest 10-Year Plan is to:

- Specify in this plan the operating policies and procedures, which Ashland County will follow in administration of the Forest.
- Provide the reader of the Plan with background information regarding the County Forest.

The plan provides a summary of 10-year forest management needs, as well as detailed annual needs for the 10-year timeframe.

In County Forest areas, approximately 93 percent of the area is forested (1996 County Forest Plan). At the time the 10-year Forest Plan was written there were approximately 32,279 acres, with five forest cover types comprising the commercial forest. The Northern Hardwood type alone comprises approximately 40 percent of the total commercial forest acreage. The following is a breakdown of the kinds of wood found in the County Forest

- Northern Hardwood (40%)
- Fir-Spruce (12%)
- Swamp Conifers (13%)
- Aspen (15%)
- Other (20%)

The County Forest Lands are open for public use and for foot travel. There is also a system of forest roads and trails, which allow for at least seasonal access to almost every section of land within the forest. Recreational opportunities within the forest include beaches, boat landings, canoe campsites, and snowmobile, ATV, hunter, and walking trails. The Ashland County Department of Forestry has 62 management compartments that range in size from 142 to 827 acres. Approximately 72 percent of this is County-owned and 28 percent remain in private holding. The following is a list of towns containing County Forest Land.

- Town of Jacobs – 13,586.46 acres (34%)
- Town of Agenda – 15,058.46 (37.6%)
- Town of Morse – 5,439.65 (13.6%)
- Town of Peeksville – 5,914.71 (14.8%)

(Source: Ashland County's Forest Resource: Trends, Issues, and Actions)

School Forests

School forests are lands owned or controlled by school districts and that are registered under Community Forest Law. These forests provide educational, recreational, and economic opportunities for local communities and their schools. Though school forests do have forest management plans, many of them are not up to date. The following is a list of school forests that are found in Ashland County:

- Odana School Forest – 40 acres
- Butternut School Forest – 27 acres
- Mellen School Forest – 50 acres
- Sanborn School Forest – 28 acres
- Glidden School Forest – 40 acres
- Cozy Valley School Forest – 40 acres

(Source: Ashland County's Forest Resource: Trends, Issues, and Actions)

National Forest Land

The Chequamegon-Nicolet National Forest consists of four separate contiguous units. Approximately 179,460 acres of the National Forest are found in Ashland County. There is a wide variety of tree species and other vegetative communities that are found in this forest, as well as over 300 wildlife species that inhabit the area. The following is a list of towns that contain National Forest Land:

- Chippewa
- Gordon
- Shanagolden
- Marengo
- Morse

(Source: North West Regional Plan Commission)

State Forest Land

State Forest Lands totaling around 2,283 acres are scattered throughout the County. These parcels range in size from 40, to approximately 277 acres. The following is a list of towns that contain State Forest Land:

- Town of La Pointe
- Town of Chippewa
- Town of Shanagolden
- Town of Gordon
- Town of Jacobs
- Town of Morse
- Town of Sanborn
- Town of Gingles
- Town of Agenda

Tribal Forest Land

Approximately 77 percent of the Bad River Reservation is forested. Of this area, 45,700 acres of forested lands are considered by the Bureau of Indian Affairs (BIA) as being suitable for commercial timber management. Additionally, there are 3,191 acres of fee lands that are capable of timber production. There is a side mix of tree species with aspen dominating almost 50 percent of the Tribe's forestland. To protect and encourage pre-settlement animal species the Reservation aims to restore late successional habitats.

Private Industrial Forest Land

There are several private firms who own large tracts of forestland in the County. In recent years, the transfer of private industrial forestland ownership has increased. At least 23,688 acres of this land have transferred ownership since 2000. Based on data from 1996, private industrial forestland ownership makes up approximately 12 percent of the total forestland in the County (*Ashland County's Forest Resource: Trends, Issues, and Actions).*

State Park

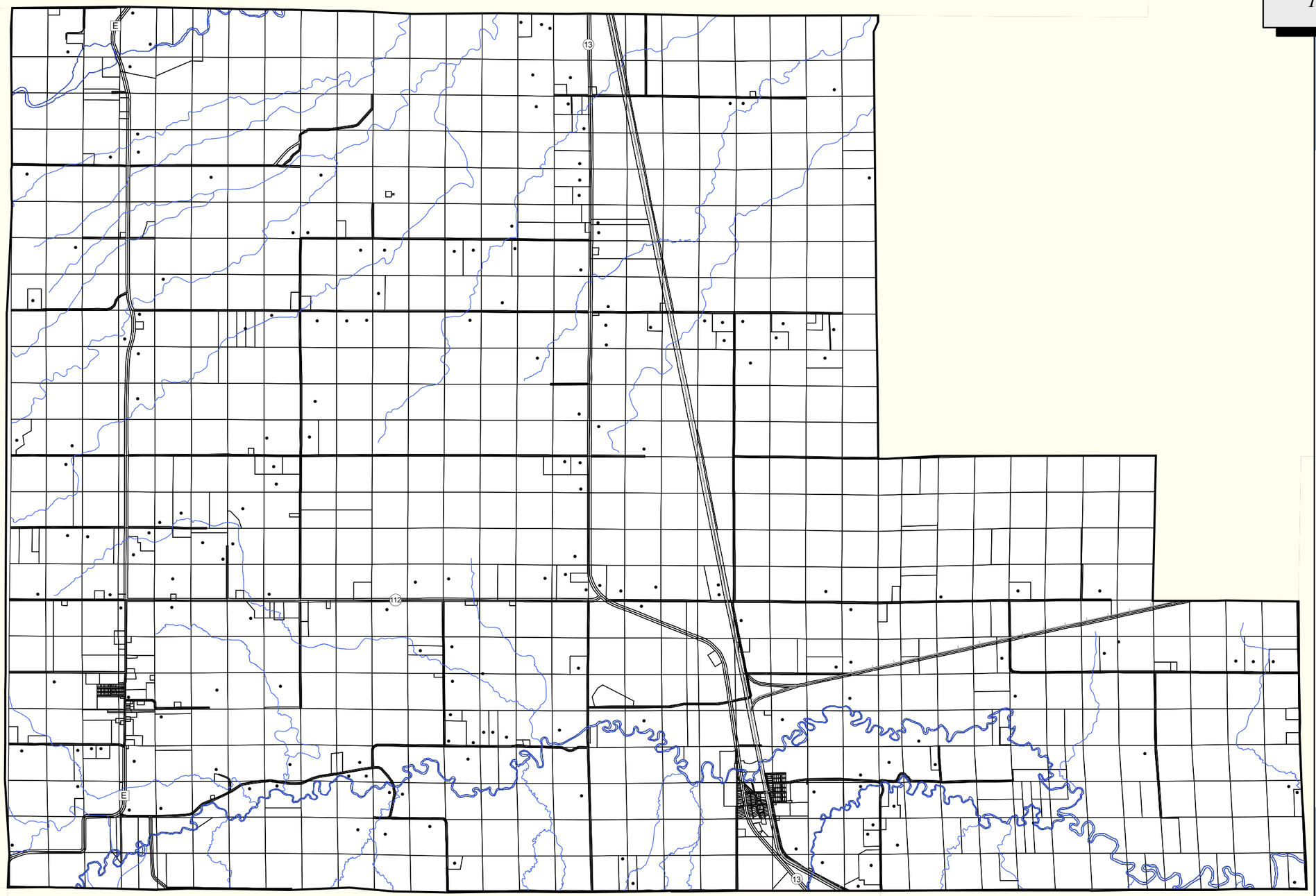
Big Bay State Park in the Town of La Pointe encompasses 2,300 acres. The Copper Falls State Park in the Town of Morse is comprised of 2,600 acres.

Apostle Islands National Lakeshore

The Apostle Island National Lakeshore is found in both Ashland and Bayfield Counties. It consists of shoreline in Bayfield County and includes 21 of the Apostle Islands. The approximate amount of area found in Ashland County is around 35,253 acres. The lakeshore's forests have a wide variety of disturbance histories, ranging from pristine old-growth forest, without a history of deer browsing, to forests that have been subjected to logging, fires, and extensive deer browsing. At present, most of the Lakeshore is covered with unbroken mature second-growth forest. In addition to forestland, there are many other natural and cultural resources that are found in this area. Wildlife found in this area includes a diverse population of nesting and migratory birds, and a variety of mammals, amphibians, and fish.

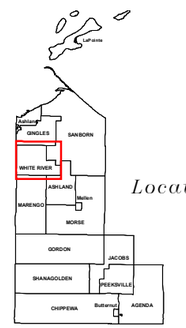
Forest And Park Lands
Town of White River: 2004

Ashland County
Comprehensive Plan Map



Legend

- County Forest
- County Park
- Chequamegon National Forest
- State of Wisconsin
- Copper Falls and Big Bay State Park



Locational Map

0 0.25 0.5 1
Miles

NORTH

Base Map: Ashland County

Data Source: Town of White River

Map Created: October, 2004

Map Edited: October, 2004

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Wildlife Habitat
As Wisconsin's land ownership becomes increasingly fragmented, the Department of Natural Resources believes that its habitat also tends to become more fragmented. This is particularly relevant to species that require a large range or contiguous habitat. Fragmented ownership negatively impacts species by causing inconsistencies in habitat management, and making it more difficult and expensive for the DNR or private organizations to acquire land for preservation.

Large tracts of high quality natural areas in Ashland County include nine State Natural Areas. These are:

- Big Bay Sandspit and Bog
- Apostle Islands Maritime Forest
- Apostle Islands Maritime Cliffs
- Apostle Islands Sandscapes
- Apostle Islands Critical Species
- Chequamegon Hardwoods
- McCarthy Lake and Cedars
- Spider Lake
- Copper Falls

State Natural Areas are designated by the Department of Natural Resources to protect outstanding examples of native natural communities, significant geological formations, and archaeological sites. State Natural Areas also provide the last refuges in Wisconsin for rare plants and animals. The Copper Falls State Natural Area is located in the Town of Morse.

In 1995, 25 elk were released into the Chequamegon National Forest as part of a monitoring project. The DNR is now responsible for monitoring the herd, which has grown to approximately 80-90 elk. In Ashland County, their primary range includes the portions of the Towns of Gordon, Shanagolden, Marengo, Morse, and Chippewa.

Wildlife Management Areas
The Hoffman Lake Hay Creek Wildlife Area encompasses a total of 13,784 acres that are located in Ashland and Iron Counties. The area in Ashland County is roughly half of the total acreage and lies in the Town of Agenda. The area is managed by the DNR whose main goal is to manage the property for wildlife, with the objective of maximizing the aspen acreage in the area. According to the DNR, there are 52 species of song birds, bear, beaver, grouse, deer, snowshoe hares, and wolves that all benefit from the aspen habitat either directly or indirectly.

The White River Wildlife Area encompasses an area of approximately 1,000 acres. The Wildlife Area is located in the Town of Gingles. This area does not have a master plan like the Hoffman Lake Hay Creek Wildlife Area does. It is much smaller and is basically unmanaged. The main goal for the area is to provide and maintain a winter deer yarding area. The Wildlife Area provides winter deer habitat with steep pine ravines, aspen, white pine , and red pine stands. The area is predominantly red clay soil. The last timber sale took place in 1993. The White River flows through the northern part of the wildlife area and the County snowmobile trail travels around the west side of the property.

Other Conservation Areas

Nature Conservancy

In 1997, the Nature Conservancy acquired 1,043 acres near Caroline Lake in Ashland County from George-Pacific Corporation. This area is located in the Town of Morse. Caroline Lake forms the headwaters of the Bad River, which flows into the Kakagon-Bad River Slough. This area provides important habitat for many species of birds and contains a large variety of forested area, wetlands, and lake areas. The area is open to the public and is also being utilized as a research area for Northland College students.

Nature Conservancy/Bad River Band of Lake Superior Tribe of Chippewa Indians

In 2003, the Nature Conservancy of Wisconsin transferred 21,322 acres of forested land in the Chequamegon Bay Area to the Bad River Band of Lake Superior Tribe of Chippewa Indians. The lands that were included in this transaction are composed of multiple parcels that range in size from 20 to 3,500 acres and are covered mostly by forests and wetlands. The Conservancy and the Tribe have signed a Memorandum of Understanding describing the two parties' working relationship on this conservation project.

Madeline Island Wilderness Preserve

The Madeline Island Wilderness Preserve is working to protect wilderness areas and open land. By preserving this space they will protect the diversity of the natural ecosystems and their plant and animal life. The group strives to promote awareness and appreciation of nature. The Wilderness Preserve is located on approximately 2,240 acres of land.

Big Bay Town Park

This Town Park is located on Madeline Island and is found about seven miles from La Pointe. The Park is adjacent to Big Bay State Park. There is no fee for daily use and there are 40 primitive campsites on a first-come, first-served basis. The Park provides trail access to trails in Big Bay State Park.

Environmentally Sensitive Areas

The Town is located in an area of the State that is characterized by numerous wetlands, which provide habitat for threatened or endangered species. Areas of this type are sensitive to development activity, and may be damaged by development that is too close to inappropriate for the individual location. The ecological services provided by these areas are important and may be difficult or costly to replicate.

Threatened or Endangered Species

Wisconsin's Natural Heritage Inventory (NHI), established in 1985 by the Wisconsin Legislature, is maintained by the Wisconsin Department of Natural Resources' (WDNR) Bureau of Endangered Resources. The NHI Program is responsible for maintaining data on the locations and status of rare species, natural communities, and natural features in Wisconsin. The Wisconsin NHI Program is part of an international network of inventory programs that collect, process, and manage data on the occurrences of natural biological diversity using standard methodology. This network was established and is still coordinated by The Nature Conservancy (TNC), an international non-profit organization. The network now includes natural heritage inventory programs in all 50 states, most provinces in Canada, and many countries in Central and South America.

Wisconsin's Natural Heritage Inventory Program's three objectives are to collect information on occurrences of rare plants and animals, high-quality natural communities, and significant natural features in Wisconsin; standardize this information, enter it into an electronic database, and mark locations on base maps for the state; and use this information to further the protection and management of rare species, natural communities, and natural features.

Based on data contained in Wisconsin's Natural Heritage Inventory, there are 26 known rare or endangered plant species and 7 known rare or endangered animal species in Ashland County (see following tables).

Rare, Threatened, and Endangered Species and Natural Communities in Ashland County

Understanding the Town of White River and Ashland County's threatened and endangered species allows for proper examination of any potential impacts proposed developments may have. While specific geographic locations of species or communities are not defined in this element, field investigations at proposed new development sites may be called for in the review and approval process. Collaborative relationships with County staff and State agency representatives will serve as valuable networks to ensure that these resources are protected and preserved within the Town of White River.

Key
End = Endangered
Thr = Threatened
Sc = Special Concern
Sc/M = Fully protected by federal and state laws under the Migratory Bird Act
Sc/P = Fully protected
Sc/N = No laws regulating use, possession, or harvesting.
Sc/H = Take regulated by establishment of open closed seasons.
Sc/Fl = Federally protected as endangered or threatened, by not so designated by WDNR

Beetle		
Common Name	Species Name	Wisconsin Status
Cicindela Hirticollis Rhodensis	Beach-Dune Tiger Beetle	Sc/N

Birds		
Common Name	Species Name	Wisconsin Status
Accipiter Gentilis	Northern Goshawk	Sc/M
Catharus Ustulatus	Swainson's Thrush	Sc/M
Dendroica Caerulescens	Black-Throated Blue Warbler	Sc/M
Dendroica Cerulea	Cerulean Warbler	Thr
Dendroica Tigrina	Cape May Warbler	Sc/M
Empidonax Flaviventris	Yellow-Bellied Flycatcher	Sc/M
Falcipennis Canadensis	Spruce Grouse	Thr
Falco Columbarius	Merlin	Sc/M
Oporornis Agilis	Connecticut Warbler	Sc/M
Vermivora Peregrina	Tennessee Warbler	Sc/M
Ammodramus Leconteii	Le Conte's Sparrow	Sc/M
Botaurus Lentiginosus	American Bittern	Sc/M
Bucephala Clangula	Common Goldeneye	Sc/M

Charadrius Melodus	Piping Plover	End
Chlidonias Niger	Black Tern	Sc/M
Circus Cyaneus	Northern Harrier	Sc/M
Cygnus Buccinator	Trumpeter Swan	End
Haliaeetus Leucocephalus	Bald Eagle	Sc/Fl*
Mergus Merganser	Common Merganser	Sc/M
Pandion Haliaetus	Osprey	Thr
Sterna Hirundo	Common Tern	End

Butterfly		
Common Name	**Species Name**	**Wisconsin Status**
Hesperia Comma	Laurentian Skipper	Sc/N
Oeneis Jutta	Jutta Arctic	Sc/N
Boloria Frigga	Frigga Fritillary	Sc/N
Erebia Discoidalis	Red-Disked Alpine	Sc/N
Lycaena Dorcas	Dorcas Copper	Sc/N
Lycaena Epixanthe	Bog Copper	Sc/N
Pieris Virginiensis	West Virginia White	Sc/N

Caddisfly		
Common Name	**Species Name**	**Wisconsin Status**
Lepidostoma Libum	A Bizarre Caddisfly	Sc/N

Community		
Scientific	**Common**	**Wisconsin Status**
Boreal Forest	Boreal Forest	Na
Dry Cliff	Dry Cliff	Na
Great Lakes Barrens	Great Lakes Barrens	Na
Great Lakes Beach	Great Lakes Beach	Na
Lake Dune	Lake Dune	Na
Moist Cliff	Moist Cliff	Na
Northern Dry Forest	Northern Dry Forest	Na
Northern Dry-Mesic Forest	Northern Dry-Mesic Forest	Na
Northern Mesic Forest	Northern Mesic Forest	Na
Alder Thicket	Alder Thicket	Na
Black Spruce Swamp	Black Spruce Swamp	Na
Coastal Fen	Coastal Fen	Na
Emergent Aquatic	Emergent Aquatic	Na
Ephemeral Pond	Ephemeral Pond	Na
Floodplain Forest	Floodplain Forest	Na
Great Lakes Alkaline Rockshore	Great Lakes Alkaline Rockshore	Na
Hardwood Swamp	Hardwood Swamp	Na
Interdunal Wetland	Interdunal Wetland	Na
Lake--Deep; Soft; Drainage	Lake--Deep; Soft; Drainage	Na
Lake--Shallow; Soft; Drainage	Lake--Shallow; Soft; Drainage	Na
Lake--Soft Bog	Lake--Soft Bog	Na
Northern Sedge Meadow	Northern Sedge Meadow	Na
Northern Wet Forest	Northern Wet Forest	Na
Northern Wet-Mesic Forest	Northern Wet-Mesic Forest	Na
Open Bog	Open Bog	Na
Poor Fen	Poor Fen	Na
Shrub-Carr	Shrub-Carr	Na
Stream--Fast; Soft; Cold	Stream--Fast; Soft; Cold	Na
Stream--Slow; Hard; Cold	Stream--Slow; Hard; Cold	Na

Stream--Slow; Hard; Warm	Stream--Slow; Hard; Warm	Na
Stream--Slow; Soft; Warm	Stream--Slow; Soft; Warm	Na
Tamarack Swamp	Tamarack Swamp	Na

Dragonfly		
Scientific	**Common**	**Wisconsin Status**
Aeshna Eremita	Lake Darner	Sc/N
Cordulegaster Obliqua	Arrowhead Spiketail	Sc/N
Gomphurus Ventricosus	Skillet Clubtail	Sc/N
Ophiogomphus Howei	Pygmy Snaketail	Thr

Fish		
Scientific	**Common Name**	**Wisconsin Status**
Acipenser Fulvescens	Lake Sturgeon	Sc/H
Clinostomus Elongatus	Redside Dace	Sc/N
Coregonus Artedi	Lake Herring	Sc/N
Coregonus Hoyi	Bloater	Sc/H
Coregonus Kiyi	Kiyi	Sc/H
Coregonus Zenithicus	Shortjaw Cisco	Sc/H
Etheostoma Microperca	Least Darter	Sc/N
Prosopium Coulteri	Pygmy Whitefish	Sc/N

Grasshopper		
Scientific	**Common Name**	**Wisconsin Status**
Melanoplus Flavidus	Blue-Legged Grasshopper	Sc/N

Herptile		
Scientific	**Common Name**	**Wisconsin Status**
Clemmys Insculpta	Wood Turtle	Thr*

Invertebrate		
Scientific	**Common Name**	**Wisconsin Status**
Alasmidonta Marginata	Elktoe	Sc/H
Gomphus Viridifrons	Green-Faced Clubtail	Sc/N
Ophiogomphus Carolus	Riffle Snaketail	Sc/N
Stylogomphus Albistylus	Least Clubtail	Sc/N

Other		
Scientific	**Common Name**	**Wisconsin Status**
Bird Rookery	Bird Rookery	Sc
Migratory Bird Concentration Site	Migratory Bird Concentration Site	Sc

Mammal		
Scientific	**Common**	**Wisconsin Status**
Napaeozapus Insignis	Woodland Jumping Mouse	Sc/N

Plant		
Scientific	Common	Wisconsin Status
Asplenium Trichomanes	Maidenhair Spleenwort	Sc
Botrychium Lunaria	Moonwort Grape-Fern	End
Botrychium Minganense	Mingan's Moonwort	Sc
Botrychium Mormo	Little Goblin Moonwort	End
Botrychium Oneidense	Blunt-Lobe Grape-Fern	Sc
Cardamine Maxima	Large Toothwort	Sc
Carex Concinna	Beautiful Sedge	Thr
Carex Pallescens Var Neogaea	Pale Sedge	Sc
Carex Prasina	Drooping Sedge	Thr
Clematis Occidentalis	Purple Clematis	Sc
Deschampsia Flexuosa	Crinkled Hairgrass	Sc
Dryopteris Expansa	Spreading Woodfern	Sc
Dryopteris Fragrans Var Remotiuscula	Fragrant Fern	Sc
Gnaphalium Sylvaticum	Woodland Cudweed	Sc
Gymnocarpium Robertianum	Limestone Oak Fern	Sc
Leucophysalis Grandiflora	Large-Flowered Ground-Cherry	Sc
Listera Convallarioides	Broad-Leaved Twayblade	Thr*
Lycopodium Selago	Fir Clubmoss	Sc
Melica Smithii	Smith Melic Grass	End
Moehringia Macrophylla	Large-Leaved Sandwort	End
Ophioglossum Vulgatum	Adder's-Tongue	Sc
Orobanche Uniflora	One-Flowered Broomrape	Sc
Osmorhiza Chilensis	Chilean Sweet Cicely	Sc
Pinguicula Vulgaris	Common Butterwort	End
Platanthera Flava Var Herbiola	Pale Green Orchid	Thr
Platanthera Orbiculata	Large Roundleaf Orchid	Sc
Polystichum Braunii	Braun's Holly-Fern	Thr*
Primula Mistassinica	Bird's-Eye Primrose	Sc
Ranunculus Gmelinii	Small Yellow Water Crowfoot	End*
Ribes Hudsonianum	Northern Black Currant	Sc
Ribes Oxyacanthoides	Canada Gooseberry	Thr
Salix Pellita	Satiny Willow	End
Salix Planifolia	Tea-Leaved Willow	Thr
Scirpus Torreyi	Torrey's Bulrush	Sc
Senecio Indecorus	Plains Ragwort	Thr
Streptopus Amplexifolius	White Mandarin	Sc
Trisetum Spicatum	Narrow False Oats	Thr
Vaccinium Vitis-Idaea Ssp Minus	Mountain Cranberry	End
Amerorchis Rotundifolia	Round-Leaved Orchis	Thr*
Arethusa Bulbosa	Swamp-Pink	Sc
Calamagrostis Stricta	Slim-Stem Small-Reedgrass	Sc
Calypso Bulbosa	Fairy Slipper	Thr
Carex Assiniboinensis	Assiniboine Sedge	Sc
Carex Capillaris	Hair-Like Sedge	Sc
Carex Exilis	Coast Sedge	Thr
Carex Lenticularis	Shore Sedge	Thr
Carex Livida Var Radicaulis	Livid Sedge	Sc
Carex Michauxiana	Michaux Sedge	Thr
Carex Tenuiflora	Sparse-Flowered Sedge	Sc

Plant (continued)		
Scientific	Common	Wisconsin Status
Ceratophyllum Echinatum	Prickly Hornwort	Sc
Cypripedium Arietinum	Ram's-Head Lady's-Slipper	Thr
Cypripedium Parviflorum	Small Yellow Lady's-Slipper	Sc
Cypripedium Reginae	Showy Lady's-Slipper	Sc
Deschampsia Cespitosa	Tufted Hairgrass	Sc
Drosera Anglica	English Sundew	Thr
Drosera Linearis	Slenderleaf Sundew	Thr*
Eleocharis Robbinsii	Robbins Spikerush	Sc
Epilobium Palustre	Marsh Willow-Herb	Sc
Epilobium Strictum	Downy Willow-Herb	Sc
Equisetum Palustre	Marsh Horsetail	Sc
Equisetum Variegatum	Variegated Horsetail	Sc
Parnassia Palustris	Marsh Grass-Of-Parnassus	Thr
Platanthera Dilatata	Leafy White Orchis	Sc
Rhynchospora Fusca	Brown Beakrush	Sc
Triglochin Maritimum	Common Bog Arrow-Grass	Sc
Utricularia Purpurea	Purple Bladderwort	Sc
Utricularia Resupinata	Northeastern Bladderwort	Sc

Salamander		
Scientific	Common	Wisconsin Status
Hemidactylium Scutatum	Four-Toed Salamander	Sc

Turtle		
Scientific	Common	Wisconsin Status
Clemmys Insculpta	Wood Turtle	Thr
Source: Wisconsin DNR		

[1]**Wisconsin Status:**
Endangered: continued existence in Wisconsin is in jeopardy.
Threatened: appears likely, within the near future, to become endangered.
Special Concern: species for which some problem of abundance or distribution is suspected but not proven. **SC/N** = no laws regulating use, possession or harvesting; **SC/H** = take regulated by establishment of open closed seasons, SC/FL = federally protected as endangered or threatened, but not so designated by WDNR; SC/M = Fully protected by federal and state laws under the migratory bird act.
Rule: protected or regulated by state or federal legislation or policy; neither endangered nor threatened.
* : Fact sheet about species and its habitat is available on the DNR website.

Air Quality
National Ambient Air Quality Standards (NAAQS) have been established by the U.S. Environmental Protection Agency[4] to protect public health and the environment. The pollutants regulated by these NAAQS include suspended particulate matter, carbon monoxide, ozone, oxides of nitrogen, oxides of sulfur, and lead. Ashland County is designated as an attainment area and does not have air quality problems.

In the Clean Air Act Amendments of 1977, Congress specified the initial classification of lands for Prevention of Significant Deterioration (PSD) purposes. There are not any areas within the County that fall under this classification.

Relevant Studies, Reports, and Findings

A Guide to Planning for Coastal Communities in Wisconsin (Draft) – (Wisconsin Coastal Management Program)
This comprehensive planning Guide is for communities in Wisconsin that lie within the coastal zone of the state. It is intended to address the preparation of a coastal element of a comprehensive plan and provides additional information for addressing coastal related issues within plans.

A Data Compilation and Assessment of Coastal Wetlands of Wisconsin's Great Lakes (Phases I, II, & III) (Natural Heritage Inventory Program, DNR)
The goals of the project were to compile existing information on coastal wetlands for Lakes superior and Michigan and in Wisconsin, Select ecologically significant primary coastal wetland sites, and identify existing data or inventory gaps.

Apostle Islands Wilderness Suitability Study – 2003 (NPS)
The purpose of the study was to determine which of the 21 islands in the park are suitable for inclusion in the National Wilderness Preservation System. It is recommended that 80 percent of the park be included in this system and that no changes should be made to motorized access to the islands.

Ashland and Bayfield Land and Water Resource Management Plan January 1999
The land and water resource management plans are intended to be action oriented, flexible and reflect the resource management needs identified through public input and focuses on coordinated implementation. The goals of the plan are as follows:
- Improve forestland management to control sediment and erosion.
- Improve manure and nutrient management to reduce nonpoint pollution.
- Improve town and forest road maintenance and construction to reduce nonpoint pollution.
- Improve shoreland management to reduce nonpoint pollution.
- Reduce crop
- land soil erosion.

[4] Section 109 of the Clean Air Act.

Ashland County Forest 10-Year Plan – 1996 (Ashland County Forestry Department)
The purpose of this plan is to specify the operating policies and procedures, which the County will follow in administration of the forest. The plan also serves to provide background information regarding the County Forest.

Bad River Band of Lake Superior Tribe of Chippewa Indians. (2001). Integrated Resources Management Plan.
This document describes the Integrated Resources Management Plan (IRMP) that the Bad River Band developed. The plan focuses on soils, minerals, water, air, transportation, recreation, cultural, vegetation, wetlands, timber, fish, wildlife, and threatened and endangered species. This document describes the current condition of each of these resources, lists a set of known issues or problems relating to each resource, and outlines a series of goals and objectives designed to begin addressing the issues.

Best Management Practice Guidelines for the Wisconsin Portion of the Lake Superior Basin – March 2003 (Ashland, Bayfield, and Iron County Land Conservation Offices)
This set of guidelines is meant to be a working document that is focused on reducing nonpoint pollution. This best management practice guideline is intended to build on the conservation projects of the past and incorporate newer technologies and ideas. The document is divided into sections based on different activities that have been identified as being important. These sections include project planning, roads, forestry, agriculture, critical area stabilization, habitat, and development.

Chequamegon-Nicolet National Forest – Draft Environmental Impact Statement (USFS)
This document discusses the effects of applying alternative ways of managing the Chequamegon-Nicolet National Forest. It provides information that helps determine what aspects of the current Forest Plans need change, alternatives to how they may be changed, and the effects of implementing each of the alternatives.

Chequamegon-Nicolet National Forests – Proposed Land and Resource Management Plan 2003 (USFS)
This document, still in its draft form, is a guide for all resource management activities in the Chequamegon-Nicolet National Forests. It includes the following: forest-wide multiple-use goals and implementing objectives; forest-wide management requirements; management area direction, including area-specific standards and guidelines, desired future conditions and management practices; identification of lands suited/not suited for timber management; monitoring and evaluation requirements, and finally recommendations to Congress for additional wilderness.

Chequamegon-Nicolet National Forests – Roads Analysis 2002 (USFS)
This document was prepared to assist Chequamegon-Nicolet National Forest in evaluating their road systems and in response to changing priorities, concerns, funding, and needs. It provides a physical, biological, social, cultural, and economic description of the existing road system in this National Forest. It also details several issues related to current road maintenance, public, private, and administrative access provided by roads, the roads' effect on aquatic environment and water quality, the role of roads in proliferation of non-native invasive species, effects of roads on wildlife, and the maintenance cost and environmental

effects of placing roadways on slopes. Opportunities and priorities for future management of the primary transportation system within this forest are also identified.

Our Watershed, Our Water – Understanding and Protecting a Watershed (The Nature Conservancy)
This document was created with input and collaboration of many sources, including residents of the Chequamegon Bay Area. The guide provides general watershed information and is intended to encourage local citizen to protect the clean water conditions that exist today so that future generations can enjoy these same things.

Wisconsin Water Quality Assessment Report of Congress 2002 (DNR)
This report describes the known quality of our surface water and groundwater. The information in this report is gathered, interpreted, and understood through the prism of existing social, economic, and political conditions. The report contains a statewide update of water quality assessment data for lakes and a partial update of river assessment information. Additionally, the report makes some recommendations to Congress.

Ashland County's Forest Resource: Trends, Issues, and Actions (*See Appendix B in Countywide Comprehensive Plan)

Ashland County's Water Resource: Issues and Recommendations (*See Appendix A in Countywide Comprehensive Plan)

Ashland County Bibliography (*See Appendix C in the Countywide Comprehensive Plan)
As part of the Comprehensive Plan preparation, a bibliography of important natural resource related documents was gathered together. Many of the resources in the document are listed above, to see the bibliography in its entirety please refer to the Countywide Comprehensive Plan.

Ashland County Land, Water, and Habitat Issue Identification Workshop-
A workshop was held in April 2004, to help County residents, as well as State and local officials identify areas of importance that they wish the comprehensive plan to address. The top ten identified issues are as follows:

- Protect watersheds/systems, including headwaters, riparian zones, buffers, to keep water clean.
- Use of proper forestry-management practices
- Balance development with conservation & preservation
- Landowner education and assistance for streambank protection and restoration (i.e. White River), including lakeshore
- Balance economy and environment to consider "hidden costs"
- High deer population problems
- Need better planned, engineered, built, and enforced trails
- Protect forest industry
- Rising property values
- Protect/restore environmental corridors (riparian zones, wetlands)
- Mining

These issues are addressed in the goals, objectives, and policies of applicable elements. For a list of all the issues that were discussed at the workshop please refer to the Vision Chapter of the policy document where the workshop issues can be found in an appendix.

Available Funding
The following is a listing of possible grant or loan resources that a city, village, town, or county could utilize. This list is not an exhaustive list, however it provides a place to start when searching for funds.

- *Wisconsin Environmental Education Board (WEEB)*
  WEEB has a grant program category that is available to encourage school districts to apply for funding for school forests.

- *Department of Agriculture, Trade, and Consumer Protection*
  Chemical and Container Disposal - Clean Sweep
  Collect unwanted agricultural pesticides and chemicals from farmers, rural properties, and businesses for safe, legal disposal. The program also assists in the collection and management of empty pesticide containers. *Contact: Roger Springman, DATCP, roger.springman@datcp.state.wi.us*

- *Wisconsin Department of Natural Resources*
  The Clean Water Fund Program (CWFP) provides low interest loans to municipalities for wastewater treatment facilities and urban storm water runoff projects. In addition to regular CWFP loans, there are two subprograms within the Clean Water Fund Program:

  -Hardship assistance is available to municipalities that meet certain criteria. [not available for storm water projects]

  -Small Loans provides a subsidy to the interest rate on a loan that a municipality obtains from the State Trust Fund. [not available for storm water projects]

  The Safe Drinking Water Loan Program (SDWLP) provides low interest loans to municipalities for drinking water facilities.

  The Land Recycling (Brownfields) Loan Program (LRLP) provides low interest loans to municipalities for investigation and remediation of certain contaminated properties.

- *Wisconsin Coastal Management Program – Department of Administration*
  To support the management, protection, and restoration of Wisconsin's coastal resources, and increase public access to the Great Lakes. *Contact - Dea Larsen Converse coastal@doa.state.wi.us*

Cultural Resources

Architectural Structures
Old buildings have a special relevance to our lives today, bringing a "sense of place" to our lives and our communities. They also tell the social, cultural, economic, and political history of people in a way that no printed word or photograph can. Thus, telling the story of Wisconsin's historic architecture is a way of documenting the diverse experiences of Wisconsin people and places.

The National and State Register of Historic Places gives honorary recognition to places that retain their historic character and are important to understanding local, state, or national history. These are official listings of properties that are worthy of preservation or significant to Wisconsin's heritage. There are not any sites located in White River that are listed in the National Register of Historic Places and/or State Register of Historic Places.

The Wisconsin Architecture & History Inventory is a collection of information on historic buildings, structures, sites, objects, and historic districts that illustrate Wisconsin's unique history. The database is maintained by the Wisconsin Historical Society, and is comprised of written text and photographs of each property, which document the property's architecture and history. Most properties become part of the Inventory as a result of a systematic architectural and historical survey, and inclusion in this inventory conveys no special status, rights or benefits to owners of these properties. The Wisconsin Architecture & History Inventory also contains records of locations of historical significance within the Town. In the Town of White River, there are nine records of historic sites listed on the Inventory. These sites include the Sanborn State Grade School, White River Bridge, White River Hydro Dam, White River Powerhouse, and Surge Tank, along with other unnamed sites.

Archeological Sites
The Wisconsin Historical Society maintains a list of archaeological sites and cemeteries referred to as the Archaeological Site Inventory Database (ASI), which is part of the Wisconsin Archaeological and Historic Resource Database (WisARD). This list is the most comprehensive list of archaeological sites, mounds, unmarked cemeteries, marked cemeteries, and cultural sites that are present in the State. The only sites that are included in this database are sites that have been reported to the Wisconsin Historical Society. Archaeological evidence indicates that people have lived in what is now Wisconsin for over 12,000 years. It is estimated that nearly 80 percent of the archaeological sites that once existed in the state have been destroyed or severely damaged, primarily by modern land practices such as development and farming. Some of the remaining evidence includes Native American effigy mounds, often constructed in the shapes of turtles, birds, bears, and other animals. Ashland County is not located in a part of the State where effigy mounds are common.

Under Wisconsin law, Native American burial mounds, unmarked burials, and all marked and unmarked cemeteries are protected from intentional disturbance. If a burial mound or an unmarked or marked burial is present in an area, the Burial Sites Preservation Office should be notified.

Archaeological sites include places where people have lived, worked, and worshipped. These sites are non-renewable resources and once a site is destroyed, either by natural or human related activities, it cannot be reclaimed. Because of the fragile nature of these sites, identifying them and determining their locations is a very important part of the planning process. A wide variety of methods used to protect natural resources can also be used to protect archaeological sites. For example, land purchases, easement purchases, zoning, and a state operated tax credit program available to property owners.

There is one known archeological site located in the Town of White River, it is a cemetery. More information can be obtained from the Wisconsin Historical Society.

Bad River Band of Lake Superior Tribe of Chippewa Indians
The Bad River Band is one of the six Wisconsin Ojibwe Bands that are federally recognized tribes. The tribe has over 6,000 members; about 1,500 of these members live on the reservation. The Chippewa migrated from the east and settled on Madeline Island in the early 1600's. The Bad River Reservation was established by the treaty of 1854, and includes over 124,000 acres of land in Ashland and Iron Counties. Ashland County has many archaeological sites that date back to the tribal community. Sites located within federally-recognized tribal lands are not reported in this document.

Preservation of Wisconsin
Archaeological Sites
It is estimated that nearly 80 percent of the archaeological sites that once existed in the state have been destroyed or severely damaged, primarily by modern land practices such as development and farming. Many sites have also been damaged by looting.

Laws and Statutes
Federal Projects
Section 106 of the National Historical Preservation Act of 1966, As Amended requires federal agencies to insure that their actions (grants, funding, permits, activities such as highway building, etc.) do not adversely affect archaeological sites on or eligible for the National Register of Historic Places.

State Projects
Archaeological sites can be protected during the course of state agency activities (grants, funding, permits, ground disturbing projects) if the sites have been recorded with the Office of the State Archaeologist. See Section 44.40 Wisconsin Statutes.

Political Subdivision Projects
Archaeological may be protected during the course of village, city, county, and other political subdivision projects (e.g. building, road construction, etc.), but only if the site is listed on the National Register of Historic Places. See Section 44.43 Wisconsin Statutes

Burial Sites
All human burial sites, including cemeteries and Indian mounds, are protected under state law Section 157.70 Wisconsin Statutes. The law applies to both public and private lands. Owners of burial sites may receive property tax exemptions. The law is administered by the SHSW Burial Sites Program.

Rock Art Site
Destruction and vandalism of ancient rock art sites listed on the National Register of Historic Places, without landowner permission, is a felony under Section 943.01 Wisconsin Statutes.

Public Lands
Federal Lands: It is illegal to remove artifacts, or otherwise disturbed archaeological sites, on federal lands without a permit under the Archaeological Resource Protection Act of 1979. Federal lands in Wisconsin include National Forests, National Parks, and Federal Trust Lands, such as Indian Reservations.

State Lands
It is illegal to remove artifacts, or otherwise disturb archaeological sites, on state or political subdivision (village, city, county) lands without a permit under The Field Archaeology Act Section 44.47 Wisconsin Statutes. The law applies to both archaeological sites on public lands and submerged sites, such as Shipwrecks on publicly owned bottomlands under lakes and rivers. Permits are administered by the Office of the State Archaeologist. Permits are normally only given to professional archaeologists.

Tax Incentives
Most types of archaeological sites are **NOT** protected from destruction by private landowner activity on privately owned lands; exceptions are covered above. As an incentive for private landowners to protect archaeological sites on their lands, the state offers a property tax exemption if the landowner formally agrees to protect the site.

Local Preservation Efforts
Significant Archaeological sites in your community may be protected by special community landmarks ordinance. Contact your local landmarks commission. For more information on ways to preserve archaeological sites in your community, contact the SHSW Regional Archaeologist near you.

Native American Tribal Preservation Programs
The eleven Wisconsin Indian tribes are very active in the preservation of archaeological sites and sacred areas. Most have historic preservation programs or contacts.

Archaeological Consultants

The Office of the State Archaeologist maintains a list of archaeological consultants qualified to conduct archaeological studies, to identify and evaluate sites under various federal and state historic preservation laws and statutes.

Economic Development Element

Town of White River

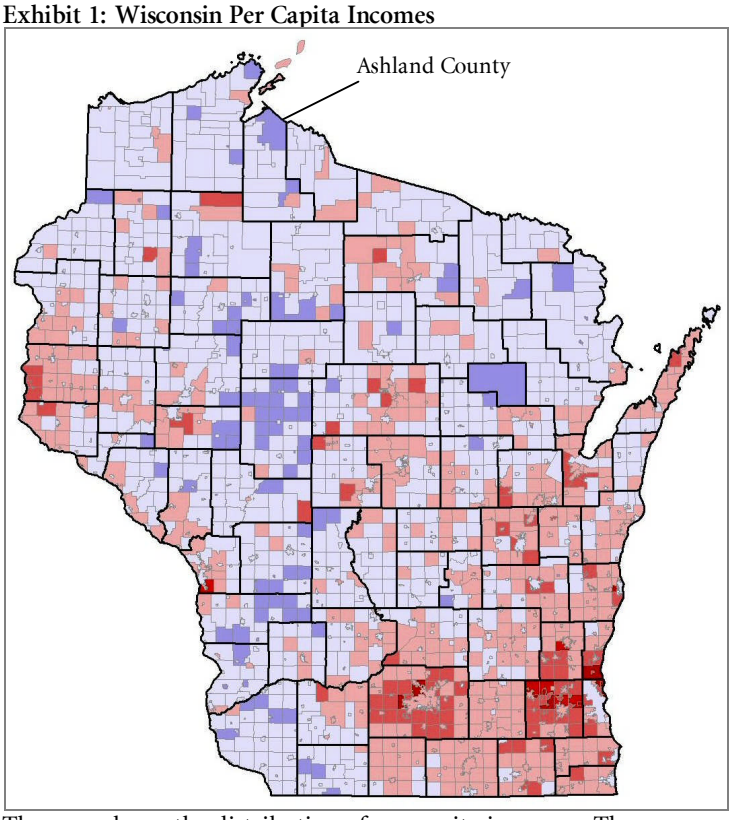
Introduction

The degree and quality of economic development in a community and the region has a direct impact on quality of life. The income of residents, revenue of local government, funding of community organizations, range of career options, and variety of shopping and services are all heavily dependent upon the diversity, stability, and growth of the local and regional economy. The local and regional economy also has a significant influence on the landscape and environment – influencing the quality of air and water, noise levels, traffic, and the overall look and feel of the community.

Although it is difficult for a local community to change its economic structure, it can have a significant influence on the quality and quantity of economic activity – and given enough time, effort and investment even the local economic structure can be changed.

The intent of the economic development element is to provide basic information on the Town's economy and population, analyze trends and identify potential issues and opportunities so that as a whole the comprehensive plan will support the economic development goals of the Town.

Exhibit 1: Wisconsin Per Capita Incomes



The map shows the distribution of per capita incomes. The municipalities in blue were below the average per capita income in Wisconsin of $19,923 and those in red were above. The darker the red or blue shade, the further away from the average.

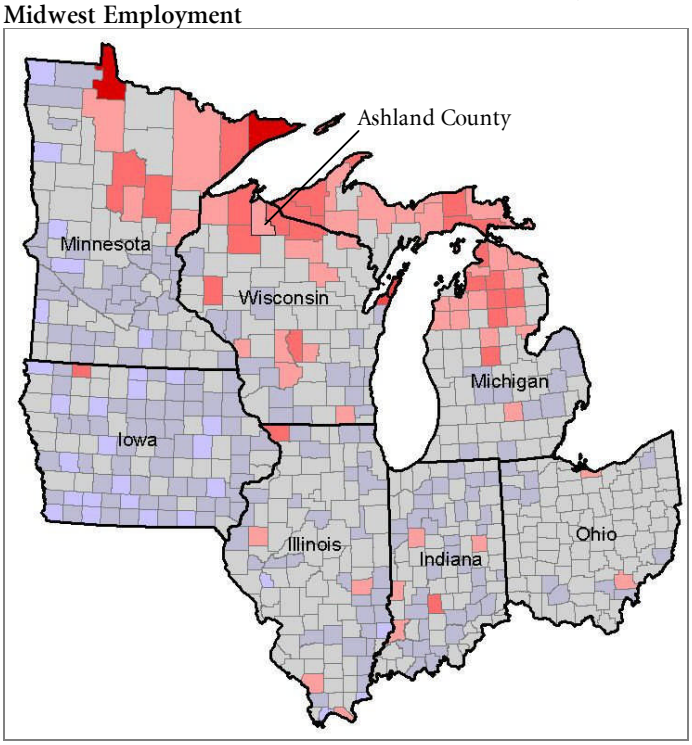
Source: 2000 U.S. Census

Background

Historically, the industry category with the most employment in Ashland County has been manufacturing, followed by health care and social assistance, and retail trade. Unlike state and national trends, manufacturing employment in Ashland County has actually increased between 1997 and 2001. Wood product manufacturing lead the way, especially the manufacturing of wood veneer and plywood manufacturing in Mellen and Butternut.

The fastest growing industry in Ashland County today is tourism. According to the 2000 census, Ashland County had 8.4 percent of total employment in the category of "Accommodation and Food Service." The map below shows how this Ashland County percentage compares to the other counties in the Midwest (Exhibit 2). The counties in red have more than the national average of 6.2 percent in accommodation and food service and the counties in blue are below the average. The graphic shows how important tourism is to the rural areas on the Great Lakes. Ashland County actually had more jobs in Accommodation and Food Service in 2000 than its neighbors Bayfield and Iron Counties, but Ashland also had a lot more employment in other categories like manufacturing.

Exhibit 2: Accommodation / Food Service As Percentage of Midwest Employment



Source: 2000 U.S. Census

Revenues from tourism have risen 221percent in Ashland County between 1993 and 2002. This is the 5th highest increase among all Wisconsin counties. The county tourism industry and implications for the Town of White River are studied later in this element.

Population and Labor Force

The goal of any government unit is to increase the quality of life and opportunities for its citizens. This section studies the residents of White River in terms of population, employment status, income, and education level. These are all indicators of how the local government is performing and how the local economy is functioning. This is also an opportunity to look at the labor force of White River and consider its strengths and weaknesses for attracting new industries.

Manufacturing in the United States has undergone a dramatic change with the emergence of smaller, lighter industries that produce more valuable products. For example, all over Wisconsin small companies are producing heart valves, dentures, semiconductors, and valuable wood and dairy products. These companies are less reliant on closeness to raw materials, markets, and inexpensive labor and more dependent on a quality workforce. Improving the workforce will increase the Town's ability to attract companies and create jobs.

Population & Unemployment

The total population in White River increased 15.7 percent from 1990 (771) to 2000 (892), which is much greater than the Ashland County growth of 3.4 percent and the Wisconsin growth of 9.6 percent. In 2000 the median age in White River was 26.8, the youngest population in Ashland County. In Ashland County the median age was 36.9 and in the state it was 36.0.

Unemployment is a serious problem in Ashland County. In 2000 the County unemployment rate was 8.1 percent, much higher than the State average of 4.7 percent. The Town of White River has much better employment figures than most of the County. Only 6.5 percent of the labor force were unemployed and 71.0 percent of the population was participating in the labor force. The following table shows the basic population and unemployment figures for the Town of White River, adjacent municipalities, Ashland County, and Wisconsin (Table 1).

Table 1: Population & Unemployment – Town of White River and Comparable Areas: 2000

	White River	Ashland City	Gingles	Sanborn	Ashland County	Wisconsin
Total Population	892	8,620	640	1,272	16,866	5,363,675
Population Age 16+	565	6,926	483	825	13,138	4,157,030
In labor force:	401	4,512	366	592	8,504	2,872,104
In Armed Forces	0	0	0	0	2	2,868
Civilian Employed	375	4,121	342	537	7,810	2,734,925
Civilian Unemployed	26	391	24	55	692	134,311
Labor Force Participation	71.0%	65.1%	75.8%	71.8%	64.7%	69.1%
Unemployment Rate	6.5%	8.7%	6.6%	9.3%	8.1%	4.7%

Source: U.S. Census SF3: 2000

Household Income

White River has a median household income of $38,250, much higher than Ashland County averages but still below the state figures. The table below shows incomes in White River compared to adjacent jurisdictions, Ashland County, and Wisconsin (Table 2).

Table 2: Household Incomes – Town of White River and Comparable Areas: 2000

	White River	Ashland City	Gingles	Sanborn	Ashland County	Wisconsin
Total Households	273	3,491	241	424	6,697	2,086,304
Income Less than $15,000	11.4%	25.3%	9.1%	28.1%	22.8%	13.0%
Income $15,000 - $24,999	18.3%	14.7%	9.5%	18.9%	15.6%	12.7%
Income $25,000 - $34,999	15.0%	16.9%	21.6%	17.5%	16.8%	13.2%
Income $35,000 - $49,999	27.1%	18.7%	17.4%	15.1%	19.3%	18.1%
Income $50,000 - $74,999	15.4%	17.1%	35.7%	13.4%	17.5%	22.7%
Income $75,000 - $99,999	4.8%	4.7%	6.6%	4.5%	5.0%	10.9%
Income $100,000 - $149,999	4.4%	1.5%	0.0%	1.9%	1.8%	6.4%
Income $150,000 - $199,999	0.7%	0.2%	0.0%	0.0%	0.2%	1.5%
Income $200,000 and over	2.9%	0.9%	0.0%	0.7%	1.0%	1.5%
Income $50,000 and over	28.2%	24.4%	42.3%	20.5%	25.5%	43.0%
Median Household Income	$ 38,250	$ 30,853	$ 42,188	$ 26,711	$ 31,628	$43,791
Per Capita Income	$ 15,667	$ 16,330	$ 16,085	$ 11,664	$ 16,069	$21,271
Percent of Families Below Poverty Level	3.4%	7.5%	7.7%	23.7%	7.8%	5.6%

Source: U.S. Census. Table DP-3. Profile of Selected Economic Characteristics: 2000

Educational Attainment

According to the 2000 U.S. Census, the White River population has a solid high school graduation rate but a low level of college education relative to other areas. Only 12.0 percent of the residents never finished high school and 42.1 percent of the population have some post high school education. The table below educational attainment in White River, adjacent municipalities, Ashland County, and Wisconsin (Table 3).

Table 3: Highest Educational Attainment – Town of White River and Comparable Areas: 2000

	White River	Ashland City	Gingles	Sanborn	Ashland County	Wisconsin
Population Age 25+	449	5,336	432	682	10,668	3,475,878
Less than 9th grade	3.8%	7.0%	0.0%	4.3%	6.4%	5.4%
Some High School, no diploma	8.2%	8.5%	5.8%	12.3%	9.5%	9.6%
High School Graduate (or GED)	45.9%	37.1%	40.0%	41.1%	40.5%	34.6%
Some College, no degree	24.1%	19.9%	21.8%	22.9%	19.7%	20.6%
Associate Degree	7.8%	7.1%	11.3%	7.0%	7.3%	7.5%
Bachelor Degree	7.6%	12.8%	17.4%	10.1%	11.2%	15.3%
Graduate or Professional Degree	2.7%	7.6%	3.7%	2.3%	5.4%	7.2%
Total with Some Post High School Education	42.1%	47.5%	54.2%	42.4%	43.6%	50.5%

Source: U.S. Census. Table DP-3. Profile of Selected Economic Characteristics: 2000

Occupations
In comparison to State and County averages, a large percentage of the White River workforce are employed in blue-collar occupations. There is a higher percentage of persons in the Farming and Construction categories than County and State averages. The breakdown of occupations for employed persons in the Town of White River, Ashland County, and Wisconsin is as follows. Note that this is not the industry they are employed in but what type of position they have with the company (Table 4).

Table 4

Occupation	White River	Percent	Ashland County	Percent	Wisconsin	Percent
Service occupations:	75	20.0%	1,624	20.8%	383,619	14.0%
Sales and office occupations:	87	23.2%	1,710	21.9%	690,360	25.2%
Production, transportation, and material moving occupations:	52	13.9%	1,531	19.6%	540,930	19.8%
Management, professional, and related occupations:	75	20.0%	2,043	26.2%	857,205	31.3%
Farming, fishing, and forestry occupations	22	5.9%	211	2.7%	25,725	0.9%
Construction, extraction, and maintenance occupations:	64	17.1%	691	8.8%	237,086	8.7%
Total:	375	100.0%	7,810	100.0%	2,734,925	100.0%

Source: U.S. Census Bureau, Table DP-3.
Profile of Selected Economic Development Characteristics: 2000.

Household Spending

Spending habits are important to economic development and understanding life in a community. It shows the priorities and preferences of the population, what it costs to live, and the spending power available to support new enterprises. Table 5 is an estimate of the spending habits of households in each municipality in Ashland County. The numbers were estimated based on population, annual incomes, and spending preferences (based on demographics) of each town (Table 5).

Table 5: Household Spending Figures – Ashland County Municipalities and Wisconsin: 2003

	Total Area Expenditures	Average Household Expenditures	Housing	Transportation	Travel / Recreation	Health Care	Food	Apparel	Education
Agenda town	8,964,739	43,945	11,100	6,439	3,323	2,252	6,299	2,200	721
Ashland city	145,774,072	40,594	10,340	6,148	3,019	2,052	5,887	2,039	657
Ashland town	9,958,796	44,459	10,251	7,877	3,370	2,756	6,448	1,988	502
Butternut village	8,789,308	45,306	11,306	6,853	3,427	2,401	6,504	2,228	705
Chippewa town	7,439,432	48,308	11,615	7,999	3,654	2,813	6,970	2,249	627
Gingles town	10,858,932	46,406	11,136	7,662	3,521	2,575	6,590	2,181	592
Gordon town	5,695,037	37,467	8,815	6,516	2,820	2,286	5,443	1,700	432
Jacobs town	11,740,278	33,640	7,783	6,090	2,485	2,109	4,970	1,524	352
La Pointe town	5,197,362	42,255	9,986	7,268	3,197	2,559	6,110	1,918	499
Marengo town	6,052,659	46,559	10,801	8,151	3,531	2,825	6,722	2,102	538
Mellen city	14,961,458	40,219	9,399	7,110	3,005	2,481	5,882	1,824	446
Morse town	8,580,566	44,690	10,383	8,010	3,317	2,783	6,574	2,025	480
Peeksville town	2,968,367	44,304	10,755	7,187	3,334	2,514	6,410	2,105	604
Sanborn town	18,629,641	43,938	10,404	7,520	3,322	2,643	6,351	2,003	528
Shanagolden town	2,786,794	44,948	10,567	7,832	3,380	2,746	6,535	2,039	516
White River town	12,762,149	46,073	11,034	7,648	3,495	2,584	6,554	2,155	581
Ashland County	281 million	41,652	10,270	6,672	3,115	2,272	6,036	2,013	597
Wisconsin	122.7 billion	56,957	14,353	8,789	4,279	2,874	8,105	2,811	860

Source: ESRI Business Information Solutions Community Information Database

Town of White River

As Table 5 shows, White River households have the capacity to spend more than the Ashland County average for almost every category. These figures are a result of the income figures mentioned previously. The table also shows how much less spending power Ashland County households have than the State average for the different categories of spending.

Economic Base

Ashland County Primary Industry Groups
The U.S. Census Bureau collects data on industries continually and publishes a yearly report called County Business Patterns (CBP). The CBP can provide a profile of Ashland County's employers and economic activity. Note that these data reflect the employment provided by Ashland County firms, not the employment of Ashland County residents.

The following table shows the general groupings of industries in Ashland County and how the number of establishments and employees has changed from 1998 to 200 (Table 6).

Table 6: Employment and Establishments – Ashland County 1998-2001

Industry	Establishments				Employees			
	1998	1999	2000	2001	1998	1999	2000	2001
Manufacturing	34	32	31	32	1,424	1,450	1,582	1,661
Health Care and Social Assistance	57	58	54	55	1,391	1,652	1,553	1,457
Retail Trade	115	112	102	103	1,024	1,030	968	980
Accommodation and Food Services	71	73	72	70	719	692	801	833
Construction	45	50	54	57	281	308	347	297
Other Services, except Public Admin	55	55	55	57	199	258	283	270
Finance and Insurance	33	31	30	28	191	179	183	187
Transportation and Warehousing	28	30	29	31	162	189	205	202
Wholesale Trade	17	17	16	17	142	124	119	173
Information	11	11	11	11	138	148	154	156
Professional, Scientific, and Technical Services	35	37	35	32	118	133	147	144
Agriculture, Forestry, Fishing, and Hunting	26	27	23	20	95	86	61	49
Real Estate and Rental and Leasing	12	15	17	16	63	20-99	68	47
Unclassified Establishments	4	8	4	3	0-19			3
Educational Services	4	4	4	4	500-999			
Utilities	4	4	4	4	20-99			
Art, Entertainment & Recreation	13	12	12	13	20-99			
Admin, Support, Waste Management, & Remediation Services	16	14	14	15	60	20-99		

Source: U.S. Census County Business Patterns Database

The main provider of jobs for Ashland County is manufacturing. The table above shows that the number of establishments has stayed steady, but employment has increased. Between 1998 and 2001, Ashland County manufacturing employment grew 16.6 percent. In this same period manufacturing employment declined 4.4 percent in Wisconsin and 6.3 percent nationally (Table 6).

Industry Sub-Categories
The following table shows the individual industries that employ at least 100 people in Ashland County (Table 7).

Table 7: Employment and Establishments – Ashland County 1998-2001

Industry	Establishments				Employees			
	1998	1999	2000	2001	1998	1999	2000	2001
Wood Product Manufacturing	14	15	13	13	779	795	827	914
Food Services and Drinking Places	59	60	61	59	576	569	690	643
Ambulatory Health Care Services	35	35	33	31	470	512	487	485
Accommodation	12	13	11	11	143	123	111	190
Food and Beverage Stores	16	16	14	14	259	248	196	189
Religious, Grantmaking, Civic, and Professional Organizations	27	26	26	27	119	184	192	175
Special trade contractors	26	29	35	39	119	132	170	171
Professional, Scientific, and Technical Services	35	37	35	32	118	133	147	144
Motor Vehicle and Parts Dealers	13	13	10	10	133	143	115	135
Gasoline Stations	17	17	16	17	102	91	109	112
Publishing Industries (except Internet)	4	4	4	5	100-249	100-249	100-249	106
Truck Transportation	19	20	18	20	68	92	100	102

Source: U.S. Census County Business Patterns Database

Wood product manufacturing is the largest industry category for employment. Between 1998 and 2001 this industry added 135 new jobs, which accounts for 57 percent of the total increase in manufacturing employment in Ashland County.

Table 8 shows the most detailed industry groupings for the wood product manufacturing category. At this level of detail, the employment is displayed as a range to protect the confidentiality of the companies. Still, it is clear that the majority of employment comes from hardwood and veneer manufacturing, employing at least 500 people.

Table 8: Employment by Individual Industries – Ashland County: 2001

Industry	Firms	Employees
Wood container & pallet mfg	1	0-19
Cut stock, resawing lumber & planing	1	20-99
Other millwork (including flooring)	2	20-99
Hardwood veneer & plywood mfg	3	500-999
Truss mfg	1	0-19
Sawmills	2	20-99
All other miscellaneous wood product mfg	3	218

Source: U.S. Census County Business Patterns Database

The other established and growing industries are the restaurant and accommodation categories, which can largely be attributed to the growing tourism industry. This Ashland County tourism industry is discussed in the next section.

Employment by Industry

As is typical of a rural township near a metropolitan area, White River employment is lower than average in education, health and social services but high in industries like construction, and agriculture. The tourism industry is also strong in White River with Arts, entertainment, recreation, accommodation and food services employing 12.3 percent of the employed workforce. The following table shows the industries employing those in the Town of White River compared to Ashland County and Wisconsin. Note that the list below shows the number of White River residents employed in each industry, not the number of jobs offered by local employers (Table 9).

Table 9: Employment by Industry: Town of White River, Ashland County, Wisconsin - 2000

Industry	White River	Percent	Ashland County	Percent	Wisconsin	Percent
Agriculture, forestry, fishing and hunting, and mining	52	13.9%	352	4.5%	75,418	2.8%
Construction	52	13.9%	476	6.1%	161,625	5.9%
Manufacturing	41	10.9%	1,336	17.1%	606,845	22.2%
Wholesale trade	15	4.0%	99	1.3%	87,979	3.2%
Retail trade	42	11.2%	822	10.5%	317,881	11.6%
Transportation and warehousing, and utilities	18	4.8%	338	4.3%	123,657	4.5%
Information	0	0.0%	126	1.6%	60,142	2.2%
Finance, insurance, real estate and rental and leasing	8	2.1%	283	3.6%	168,060	6.1%
Professional, scientific, management, administrative, and waste management services	13	3.5%	356	4.6%	179,503	6.6%
Educational, health and social services:	63	16.8%	2,015	25.8%	548,111	20.0%
Arts, entertainment, recreation, accommodation and food services	46	12.3%	876	11.2%	198,528	7.3%
Other services	15	4.0%	299	3.8%	111,028	4.1%
Public administration	10	2.7%	432	5.5%	96,148	3.5%
TOTAL	375	100.0%	7,810	100%	2,734,925	100%

Source: U.S. Census Bureau, Table DP-3. Profile of Selected Economic Development Characteristics: 2000.

With Ashland County becoming a retirement destination and the population becoming older, health care and social services should be a growing industry in the coming years.

Largest Employers in Ashland County

The largest employers in Ashland County are a reflection of the dominant industries. Most are associated with manufacturing, tourism, forest products, or serving the local population. The Bad River Indian Community is the largest employer with at least 500 employees (Table 10).

Table 10: Largest Employers - Ashland County

Name	NAICS Description	Location	Size
Bad River Indian Community	American Indian Tribal Government	Sanborn	500-999
Memorial Medical Center	General Medical and Surgical Hospitals	City of Ashland	250-499
C G Bretting Manufacturing	Paper Industry Machinery Manufacturing	City of Ashland	250-499
Ashland School District	Elementary and Secondary Schools	City of Ashland	185-425
Coop Educational Service	Administration of Education Programs	City of Ashland	100-249
Larson-Juhl US	All Other Miscellaneous Manufacturing	City of Ashland	100-249
Northland College	Colleges, Universities, and Professional Schools	City of Ashland	100-249
Wal-Mart	Discount Department Stores	City of Ashland	100-249
Columbia Forest Products	Hardwood Veneer and Plywood Manufacturing	City of Mellen	100-249
Birds Eye Veneer	Hardwood Veneer and Plywood Manufacturing	Butternut	100-249
Duluth Clinic – Ashland	Offices of Physicians	City of Ashland	100-249
Lori Knapp Inc	Other Community Housing Services	City of Ashland	100-249
Beverly Health & Rehabilitation	Nursing Care Facilities	City of Ashland	100-249

Source: WI DWD, Bureau of Workforce Information, ES-202 Database

Employers in the Town of White River

White River's largest employer is the White River Hardwoods sawmill. With an employed workforce of 375, the Town is a net importer of jobs. That is, White River has fewer jobs than are consumed by its local workforce. Residents must travel to surrounding employment centers for work, presumably Ashland and Mellen (Table 11).

Table 11: Largest Employers – Town of White River

Name	NAICS Description	Size
WHITE RIVER HARDWOODS INC	Sawmills	10-19
BLAKEMAN PLUMBING & HEATING	Plumbing, Heating, and Air-Conditioning Contractors	5-9
GRANGER BUILDERS INC	New Single-Family Housing	5-9
TOWN OF WHITE RIVER	Executive and Legislative Offices, Combined	5-9
LIPKA CONSTRUCTION		5-9
RITOLA INC	Logging	1-4
DON TIKKA CONSTRUCTION	New Single-Family Housing	1-4
KEITH JOLMA ELECTRIC	Electrical Contractors	1-4
VALLEY LOGWRIGHT	New Single-Family Housing Construction	1-4

Source: WI DWD, Bureau of Workforce Information, ES-202 Database

Other Places of Employment in White River Include but are not Limited to:

- *Bitter Creek Candle Supply*
- *IDE Enterprise*
- *Private Farms*

State of Wisconsin Trends

The following three pages contain the latest projections from the Wisconsin Department of Workforce Development on industries which are projected to increase or decline in Wisconsin over the next ten years.

Figure 1-4: Thirty Fastest Growing Industries, 2000 to 2010

SIC Code	Industry Title	2000 Estimated Employment	2010 Projected Employment	2000-2010 Employment Change	2000-2010 Percent Change
89	Services, Not Elsewhere Classified	440	630	190	43.2%
79	Amusement & Recreation Services	31,070	42,790	11,720	37.7%
07	Agricultural Services	15,680	20,860	5,180	33.0%
83	Social Services	76,420	100,500	24,080	31.5%
84	Museums, Botanical, Zoological Gardens	1,420	1,850	430	30.3%
87	Engineering & Management Services	40,650	52,750	12,100	29.8%
75	Auto Repair Services and Parking	22,040	28,540	6,500	29.5%
81	Legal Services	13,850	17,760	3,910	28.2%
47	Transportation Services	6,510	8,130	1,620	24.9%
80	Health Services	233,240	287,930	54,690	23.4%
70	Hotels & Other Lodging Places	30,770	36,600	5,830	18.9%
73	Business Services	152,990	181,300	28,310	18.5%
41	Local and Interurban Transit	15,920	18,520	2,600	16.3%
59	Miscellaneous Retail Stores	73,760	85,760	12,000	16.3%
86	Membership Organizations	74,740	86,860	12,120	16.2%
67	Holding & Other Investment Offices	4,550	5,280	730	16.0%
62	Security & Commodity Brokers	8,240	9,450	1,210	14.7%
25	Furniture and Fixtures	18,640	21,300	2,660	14.3%
58	Eating and Drinking Places	173,380	197,940	24,560	14.2%
57	Furniture & Homefurnishings Stores	19,210	21,780	2,570	13.4%
65	Real Estate	20,270	22,760	2,490	12.3%
72	Personal Services	26,170	29,310	3,140	12.0%
45	Transportation by Air	13,990	15,550	1,560	11.2%
16	General Contractors, Except Building	12,600	13,860	1,260	10.0%
82	Educational Services	245,780	270,350	24,570	10.0%
55	Auto Dealers & Service Stations	58,560	64,300	5,740	9.8%
17	Special Trade Contractors	81,110	88,850	7,740	9.5%
63	Insurance Carriers	48,600	53,200	4,600	9.5%
15	General Building Contractors	30,360	33,090	2,730	9.0%
61	Nondepository Institutions	6,930	7,540	610	8.8%

Employment rounded to nearest 10.

Numbers may not add due to rounding.

Employment derived using data from 2000 Current Employment Statistics (2001 Benchmark), 2000 Covered Employment and Wages, and unpublished data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau.

Source: Projections Unit, Office of Economic Advisors, Wisconsin Department of Workforce Development

Figure 1-3: Thirty Industries Adding the Most New Jobs, 2000 to 2010

SIC Code	Industry Title	2000 Estimated Employment	2010 Projected Employment	2000-2010 New Jobs	2000-2010 Percent Change
80	Health Services[1]	233,240	287,930	54,690	23.4%
73	Business Services	152,990	181,300	28,310	18.5%
82	Educational Services[1]	245,780	270,350	24,570	10.0%
58	Eating and Drinking Places	173,380	197,940	24,560	14.2%
83	Social Services	76,420	100,500	24,080	31.5%
86	Membership Organizations	74,740	86,860	12,120	16.2%
87	Engineering & Management Services	40,650	52,750	12,100	29.8%
59	Miscellaneous Retail Stores	73,760	85,760	12,000	16.3%
79	Amusement & Recreation Services	31,070	42,790	11,720	37.7%
93	Local Government, ex. Education & Hospitals[1], [2]	126,080	135,000	8,920	7.1%
17	Special Trade Contractors	81,110	88,850	7,740	9.5%
75	Auto Repair Services and Parking	22,040	28,540	6,500	29.5%
50	Wholesale Trade, Durable Goods	80,850	86,960	6,110	7.6%
70	Hotels & Other Lodging Places	30,770	36,600	5,830	18.9%
55	Auto Dealers & Service Stations	58,560	64,300	5,740	9.8%
07	Agricultural Services	15,680	20,860	5,180	33.0%
53	General Merchandise Stores	66,360	71,500	5,140	7.7%
63	Insurance Carriers	48,600	53,200	4,600	9.5%
81	Legal Services	13,850	17,760	3,910	28.2%
51	Wholesale Trade, Nondurable Goods	57,740	61,540	3,800	6.6%
42	Trucking and Warehousing	53,590	57,370	3,780	7.1%
54	Food Stores	65,150	68,400	3,250	5.0%
72	Personal Services	26,170	29,310	3,140	12.0%
24	Lumber and Wood Products	32,220	35,000	2,780	8.6%
15	General Building Contractors	30,360	33,090	2,730	9.0%
25	Furniture and Fixtures	18,640	21,300	2,660	14.3%
41	Local and Interurban Transit	15,920	18,520	2,600	16.3%
57	Furniture & Homefurnishings Stores	19,210	21,780	2,570	13.4%
65	Real Estate	20,270	22,760	2,490	12.3%
52	Building Materials & Garden Supplies	26,140	28,280	2,140	8.2%

[1]State and local government employment in education and hospitals is removed and included with Educational Services (SIC 82) and Health Services (SIC 80).

[2]Local government includes tribal owned operations.

Employment rounded to nearest 10.
Numbers may not add due to rounding.
Employment derived using data from 2000 Current Employment Statistics (2001 Benchmark), 2000 Covered Employment and Wages, and unpublished data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau.

Source: Projections Unit, Office of Economic Advisors, Wisconsin Department of Workforce Development

Figure 1-5: Declining Industries, 2000 to 2010

SIC Code	Industry Title	2000 Estimated Employment	2010 Projected Employment	2000-2010 Employment Change	2000-2010 Percent Change
35	Industrial Machinery and Equipment	109,410	104,100	(5,310)	-4.9%
33	Primary Metal Industries	26,170	23,300	(2,870)	-11.0%
36	Electronic & Other Electrical Equipment	46,700	44,100	(2,600)	-5.6%
37	Transportation Equipment	34,240	31,800	(2,440)	-7.1%
34	Fabricated Metal Products	67,790	65,600	(2,190)	-3.2%
31	Leather & Leather Products	3,500	1,600	(1,900)	-54.3%
88	Private Households	5,540	4,000	(1,540)	-27.8%
26	Paper & Allied Products	52,250	50,800	(1,450)	-2.8%
27	Printing & Publishing	54,690	53,400	(1,290)	-2.4%
40	Railroad Transportation	3,770	2,490	(1,280)	-34.0%
56	Apparel and Accessories Stores	16,170	14,930	(1,240)	-7.7%
23	Apparel and Textile Products	5,810	5,000	(810)	-13.9%
38	Instruments and Related Products	17,730	17,300	(430)	-2.4%
22	Textile Mill Products	2,410	2,000	(410)	-17.0%
884[1]	Unpaid Family Workers	2,200	1,890	(310)	-14.1%
14	Nonmetallic Minerals, Except Fuels	2,720	2,480	(240)	-8.8%
29	Petroleum and Coal Products	430	400	(30)	-7.0%
46	Pipe Lines, Except Natural Gas	120	90	(30)	-25.0%
91	Federal Government[2]	16,620	16,600	(20)	-0.1%

[1]This code is used for occupational projection purposes. This code includes all family members who work unpaid in family-owned businesses, regardless of the industry.

[2]Postal Service employment is taken out of Federal Government employment and is shown as SIC 43.

Employment is rounded to the nearest ten.
Numbers may not add due to rounding.

Employment derived using data from 2000 Current Employment Statistics (2001 Benchmark), 2000 Covered Employment and Wages, and unpublished data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau.

Source: Projections Unit, Office of Economic Advisors, Wisconsin Department of Workforce Development

Distribution Network

If Ashland County wants to attract new business and support the existing industries, investment in the distribution network for goods and services will have to continue. This includes road, rail, water, and air transportation systems.

- **Road**
  The road network in Ashland County is the dominant--and in most places the only--means of transportation for goods and services. There is no high-speed highway or interstate running through the county and travel on Ashland County roads is slow. The logging, nonmetallic mining, and other heavy transport vehicles further stress the road network. Town roads are also open to ATV's which create an additional level of wear and tear.

- **Rail**
  There is one primary rail line that runs parallel along Highway 13 through the City of Ashland to Butternut and on to Price County. Much of this line is currently unused or not frequently used and there is talk about removing the underused sections. Communities along the rail corridor must seriously consider the consequences of removing this rail line if they ever hope to attract industry or build an industrial park in the future. Once the line is removed, trucking is the only means of transportation and replacing the rail later would be expensive.

- **Water**
  The level of Lake Superior has been gradually dropping. This is compromising the harbors along the Lake Superior coastline and some ports can no longer accept deep-water vessels. Ashland County should review these harbors and decide if they are still viable for the County's shipping needs.

- **Air**
  Major renovations are currently underway at the Ashland Airport and these investments should continue for economic development to succeed. Air transportation is a vital component to the future of the Ashland County economy for many reasons. Today, access to air travel is one of the most important factors in choosing firm locations. No matter what the product is, firms need the ability to reach other cities for meetings and to move clients and executives. Many manufacturing firms today even use air as the primary means of shipping because they produce small, high-value products that require immediate delivery. Another industry that would benefit from airport improvements is the growing cottage arts and crafts sector that sells products via catalogue or on the Internet and needs quick air shipping by companies like Federal Express. Finally, the tourism industry in Ashland County will become increasingly dependent on air travel as it becomes a more popular destination.

Tourism

Tourism is an important part of the Wisconsin economy and almost every region of the State is affected. According to the Wisconsin Department of Tourism, travelers spend $32 million per day in Wisconsin or $370 per second. State and local government revenues generated by tourism in 2002 were estimated at 11.6 billion. This results in $6.6 billion in employee wages, $1.1 billion in State government revenues, and $778 million in local government revenues. The largest single expenditure category was retail shopping at $3.5 billion.

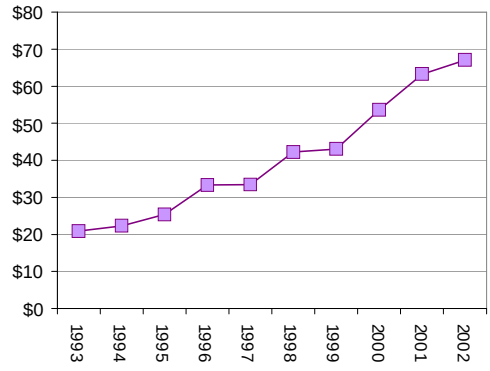
More people are traveling to Ashland County every year for its natural attractions including a large section of the Chequamegon National Forest, Copper Falls State Park, miles of Lake Superior coastline, Madeline Island, the Flambeau River, the elk herd near Clam Lake, the Chippewas River, the White River, the Marengo and Brunsweiller River, thousands of miles of small trout streams, and multiple small lakes. There are cultural attractions in the Bad River Reservation, ethnic festivals throughout the County, and the County Fair. Travelers are also drawn to the County for year-round recreational activities like hunting, fishing, skiing, biking, and snowmobiling, along with hiking, canoeing, kayaking (stream and sea), birdwatching, camping, ice fishing, and other quiet sports.

There are many opportunites for communities to become "gateways" to the natural attractions where tourists make their last stop for food, supplies, and gas. Some towns make their impact by hosting festivals. A 1995 survey showed Ashland County to have the following amenities for tourists: 15 campgrounds, 271 campsites, 180 miles of hiking trails, 16 miles of mountain bike trails, 51 miles of cross country skiing trails, and 297 miles of snowmobile trails.

A 1990 survey completed by the UW Extension specifically studied the types of tourists that come to Wisconsin for State Parks and trails. They found that these tourists spent roughly $190 per group, per trip (depending on the size of the group and length of stay). Importantly, they found that these tourists spend most of their money on groceries, eating and drinking, and automobile-related items.

Ashland County tourism expenditures were estimated at $67 million dollars in 2002. Summer was the biggest season with expenditures of $35 million (Exhibit 3). Fall travelers spent $16 million and winter/spring visitors spend $15 million. Ashland County's revenue in 2002 was only 44th out of Wisconsin's 72 counties, but expenditures have risen 221 percent between 1993 and 2002. This is the 5th highest increase among all Wisconsin counties. Tourism is one of the largest areas of growth for the Ashland County economy and every community in

Exhibit 3: Ashland County Tourism Revenue: 1993-2002 (Millions)



the region could benefit from its growth. The chart to the right shows the steady increase of Ashland County's tourism revenues.

Recreational Trails
A large component of Ashland County's tourism is snowmobiling and ATV trails. Building, maintaining, and promoting these trails can link even the most remote villages and townships into the tourism industry. Wisconsin had 192,211 registered ATVs at the end of 2003. According to the Wisconsin Department of Tourism, the average ATV party consisted of five people and stayed three days. The average persons spent $523.33 per trip or $163.54 per day. Other types of recrational trails (hiking, cross-country skiing, etc.) are also popular attractions that likely contribute to the tourism economy. One component lacking in Ashland County is comprehensive trail maps and websites marketing the trails to potential travelers. Paper trail maps are published through the Ashland County Snomobile Alliance and the Wisconsin ATV Alliance, but the maps do not match and many potential tourists plan their vacation using the Internet. There are snowmobile and ATV trails located within White River's boundaries.

Hunting / Fishing
Several Ashland County lakes are listed on the DNR website as fishing destinations. Quality sportfish are plentifull in many areas including Muskee (Galilee Lake), Bass (Day Lake, East Twin Lake, Lake Three, Mineral Lake, Spillerburg Lake, and Little Clam Lake), and Walleye (Mineral Lake and the Spider/Moquah Chain). In 2003 there were 4,530 fishing permits issued in Ashland County to Wisconsin residents and 1,287 issued to residents of other states.

In 2003 there were 6,152 hunting permits issued in Ashland County to Wisconsin residents and 234 to residents of other states. The majoirty of these were deer hunting (4,181 gun and archery permits) followed by small game (1,170 permits). The DNR estimates that 5,444 deer were killed in Ashland County in 2003 (4,425 by gun and 1,019 by archery).

Town of White River Tourism
Being close to the City of Ashland, which has a large population and is a tourism destination itself, the Town of White River will be affected by tourism. The section of Highway 13 which runs through much of the Town of White River has an average daily traffic count of over 2,500 vehicles. Whether these people are heading to attractions further north, or to attractions in White River, they may need places to eat, drink, sleep, and purchase supplies while heading through the Town.

Currently, there is not a substantial local economy that could benefit from the tourists that may be visiting White River. They may use snowmobile trails, visit the rivers, and hike in the forestlands but they probably spend most of their money in the City of Ashland.

When it comes to marketing tourism, communities that do not have websites or any internet presence will lose potential visitors.

While it would not be cost effective for a town this size to invest in internet sites, White River should make sure local attractions are being featured on other websites including snowmobile/ATV clubs, chamber of commerce sites, and state and local tourism sites.

Commuting Patterns

Commute Type
The 2000 Census indicates that 325 White River residents or 36.4 percent of the population commute to work. Although much of the area is rural there are many State and Federal highways that make traveling and commuting relatively easy. Table 12 shows the means of transportation for employed White River residents.

The residents of White River have an average commute time of 25.5 minutes, higher than the Ashland County average of 15.8 and the Wisconsin average of 20.8. With little employment in White River, a large percentage of the population is commuting to Ashland or Mellen.

Table 12: Commuting to Work – Town of White River

Car, truck, van – alone	64.2%
Carpool	20.1%
Walking	2.4%
Other means	1.4%
Working at home	11.9%
Total Persons Commuting	325
Percentage of Total Population	36.4%

Source: U.S. Census Bureau: 2000, SF3

Ashland County
The table to the right shows which counties, besides Ashland, employ Ashland County residents. Only 14.5 percent of the residents travel to other counties, primarily Price and Bayfield (Tables 12 & 13).

Table 13: Ashland Co. Commuter Destinations

Destination County	Persons	Percentage
Ashland Co.	6,559	85.5 %
Price Co. WI	519	6.8 %
Bayfield Co. WI	301	3.9 %
Douglas Co. WI	46	.6 %
Sawyer Co. WI	37	.5 %
St. Louis Co. MN	29	.4 %
Iron Co. WI	20	.3 %
Wood Co. WI	19	.2 %
Gogebic Co. MI	19	.2 %
Taylor Co. WI	16	.2 %
Dane Co. WI	14	.2 %
Fond du Lac Co. WI	10	.1 %
St. Croix Co. WI	10	.1 %
Elsewhere	75	1.0 %
Grand Total	7,674	100 %

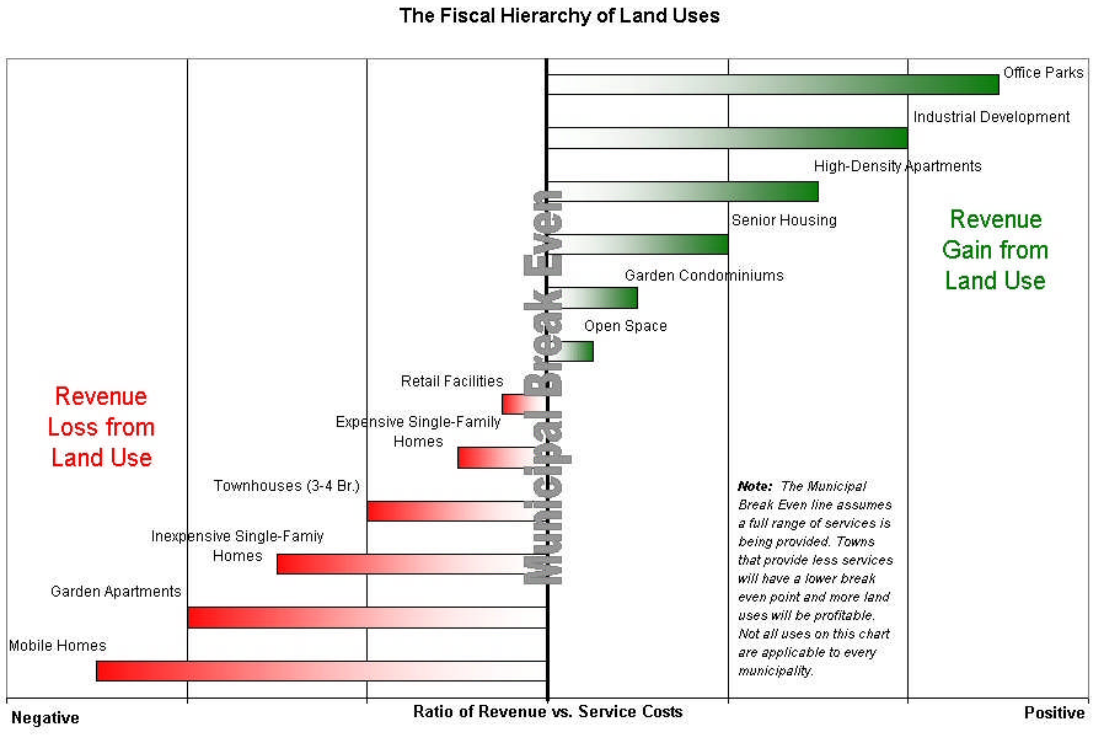
Source: U.S. Census 2000

Land Values and Tax Base

Local property taxes are paid by all non-exempt property owners on the basis of the value of property – land, improvements and personal property. These taxes are used to fund the operations of local government – providing for public safety, schools, maintaining streets, and funding programs that improve the quality of life for residents. There are three primary classes of property – residential, commercial and manufacturing. Although each class of property pays taxes at the same rate, they all have different values and impose differing costs on the local government. Residential property clearly imposes the greatest costs per unit – it typically accounts for 75% of all property in a community, it is typically the most dispersed land use and therefore the costliest to serve with infrastructure, and residents demand higher levels of services – particularly public safety and education. Many cost-of-service studies indicate that residential development does not generate sufficient revenue from property taxes and fees to pay for the costs it imposes on local government.

The following graphic shows the "Fiscal Hierarchy of Land Uses" when it comes to maximizing the revenue from every dollar paid in government services. The municipal break-even line is different for every community and the line in the graphic represents the approximate point for a *full-service* municipality (Exhibit 4). Most of the municipalities in Ashland County provide a limited range of services and would have a lower break-even point.

Exhibit 4



Property Taxes
The Wisconsin Department of Revenue maintains a database of assessed property values for every taxing jurisdiction in the state. The table below shows how the different municipalities in Ashland County compare in total assessed value, per-capita assessed value, and how the municipality's total value is distributed across types of use. The "total value" column is the assessed value of all land and improvements in each jurisdiction. The "per capita value" is the total value divided by the population. All things being equal, towns with higher per-capita assessed values are capable of providing higher levels of service to each resident (Table 14).

Table 14: Property Values and Distribution Across Land Uses – Ashland County

			Land Use Percentages (land and improvements)					
Category	Total Value	Per Capita Value	Residential	Agriculture	Manuf.	Commercial	Forests	Other
Agenda Twp	$37,709,000	$73,507	44.6%	0.6%	0.0%	0.5%	49.6%	4.7%
Ashland City	$321,647,200	$37,314	63.3%	0.0%	4.3%	26.9%	0.4%	5.1%
Ashland Twp	$26,652,500	$44,200	44.9%	1.9%	0.3%	2.4%	44.0%	6.5%
Butternut Village	$9,780,800	$24,031	67.3%	0.1%	3.2%	22.4%	2.9%	4.1%
Chippewa Twp	$40,505,900	$93,547	43.8%	0.7%	0.0%	1.3%	47.6%	6.5%
Gingles Twp	$32,132,900	$50,208	65.3%	0.5%	0.3%	5.9%	20.9%	7.0%
Gordon Twp	$36,598,800	$102,518	74.0%	0.0%	0.0%	4.7%	20.2%	1.0%
Jacobs Twp	$34,009,700	$40,730	52.5%	0.1%	3.1%	4.9%	36.7%	2.7%
La Pointe Twp	$207,806,600	$844,742	92.5%	0.0%	0.0%	4.6%	1.6%	1.3%
Marengo Twp	$16,208,400	$44,775	50.1%	3.1%	0.0%	0.1%	39.0%	7.7%
Mellen City	$19,832,600	$23,471	61.0%	0.0%	16.3%	16.5%	0.3%	5.9%
Morse Twp	$35,757,700	$69,432	52.4%	0.4%	0.0%	2.1%	40.6%	4.5%
Peeksville Twp	$16,324,600	$92,753	28.4%	0.7%	0.0%	0.7%	63.6%	6.6%
Sanborn Twp	$23,607,000	$18,559	39.4%	0.0%	0.0%	2.6%	56.3%	1.7%
Shanagolden Twp	$16,635,800	$110,905	42.6%	0.3%	0.0%	2.2%	51.0%	4.0%
White River Twp	$32,859,100	$36,838	50.2%	3.4%	0.3%	3.8%	31.6%	10.7%
Ashland County	$908,068,600	$53,840	65.1%	0.4%	2.1%	12.3%	15.9%	4.3%
State Averages	$325,578	$74,946	71.9%	0.9%	3.4%	18.2%	2.7%	3.1%

Source: Wisconsin Department of Revenue, Database of Assessed Values, 2002

The vast majority of the land value in the state of Wisconsin comes from residential and commercial uses. Municipalities in Ashland County are special cases because they are largely undeveloped and have considerable forestlands. The total value of non-exempt forestland accounts for almost 16 percent of the total land value in Ashland County with some municipalities having over 50 percent of their value in forests. While this land generates revenue and costs very little in services, it will never generate the kind of revenue that comes from commercial or manufacturing property.

Town of White River

The Town of White River has a low per-capita assessed value compared to many municipalities in Ashland County due to its relatively high population and large amount of expensive residential and forest land. The Town contains over 28 thousand acres assessed on average at $1,164 dollars per acre for a total of $32.8 million dollars in taxable land. This equates to $36,838 of value for each of the 892 residents in White River. This value is much lower than the County average of $53,840 and the State average of $74,946.

Environmentally Contaminated Sites

"Brownfields are abandoned, idle or underused industrial or commercial facilities, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination."
– *Wisconsin Department of Natural Resources*

Former gas stations are common brownfields in rural areas.

- **Background**

When economic development is hampered by costs associated with removing remnants of prior uses, including demolishing buildings and cleaning up environmental contamination, this property can be identified as a "brownfield." Just the suspicion of contamination may be enough to stop development. Identifying properties where this dynamic is present and removing the obstacles to development should be a top priority of local municipalities.

- **What Can Municipalities Do?**

The first step is to identify the brownfield properties in the jurisdiction. There is no comprehensive database for this and every case is different. The municipality may have to ask local developers what properties they would consider if the parcel was free of all contamination, buildings, and other remnants of former uses.

Once a brownfield is identified, the first step is often conducting Phase I and Phase II environmental assessments. This relatively inexpensive option may be enough to allay the fears of developers about the presence of environmental contamination. In other cases, it may be in the best interest of the municipality to have dilapidated structures removed and environmental contaminants cleaned up. Grants are frequently offered by the Wisconsin Department of Natural Resources (DNR) to pay for assessments, building demolition, and environmental clean-up.

- **Town of White River**

At this time, no brownfield sites have been identified in the Town of White River. There is an old Township dump but the DNR is aware of it and it has been sealed. A search of the DNR's reported spills and contaminated land databases did not return any significant results. Local officials identified brownfield sites, including a large number of gravel pits and a closed dump.

Regional, State, and Federal Economic Development Programs

Following is an inventory of regional, state, and national resources available to the town and/or businesses for economic development projects and programs.

Regional Programs

Northwest Wisconsin Business Development Fund, Northwest Business Development Corporation. Purpose: to promote private sector investment in long-lived assets and to create jobs by addressing capital gains in the market for long-term debt. Program provides low-interest, fixed-rate subordinated debt for up to 40 percent of a project. Eligible industries primarily timber and wood, manufacturing, and tourism in Northern Wisconsin. Projects must create one job for every $5,000 loaned. Eligible counties include Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer, Taylor, and Washburn. Contact Info: Northwest Business Development Corporation, Mr. Bruce T. Davis, Executive Director, 715-635-2197.

Intermediary Relending Program, Northwest Business Development Corporation. Purpose: to promote private sector investment in long-lived assets and to create jobs by addressing capital gains in the market for long-term debt. Program provides fixed rate loans for up to 50 percent of total project, not to exceed $150,000. Eligible industries include business (excluding tourism). Projects must create one job for every $15,000 loaned. Eligible counties include Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer, Taylor, and Washburn. Contact Info: Northwest Business Development Corporation, Mr. Bruce T. Davis, Executive Director, 715-635-2197.

Economic Development Loan Program, Northern States Power Company. Purpose: to stimulate private investment and foster economic diversification within NSPW's service territory. Program provides up to 50 percent of an eligible project cost financed by debt, up to a maximum of $50,000;or by loan guarantee up to maximum of $200,000. Only businesses relocating to NSPW's territory from another territory are eligible. Contact Info: Northern States Power Company, Economic Development Department. Eau Claire, WI 715-839-2570.

Ashland County Revolving Loan Fund Program, Ashland County. Purpose: to develop and retain a positive business climate. The program is designed to partially address the gap in private capital markets for long-term, fixed-rate financing. To be eligible, companies must be located in Ashland County and produce a minimum of one job per $20,000 in financing. Contact info: Ashland Area Development Corporation, Frank R. Kempf, Executive Director. Ashland, WI (715) 682-8344.

State of Wisconsin Programs
The Department of Commerce has a broad range of technical and financial assistance programs designed to assist businesses to successfully launch or expand operations. Services and programs include business planning, site selection, working capital, permitting, employee training and research and development. Although not comprehensive, the list below outlines available resources and programs. A complete list can be found at www.commerce.state.wi.us.

- *Industrial Revenue Bonds* - the Industrial Revenue Bond (IRB) program allows cities, villages and towns to support industrial development through the sale of tax-exempt bonds. The proceeds from the bond sale are loaned to businesses to finance capital investment projects at, primarily, manufacturing facilities. Even though IRBs are municipal bonds, they are not general obligations of the municipality. The company or business that will use the facilities provides the interest and principal payments on the loan. The local government is in partnership with the business, lending its name, but not its credit, to the bond issue.

- The *Brownfields Initiative* provides grants to persons, businesses, local development organizations, and municipalities for environmental remediation activities for brownfield sites where the owner is unknown, cannot be located or cannot meet the cleanup costs. Contact Jason Scott, 608/261-7714.

- The *Customized Labor Training (CLT) program* assists companies investing in new technologies or manufacturing processes by providing a grant up to 50 percent of the cost of training employees on the new technologies.

- The *Community Development Block Grant (CDBG)-Economic Development Program* provides grants to communities to loan to businesses for start-up, retention, and expansion projects based on the number of jobs created or retained. Communities can create revolving loan funds from the loan repayments. Eligible project costs include construction and expansion, working capital and acquisition of existing businesses, land, buildings and equipment.

- The *Community-Based Economic Development Program* is designed to promote local business development in economically-distressed areas. The program awards grants to community-based organizations for development and business assistance projects and to municipalities for economic development planning. The program helps community-based organizations plan, build, and create business and technology-based incubators, and can also capitalize an incubator tenant revolving-loan program. Contact Doug Thurlow, 608/266-7942. Fax Form 954*

- The Rural Economic Development Program is designed to provide working capital or fixed asset financing for businesses. Since it's inception in 1990, the RED program has provided more than $1.4 million to over 110 Wisconsin businesses. Eligible businesses must be locating in a city, village, or town of less than 6,000 people. Contact info: Department of Commerce Regional Manager Marty Ambros, (715) 836-2630.

Also under the umbrella of the Wisconsin Department of Commerce is *Forward Wisconsin*, a statewide public-private marketing and business recruitment organization. Its role is marketing outside Wisconsin to bring new businesses, jobs and increased economic activity to the state.

Wisconsin Department of Transportation (WisDOT)

- The *Freight Railroad Infrastructure Improvement Program* awards loans to businesses or communities to rehabilitate rail lines, advance economic development, connect an industry to the national railroad system, or to make improvements to enhance transportation efficiency, safety, and intermodal freight movement.

- The *Transportation Economic Assistance (TEA) Program* provides matching grants to governing bodies, private businesses for road, rail, harbor and airport projects that help attract employers to Wisconsin, or encourage business and industry to remain and expand in the state.

- The *Transportation Enhancements (TE) Program* promotes activities that enhance a transportation project or area served by a transportation project.

The *Wisconsin Housing & Economic Development Authority (WHEDA)* provides financing to investors and local governments to stimulate housing, small business and agribusiness development. Contact info: www.wheda.com, (608) 266-7884.

Federal Programs

CFDA = Catalog of Federal Domestic Assistance
Detailed program descriptions can be found at http:\\www.cfda.gov

Rural Business Opportunity Grants CFDA: 10.773, Agency: RBS
Objectives: Grant funds may be used to assist in the economic development of rural areas by providing technical assistance, training, and planning for business and economic development.

Community Development Block Grants/Entitlement Grants CFDA: 14.218, Agency: HUD
Objectives: To develop viable urban communities, by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for persons of low and moderate income.

Farm Operating Loans CFDA: 10.406, Agency: FSA
Objectives: To enable operators of not larger than family farms through the extension of credit and supervisory assistance, to make efficient use of their land, labor, and other resources, and to establish and maintain financially viable farming and ranching operations.

Interest Assistance Program CFDA: 10.437, Agency: FSA
Objectives: To provide a 4 percent subsidy to farmers and ranchers, who do not qualify for standard commercial credit. Guaranteed loans are serviced by a lender who has entered into a Lenders Agreement with the agency.

Business and Industry Loans CFDA: 10.768, Agency: RBS
Objectives: To assist public, private, or cooperative organizations (profit or nonprofit), Indian tribes or individuals in rural areas to obtain quality loans for the purpose of improving, developing or financing business, industry, and employment and improving the economic and environmental climate in rural communities including pollution abatement and control.

Empowerment Zones Program CFDA: 10.772, Agency: USDA
Objectives: The purpose of this program is to provide for the establishment of empowerment zones and enterprise communities in rural areas to stimulate the creation of new jobs, particularly for the disadvantaged and long-term unemployed, and to promote revitalization of economically distressed areas.

Community Development Block Grants/Special Purpose Grants/Technical Assistance Program CFDA: 14.227, Agency: HUD

Community Development Block Grants/Brownfield Economic Development Initiative CFDA: 14.246, Agency: HUD
Objectives: To return brownfields to productive use by assisting public entities eligible under the Section 108-Guaranteed Loan program carry out qualified economic development projects on brownfields authorized by Section 108(a) of the Housing and Community Development Act of 1974, as amended. Grant assistance must enhance the security of loans guaranteed under the Section 108 program or improve the viability of projects financed with loans guaranteed under the Section 108 program.

Bank Enterprise Award Program CFDA: 21.021, Agency: TREAS
Objectives: To encourage insured depository institutions to increase their level of community development activities in the form of loans, investments, services and technical assistance within distressed communities and to provide assistance to community development financial institution's through grants, stock purchases, loans, deposits and other forms of financial and technical assistance. The program rewards participating insured depository institutions for increasing their activities in economically distressed communities and investing in community development financial institutions.

Construction Grants for Wastewater Treatment Works CFDA: 66.418, Agency: EPA
Objectives: To assist and serve as an incentive in construction of municipal wastewater treatment works which are required to meet State and/or Federal water quality standards and improve the water quality in the waters of the United States.

Brownfield Assessment and Cleanup Cooperative Agreements CFDA: 66.818, Agency: EPA
Objectives: To provide funding: (1) to inventory, characterize, assess, and conduct planning and community involvement related to brownfield sites; (2) to capitalize a revolving loan fund (RLF) and provide subgrants to carry out cleanup activities at brownfield sites; and (3) to carry out cleanup activities at brownfield sites that are owned by the grant recipient.

Farm Ownership Loans CFDA: 10.407, Agency: FSA
Objectives: To assist eligible farmers, ranchers, and aquaculture operators, including farming cooperatives, corporations, partnerships, and joint operations to: Become owner-operators of not larger than family farms; make efficient use of the land, labor, and other resources; carry on sound and successful farming operations; and enable farm families to have a reasonable standard of living.

Rural Community Development Initiative CFDA: 10.446, Agency: RHS
Objectives: To develop the capacity and ability of private, nonprofit community-based housing and community development organizations, and low income rural communities to improve housing, community facilities, community and economic development projects in rural areas.

Rural Economic Development Loans and Grants CFDA: 10.854, Agency: RBS
Objectives: To promote rural economic development and job creation projects, including funding for project feasibility studies, start-up costs, incubator projects, and other reasonable expenses for the purpose of fostering rural development.

Procurement Assistance to Small Businesses CFDA: 59.009, Agency: SBA
Objectives: To assist small business in obtaining a "fair" share of contracts and subcontracts for Federal government supplies and services and a "fair" share of property sold by the government.

Small Business Loans CFDA: 59.012, Agency: SBA
Objectives: To provide guaranteed loans to small businesses which are unable to obtain financing in the private credit marketplace, but can demonstrate an ability to repay loans granted.

Service Corps of Retired Executives Association CFDA: 59.026, Agency: SBA
To use the management experience of retired and active business management professionals to counsel and train potential and existing small business owners.

Small Business Development Center CFDA: 59.037, Agency: SBA
Objectives: To provide management counseling, training, and technical assistance to the small business community through Small Business Development Centers (SBDCs).

Certified Development Company Loans (504 Loans) CFDA: 59.041, Agency: SBA
Objectives: To assist small business concerns by providing long- term, fixed-rate financing for fixed assets through the sale of debentures to private investors.

Farm Storage Facility Loans CFDA: 10.056, Agency: FSA
Objectives: To encourage the construction of on farm grain storage capacity and to help farmers adapt to identity preserved storage and handling requirements for genetically enhanced production.

Intergovernmental Cooperation

Town of White River

Introduction

Given the number and range of public and quasi-public entities that can affect the daily lives of Town residents, intergovernmental cooperation is a very important consideration in this plan.

Cooperation can take many forms (Exhibit 1). Relationships may be informal, based on verbal agreements or other informal arrangements. Or, cooperation may be more formal as expressed in a legally binding agreement. Most intergovernmental cooperation is done for the purpose of delivering services or exercising joint powers. Some cooperation is undertaken to receive services or make cooperative purchases.

> "Intergovernmental cooperation is any arrangement by which two or more governmental entities work together to address an issue of mutual interest."

Intergovernmental relations can be described as vertical or horizontal. Vertical relationships are those linking a municipality to governments of broader jurisdiction. For example, the relationship between a local unit of government to the state and the federal government is vertical. Actions of one, often have a direct bearing on the others. For the most part, this relationship occurs in a top down fashion. For example, when the state adopts a statewide policy plan, it in essence directs future activities with counties, villages, cities, and towns. As discussed in the Transportation Element of this plan, the Wisconsin Department of Transportation has adopted a number of statewide policy plans that directly affect transportation activities within the jurisdictions of local units of government. It is therefore imperative that when such policies are considered, local units of government, individually or cooperatively, work with the appropriate state bodies to develop a mutually beneficial relationship.

Exhibit 1. Examples of Intergovernmental Cooperation	
♦ Transfer of territory (annexation, detachment)	♦ Joint ventures
♦ Sharing information, staff, resources, etc.	♦ Revenue sharing
♦ Communication	♦ Boundary agreements
♦ Consolidating services / trading services	♦ Areawide service agreement
♦ Areawide planning	♦ Joint use of a facility
♦ Special purpose districts serving multiple jurisdictions	♦ Cooperative purchasing

Horizontal relationships describe the Town's connection to adjacent communities. Together, these relationships cut across each of the nine functional elements of this plan.

Over the years, and most recently with the Kettl Commission report, there has been a statewide push for consolidating governmental services at the local level. The Commission on State-Local Partnerships (Kettl Commission) calls for the creation of "growth-sharing areas: within which local units of government would collaborate to serve the needs of their citizens. The report recommends that local governments adopt "Area Cooperation

Compacts" with at least two other governments in at least two functional areas including: law enforcement, housing, emergency services, fire, solid waste, recycling, public health, animal control, transportation, mass transit, land-use planning, boundary agreements, libraries, parks, recreation, culture, purchasing or e-government. The Commission also advocates for the reform of state aids to municipalities. The Town shares fire protection services with the Town of Morengo and provides mutual aid to all of the surrounding Towns and DNR in fire protection. The Town also provides emergency aid at accidents in the Town of White River and the Town of Morengo.

Governmental Structure

Organizational Structure of the Town
The Town operates through a Board/Supervisor form of government. The Town Board consists of two Supervisors and a Chair.

The Board of Supervisors is elected at-large and is responsible for setting policies. The Town Board Chair, also elected at-large, presides at Town Board meetings, and votes on all matters before the board. Generally, the Town Chair is assigned certain administrative responsibilities but does not carry veto power.

Area Local Units of Government

County Government
The Town is located in Ashland County. The County was created in 1860. The Board of Supervisors consists of 21 supervisors each representing a geographic area. Town residents are located in supervisory district 15.

Surrounding Communities
Nearby communities in Ashland County are the towns of Gingles, Sanborn, Ashland, Marengo, and the city of Ashland. The Town also borders the town of Kelly and the town of Lincoln in Bayfield County.

Regional Governmental Bodies

Regional Planning Commission
There are eight regional planning commissions within Wisconsin created pursuant to §66.0309, Wis. Stats. (Exhibit 2). The governor with consent of local governing bodies creates them. RPCs are formed to provide a wide range of services to

Exhibit 2. Regional Planning Commissions in Wisconsin

local units of government within its geographic boundary. As part of these services, The RPC can offer planning assistance on regional issues, assist local interests in responding to state and federal programs, provide advisory service on regional planning problems, act as a coordinating agency for programs and activities, and provide cost shared planning and development assistance to local governments. A six-county area in the southern part of the state is not served by a RPC (Columbia, Dane, Dodge, Jefferson, Rock and Sauk counties).

The Town is located within the Northwest Regional Planning Commission (NWRPC). NWRPC was created in 1959 by local units of government of northwest Wisconsin. It is the oldest planning commission in Wisconsin and one of the first multi-county planning commissions in the nation. The Commission is a cooperative venture of Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer, Taylor, and Washburn Counties and the tribal units of Bad River, Red Cliff, Lac du Flambeau, Lac Courte Oreilles, and St. Croix.

NWRPC has created three affiliated corporations. Northwest Wisconsin Business Development Corporation was created in 1984 to manage NWRPC's loan funds. Northwest Affordable Housing Inc. was established in 1996 to coordinate the creation of affordable housing. Wisconsin Business Innovation Corporation (WBIC), created in 1996, encourages development of technology-based companies in rural Wisconsin. Badger Oil Company, a subsidiary of WBIC, was created in June 1999.

Special Purpose Districts

Special purpose districts are local units of government that are created to provide a specified public service. Like municipalities, special purpose districts derive their authority from state statutes. They have geographic boundaries that may or may not coincide with those of counties, villages, cities, or towns. Once a special district is created, it becomes an autonomous body often with its own taxing authority. In a few instances, state statutes create unique districts (e.g., professional team districts) but typically authorize counties, towns, cities, and villages to create special districts according to the requirements contained in the statutes. Exhibit 3 provides a sample of non-educational special purpose districts authorized by state statute. Local school districts and the vocational educational districts in the state are also considered special districts because they have been created to provide a single service – education.

Exhibit 3. Sample of Non-educational Special Purpose Districts in Wisconsin

Type of District	State Authorization
Metropolitan sewerage district	Chapter 200
Town sanitary district	Subchapter IX, Chapter 60
Drainage district	Chapter 88
Public inland lake protection and	Chapter 33
Local exposition districts	Subchapter II, Chapter 229
Local professional baseball park district	Subchapter III, Chapter 229
Local professional football stadium district	Subchapter IV, Chapter 229
Local cultural arts district	Subchapter V, Chapter 229
Architectural conservancy district	§66.1007

School District
The Town is located in the Ashland School District. It is governed by a board of nine members. The school district's offices are located at 502 West Main Street in the City of Ashland. The Town has a good working relationship with the school district.

Technical College District
In Wisconsin there are 16 technical college districts. The Town is located in the Wisconsin Indianhead Technical College District (Exhibit 4). The district includes 11 counties. Its campuses are located in Ashland, New Richmond, Rice Lake, and Superior. A nine-member board governs the district.

Exhibit 4. Wisconsin Indianhead Technical College District

State Agencies

By virtue of their roles, there are a number of state agencies that are integral partners in Town policies, programs, and projects.

Department of Natural Resources (DNR)
The DNR has a wide range of statewide responsibilities for environmental quality, state parks, and recreation. It is governed by the Natural Resources Board, which has legal authority to set agency policy, recommend regulations for legislative approval, approve property purchases and accept donations. Together with the DNR staff, the board works to establish policies and programs, administer state laws and rules, distribute grants and loans, and work with many government and non-government entities. Most of the DNR workforce is assigned to field offices in five regions (Exhibit 5). Their work is further subdivided into 23 geographic management units (GMU) whose boundaries roughly match the state's natural river basins and large waterways.

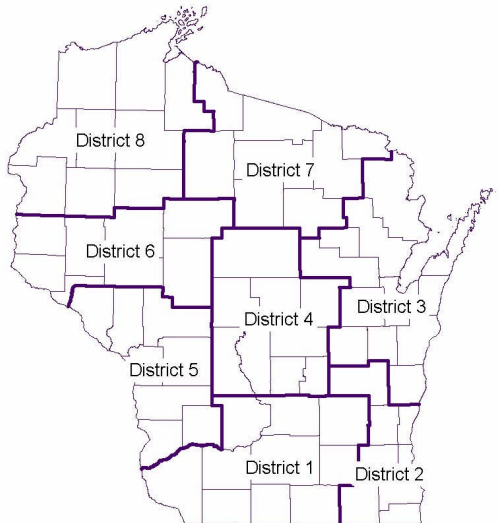
Exhibit 85 Department of Natural Resources Regions

DNR staff are responsible for defining the area's natural ecology and identifying threats to natural resources and the environment. The DNR is composed of a broad range of expertise, and staff efforts are often combined with local government and private efforts to manage public resources. The Town is located in the Northern Region,

which serves the following counties: Ashland, Barron, Bayfield, Burnett, Douglas, Florence, Forest, Iron, Langlade, Lincoln, Onieda, Polk, Price, Rusk, Sawyer, Taylor, Vilas, and Washburn. Local DNR service centers are found in the following communities: Antigo, Ashland, Hayward, Ladysmith, Park Falls, Rhinelander, Spooner, Superior, and Woodruff.

Department of Transportation
The Wisconsin Department of Transportation (WisDOT) is divided into eight districts for administrative and programmatic purposes. The Town is located in District 8. This district includes the following counties: Ashland, Barron, Bayfield, Burnette, Douglas, Polk, Rusk, Sawyer, and Washburn (Exhibit 6). The district office is located in Superior.

Exhibit 6. Department of Transportation Districts



Department of Commerce
The Department of Commerce is another state agency with regulatory responsibility. The Safety and Buildings Division administers and enforces state laws and rules relating to building construction and safety and health. Plan review and site inspection is part of the division's role in protecting the health and welfare of people in constructed environments.

Department of Agriculture, Trade and Consumer Protection
The Department of Agriculture, Trade and Consumer Protection (DATCP) has regulatory duties concerning the Farmland Preservation Program and certain agricultural practices.

Department of Revenue (DOR)
The Department of Revenue is responsible for a number of functions relating to local governments. The DOR oversees the shared revenue program, and other programs that distribute tax revenue to municipalities (e.g., lottery tax credits). The DOR also oversees and approves municipal Tax Increment Financing Districts.

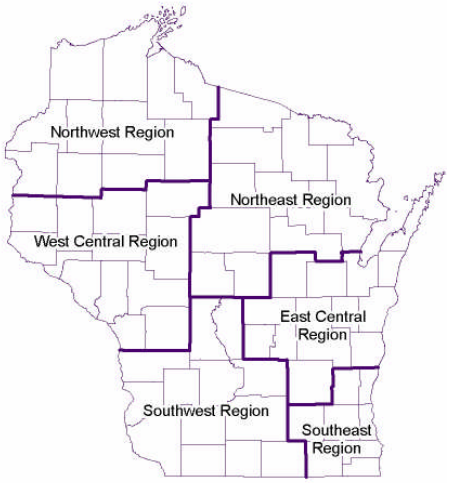
Department of Administration
The Department of Administration (DOA) fulfills a number of functions. Some of those functions related to land use planning include reviewing incorporations, cooperative boundary plans, and all annexation requests occurring in counties with a population of 50,000 or more. Additionally, the Division of Intergovernmental Relations (DIR) within DOA provides information and resources to enhance and facilitate local planning. DIR also

provides technical assistance and advice to state agencies and local governments with land information responsibilities, among other things. DIR will review this comprehensive plan to ensure consistency with the State's 'Smart Growth' legislation.

Along with regulating local activities, all of these state agencies provide information, education and training. They also maintain funding programs to help local governments with development efforts and provide a basic level of health and safety.

Wisconsin Emergency Management
Wisconsin Emergency Management (WEM) is charged with a wide range of responsibilities for disaster mitigation, planning, response, and education. It administers a number of grants to local communities and is responsible for preparing and administering several statewide policy plans. Most recently, it completed a statewide hazard mitigation plan for natural and technological hazards in conformance with the Disaster Mitigation Plan of 2000.

Exhibit 7. Wisconsin Emergency Management Regions



Regional directors are located in each of the six regional offices throughout the state (Exhibit 7). They work directly with municipal and county programs in planning, training exercising, response and recovery activities, as well as the coordination of administrative activities between the Division and local governments. When disasters and emergencies strike, they are the Division's initial responders and serve as field liaisons with the state. The office of the Northwest Region is located in Spooner.

Federal

U.S. Fish and Wildlife Service
The U.S. Fish and Wildlife Service works with Ashland County, local governments, and WDNR on many programs related to natural resources.

Tribal Governments

Bad River Band of Lake Superior Tribe of Chippewa Indians
The Bad River Reservation is located in parts of Ashland and Iron Counties, specifically in the Towns of Ashland, Gingles, LaPointe, Sanborn, and White River in Ashland County. The Bad River Reservation was established through the Treaty of September 30, 1854. The

Band is a federally recognized Indian Tribe organized under Section 16 of the Indian Reorganization Act of 1934, 25 U.S.C., Subsection 476. The Band is organized as a tribe for the common welfare of the membership, to conserve and make use of our natural resources, and to enjoy the rights of home rule, which are enumerated in the Tribal Constitution as amended.

Land within the reservation boundaries currently includes both tribal land, and land that is privately owned by non-Band members. Much of the reservation land was originally alloted to individual Band members in 80-acre tracts, and subsequently some of those tracts were sold or transferred into private ownership by non-Band members. The pattern of land ownership is highly fragmented, with approximately 47 percent of the land within the reservation boundaries in private ownership. This fragmented pattern of ownership requires that the Towns and Bad River Band interact and cooperate on certain matters including the provision of some services (roads, fire protection), and resource management efforts.

Interstate Agencies

As allowed by the state's constitution, Wisconsin is party to a number of interstate organizations and compacts. One multi-state agency will be described here.

The **Great Lakes Commission** is a binational organization focused on land and water resource protection and use surrounding the Great Lakes. It was established in 1955 by joint legislative action between the great lakes states. It is composed of eight member states, and two Canadian provinces that border the Great Lakes. The Commission provides information on public policy issues that affect the land and water resources in the region, and provides a forum for coordinating public policy between the member states and provinces.

Nongovernmental Organizations

In addition to governmental organizations there are other types of organizations that can affect the daily lives of Town residents. These may include a chamber of commerce, non-profit organizations, and similar organizations that are actively working to promote the quality of life in the area. It is imperative that governmental and nongovernmental organizations work together for the good of all residents. The following section briefly describes some of these organizations and how they are organized and their purpose.

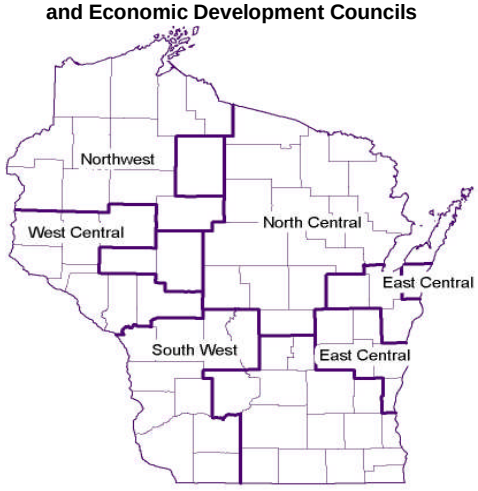
Forward Wisconsin

Forward Wisconsin, Inc., is a public-private statewide marketing and business recruitment organization. It was created in 1984 as a not-for-profit corporation. Its job is marketing outside Wisconsin to attract new businesses, jobs and increased economic activity to the state. It is governed by a board of directors that reflects that public-private partnership. Governor Jim Doyle is chairman of the board. Private sector representation includes Wisconsin's utilities, banks, educational institutions, investment firms, law firms, and

manufacturers. Public sector representation includes four state legislators and the Secretary of the Department of Commerce. Funding for Forward Wisconsin comes from private-sector contributors and from the state through a contract with the Wisconsin Department of Commerce. Forward Wisconsin is headquartered in Madison and has offices in Eau Claire, Milwaukee, and Chicago.

International Trade, Business and Economic Development Councils
Since 1992, five regional International Trade, Business and Economic Development Councils (ITBECs) have been created in Wisconsin to expand economic development in the state by promoting tourism from foreign lands and the exporting of Wisconsin products to other countries. ITBECs are a public-private partnership between business leaders, county elected officials, and tribal representatives. What began as 11 counties in the northwest part of the state now includes 54 counties.

Exhibit 8. International Trade, Business and Economic Development Councils



The Town is located in the Northwest ITBEC (Exhibit 8). The Northwest ITBEC was the first ITBEC created in Wisconsin. Since its inception in 1992, it has grown to include Douglas, Bayfield, Ashland, Iron, Price, Sawyer, Washburn, Burnett, Polk, Barron, Rusk, and Taylor counties.

Resource Conservation and Development Councils
Resource Conservation and Development Councils (RC&Ds) are private, non-profit organizations created pursuant to state enabling legislation to improve the social, economic, and environmental opportunities of the area. Nationally, there are more than 200 districts and there are five in Wisconsin (Exhibit 9). The Town is located in the Pri-Ru-Ta RC&D.

> "RC&Ds provide an areawide framework for addressing locally-defined issues with assistance of state and federal agencies and other partners."

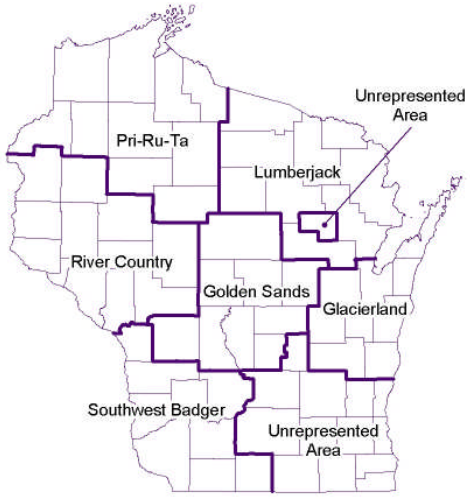
Working through its RC&D council, local citizens provide leadership and work together to set program priorities. Each RC&D district establishes an area plan (also known as a resource conservation and utilization plan), which provides direction for the council in making community improvements and conducting activities. A variety of government agencies, organizations, and companies provide assistance in accomplishing program goals.

RC&D councils have broad authority to seek help from a variety of sources including federal or state agencies, local government, community organizations, and private industry. Help may be technical or financial assistance in the form of donations, loans, grants, or cost-sharing programs.

Recent activities of the Pri-Ru-Ta Council include the following:

- ***Superior Shores Agricultural Cooperative, Inc. of Ashland-Bayfield Counties*** – Developed yogurt cheese with added fruits, dairy-fruit beverages and fluid milk marketing.
- ***Bayfield Lamb Cooperative*** -- Developed a new generation cooperative to help farmers develop and market value-added lamb meat products.
- ***Forest Stewardship*** -- Worked with private woodland owners to develop a forest stewardship plan to help them manage their woodlots more profitably.
- ***Native American Youth Natural Resources Field Week*** at Lac Courte Oreilles Ojibwe Community College.

Exhibit 9. Resource & Conservation Development Councils in Wisconsin



Existing Intergovernmental Cooperation

State statutes set up a number of tools for local units of government to formally cooperate on a number of issues of common concern. Exhibit 10 summarizes these tools and the following sections describe them in more detail and if the Town is currently using them.

Exhibit 10. Types of Intergovernmental Agreements				
	General Agreement	Stipulation & Order	Revenue Sharing Agreement	Cooperative Boundary Agreement
State Authorization	§66.0301	§66.0225	§66.0305	§66.0307
Uses	services	boundaries	revenue sharing	boundaries, services, & revenue sharing
Who decides?	participating municipalities	municipalities involved in the lawsuit, the judge, and area residents if they request a referendum	participating municipalities	participating municipalities and Department of Administration, Municipal Boundary Review
Referendum?	no	binding referendum possible	advisory referendum possible	advisory referendum possible

Source: Intergovernmental Cooperation, Wisconsin Department of Administration

Stipulations and Orders
Section 66.0225, Wis. Stats., allows local units of government to resolve an on-going legal battle over a boundary conflict with a legally binding stipulation and order. The Town is not party to a stipulation and order.

General Agreements
State statutes (§66.0301) authorizes local units of government to cooperate for the "receipt or furnishing of services or the joint exercise of any power or duty required or authorize by law". The Town has entered into a general agreement to share its fire and EMS services.

Municipal Revenue Sharing Agreements
Under §66.0305, Wis. Stats., adjoining local units of government can share taxes and fees with a municipal revenue sharing agreement. This type of agreement can also include provisions for revenue sharing. The Town is not party to any revenue sharing agreement.

Cooperative Boundary Agreements
Cooperative boundary agreements (§66.0307, Wis. Stats.) can be used to resolve boundary conflicts between villages, cities, and towns and may include revenue sharing or any other

arrangement. With adoption of a cooperative boundary agreement, the rules of annexation do not apply. The Town is not party to any cooperative boundary agreement.

Existing or Potential Areas of Conflict

The Town enjoys a good working relationship with the surrounding towns. It is imperative that this cooperation continues through the implementation of this plan and those of the surrounding towns. A set of goals and objectives are included in the policy document that describe the ways in which the Town will attempt to avoid and/or minimize conflict with its surrounding neighbors.

Overview

During the planning process many aspects of land use were analyzed with an eye toward developing a future land use plan. Existing land development patterns are considered along with the existence of any brownfield sites[1]. Local real estate forces are considered and again will be used in fashioning the future land use plan and supporting goals, objectives, and policies. Relationships between the Town, the county, and other nearby jurisdictions also play an important role when determining how land in the Town could be developed in the coming years.

Existing Land Use

Table 1 provides a summary of land uses in the Town by type. Map 1, Existing Land Use, depicts the current land uses in the Town. A majority of space is taken up by woodlands or open space. The next two largest land uses in the Town are single-family residential, (2.2 percent), and transportation, (3.4 percent). Commercial uses in the Town account for a very small portion of uses in the Town. The residential areas can be found scattered throughout the Town.

Table 1. Existing Land Use: 2004

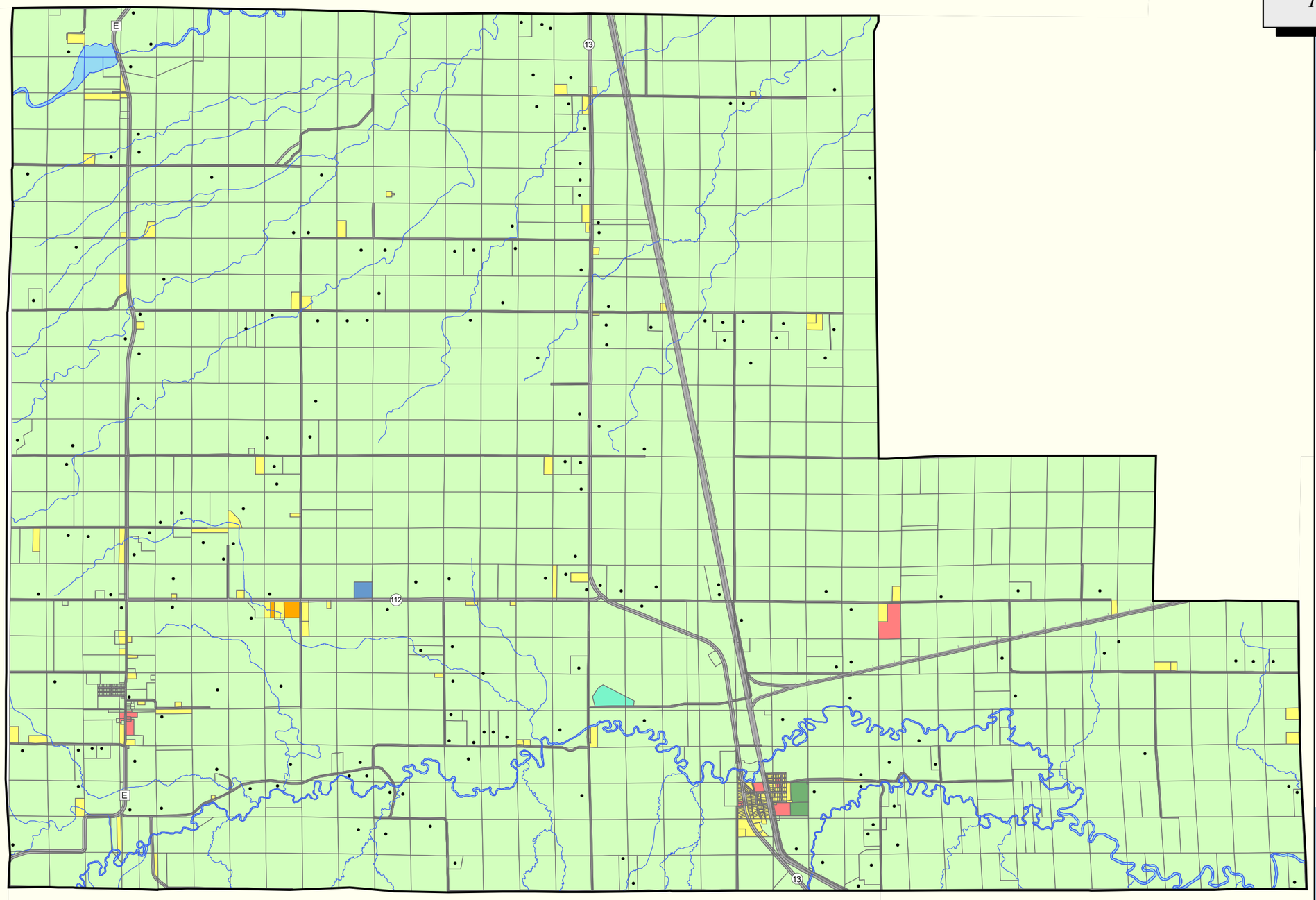
Land Use	Types of uses	Acres	Percent Of Total
Residential			
Single-family	Detached single-family homes	628	2.2
Commercial	**Any combination of commercial uses on the same site**	**38**	**0.1**
Governmental services	**Municipal buildings, libraries, community centers, schools, post offices**	**10**	**< 0.1**
Institutional services	**Hospitals, churches, group homes, nursing homes**	**9**	**< 0.1**
Infrastructure			
Transportation	Roads, railroads, airports, parking lots, right-of-way	953	3.4
Agriculture, woodlands, and open space	Forested and shrub areas, agricultural land and support buildings and residences	**26,408**	**93.4**
Park and recreation	Public and private parks, golf courses	**18**	**< 0.1**
Quarry		**17**	**< 0.1**
Water		**178**	**0.6**
Total		**28,259**	**100**

Note: The percents may not total 100, due to rounding
This data is based on a windshield survey that was done by the planning committee members or by the consultant.
Single family acreage counts are based on parcels or of an average size of 2 acres.

[1] A brownfield is a site consisting of one or more properties that are abandoned or underutilized because of concerns about environmental contamination.

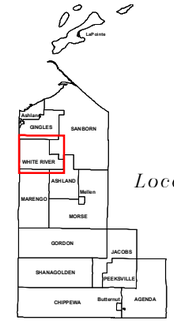
Existing Land Use
Town of White River: 2004

Ashland County
Comprehensive Plan Map



Legend

- Residence
- Single-family
- Commercial
- Governmental Services
- Institutional
- Park & Recreation
- Agricultural / Woodlands / Open Space
- Transportation
- Quarry / Pit
- Water



Locational Map

0 0.25 0.5 1
Miles

NORTH

Base Map: Ashland County

Data Source: Town of White River

Map Created: October, 2004

Map Edited: October, 2004

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Land Supply and Demand

To provide a snapshot of the local real estate trends a local realtor, as well as a realty website were reviewed. Home sale prices are not available for the town but in other places throughout the county there are single-family homes on the market for a wide range of sale prices. Land prices in White River and in other towns throughout the county currently range from $700 to $7,000 per acre.

Waste Disposal and Contaminated Sites
Identification of brownfield sites is an important consideration in forming an appropriate land use plan, in fostering economic development, and in ensuring a clean and healthy environment. Cleanup and redevelopment of brownfield sites makes common sense by returning abandoned or under-utilized properties to the tax rolls and to productive use. Redevelopment of brownfield sites also makes optimal use of existing infrastructure.

To identify brownfield sites, the following sources were reviewed:
- Bureau of Remediation and Redevelopment Tracking System (BBRTS)
- Registry of Waste Disposal Sites in Wisconsin
- Superfund Sites
- Local knowledge

The DNR has not identified any contaminated areas within the Town and community members indicated that there is an old Township dump which has been sealed More information on this can be found in the Economic Development Element.

Opportunities for Redevelopment
Currently there are no areas in need of redevelopment in the Town.

Development Factors
There are a number of physical conditions that limit or restrict land development within and around the Town. Other physical factors include conditions that favor a particular use (such as agriculture), or environmental features that make construction more difficult (see the *Wetland and Floodplain* and the *Forest and Park Land* maps in the Agricultural, Cultural, and Natural Resources Element). Examples of these are hydric soils, water features, public lands, federal, state, and county lands, federal trust lands, and preservation and conservation lands. Physical features and land ownership do not necessarily prevent development from occurring; they may just pose significant challenges. Land that is delineated as wetland, however, can prohibit development from occurring.

Future growth of the Town of White River is limited to areas that are not in a wetland area. (Land Use Map).

Land Use Conflicts

Conflicts often develop over time when certain land uses are located inappropriately, or adequate buffering is not provided between conflicting land uses. Sometimes industrial land uses have characteristics associated with them that can potentially be viewed as a nuisance by surrounding residents including noise, dust, odors, and truck traffic. While the land uses in White River are generally uniform throughout, the Town is not immune to these types of conflicts that may occur in the future.

Demographics

Overview

A community can directly and indirectly affect how fast it grows and the type of growth that occurs through the policies it adopts and the actions it takes. A community could capture a disproportionate share of the growth potential within the region by proactively creating opportunities for new development through any number of actions, including infrastructure improvement and creation of incentives, for example. A community could create a public private partnership and use its resources to make a project happen that would not otherwise occur. Likewise, it could slow the natural rate of growth by instituting certain policies to limit new development.

Although a community can affect the rate of growth, it needs to take stock of historical growth patterns and understand its strengths and weaknesses relative to the other locales within the regional market. Obviously, a community needs to be realistic in preparing population forecasts because it affects many parts of the comprehensive plan. If a community uses unrealistic population forecasts, the plan will be flawed (although it can be adjusted by amendment).

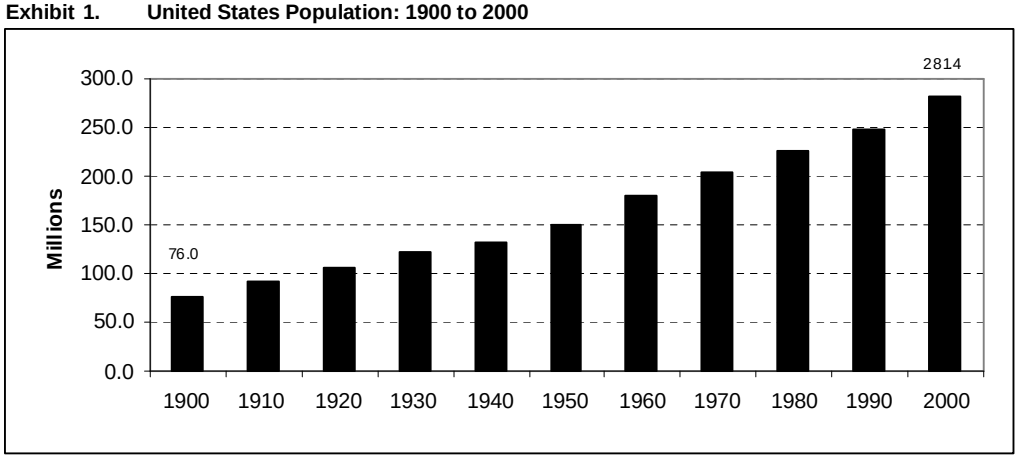
National and Statewide Demographic Trends

Before describing the historical population change in the Town of Shanagolden, it is important to consider the larger picture by briefly looking at national and statewide demographic trends and shifts. As depicted in Exhibit 1, the population of the United States has increased steadily from its founding to the current day. During the last decade (1990-2000), however, the rate of population growth was near record levels. Most of the growth resulted from immigration, not from natural increase through births. Changes in immigration law at the federal level will likely continue to facilitate immigration from other countries, especially from Mexico and countries throughout Latin America.

Because of the significant level of immigration in recent years and other demographic shifts, the population center of the United States is moving south and west, and as a consequence the Midwest and Northeast are losing ground (Exhibit 2).

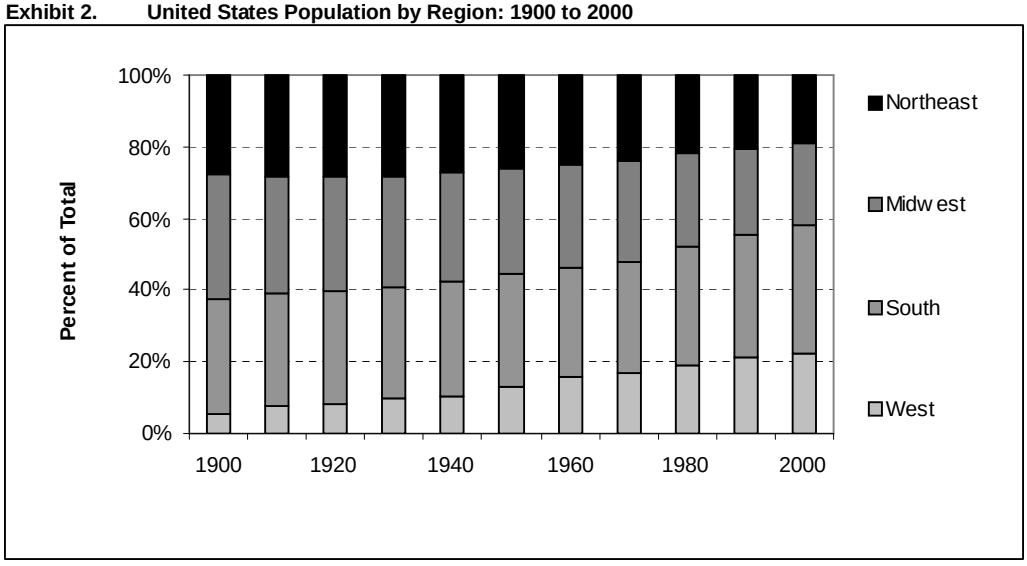
This population shift will have profound implications on Wisconsin's labor force and it's economic development potential in the coming years, not to mention political influence at the national level. Some economic development specialists in Wisconsin are predicting a labor shortage in the coming years and see immigration to Wisconsin as one way of addressing this potential impediment to sustained economic activity.

Exhibit 1. United States Population: 1900 to 2000



Source: Census Bureau

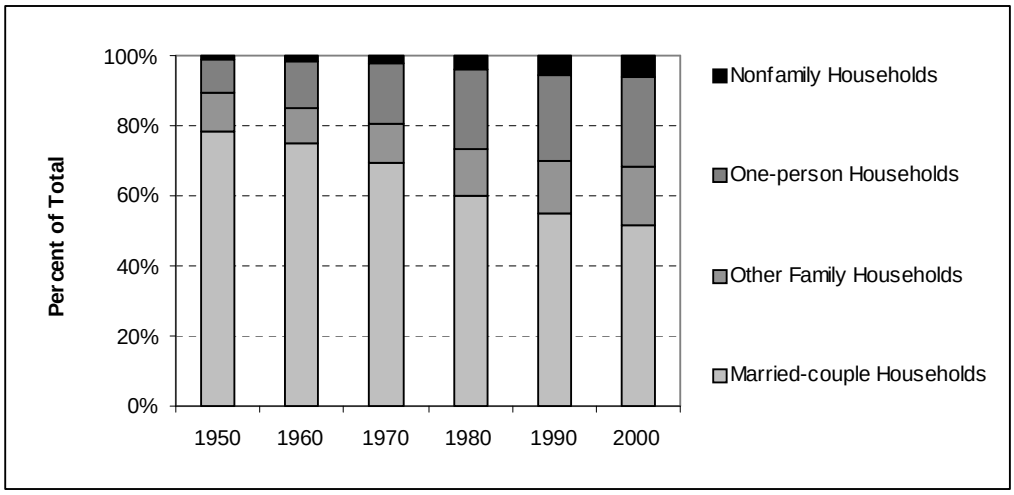
Exhibit 2. United States Population by Region: 1900 to 2000



Source: Census Bureau

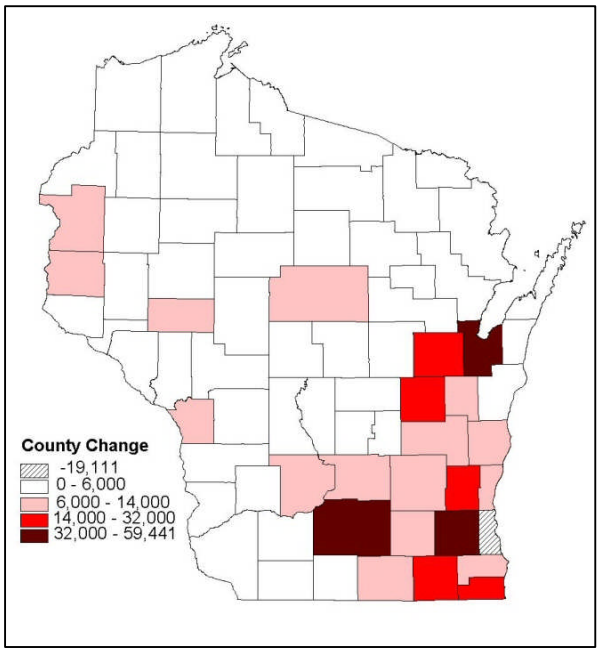
The nature of households is also changing throughout the United States. Although married-couple households are most common, they are losing ground to other living arrangements (Exhibit 3). As the proportion of married-couple households declines, we see a significant growth in one-person households. Although the data presented here is for the entire United States and may not reflect precisely what is happening in the Town of White River, it is a trend that should be considered in fashioning this plan and especially in assessing the types of housing units that may be needed in the coming years in the region.

Exhibit 3. Households by Type; United States: 1950 to 2000



Source: Census Bureau

Exhibit 4. Numeric Population Change; Wisconsin: 1990 to 2000



Source: Census Bureau

At the state level, the population has been increasing, but slower than the national rate, and at a substantially slower rate when compared to many states in the west and south as noted in the previous section. Between 1970 and 2000, nearly one million new residents have been added to the state. The rate of growth between 1990 and 2000, was 9.6 percent, which was twice the rate of growth experienced in the preceding decade.

Most of the state's growth is centered in and around the Madison and Milwaukee metropolitan areas, along the Fox River Valley, and in St. Croix County (Exhibit 4).

Regional Demographic Trends

Ashland County's population grew approximately 3.4 percent or by about 559 people from 1990 to 2000, much lower than both State and national levels (Table 1). The largest numeric increase within the County was in the Town of Sanborn followed by the Town of Gingles. The Town of White River experienced a numeric increase in population of 121 people during this time period.

In percentage points, the Town of La Pointe experienced the highest growth rate during the 1990 to 2000 period at 67.3 percent, followed by the Town of Gingles (30.1 %). The Towns of Marengo and Sanborn (27.5%), Town of Gordon (18.6%), Town of White River (15.7%), Morse Town (7.1%), Town of Chippewa (6.9%), Town of Ashland (6.3%), Town of Peeksville (5.4%). Declining in population were the Village of Butternut (-2.2%), Town of Jacobs (-5.6%), the City of Mellen (-9.6%), Town of Shanagolden (-12.8%), and the Town of Agenda (-13.2%).

"Ashland County's population grew approximately 3.4 percent or by about 559 people from 1990 to 2000."

Table 1. Population Change 1990 - 2000

	1990	2000	Difference	Percent Change
State of Wisconsin	4,891,769	5,363,675	471,906	9.6%
Ashland County	16,307	16,866	559	3.4%
Agenda Town	591	513	-78	-13.2%
Ashland Town	567	603	36	6.3%
Butternut Village	416	407	-9	-2.2%
Chippewa Town	405	433	28	6.9%
Gingles Town	492	640	148	30.1%
Gordon Town	301	357	56	18.6%
Jacobs Town	885	835	-50	-5.6%
La Pointe Town	147	246	99	67.3%
Marengo Town	284	362	78	27.5%
Mellen City	935	845	-90	-9.6%
Morse Town	481	515	34	7.1%
Peeksville Town	167	176	9	5.4%
Sanborn Town	998	1,272	274	27.5%
Shanagolden Town	172	150	-22	-12.8%
White River Town	771	892	121	15.7%
Bad River Reservation	1,070	1,411	341	31.9%

Source: US Census 2000

Age

The median age in the Town is 26.8, which is significantly younger than the median age of 36.9 in all of Ashland County. About 15 percent of the Town's population is between the ages of 35 and 44 and approximately 9 percent are between the ages of 45 and 54 (Table 2). This means that by 2020, approximately 24 percent of this population will be retired or approaching retirement.

" The median age in White River is 26.8, which compares to 36.9 in Ashland County."

Table 2. Population by Age Group – Town of White River		
	Number	**Percent**
Under 5 years	98	11%
5 to 9	107	12%
10 to 14	102	11.4%
15 to 19	85	9.5%
20 to 24	38	4.3%
25 to 34	104	11.7%
35 to 44	130	14.6%
45 to 54	81	9.1%
55 to 59	39	4.4%
60 to 64	29	3.3%
65 to 74	41	4.6%
75 to 84	24	2.7%
85 and over	14	1.6%
MEDIAN AGE	**26.8**	

Source: US Census Bureau. Census 2000 Data Set SF-1

In-migration of new residents and out-migration of existing residents will also be a factor. The guidelines above are general but provide one of several tools to determine the type of housing units needed in the future. The distribution of households over time may create demand for a greater mix of housing types. Older adults tend to move into a variety of housing arrangements when they are no longer interested in or able to maintain larger homes and lots. In addition, lifestyle choices may also warrant a greater mix of housing types. If choices are not available in White River, existing residents may seek housing elsewhere.

Between 1990 and 2000, White River's population increased by 15.7 percent or 121 people. The total number of households increased from 1990 to 2000 by 9.8 percent adding 25 additional households. Overall, population growth occurred at a faster rate than residential growth in White River over the last ten-year period.

Household Income Levels

The 2000 median household income for the Town of White River was $38,250. This compares with $31,628 for Ashland County, and $43,791 for the State of Wisconsin. This level of income has an impact on the affordability of housing and potential economic growth within the Town.

Employment and Education Levels

A general overview of local income/employment and educational attainment was undertaken to gain perspective on the local economy and its link to regional growth dynamics. Since the mid-1980s, the State of Wisconsin has realized a growing economy but a shortened supply of labor. In general, labor shortages and competition have lead to recruitment outside the State and internationally.

Data from the 2000 Census shows that 56 percent of the 892 people in the Town of White River have high school diplomas while some 42 percent have some post-high school education. There are 401 people in the Town's labor force. Countywide 41percent of the 16,866 people in the County have high school diplomas while some 44 percent have some post high school education. In the entire county there are about 8,504 people in the labor force. The Town does not offer much in the way of employment opportunities, this is the case throughout a majority of the County. Many of White River's residents are employed in production, transportation, and material moving occupations, and the Town has a average level of household income when compared to surrounding areas. More information on employment and education levels is included in the Economic Development Element.

Appendix 10-1:

Town of White River Comprehensive Plan
Survey Results Summary

Town of White River

Confidential Community Survey - 2003

Ashland County and its participating communities are in the process of preparing a comprehensive plan and want to learn more about your preferences on a number of issues. The information you provide by completing and returning this survey will assist us in planning for an Ashland County future that meets your expectations. This survey is completely confidential.

About the Town of White River

Future Growth and Development

1. Over the last decade, the population has grown by 15.7% or 121 people, generating 14 new housing units. Compared to the last decade, how should your community grow in the future?

Slower	25.6%	Same Rate	59.0%	Faster	10.3%

2. What type of new growth, if any, do you wish to see occur in your community (check all that apply).

None	17.9%	Industrial	28.2%	Retail	15.4%	Forestry	28.2%
Residential	41.0%	Hospitality	10.3%	Cottage Industry	7.7%	Mining	5.1%
Commercial	25.6%	Service	20.5%	Agricultural Production	38.5%	Home Based Business	25.6%

3. In your opinion is there currently a need for any of the following housing types in your community?

	Yes	No
Single Family (Renter and Owner Occupied)	33.3%	35.9%
Duplexes	7.7%	56.4%
Apartments (Three or more units)	17.9%	51.3%
Condominiums	5.1%	53.8%
Seasonal Residences	17.9%	46.2%
Assisted Living for Seniors	41.0%	35.9%
Nursing Homes	10.3%	51.3%
Mobile Homes	7.7%	59.0%

4. What do you think the minimum, <u>non-subdivision</u>, size of residential lots should be?

1 Acre	20.5%	6 - 10 Acres	15.4%	16 - 20 Acres	5.1%	26 - 30 Acres	0.0%	36 - 40 Acres	2.6%
2 - 5 Acres	41.0%	11 - 15 Acres	0.0%	21 - 25 Acres	2.6%	31 - 35 Acres	0.0%	More than 40 Acres	7.7%

Regulatory Environment

5. Do you believe existing regulatory controls (i.e. zoning, subdivision, land division, sanitary permits, well permits) are sufficient to achieve your vision of your community's future?

Yes	61.5%	No	10.3%	Unsure	23.1%

6. Do you believe your community should plan on adopting any of these additional methods of growth management?

	Yes	No	Unsure
Driveway Permitting	20.5%	51.3%	5.1%
Storm Water and Erosion Control	28.2%	38.5%	12.8%
Nonmetallic Mining	15.4%	53.8%	7.7%
Uniform Dwelling Code	17.9%	46.2%	12.8%
Design Review	12.8%	53.8%	10.3%
Purchase of Easements	15.4%	51.3%	12.8%
Development of Impact Fees	0.0%	53.8%	20.5%
Density Standards	17.9%	35.9%	23.1%
Local Zoning Control	25.6%	43.6%	10.3%
Local Shoreland Zoning Control	33.3%	38.5%	12.8%
Local Signage Control	28.2%	43.6%	7.7%
Local Land Division Control	25.6%	48.7%	5.1%
Local Subdivision Control	35.9%	46.2%	2.6%

Government Services

7. Do residents have an adequate opportunity to express their opinions on issues? Yes 56.4% No 30.8%

8. Please rate the following services

	Good	Fair	Poor	No opinion
Police protection	23.1%	30.8%	15.4%	17.9%
Fire protection	23.1%	48.7%	12.8%	5.1%
EMS (Emergency Medical Service)	23.1%	35.9%	10.3%	15.4%
Trash collection	23.1%	25.6%	10.3%	28.2%
Recycling	30.8%	28.2%	12.8%	17.9%
Water and sewer	17.9%	15.4%	5.1%	48.7%
Storm water	17.9%	12.8%	7.7%	48.7%
Snow removal	25.6%	25.6%	33.3%	5.1%
Road repairs and maintenance	10.3%	33.3%	46.2%	5.1%
Library services	28.2%	10.3%	5.1%	43.6%
Traffic enforcement	30.8%	23.1%	5.1%	28.2%
Planning and zoning	12.8%	35.9%	7.7%	30.8%
School district	53.8%	25.6%	2.6%	7.7%
Communication with residents	20.5%	33.3%	23.1%	12.8%
Recreation for youth	17.9%	17.9%	33.3%	20.5%
Recreation for adults	15.4%	17.9%	28.2%	25.6%
Recreation for the elderly	10.3%	15.4%	28.2%	33.3%
Administrative services	10.3%	20.5%	12.8%	41.0%

Local Questions

9. Are there areas in our Township that should be set aside for future generations? Yes....30.8% No 48.7%

If yes, please specify. 46.2%

Please do not write outside of the box.

10. Are you willing to pay for it? Yes ...28.2% No 46.2%

11. Would you be in favor of the Town creating and using a Conservation Easement Acquisition Fund? Yes....17.9% No 59.0%

About Ashland County

12. How do you feel about Ashland County as a place

	Excellent	Good	Fair	Poor
to live	28.2%	48.7%	15.4%	5.1%
to work	7.7%	25.6%	25.6%	33.3%

13. Over the last ten years, the quality of life in the County has

improved .....15.4% stayed the same.51.3% declined 25.6%

14. From the following list, rank the importance of the County efforts and services with 1 being the most important and 5 being the least important.

Continue to promote industrial development 74.4%

Continue to promote tourism..... 82.1%

Continue to promote economic diversification 76.9%

Do more to expand Health Service 82.1%

Do more to protect water quality 82.1%

Do more to protect open space..... 79.5%

Do more to enforce existing ordinances..... 71.8%

Do more to improve the transportation system 76.9%

Do more to work cooperatively with local governments 82.1%

Do more to communicate with County residents..... 81.6%

Do more to enforce traffic regulations 74.4%

Focus on recruiting value added businesses to compliment existing businesses..... 81.6%

15. Please rate the following County Services

	Good	Fair	Poor	No opinion
UW-Extension	25.6%	38.5%	5.1%	12.8%
Child Support Agency	15.4%	28.2%	5.1%	30.8%
County Surveyor and Land Records	41.0%	25.6%	0.0%	17.9%
Emergency Government	12.8%	46.2%	0.0%	23.1%
Forestry	17.9%	35.9%	10.3%	17.9%
Highway Department	25.6%	38.5%	15.4%	2.6%
Human Services	20.5%	35.9%	2.6%	20.5%
Land Conservation	35.9%	25.6%	5.1%	20.5%
Health Department	28.2%	41.0%	0.0%	12.8%
Sheriff's Office	41.0%	25.6%	10.3%	5.1%
Veteran's Service	12.8%	25.6%	0.0%	43.6%
Zoning	25.6%	28.2%	5.1%	25.6%

Background Questions

16. Are you a . . . Seasonal property owner 25.6% Year-round resident 66.7%

17. What is your age? 18 - 24 0.0% 25 - 45 20.5% 46 - 65 51.3% Over 65 25.6%

18. If you are a year-round resident, do you own or rent your dwelling unit? Own 71.8% Not Applicable 10.3% Rent 0.0%

19. How long have you resided at your current address?

Less than 5 years 15.4% 11 - 20 years 23.1%

6 - 10 years 5.1% Over 20 years 46.2%

Please complete survey and return within 10 days. Thank you.

APPENDIX 4.11.1-1 Historic and Projected Population Data

Time Series of The Final Official Population Estimates and Census Counts for Wisconsin Counties

Prepared by Demographic Services Center, Wisconsin Department of Administration

Census counts include Count Question Resolution Program corrections.

County Name	DOA County Code	FIPS State / County Code	1970 Census	Final 1/1/1973 Estimate	Final 1/1/1974 Estimate	Final 1/1/1975 Estimate	Final 1/1/1976 Estimate	Final 1/1/1977 Estimate	Final 1/1/1978 Estimate	Final 1/1/1979 Estimate
Adams	01	55001	9,234	9,940	10,648	11,159	11,695	12,019	12,056	12,221
Ashland	02	55003	16,743	16,234	16,328	16,046	16,248	16,235	16,269	16,031
Barron	03	55005	33,955	35,427	36,636	36,078	36,338	36,731	37,296	37,395
Bayfield	04	55007	11,683	11,912	12,269	12,324	12,684	12,885	13,080	13,103
Brown	05	55009	158,244	166,802	168,307	170,771	170,622	171,455	173,668	176,217
Buffalo	06	55011	13,743	14,129	14,242	14,029	14,240	14,489	14,666	14,703
Burnett	07	55013	9,276	9,981	10,598	10,690	10,973	11,213	11,463	11,456
Calumet	08	55015	27,604	28,751	29,148	29,668	29,958	29,816	30,326	30,629
Chippewa	09	55017	47,717	49,742	49,593	49,691	50,149	50,272	50,552	50,992
Clark	10	55019	30,361	31,273	31,586	31,492	31,876	31,927	32,277	32,163
Columbia	11	55021	40,150	41,595	42,263	42,026	42,433	42,419	42,495	42,504
Crawford	12	55023	15,252	15,541	15,669	15,603	15,681	15,691	15,741	15,539
Dane	13	55025	290,272	304,074	300,881	305,527	312,472	314,056	319,105	323,499
Dodge	14	55027	69,004	71,642	72,140	72,193	73,034	73,447	74,117	74,257
Door	15	55029	20,106	21,077	22,285	22,140	22,933	23,253	24,134	24,567
Douglas	16	55031	44,657	44,888	44,757	43,728	44,282	44,524	44,000	44,061
Dunn	17	55033	28,991	29,671	30,126	29,813	30,309	30,646	30,864	31,316
Eau Claire	18	55035	67,219	70,954	70,827	72,052	72,696	73,802	74,404	75,648
Florence	19	55037	3,298	3,369	3,575	3,500	3,659	3,783	3,893	3,869
Fond du Lac	20	55039	84,567	86,779	87,700	87,385	88,125	88,180	88,591	88,985
Forest	21	55041	7,691	8,265	8,239	8,184	8,357	8,504	8,684	8,713
Grant	22	55043	48,398	49,810	50,823	50,339	50,896	51,242	51,698	51,699
Green	23	55045	26,714	27,535	28,756	28,541	28,815	28,929	29,187	29,186
Green Lake	24	55047	16,878	17,208	17,363	17,332	17,414	17,459	17,601	17,701

County Name	DOA County Code	FIPS State / County Code	1970 Census	Final 1/1/1973 Estimate	Final 1/1/1974 Estimate	Final 1/1/1975 Estimate	Final 1/1/1976 Estimate	Final 1/1/1977 Estimate	Final 1/1/1978 Estimate	Final 1/1/1979 Estimate
Iowa	25	55049	19,306	19,489	19,542	19,387	19,550	19,683	19,910	19,880
Iron	26	55051	6,533	6,611	6,608	6,684	6,682	6,788	6,731	6,565
Jackson	27	55053	15,325	15,404	15,760	15,679	15,697	15,633	15,868	16,083
Jefferson	28	55055	60,060	62,598	64,079	62,968	63,673	64,031	64,325	64,291
Juneau	29	55057	18,455	18,538	19,194	18,636	18,746	18,796	19,125	19,384
Kenosha	30	55059	117,917	122,246	126,022	126,651	127,053	125,655	125,808	126,638
Kewaunee	31	55061	18,961	19,195	19,762	19,233	19,491	19,628	19,721	19,704
La Crosse	32	55063	80,468	81,727	82,741	83,043	85,883	87,487	87,910	91,347
Lafayette	33	55065	17,456	17,860	18,197	18,227	18,397	18,499	18,459	18,320
Langlade	34	55067	19,220	19,184	19,373	19,394	19,552	19,576	19,719	19,797
Lincoln	35	55069	23,499	24,824	25,571	25,149	25,281	25,586	25,951	26,031
Manitowoc	36	55071	82,294	82,719	82,960	82,859	83,467	83,407	83,518	83,951
Marathon	37	55073	97,457	101,616	104,264	104,190	105,637	107,092	109,879	111,487
Marinette	38	55075	35,810	36,299	37,232	37,078	37,929	38,130	38,312	38,392
Marquette	39	55077	8,865	9,415	9,700	9,692	9,915	10,094	10,271	10,334
Menominee	40	55078	2,607	2,707	2,707	2,644	2,803	2,839	3,217	3,140
Milwaukee	41	55079	1,054,249	1,042,434	1,032,713	1,012,536	1,004,139	981,618	960,993	953,127
Monroe	42	55081	31,610	32,506	32,953	33,019	33,460	33,874	34,056	34,350
Oconto	43	55083	25,553	26,633	27,656	27,615	28,245	28,511	28,918	28,873
Oneida	44	55085	24,427	26,636	27,883	28,302	28,914	29,549	30,143	30,379
Outagamie	45	55087	119,398	123,232	123,783	125,471	127,190	127,967	130,053	132,016
Ozaukee	46	55089	54,461	60,477	63,600	64,932	66,713	67,866	69,914	70,833
Pepin	47	55091	7,319	7,460	7,452	7,364	7,477	7,555	7,619	7,621
Pierce	48	55093	26,652	28,014	29,171	28,539	29,082	29,254	29,537	29,881
Polk	49	55095	26,666	28,009	29,613	29,465	29,899	30,211	30,594	30,997
Portage	50	55097	47,541	50,270	51,657	52,272	53,404	54,123	55,555	56,587
Price	51	55099	14,520	14,743	15,123	15,013	15,141	15,201	15,259	15,326

County Name	DOA County Code	FIPS State / County Code	1970 Census	Final 1/1/1973 Estimate	Final 1/1/1974 Estimate	Final 1/1/1975 Estimate	Final 1/1/1976 Estimate	Final 1/1/1977 Estimate	Final 1/1/1978 Estimate	Final 1/1/1979 Estimate
Racine	52	55101	170,838	174,848	176,350	178,916	179,334	178,164	177,337	179,502
Richland	53	55103	17,079	16,549	16,438	16,599	16,768	16,739	16,783	16,877
Rock	54	55105	131,970	133,485	137,803	137,179	137,203	137,293	138,185	139,771
Rusk	55	55107	14,238	14,626	14,703	14,705	14,838	14,815	15,031	15,047
St. Croix	56	55109	34,354	36,967	38,239	39,057	40,192	40,954	42,129	43,091
Sauk	57	55111	39,057	39,971	40,458	40,734	41,212	41,316	41,694	41,743
Sawyer	58	55113	9,670	10,222	10,907	10,863	11,150	11,342	11,440	11,421
Shawano	59	55115	32,650	33,783	34,538	34,182	34,581	34,746	35,312	35,374
Sheboygan	60	55117	96,660	98,814	99,659	99,324	99,257	99,438	99,993	100,912
Taylor	61	55119	16,958	17,953	18,175	18,145	18,644	18,865	19,158	19,152
Trempealeau	62	55121	23,344	24,099	24,332	24,567	24,999	25,251	25,408	25,591
Vernon	63	55123	24,557	24,472	25,315	24,807	25,043	24,968	25,042	25,233
Vilas	64	55125	10,958	11,977	12,664	12,896	13,355	14,565	14,966	15,504
Walworth	65	55127	63,444	65,363	68,194	67,511	68,170	68,589	69,058	69,870
Washburn	66	55129	10,601	11,311	11,792	11,784	12,182	12,440	12,648	12,660
Washington	67	55131	63,839	70,575	75,233	76,579	78,287	80,367	83,282	86,163
Waukesha	68	55133	231,335	247,583	256,669	262,746	269,927	275,640	285,100	293,779
Waupaca	69	55135	37,780	39,208	40,313	39,811	40,397	40,890	41,425	41,969
Waushara	70	55137	14,795	15,480	15,982	15,897	16,246	16,412	16,817	17,009
Winnebago	71	55139	129,946	131,413	130,523	130,813	132,604	132,138	132,793	133,770
Wood	72	55141	65,362	67,200	67,699	68,233	69,659	70,822	71,622	72,052
STATE Total			**4,417,821**	**4,533,344**	**4,586,061**	**4,581,701**	**4,623,357**	**4,627,384**	**4,652,755**	**4,688,278**

Time Series of The Final Official Populatio

Prepared by Demographic Services Cente

Census counts include Count Question Resolutior

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1980 Estimate	1980 Census	Final 1/1/1981 Estimate	Final 1/1/1982 Estimate	Final 1/1/1983 Estimate	Final 1/1/1984 Estimate	Final 1/1/1985 Estimate	Final 1/1/1986 Estimate
Adams	01	55001	12,034	13,457	13,741	13,989	14,391	14,627	14,659	15,099
Ashland	02	55003	16,194	16,783	16,958	17,221	17,204	17,275	16,964	16,734
Barron	03	55005	37,641	38,730	39,164	40,082	41,275	41,430	41,036	40,732
Bayfield	04	55007	13,201	13,822	13,846	14,109	14,161	14,017	13,908	14,118
Brown	05	55009	173,070	175,280	177,142	180,033	182,427	185,141	185,261	187,471
Buffalo	06	55011	13,971	14,309	14,333	14,260	14,509	14,313	14,259	14,253
Burnett	07	55013	11,494	12,340	12,556	12,809	12,915	13,067	12,967	12,893
Calumet	08	55015	31,050	30,867	31,386	31,915	32,595	33,177	33,330	33,514
Chippewa	09	55017	51,090	52,127	52,137	53,587	54,134	54,431	53,695	53,886
Clark	10	55019	31,845	32,910	32,993	32,976	33,660	33,337	32,937	32,613
Columbia	11	55021	41,931	43,222	43,362	43,513	44,194	44,191	43,675	43,902
Crawford	12	55023	16,089	16,556	16,612	16,835	16,969	16,739	16,695	16,527
Dane	13	55025	313,201	323,545	325,785	330,937	333,950	336,005	339,194	341,262
Dodge	14	55027	74,377	75,064	75,857	76,686	77,319	76,743	76,688	76,631
Door	15	55029	24,216	25,029	25,317	25,525	26,034	25,961	26,157	26,342
Douglas	16	55031	43,799	44,421	45,060	44,913	44,690	43,394	42,673	42,403
Dunn	17	55033	33,154	34,314	35,023	35,430	36,186	35,559	35,434	35,482
Eau Claire	18	55035	78,085	78,805	79,685	81,987	83,635	83,675	83,743	83,694
Florence	19	55037	3,526	4,172	4,211	4,210	4,347	4,326	4,287	4,344
Fond du Lac	20	55039	86,974	88,964	89,525	89,603	89,683	90,386	90,134	90,417
Forest	21	55041	8,493	9,044	9,247	9,377	9,375	9,465	9,373	9,327
Grant	22	55043	50,574	51,736	51,915	52,157	52,256	52,136	52,298	51,795
Green	23	55045	28,891	30,012	30,134	30,212	30,618	30,416	30,468	30,464
Green Lake	24	55047	18,112	18,370	18,564	18,941	19,207	19,018	19,147	18,958

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1980 Estimate	1980 Census	Final 1/1/1981 Estimate	Final 1/1/1982 Estimate	Final 1/1/1983 Estimate	Final 1/1/1984 Estimate	Final 1/1/1985 Estimate	Final 1/1/1986 Estimate
Iowa	25	55049	19,330	19,802	19,972	20,273	20,320	20,243	20,192	20,280
Iron	26	55051	6,328	6,730	6,765	6,623	6,815	6,615	6,456	6,421
Jackson	27	55053	16,491	16,831	17,098	16,881	17,212	17,159	16,908	16,771
Jefferson	28	55055	64,058	66,152	66,655	66,541	66,616	66,596	66,576	66,901
Juneau	29	55057	20,124	21,037	21,308	21,634	21,744	21,991	21,916	21,861
Kenosha	30	55059	120,020	123,137	123,574	122,128	121,330	122,443	121,158	121,236
Kewaunee	31	55061	19,364	19,539	19,633	20,257	20,354	20,103	20,187	20,103
La Crosse	32	55063	89,950	91,056	92,173	93,582	94,492	96,177	96,632	96,648
Lafayette	33	55065	17,131	17,412	17,354	17,894	17,992	17,525	17,427	17,111
Langlade	34	55067	19,512	19,978	20,111	20,615	20,631	20,623	20,317	20,215
Lincoln	35	55069	26,068	26,555	26,311	26,396	26,815	26,718	26,796	26,755
Manitowoc	36	55071	81,744	82,918	83,251	83,304	84,038	84,033	83,128	82,697
Marathon	37	55073	108,846	111,270	111,329	111,013	112,369	112,494	111,943	112,094
Marinette	38	55075	37,352	39,314	39,508	40,071	39,676	39,947	40,102	40,647
Marquette	39	55077	10,684	11,672	11,916	12,123	12,689	12,621	12,581	12,615
Menominee	40	55078	2,779	3,373	3,373	3,274	3,611	3,844	3,846	3,947
Milwaukee	41	55079	944,139	964,988	964,675	960,659	948,686	934,004	939,570	935,757
Monroe	42	55081	34,329	35,074	35,490	35,822	36,723	36,351	36,184	36,517
Oconto	43	55083	28,957	28,947	29,095	29,322	29,700	29,880	30,292	30,390
Oneida	44	55085	30,899	31,216	31,635	32,039	32,558	32,764	32,630	32,523
Outagamie	45	55087	127,964	128,730	129,603	131,304	132,312	134,010	134,099	135,910
Ozaukee	46	55089	65,761	66,981	67,026	67,202	67,036	67,241	67,465	67,779
Pepin	47	55091	7,310	7,477	7,586	7,637	7,587	7,490	7,509	7,359
Pierce	48	55093	30,297	31,149	31,359	31,710	32,052	31,696	32,126	32,617
Polk	49	55095	31,322	32,351	32,966	33,672	34,493	34,707	34,950	34,837
Portage	50	55097	53,645	57,420	58,454	59,441	60,733	60,725	61,405	61,256
Price	51	55099	15,411	15,788	15,993	15,919	16,197	16,229	16,290	16,374

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1980 Estimate	1980 Census	Final 1/1/1981 Estimate	Final 1/1/1982 Estimate	Final 1/1/1983 Estimate	Final 1/1/1984 Estimate	Final 1/1/1985 Estimate	Final 1/1/1986 Estimate
Racine	52	55101	173,222	173,132	173,422	172,246	170,173	170,056	169,193	169,373
Richland	53	55103	17,035	17,476	17,667	17,798	17,825	17,615	17,370	17,355
Rock	54	55105	136,603	139,420	139,157	138,504	138,721	140,344	138,687	139,078
Rusk	55	55107	15,139	15,589	15,520	15,647	15,657	15,936	15,613	15,644
St. Croix	56	55109	42,197	43,262	44,545	44,594	45,737	46,249	46,549	47,247
Sauk	57	55111	42,578	43,469	43,734	44,791	45,227	45,458	45,725	45,613
Sawyer	58	55113	12,294	12,843	13,045	13,457	13,749	13,874	13,783	13,652
Shawano	59	55115	34,718	35,928	36,048	36,409	36,960	37,043	36,784	36,646
Sheboygan	60	55117	99,657	100,935	101,104	101,608	101,708	102,606	102,185	102,503
Taylor	61	55119	18,534	18,817	18,989	19,402	19,779	19,699	19,540	19,387
Trempealeau	62	55121	25,087	26,158	26,212	26,455	26,535	26,513	26,707	26,521
Vernon	63	55123	25,209	25,642	25,757	25,968	26,046	25,872	26,343	26,082
Vilas	64	55125	15,721	16,535	16,846	16,847	17,170	17,287	17,397	17,635
Walworth	65	55127	67,815	71,507	71,999	72,209	72,942	72,497	72,203	73,091
Washburn	66	55129	12,607	13,174	13,318	13,223	13,739	14,054	14,154	14,209
Washington	67	55131	83,627	84,848	85,291	85,550	86,255	86,202	87,249	87,783
Waukesha	68	55133	276,886	280,203	282,521	283,356	285,933	284,049	285,904	288,150
Waupaca	69	55135	40,763	42,831	43,448	44,166	44,728	44,869	44,743	44,949
Waushara	70	55137	17,373	18,526	18,717	18,919	19,469	19,775	19,631	20,002
Winnebago	71	55139	130,754	131,772	131,769	132,811	134,750	135,979	136,132	137,914
Wood	72	55141	71,653	72,799	73,027	73,676	74,283	75,348	75,462	75,806
STATE Total			**4,602,299**	**4,705,642**	**4,730,902**	**4,756,279**	**4,777,901**	**4,774,383**	**4,779,021**	**4,789,122**

Time Series of The Final Official Populatio

Prepared by Demographic Services Center

Census counts include Count Question Resolutior

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1987 Estimate	Final 1/1/1988 Estimate	Final 1/1/1989 Estimate	Final 1/1/1990 Estimate	1990 Census	Final 1/1/1991 Estimate	Final 1/1/1992 Estimate	Final 1/1/1993 Estimate
Adams	01	55001	15,201	15,298	15,577	15,874	15,682	15,824	16,130	16,611
Ashland	02	55003	16,919	16,848	16,969	16,947	16,307	16,289	16,313	16,426
Barron	03	55005	40,700	40,968	41,143	41,327	40,750	40,888	41,180	41,525
Bayfield	04	55007	14,151	14,263	14,429	14,347	14,008	14,078	14,186	14,245
Brown	05	55009	188,850	190,996	194,146	196,313	194,594	195,694	198,686	202,940
Buffalo	06	55011	14,229	14,224	14,242	14,310	13,584	13,527	13,588	13,729
Burnett	07	55013	12,962	13,068	13,267	13,383	13,084	13,131	13,205	13,463
Calumet	08	55015	34,182	34,480	34,729	34,881	34,291	34,512	34,779	35,655
Chippewa	09	55017	54,150	54,220	54,695	54,626	52,360	52,495	52,796	53,191
Clark	10	55019	32,399	32,450	32,749	32,607	31,647	31,737	31,843	31,945
Columbia	11	55021	44,468	44,621	44,983	45,053	45,088	45,326	45,823	46,419
Crawford	12	55023	16,549	16,517	16,608	16,567	15,940	15,989	15,983	16,038
Dane	13	55025	342,569	346,591	352,999	355,810	367,085	370,633	376,989	383,420
Dodge	14	55027	76,704	76,367	76,509	77,129	76,559	76,884	78,032	78,738
Door	15	55029	26,636	26,905	27,125	27,079	25,690	25,739	25,913	26,007
Douglas	16	55031	42,345	41,916	41,829	41,768	41,758	41,846	41,923	42,225
Dunn	17	55033	35,475	35,409	35,615	35,273	35,909	36,101	36,121	36,458
Eau Claire	18	55035	83,448	83,838	84,269	84,144	85,183	85,472	86,054	86,904
Florence	19	55037	4,295	4,387	4,437	4,530	4,590	4,612	4,750	4,804
Fond du Lac	20	55039	90,356	90,546	90,683	90,452	90,083	90,588	91,217	92,222
Forest	21	55041	9,130	9,172	9,227	9,310	8,776	8,792	8,811	8,942
Grant	22	55043	51,231	51,057	51,114	50,805	49,266	49,204	49,463	49,463
Green	23	55045	30,564	30,459	30,515	30,374	30,339	30,443	30,539	30,700
Green Lake	24	55047	18,914	18,896	18,982	18,916	18,651	18,713	18,856	18,941

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1987 Estimate	Final 1/1/1988 Estimate	Final 1/1/1989 Estimate	Final 1/1/1990 Estimate	1990 Census	Final 1/1/1991 Estimate	Final 1/1/1992 Estimate	Final 1/1/1993 Estimate
Iowa	25	55049	20,345	20,336	20,327	20,305	20,150	20,198	20,454	20,707
Iron	26	55051	6,345	6,342	6,436	6,543	6,153	6,153	6,204	6,211
Jackson	27	55053	16,617	16,605	16,746	16,706	16,588	16,661	16,816	16,894
Jefferson	28	55055	66,624	66,876	67,530	67,943	67,783	68,110	68,811	69,441
Juneau	29	55057	21,792	21,952	22,174	22,252	21,650	21,794	22,092	22,312
Kenosha	30	55059	121,553	123,127	124,876	127,384	128,181	129,443	131,613	133,406
Kewaunee	31	55061	20,007	20,027	20,095	20,278	18,878	18,882	18,936	19,078
La Crosse	32	55063	96,736	97,002	97,453	97,549	97,904	98,646	99,282	100,383
Lafayette	33	55065	16,986	16,893	16,921	16,861	16,074	16,093	16,149	16,154
Langlade	34	55067	20,189	20,197	20,352	20,515	19,505	19,575	19,761	20,026
Lincoln	35	55069	26,803	27,080	27,142	27,566	26,993	27,221	27,339	27,651
Manitowoc	36	55071	82,441	82,695	82,767	82,649	80,421	80,579	81,439	81,889
Marathon	37	55073	112,564	112,810	114,171	115,098	115,400	116,380	117,523	119,315
Marinette	38	55075	40,926	41,002	41,298	41,633	40,548	40,645	40,837	41,138
Marquette	39	55077	12,588	12,647	12,872	13,086	12,321	12,414	12,562	12,750
Menominee	40	55078	4,002	4,062	4,111	4,169	3,890	3,938	3,988	4,062
Milwaukee	41	55079	932,330	931,000	932,959	933,698	959,275	961,841	965,067	967,814
Monroe	42	55081	36,758	36,860	37,268	37,635	36,633	36,809	37,182	37,591
Oconto	43	55083	30,661	30,728	31,333	31,591	30,226	30,382	30,664	31,109
Oneida	44	55085	32,723	32,525	32,781	33,471	31,679	31,869	32,175	32,662
Outagamie	45	55087	136,716	137,777	139,769	141,376	140,510	141,521	143,765	145,967
Ozaukee	46	55089	68,581	69,391	70,424	72,995	72,831	73,525	74,912	75,639
Pepin	47	55091	7,309	7,253	7,374	7,400	7,107	7,102	7,105	7,156
Pierce	48	55093	33,040	33,132	33,635	33,841	32,765	32,903	33,062	33,344
Polk	49	55095	34,710	35,022	35,371	35,618	34,773	34,971	35,136	35,541
Portage	50	55097	61,725	61,614	62,454	63,073	61,405	61,884	62,357	63,263
Price	51	55099	16,253	16,125	16,279	16,292	15,600	15,611	15,654	15,761

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1987 Estimate	Final 1/1/1988 Estimate	Final 1/1/1989 Estimate	Final 1/1/1990 Estimate	1990 Census	Final 1/1/1991 Estimate	Final 1/1/1992 Estimate	Final 1/1/1993 Estimate
Racine	52	55101	169,976	170,670	171,873	172,736	175,034	176,268	177,882	180,044
Richland	53	55103	17,061	17,125	17,228	17,309	17,521	17,523	17,578	17,652
Rock	54	55105	139,275	139,344	139,977	140,299	139,510	140,064	140,971	141,982
Rusk	55	55107	15,571	15,456	15,582	15,645	15,079	15,097	15,090	15,189
St. Croix	56	55109	47,911	48,655	49,696	50,443	50,251	50,668	51,429	52,039
Sauk	57	55111	45,734	45,831	46,423	46,986	46,975	47,522	48,155	48,780
Sawyer	58	55113	13,646	13,756	14,180	14,271	14,181	14,293	14,372	14,487
Shawano	59	55115	36,679	36,489	37,134	37,315	37,157	37,215	37,330	37,551
Sheboygan	60	55117	102,792	102,884	103,895	104,504	103,877	104,262	104,781	105,931
Taylor	61	55119	19,242	19,214	19,450	19,567	18,901	18,971	18,998	19,066
Trempealeau	62	55121	26,330	26,335	26,487	26,576	25,263	25,408	25,437	25,559
Vernon	63	55123	25,983	26,102	26,402	26,485	25,617	25,757	25,861	26,033
Vilas	64	55125	17,602	17,907	18,178	18,247	17,707	17,867	17,989	18,150
Walworth	65	55127	73,028	73,357	74,282	75,401	75,000	75,778	77,063	78,112
Washburn	66	55129	14,264	14,290	14,456	14,441	13,772	13,887	13,984	14,136
Washington	67	55131	88,238	89,936	92,971	95,452	95,328	96,909	99,444	102,437
Waukesha	68	55133	288,903	293,438	300,372	306,361	304,715	308,243	313,522	318,835
Waupaca	69	55135	44,862	45,063	45,457	46,015	46,104	46,508	47,062	47,484
Waushara	70	55137	19,958	19,946	20,026	20,140	19,385	19,495	19,655	19,717
Winnebago	71	55139	138,137	139,107	140,781	141,401	140,320	141,257	142,972	144,432
Wood	72	55141	75,849	76,021	76,545	76,596	73,605	73,848	74,584	75,103
STATE Total			**4,794,792**	**4,815,502**	**4,863,154**	**4,895,542**	**4,891,769**	**4,920,507**	**4,968,224**	**5,020,994**

Time Series of The Final Official Populatio

Prepared by Demographic Services Cente

Census counts include Count Question Resolutior

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1994 Estimate	Final 1/1/1995 Estimate	Final 1/1/1996 Estimate	Final 1/1/1997 Estimate	Final 1/1/1998 Estimate	Final 1/1/1999 Estimate	Final 1/1/2000 Estimate	2000 Census
Adams	01	55001	16,816	16,776	17,120	17,493	17,826	18,184	18,354	19,920
Ashland	02	55003	16,436	16,615	16,650	16,755	16,785	16,835	16,780	16,866
Barron	03	55005	41,631	41,772	42,114	42,399	42,695	43,308	43,507	44,963
Bayfield	04	55007	14,249	14,300	14,428	14,522	14,603	14,690	14,759	15,013
Brown	05	55009	206,418	209,077	212,448	215,692	218,149	220,773	222,898	226,658
Buffalo	06	55011	13,681	13,648	13,660	13,740	13,818	13,895	13,947	13,804
Burnett	07	55013	13,552	13,641	13,720	13,857	13,999	14,154	14,198	15,674
Calumet	08	55015	36,097	36,824	37,309	37,788	38,760	39,313	40,082	40,631
Chippewa	09	55017	53,425	53,670	53,996	54,283	54,761	55,217	55,679	55,195
Clark	10	55019	32,050	32,146	32,185	32,357	32,625	32,806	32,939	33,557
Columbia	11	55021	46,642	47,217	47,822	48,590	49,266	49,839	50,307	52,468
Crawford	12	55023	15,944	16,003	16,103	16,217	16,656	16,704	16,727	17,243
Dane	13	55025	389,677	393,857	398,233	402,988	407,584	413,090	418,978	426,526
Dodge	14	55027	78,945	79,915	80,839	82,147	83,348	84,312	85,119	85,897
Door	15	55029	25,884	26,025	26,171	26,333	26,537	26,589	26,968	27,961
Douglas	16	55031	42,046	42,230	42,256	42,383	42,291	42,328	42,392	43,287
Dunn	17	55033	36,650	37,062	37,343	37,907	38,309	38,570	38,937	39,858
Eau Claire	18	55035	87,119	87,737	88,668	89,682	90,691	91,760	92,103	93,142
Florence	19	55037	4,810	4,822	4,850	4,945	5,057	5,073	5,104	5,088
Fond du Lac	20	55039	92,551	93,388	94,415	95,435	96,151	96,678	97,313	97,296
Forest	21	55041	8,876	9,004	8,999	9,121	9,302	9,323	9,313	10,024
Grant	22	55043	49,319	49,399	49,442	49,567	49,796	49,876	50,214	49,597
Green	23	55045	30,785	31,064	31,349	31,689	31,983	32,153	32,552	33,647
Green Lake	24	55047	18,914	18,976	19,060	19,337	19,576	19,600	19,608	19,105

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1994 Estimate	Final 1/1/1995 Estimate	Final 1/1/1996 Estimate	Final 1/1/1997 Estimate	Final 1/1/1998 Estimate	Final 1/1/1999 Estimate	Final 1/1/2000 Estimate	2000 Census
Iowa	25	55049	20,848	21,086	21,323	21,616	21,913	22,160	22,378	22,780
Iron	26	55051	6,225	6,242	6,242	6,279	6,329	6,343	6,333	6,861
Jackson	27	55053	16,923	17,016	17,098	18,010	18,304	18,457	18,613	19,100
Jefferson	28	55055	69,799	70,886	71,788	72,704	73,340	74,004	74,535	75,767
Juneau	29	55057	22,462	22,677	22,884	23,192	23,425	23,533	23,816	24,316
Kenosha	30	55059	135,449	136,828	138,049	140,133	141,474	142,407	143,740	149,577
Kewaunee	31	55061	19,136	19,278	19,393	19,621	19,904	20,028	20,186	20,187
La Crosse	32	55063	101,126	102,269	103,149	104,409	105,299	106,193	106,990	107,120
Lafayette	33	55065	16,106	16,059	16,062	16,130	16,252	16,258	16,203	16,137
Langlade	34	55067	20,100	20,238	20,312	20,459	20,593	20,622	20,723	20,740
Lincoln	35	55069	27,946	28,175	28,396	28,682	28,865	28,999	29,142	29,641
Manitowoc	36	55071	82,120	82,632	83,142	83,828	84,434	84,727	85,121	82,893
Marathon	37	55073	120,713	122,095	123,258	124,309	125,491	126,393	127,280	125,834
Marinette	38	55075	41,306	41,684	41,842	42,104	42,523	42,925	43,080	43,384
Marquette	39	55077	12,840	12,994	13,186	13,382	13,734	13,847	13,885	14,555
Menominee	40	55078	4,074	4,147	4,232	4,272	4,293	4,655	4,737	4,562
Milwaukee	41	55079	969,252	965,257	963,903	958,408	957,058	956,688	955,026	940,164
Monroe	42	55081	37,684	37,839	38,024	38,355	38,758	39,134	39,264	40,896
Oconto	43	55083	31,350	31,747	31,992	32,518	33,089	33,590	34,001	35,652
Oneida	44	55085	33,051	33,473	33,853	34,147	34,439	34,840	34,979	36,776
Outagamie	45	55087	147,612	150,048	151,727	153,813	155,953	157,994	159,930	161,091
Ozaukee	46	55089	76,320	77,728	78,495	79,436	80,098	80,759	81,758	82,317
Pepin	47	55091	7,178	7,178	7,179	7,205	7,213	7,249	7,296	7,213
Pierce	48	55093	33,543	33,687	33,793	34,199	34,547	35,001	35,323	36,804
Polk	49	55095	35,736	36,044	36,295	36,698	37,046	37,476	37,853	41,319
Portage	50	55097	64,297	65,116	65,820	66,490	66,913	67,378	67,690	67,182
Price	51	55099	15,952	15,997	16,052	16,181	16,269	16,366	16,365	15,822

County Name	DOA County Code	FIPS State / County Code	Final 1/1/1994 Estimate	Final 1/1/1995 Estimate	Final 1/1/1996 Estimate	Final 1/1/1997 Estimate	Final 1/1/1998 Estimate	Final 1/1/1999 Estimate	Final 1/1/2000 Estimate	2000 Census
Racine	52	55101	181,366	183,365	184,809	186,435	187,330	188,904	189,473	188,831
Richland	53	55103	17,616	17,471	17,574	17,767	17,794	17,852	17,920	17,924
Rock	54	55105	143,108	145,374	147,065	148,766	149,784	150,617	151,196	152,307
Rusk	55	55107	15,250	15,226	15,235	15,310	15,322	15,321	15,310	15,347
St. Croix	56	55109	52,754	53,395	54,406	55,829	57,113	58,724	59,896	63,155
Sauk	57	55111	49,390	50,090	50,897	51,700	52,334	52,863	53,356	55,225
Sawyer	58	55113	14,683	14,816	15,108	15,333	15,517	15,643	15,725	16,196
Shawano	59	55115	37,712	37,815	38,234	38,518	38,730	39,066	39,212	40,664
Sheboygan	60	55117	107,064	107,836	108,985	110,462	111,427	112,063	112,868	112,656
Taylor	61	55119	19,115	19,140	19,247	19,389	19,481	19,566	19,680	19,680
Trempealeau	62	55121	25,717	25,746	25,930	26,116	26,314	26,500	26,649	27,010
Vernon	63	55123	26,116	26,072	26,130	26,344	26,492	26,715	26,923	28,056
Vilas	64	55125	18,467	18,655	18,874	19,232	19,435	19,594	19,741	21,033
Walworth	65	55127	79,155	80,407	81,395	82,906	84,414	85,493	86,266	92,013
Washburn	66	55129	14,257	14,334	14,414	14,619	14,819	14,889	14,971	16,036
Washington	67	55131	105,105	106,966	108,619	110,629	112,326	113,859	115,146	117,496
Waukesha	68	55133	323,387	328,631	334,077	341,338	345,440	350,273	355,655	360,767
Waupaca	69	55135	48,051	48,428	48,673	49,296	49,751	50,125	50,368	51,825
Waushara	70	55137	19,980	20,093	20,318	20,616	20,928	21,113	21,174	23,066
Winnebago	71	55139	145,771	148,119	149,894	152,671	153,937	154,754	155,922	156,763
Wood	72	55141	75,722	76,014	76,446	77,215	77,538	77,797	77,930	75,555
STATE Total			**5,061,451**	**5,101,581**	**5,142,999**	**5,192,298**	**5,234,350**	**5,274,827**	**5,310,406**	**5,363,715**

Time Series of The Final Official Populatio

Prepared by Demographic Services Cente

Census counts include Count Question Resolutior

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2001 Estimate	Final 1/1/2002 Estimate	Final 1/1/2003 Estimate	Final 1/1/2004 Estimate	Final 1/1/2005 Estimate	Final 1/1/2006 Estimate	Final 1/1/2007 Estimate	Final 1/1/2008 Estimate
Adams	01	55001	20,072	20,327	20,452	20,707	21,224	21,548	21,645	21,836
Ashland	02	55003	16,901	16,979	16,919	16,969	16,905	16,906	16,879	16,929
Barron	03	55005	45,278	45,633	45,883	46,540	46,805	47,247	47,551	47,727
Bayfield	04	55007	15,119	15,263	15,383	15,575	15,666	15,828	15,990	16,160
Brown	05	55009	228,817	231,858	234,660	237,841	240,404	242,733	244,764	245,168
Buffalo	06	55011	13,897	13,955	13,975	14,033	14,076	14,142	14,183	14,200
Burnett	07	55013	15,828	16,051	16,131	16,398	16,542	16,614	16,749	16,791
Calumet	08	55015	41,475	42,497	43,612	44,361	45,168	45,711	46,031	46,292
Chippewa	09	55017	55,812	56,588	57,358	59,466	60,367	60,893	61,604	61,872
Clark	10	55019	33,791	33,860	33,969	34,373	34,453	34,501	34,479	34,589
Columbia	11	55021	52,912	53,472	53,862	54,596	54,940	55,272	55,636	56,130
Crawford	12	55023	17,310	17,406	17,404	17,501	17,493	17,461	17,553	17,629
Dane	13	55025	431,815	438,881	445,253	450,730	458,297	464,513	468,514	471,559
Dodge	14	55027	86,476	87,083	87,599	88,285	88,748	89,063	89,225	89,810
Door	15	55029	28,220	28,641	28,819	29,114	29,299	29,720	30,043	30,303
Douglas	16	55031	43,506	43,677	43,575	43,708	43,870	43,932	44,096	44,326
Dunn	17	55033	40,315	40,828	41,312	41,737	42,208	42,752	43,118	43,292
Eau Claire	18	55035	94,033	95,132	95,904	96,214	97,142	97,760	98,000	98,302
Florence	19	55037	5,112	5,187	5,191	5,214	5,213	5,258	5,295	5,317
Fond du Lac	20	55039	97,927	98,589	99,205	99,608	100,180	100,716	101,174	101,740
Forest	21	55041	10,039	10,113	10,155	10,198	10,213	10,276	10,329	10,393
Grant	22	55043	50,018	50,165	50,242	50,552	50,664	50,529	51,037	51,290
Green	23	55045	33,925	34,351	34,671	35,163	35,578	36,054	36,262	36,493
Green Lake	24	55047	19,164	19,282	19,250	19,344	19,375	19,353	19,446	19,416

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2001 Estimate	Final 1/1/2002 Estimate	Final 1/1/2003 Estimate	Final 1/1/2004 Estimate	Final 1/1/2005 Estimate	Final 1/1/2006 Estimate	Final 1/1/2007 Estimate	Final 1/1/2008 Estimate
Iowa	25	55049	22,976	23,153	23,334	23,639	23,789	23,964	24,130	24,196
Iron	26	55051	6,861	6,932	6,936	6,948	6,922	6,983	7,002	7,048
Jackson	27	55053	19,219	19,381	19,538	19,677	19,828	19,969	20,080	20,140
Jefferson	28	55055	76,524	77,306	77,811	78,342	79,188	80,092	80,411	81,022
Juneau	29	55057	24,616	25,052	25,328	25,470	26,656	26,903	27,177	27,359
Kenosha	30	55059	150,934	153,009	154,234	156,082	158,219	159,638	161,370	162,094
Kewaunee	31	55061	20,312	20,487	20,648	20,860	21,082	21,157	21,198	21,358
La Crosse	32	55063	107,663	108,433	108,795	109,616	110,128	110,743	111,791	112,758
Lafayette	33	55065	16,214	16,263	16,245	16,311	16,312	16,311	16,317	16,468
Langlade	34	55067	20,890	21,017	21,075	21,227	21,389	21,471	21,517	21,680
Lincoln	35	55069	29,776	29,944	30,019	30,271	30,402	30,565	30,562	30,681
Manitowoc	36	55071	83,244	83,925	84,020	84,264	84,480	84,640	84,603	84,830
Marathon	37	55073	126,743	127,968	128,823	129,962	131,377	132,697	134,028	135,190
Marinette	38	55075	43,589	43,804	43,965	44,204	44,471	44,543	44,646	44,823
Marquette	39	55077	14,663	14,771	14,888	15,051	15,138	15,252	15,319	15,423
Menominee	40	55078	4,591	4,595	4,593	4,616	4,616	4,633	4,606	4,630
Milwaukee	41	55079	939,919	941,091	941,301	939,358	938,995	936,892	937,324	938,490
Monroe	42	55081	41,340	41,865	42,053	42,626	43,069	43,555	43,838	44,170
Oconto	43	55083	36,220	36,811	37,279	37,679	38,243	38,690	38,958	39,261
Oneida	44	55085	37,002	37,418	37,458	37,726	38,073	38,313	38,600	38,903
Outagamie	45	55087	162,833	165,570	167,447	168,840	170,680	172,618	173,773	174,778
Ozaukee	46	55089	82,870	83,964	84,516	85,160	85,787	86,389	86,697	87,008
Pepin	47	55091	7,339	7,483	7,502	7,568	7,596	7,634	7,714	7,743
Pierce	48	55093	37,172	37,757	38,123	38,615	39,329	39,805	40,235	40,523
Polk	49	55095	41,857	42,621	43,204	43,870	44,613	45,139	45,611	45,892
Portage	50	55097	67,692	68,227	68,677	68,935	69,365	69,591	69,959	70,506
Price	51	55099	15,851	15,891	15,889	15,954	15,993	16,066	16,069	16,088

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2001 Estimate	Final 1/1/2002 Estimate	Final 1/1/2003 Estimate	Final 1/1/2004 Estimate	Final 1/1/2005 Estimate	Final 1/1/2006 Estimate	Final 1/1/2007 Estimate	Final 1/1/2008 Estimate
Racine	52	55101	189,490	190,446	191,079	191,853	193,239	194,580	195,113	196,321
Richland	53	55103	18,009	18,056	18,058	18,098	18,061	18,125	18,208	18,317
Rock	54	55105	153,195	154,001	154,588	155,536	156,994	158,525	159,530	160,477
Rusk	55	55107	15,414	15,458	15,340	15,512	15,469	15,572	15,627	15,657
St. Croix	56	55109	64,752	67,767	70,121	72,522	75,686	78,028	79,020	79,702
Sauk	57	55111	55,868	56,663	57,555	58,595	59,266	60,054	60,673	61,086
Sawyer	58	55113	16,345	16,584	16,736	17,027	17,146	17,411	17,542	17,753
Shawano	59	55115	40,944	41,273	41,454	41,944	42,029	42,304	42,413	42,602
Sheboygan	60	55117	113,378	114,139	114,693	115,447	116,075	116,348	117,045	117,472
Taylor	61	55119	19,718	19,718	19,727	19,872	19,902	19,917	20,049	20,065
Trempealeau	62	55121	27,229	27,393	27,599	27,765	27,975	28,126	28,119	28,278
Vernon	63	55123	28,329	28,584	28,663	28,928	29,189	29,400	29,530	29,719
Vilas	64	55125	21,188	21,457	21,658	21,966	22,215	22,412	22,545	23,044
Walworth	65	55127	93,032	94,532	95,630	97,052	98,496	99,761	100,672	101,315
Washburn	66	55129	16,209	16,438	16,565	16,762	17,000	17,236	17,403	17,646
Washington	67	55131	118,686	120,429	121,929	123,587	125,940	127,871	129,316	130,493
Waukesha	68	55133	363,571	368,077	371,211	373,339	377,348	379,577	381,651	382,697
Waupaca	69	55135	52,052	52,622	52,843	53,148	53,351	53,575	53,773	54,157
Waushara	70	55137	23,365	24,560	24,656	24,806	24,918	25,083	25,215	25,322
Winnebago	71	55139	157,283	159,161	160,177	161,863	163,244	163,867	164,703	165,358
Wood	72	55141	75,720	75,982	75,951	76,235	76,644	76,937	76,839	77,049
STATE Total			**5,400,449**	**5,453,896**	**5,490,718**	**5,532,955**	**5,580,757**	**5,617,744**	**5,648,124**	**5,675,156**

Time Series of The Final Official Populatio

Prepared by Demographic Services Cente

Census counts include Count Question Resolutior

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2009 Estimate	Final 1/1/2010 Estimate	2010 Census	Final 1/1/2011 Estimate	Final 1/1/2012 Estimate	Final 1/1/2013 Estimate	Final 1/1/2014 Estimate	Final 1/1/2015 Estimate
Adams	01	55001	22,112	22,213	20,875	20,935	20,797	20,834	20,844	20,857
Ashland	02	55003	17,055	17,071	16,157	16,064	16,063	16,097	16,071	16,067
Barron	03	55005	48,200	48,399	45,870	45,925	45,928	45,963	46,020	46,197
Bayfield	04	55007	16,411	16,674	15,014	15,036	15,052	15,088	15,059	15,185
Brown	05	55009	245,426	246,654	248,007	249,192	250,281	251,495	253,156	255,376
Buffalo	06	55011	14,292	14,268	13,587	13,620	13,649	13,630	13,594	13,672
Burnett	07	55013	16,911	17,002	15,457	15,448	15,457	15,496	15,462	15,527
Calumet	08	55015	46,642	46,958	48,971	49,109	49,168	49,405	49,715	50,656
Chippewa	09	55017	62,286	62,600	62,415	62,610	62,777	62,918	63,038	63,539
Clark	10	55019	34,900	34,950	34,690	34,719	34,706	34,721	34,697	34,868
Columbia	11	55021	56,423	56,549	56,833	56,850	56,835	56,804	56,795	57,028
Crawford	12	55023	17,674	17,745	16,644	16,600	16,638	16,658	16,628	16,739
Dane	13	55025	473,622	474,839	488,073	489,331	491,555	497,021	502,251	508,379
Dodge	14	55027	90,022	89,962	88,759	88,789	88,692	88,875	89,203	89,595
Door	15	55029	30,529	30,568	27,785	27,765	27,867	27,966	27,976	28,175
Douglas	16	55031	44,448	44,710	44,159	44,176	44,191	44,279	44,196	44,394
Dunn	17	55033	43,683	43,992	43,857	43,787	43,853	43,887	43,917	44,295
Eau Claire	18	55035	99,019	99,275	98,736	99,012	99,260	99,734	100,477	100,973
Florence	19	55037	5,346	5,417	4,423	4,337	4,358	4,381	4,450	4,474
Fond du Lac	20	55039	102,151	102,385	101,633	101,740	101,955	101,984	102,424	103,124
Forest	21	55041	10,483	10,540	9,304	9,180	9,197	9,210	9,253	9,287
Grant	22	55043	51,688	51,780	51,208	51,280	51,436	51,723	52,603	53,099
Green	23	55045	36,603	36,621	36,842	36,884	36,863	36,799	36,822	36,928
Green Lake	24	55047	19,728	19,772	19,051	19,091	19,106	19,093	19,114	19,174

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2009 Estimate	Final 1/1/2010 Estimate	2010 Census	Final 1/1/2011 Estimate	Final 1/1/2012 Estimate	Final 1/1/2013 Estimate	Final 1/1/2014 Estimate	Final 1/1/2015 Estimate
Iowa	25	55049	24,351	24,329	23,687	23,720	23,726	23,740	23,809	23,836
Iron	26	55051	7,096	7,093	5,916	5,828	5,843	5,848	5,915	5,925
Jackson	27	55053	20,305	20,360	20,449	20,475	20,523	20,551	20,630	20,735
Jefferson	28	55055	81,310	81,362	83,686	83,794	83,857	83,940	83,974	84,255
Juneau	29	55057	27,774	27,760	26,664	26,725	26,878	26,912	26,934	26,987
Kenosha	30	55059	162,243	162,694	166,426	166,632	166,823	166,915	167,258	167,493
Kewaunee	31	55061	21,488	21,530	20,574	20,594	20,637	20,604	20,652	20,703
La Crosse	32	55063	113,318	113,758	114,638	114,919	115,577	115,928	116,740	117,054
Lafayette	33	55065	16,600	16,556	16,836	16,880	16,897	16,883	16,914	16,948
Langlade	34	55067	21,844	21,868	19,977	19,901	19,880	19,835	19,847	19,907
Lincoln	35	55069	30,781	30,822	28,743	28,668	28,856	29,134	28,816	28,835
Manitowoc	36	55071	85,065	85,074	81,442	81,406	81,437	81,352	81,320	81,372
Marathon	37	55073	136,376	136,874	134,063	134,414	134,524	134,679	134,803	135,341
Marinette	38	55075	45,019	45,188	41,749	41,719	41,718	41,732	41,605	41,535
Marquette	39	55077	15,516	15,536	15,404	15,392	15,394	15,376	15,399	15,431
Menominee	40	55078	4,655	4,656	4,232	4,202	4,214	4,221	4,236	4,244
Milwaukee	41	55079	931,830	928,449	947,735	948,369	948,322	950,410	949,741	949,795
Monroe	42	55081	44,620	44,791	44,673	44,877	45,056	45,198	45,339	45,494
Oconto	43	55083	39,455	39,567	37,660	37,723	37,829	37,898	38,014	38,147
Oneida	44	55085	39,129	39,282	35,998	35,962	36,057	36,042	36,082	36,232
Outagamie	45	55087	175,530	176,123	176,695	177,455	178,150	179,117	180,022	181,310
Ozaukee	46	55089	87,173	87,447	86,395	86,530	86,635	86,705	87,116	87,682
Pepin	47	55091	7,777	7,760	7,469	7,461	7,465	7,448	7,445	7,418
Pierce	48	55093	40,704	40,776	41,019	41,085	41,108	40,940	41,107	41,251
Polk	49	55095	46,231	46,171	44,205	44,244	44,241	44,213	44,237	44,259
Portage	50	55097	70,785	71,242	70,019	70,370	70,806	70,903	70,882	70,940
Price	51	55099	16,173	16,182	14,159	14,000	14,055	14,117	14,155	14,133

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2009 Estimate	Final 1/1/2010 Estimate	2010 Census	Final 1/1/2011 Estimate	Final 1/1/2012 Estimate	Final 1/1/2013 Estimate	Final 1/1/2014 Estimate	Final 1/1/2015 Estimate
Racine	52	55101	196,380	196,456	195,408	195,225	195,386	195,174	195,461	195,484
Richland	53	55103	18,345	18,366	18,021	18,045	18,043	18,015	17,995	17,994
Rock	54	55105	160,635	160,826	160,331	160,287	160,129	160,148	160,104	160,059
Rusk	55	55107	15,697	15,678	14,755	14,703	14,756	14,772	14,790	14,785
St. Croix	56	55109	79,905	79,919	84,345	84,503	84,856	85,249	85,735	86,169
Sauk	57	55111	61,338	61,481	61,976	61,951	61,994	62,041	62,092	62,207
Sawyer	58	55113	17,846	17,935	16,557	16,600	16,659	16,670	16,676	16,727
Shawano	59	55115	42,780	42,752	41,949	41,954	41,919	41,875	41,859	41,849
Sheboygan	60	55117	117,566	117,650	115,507	115,569	115,549	115,386	115,362	115,305
Taylor	61	55119	20,177	20,181	20,689	20,681	20,697	20,720	20,733	20,715
Trempealeau	62	55121	28,534	28,569	28,816	28,905	28,986	29,086	29,184	29,305
Vernon	63	55123	29,910	29,974	29,773	29,849	29,865	29,930	29,977	30,049
Vilas	64	55125	23,389	23,422	21,430	21,444	21,485	21,465	21,523	21,590
Walworth	65	55127	101,808	102,022	102,228	102,485	102,530	102,579	102,837	102,469
Washburn	66	55129	17,798	17,848	15,911	15,900	15,907	15,928	15,948	15,915
Washington	67	55131	131,066	131,343	131,887	132,206	132,482	132,612	133,071	133,486
Waukesha	68	55133	383,190	383,864	389,891	390,267	390,914	391,478	392,761	393,927
Waupaca	69	55135	54,401	54,500	52,410	52,392	52,381	52,354	52,435	52,429
Waushara	70	55137	25,438	25,539	24,496	24,531	24,506	24,481	24,511	24,499
Winnebago	71	55139	165,864	166,308	166,994	167,245	167,702	167,862	168,216	168,526
Wood	72	55141	77,171	77,123	74,749	74,669	74,587	74,583	74,954	74,965
STATE Total			**5,688,040**	**5,695,950**	**5,686,986**	**5,694,236**	**5,703,525**	**5,717,110**	**5,732,981**	**5,753,324**

Time Series of The Final Official Populatio

Prepared by Demographic Services Cente

Census counts include Count Question Resolutior

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2016 Estimate	Final 1/1/2017 Estimate	Final 1/1/2018 Estimate	Final 1/1/2019 Estimate
Adams	01	55001	20,730	20,644	20,786	20,630
Ashland	02	55003	15,975	16,006	16,030	15,946
Barron	03	55005	46,372	46,274	46,336	46,472
Bayfield	04	55007	15,206	15,301	15,327	15,335
Brown	05	55009	257,897	259,460	260,616	262,452
Buffalo	06	55011	13,704	13,703	13,699	13,707
Burnett	07	55013	15,544	15,486	15,508	15,524
Calumet	08	55015	51,669	52,320	52,658	53,018
Chippewa	09	55017	64,135	64,364	64,551	64,881
Clark	10	55019	34,888	34,748	34,743	34,748
Columbia	11	55021	57,066	57,053	57,125	57,282
Crawford	12	55023	16,744	16,707	16,737	16,669
Dane	13	55025	518,538	524,787	530,519	537,328
Dodge	14	55027	89,962	89,908	89,949	90,032
Door	15	55029	28,127	28,340	28,463	28,650
Douglas	16	55031	44,415	44,294	44,443	44,468
Dunn	17	55033	44,575	44,603	44,617	44,621
Eau Claire	18	55035	101,731	102,340	102,816	103,159
Florence	19	55037	4,473	4,468	4,454	4,475
Fond du Lac	20	55039	103,290	103,704	104,035	104,423
Forest	21	55041	9,279	9,256	9,227	9,195
Grant	22	55043	53,107	52,725	52,615	52,954
Green	23	55045	36,907	36,879	36,967	37,086
Green Lake	24	55047	19,143	19,175	19,174	19,224

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2016 Estimate	Final 1/1/2017 Estimate	Final 1/1/2018 Estimate	Final 1/1/2019 Estimate
Iowa	25	55049	23,829	23,831	23,867	23,896
Iron	26	55051	5,901	5,927	5,921	5,894
Jackson	27	55053	20,743	20,773	20,800	20,832
Jefferson	28	55055	84,262	84,412	84,352	84,579
Juneau	29	55057	27,022	27,079	27,117	27,232
Kenosha	30	55059	167,658	168,065	168,700	170,071
Kewaunee	31	55061	20,723	20,783	20,786	20,782
La Crosse	32	55063	118,038	118,675	119,193	119,484
Lafayette	33	55065	16,961	17,003	17,010	17,002
Langlade	34	55067	19,995	20,072	20,131	20,086
Lincoln	35	55069	28,787	28,830	28,862	28,957
Manitowoc	36	55071	81,404	81,076	81,494	81,643
Marathon	37	55073	135,483	134,943	135,922	136,517
Marinette	38	55075	41,413	41,259	41,382	41,401
Marquette	39	55077	15,425	15,370	15,408	15,390
Menominee	40	55078	4,256	4,248	4,258	4,265
Milwaukee	41	55079	948,930	945,416	950,381	946,296
Monroe	42	55081	45,865	46,109	46,363	46,994
Oconto	43	55083	38,195	38,190	38,476	38,778
Oneida	44	55085	36,208	36,225	36,383	36,285
Outagamie	45	55087	182,365	182,921	184,541	187,092
Ozaukee	46	55089	87,879	88,217	88,667	89,905
Pepin	47	55091	7,414	7,383	7,391	7,431
Pierce	48	55093	41,320	41,480	42,021	42,208
Polk	49	55095	44,236	44,168	44,380	44,536
Portage	50	55097	70,883	70,761	71,038	71,680
Price	51	55099	14,086	14,028	14,046	14,216

County Name	DOA County Code	FIPS State / County Code	Final 1/1/2016 Estimate	Final 1/1/2017 Estimate	Final 1/1/2018 Estimate	Final 1/1/2019 Estimate
Racine	52	55101	195,294	195,146	196,200	196,487
Richland	53	55103	17,954	17,896	17,919	18,007
Rock	54	55105	159,886	159,372	160,349	160,444
Rusk	55	55107	14,783	14,735	14,754	14,919
St. Croix	56	55109	86,858	87,828	88,583	89,692
Sauk	57	55111	62,187	62,240	62,822	63,281
Sawyer	58	55113	16,754	16,689	16,828	16,893
Shawano	59	55115	41,755	41,549	41,655	41,775
Sheboygan	60	55117	115,050	114,714	115,924	116,547
Taylor	61	55119	20,741	20,692	20,746	20,849
Trempealeau	62	55121	29,395	29,452	29,767	29,964
Vernon	63	55123	30,114	30,112	30,248	30,424
Vilas	64	55125	21,662	21,607	21,771	21,798
Walworth	65	55127	102,593	102,591	103,535	104,062
Washburn	66	55129	15,929	15,869	15,929	16,027
Washington	67	55131	134,137	134,630	135,970	137,637
Waukesha	68	55133	396,449	398,236	401,446	405,991
Waupaca	69	55135	52,320	52,100	52,217	52,368
Waushara	70	55137	24,471	24,358	24,441	24,517
Winnebago	71	55139	169,032	169,053	170,025	170,580
Wood	72	55141	74,998	74,620	74,817	75,450
STATE Total			**5,775,120**	**5,783,278**	**5,816,231**	**5,843,443**

Wisconsin's Future Population

Projections for the State, Its Counties and Municipalities, 2010 - 2040

December 2013

David Egan-Robertson
UW-Madison Applied Population Laboratory

Prepared for the
Wisconsin Department of Administration
Demographic Services Center

Wisconsin's Future Population
2010 – 2040

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Acknowledgements

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Karl Pearson, Demographer, Wisconsin Department of Health Services
Balkrishna Kale, demographer (retired), Demographic Services Center
Dan Barroilhet, Demographer, Demographic Services Center
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Highlights

State Projections, 2010 - 2040

- ✓ Wisconsin's population in 2040 is projected to be nearly 6,500,000, a gain of more than 800,000 people, or 14 percent, from 2010.

- ✓ Each decade will be marked by specific demographic patterns:

    - 2010 – 2020:
      --Net migration, after being slightly negative in the first five years, returns to a strong net gain in the latter half of the decade, matching the state's pattern of the 1990s.
      --Births remain well ahead of deaths, providing a solid component of natural increase to the state's population, accounting for more than two-thirds of the decade's gain.
      --The total population will grow more than 315,000, nearly equaling the 2000-2010 numeric growth of 323,000.

    - 2020 – 2030:
      --Net migration will continue to be strongly positive, producing nearly one-half of the decade's increase in population.
      --The leading edge of the Baby Boom reaches age 80 in mid-decade. Even with improvements in life expectancy, the size of the "Boomer" cohort will lead to an inevitable increase in deaths. While the number of births will still grow, it will not keep pace with the rise in deaths, thus leading to a reduction in the natural increase component.
      --The total population will grow more than 370,000, the largest decadal change since the 1990s.

    - 2030 – 2040:
      --Deaths among the Boomers will continue to rise. The number of births will increase only slightly. Natural increase, while remaining positive, will decelerate rapidly.
      --Net migration is expected to also lose pace after 15 years of strong growth.
      --The total population will grow by 115,000 for the decade.

- ✓ Across the full 30 years:

    - The preschool- and school-aged populations—ages 0 through 17—will decrease slightly from 1,339,500 in 2010 to 1,311,500 in 2015, then grow steadily to a peak of 1,390,000 in 2035. At 1,381,000 in 2040, this age group will have a net gain of 3.1 percent from the beginning to the end of the projection period.

    - The school-aged population alone—ages 5 through 17—will follow a similar pattern: decline from 981,000 in 2010 to 962,500 in 2015, then a gradual increase to 1,012,500 at 2035. At 1,007,500 in 2040, the net

gain across the 30 years will be 2.7 percent.

- The traditional working-age population—ages 18 through 64—will rise modestly from 3,570,000 in 2010 to 3,603,000 in 2020, then begin a slow decline during the 2020s and 2030s to 3,575,000 in 2040, resulting in a 0.1 percent increase across time.

- The elderly population—age 65 and over—will increase rapidly in every five-year interval, from 777,500 in 2010 to 1,535,500 in 2040, nearly doubling in 30 years.

- The very elderly population—age 85 and over—will rise steadily from 118,500 in 2010 to 145,500 in 2025, then nearly double to 283,500 in the following fifteen years. From 2010 to 2040, this age group will increase 140 percent.

- The state's population of centenarians is expected to increase from approximately 1,200 in 2010 to 3,800 in 2040.

- The shares of three broad age groups will change across the 30-year time span in this manner:
  --Ages 0-17: from 23% in 2010 to 21% in 2040
  --Ages 18-64: from 63% in 2010 to 55% in 2040
  --Ages 65 & over: from 14% in 2010 to 24% in 2040

- The state's median age is projected to rise from 38.4 years in 2010 to 42.4 in 2040. In comparison, the Census Bureau projects the national median will rise from 37.7 to 40.4 years across the same period.

- Life expectancy at birth will rise from 77.3 years at 2010 to 81.5 years in 2040 for males and from 82.0 years at 2010 to 85.7 years in 2040 for females. Wisconsin's life expectancies will continue to outpace those predicted for the national population.

County Projections, 2010 - 2040

- ✓ Across the entire 30-year period, 57 of Wisconsin's 72 counties are projected to increase in population. Of these, 25 are expected to exceed the state's growth rate of 14.1% from 2010 to 2040.

- ✓ As the population ages, more Wisconsin counties are projected to move from the condition of natural increase (more births than deaths) to natural decrease (more deaths than births). The projections indicate that, while 18 counties experienced natural decrease in the 2000s, the number will rise to 29 in the 2010s, 33 in the 2020s, and 45 in the 2030s.

- ✓ As the state's net migration flow improves in future years, counties with positive gains in migrants are projected to increase from 49 in the 2000s to 64 in the 2010s and 69 in the 2020s. As net migration slows again in the 2030s, 54 counties will still have positive in-migration.

- ✓ Saint Croix County is projected to be the top percentage gainer —41 percent— in the state. Dane County is predicted to be the top numeric gainer—adding almost 119,000 people—over 30 years.

- ✓ Buoyed by strong natural increase, Milwaukee County's population is expected to grow over time and exceed 1 million around 2035. It share of the state's total will remain close to its current ratio of 1 in 6 residents.

Municipal Projections, 2013 – 2040[1]

- ✓ Of the state's 1,852 current municipalities, 1,300 (70%) are projected to gain population through 2040 and approximately 540 (29%) are projected to lose population. (The balance are expected to have the same population at 2040 as at 2010.)

- ✓ In aggregate, cities will contain the largest number and share of state residents at 2040 (3.5 million, 54%). Villages are predicted to experience a greater percentage growth than cities and towns over the 27-year period, of 22%, and will have approximately 1.1 million inhabitants at 2040. Towns are projected to have 1.9 million residents, an increase of 14% from 2013, but their share of the state's population will remain at 29%.

- ✓ The state's largest city, Milwaukee, is projected to gradually gain population and reach a total of 627,400 in 2040. The second largest city, Madison, is projected to have the largest numeric gain over 27 years—43,150—to reach 281,150 in 2040.

- ✓ Kenosha is projected to gain enough residents by 2020 to supplant Green Bay as the state's third largest city. In addition, Waukesha is predicted to surpass both Appleton and Racine to become the fifth largest city at 2030.

[1] The state and county projections use the 2010 Census as their "point of departure" for calculating into the future. The municipal projections use the most recent Demographic Services Center's estimates as their basis. Additional descriptions of the methodologies and their differences are explained in a separate document.

Assumptions of the Projections

The projections that Demographic Services Center has produced over the past 40 are referred to as "baseline projections." That is, the predictions of the population of the state and its constituent areas are based on the primary assumption that past demographic and economic patterns, on a large scale, will hold true into the future.

This baseline framework guides our thinking in specific ways. For example, it is presumed that there will be no substantial shifts in the state's economy (e.g., the emergence of extensive extractive industries, such as oil or gas, which would change the patterns of in- and out-migration) or natural or man-made disasters that would greatly affect the populace. As another example, if it is noted that the working-age population of a county is declining over time, no attempt is made to maintain a certain ratio of potential workers to children and retirees.

Population projections are not a statement of what **will** happen, but an inference of what **might** happen, IF past patterns and probable future trends hold true.

The specific projections model that Demographic Services uses for the state and its counties is patterned upon the cohort-component method. This methodology takes a base period experience of fertility, mortality and migration (for this release, the 2000 – 2010 intercensal period) and modifies the age- and sex-specific rates for each of these components, based on indicators provided by federal sources, going forward into the future. In other words, a basic assumption is that "As goes the nation, so goes Wisconsin." Historical Wisconsin data—extending back 30 years or more—also influence the shaping of future rates, particularly in the realm of migration.

Similarly, the municipal projections rely on historic patterns; specifically, the growth rates of individual communities since 1990, with greater weight given to recent change than distant change.

While other U.S. states have used projections models that incorporate employment forecasts—specifically, the need or demand for workers in relationship to supply—it has been found that the cohort-component model, with its focus on basic demographic events, is the most effective for Wisconsin.

Past Experience, Projected Future: The State's Population Change

Wisconsin's population change during the 2000-2010 decade can be viewed as two distinctly different five-year periods. Based on Demographic Services' annual estimates, the state's growth of 221,000 for 2000-2005 nearly matched the 1995-2000 change of 230,000, and the percentage gain was a solid 4.1%, or an average of about 0.8% per year. However, the slowing of the housing construction market and the recession that began in late 2007 led to a stall of the state's growth. For the second

Wisconsin's Population, 1980-2010, at 5-Year Intervals			
Year	Population	Numeric Change	Percent Change
1980	4,705,642	--	--
1985	4,771,758	66,116	1.4
1990	4,891,769	120,011	2.5
1995	5,134,123	242,374	5.0
2000	5,363,715	229,572	4.5
2005	5,584,522	220,807	4.1
2010	5,686,986	102,464	1.8

half of the decade, the total population increase fell to 102,000, or 1.8%; in the last three years, the state likely experienced net out-migration (i.e., more residents moving out than moving in).

Still, for the decade as a whole, the state gained approximately 323,000 residents, for a decadal percent change of 6.0 percent. The state added 80,000 inhabitants through net migration (compared to 228,000 in the 1990s and a net out-migration of -127,000 in the 1980s). Natural increase (births minus deaths) provided a gain of 243,000; by comparison, natural increase was 244,000 in the 1990s and 313,000 in the 1980s.

The population projections in the near term reflect the probability that the state's economy will begin to improve during the current five-year period, increasing job growth and thus leading to net migration turning from negative to positive in 2014 and 2015. Net migration is then expected to increase steadily through 2020. In addition, births—which, like migration, have experienced a recessionary dip recently, to below 70,000 statewide per year—will "bounce back," exceeding 350,000 for the five-year period of 2015-2020. For the entire decade, overall growth will not be much different from the 2000-2010, and can be thought of as a mirror reflection of that period. (Each of the demographic components—births, deaths and migration—will be discussed in greater detail in separate sections that follow.)

Wisconsin's Projected Population, 2010-2040, at 5-Year Intervals			
Year	Projected Population	Numeric Change	Percent Change
2010	5,686,986	--	--
2015	5,783,015	96,029	1.7
2020	6,005,080	222,065	3.8
2025	6,203,850	198,770	3.3
2030	6,375,910	172,060	2.8
2035	6476,270	100,360	1.6
2040	6,491,635	15,365	0.2

Beyond 2020, growth is projected to be strongest in the 2020-2030 period. Migration should still remain positive, births will continue to exceed deaths substantially—at least for the first five years—and overall growth is expected to be more than 370,000, or 6.2%

Like the United States and much of the developed world, Wisconsin in the 2020s will begin facing the demographic inevitability of the Baby Boom (persons born 1946 through 1964) reaching the ages when mortality rates accelerate. The "leading edge" of the Boomer generation will be 75 in 2021. In recent history, and projected through 2020, Wisconsin has maintained and will maintain a relatively steady natural increase (births minus deaths) in the range of 22,000 to 26,000 annually. In particular, the number of deaths has been remarkably stable, ranging from only 44,000 to 48,000 annually from 1993 through 2011. While births are projected to continue to rise numerically through the entire projections period (primarily due to the increasing population), the number of deaths will begin to climb rapidly after 2020, passing the annual thresholds of 50,000 during 2020-2025, 55,000 during 2025-2030, 60,000 during 2030-2035 and 65,000 during 2035-2040.

In short, natural increase during the 2030s will be reduced substantially. In addition, after fifteen years of solid gains through net in-migration, the state's migration rate is expected to slow. Nonetheless, the state is projected to gain more than 115,000 residents from 2030 to 2040, or 1.8%.

Components of Population Change: Births, Deaths and Migration

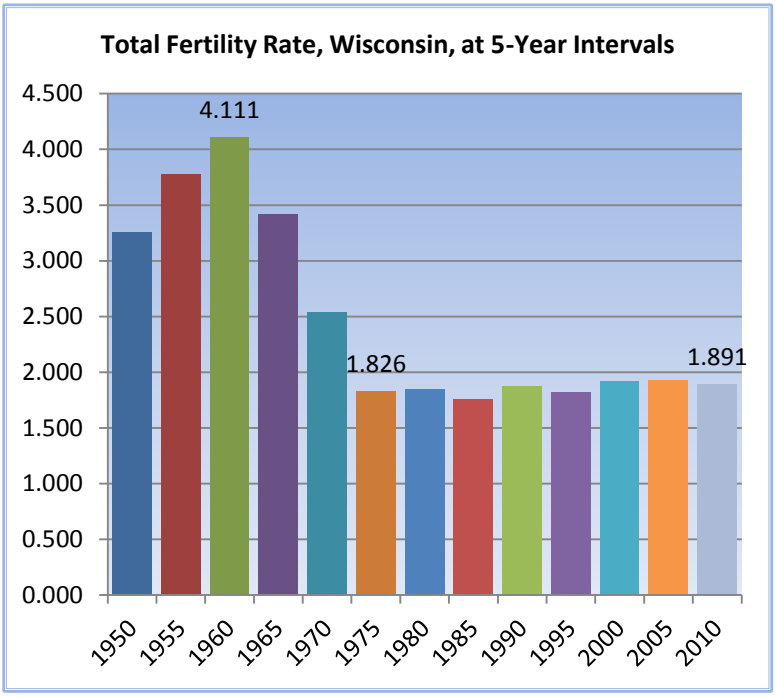
As mentioned earlier, the projection of Wisconsin's population relies on three demographic categories: fertility, mortality, and migration. Base rates for each of these components were calculated and then carried forward into the future based on national forecasts and historical experience. Then the population was aged forward, being exposed, in effect, to the projected rates for each 5-year age and sex cohort. The demographic components are discussed in detail below.

Births (Fertility)

The fertility, or birth, rate of a population can be measured and expressed in a number of ways. A common metric is the total fertility rate or TFR. Across time, the number of births per female can be tracked through women's fertile years to compute a cohort-based TFR. However, a similar period TFR can be calculated for a limited time frame for all women as a whole, using current age-specific fertility rates as a basis. In short, a period TFR is a synthesized one-number estimate of the average number of children a woman would bear if she completed her reproductive period at the current age-specific rates. The period TFR is useful for sketching a geographic area's fertility rate at particular points in history, or as a comparison among geographies (e.g., different counties or states).

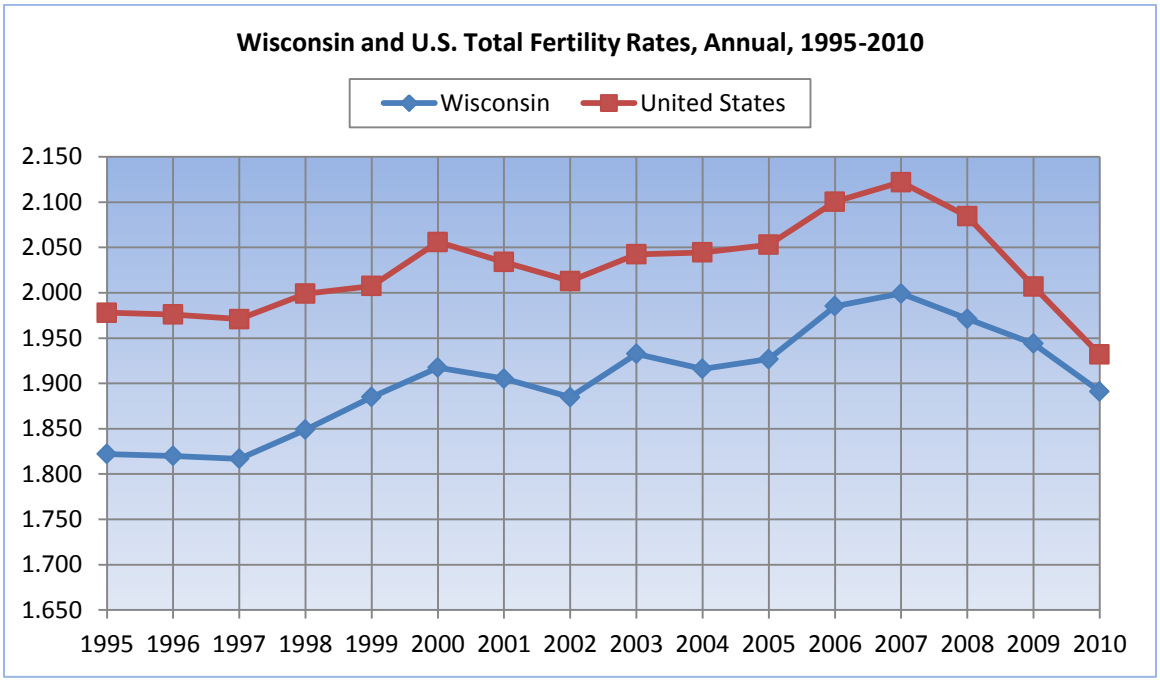
Since the early 1970s, Wisconsin's total fertility rate has remained relatively steady. Following the Baby Boom (generally defined in the United States as the period from 1946 through 1964), the state's TFR fell from its peak of more than 4 children per woman to less than 2 per woman in 1975.

Wisconsin's fluctuations in TFR also track the national pattern quite well across time. The effect of the two recessions in the past decade—around 2001-2002 and 2007-2009—can be seen in declines in the fertility rates during those times, in the graph of single-year TFRs from 1995



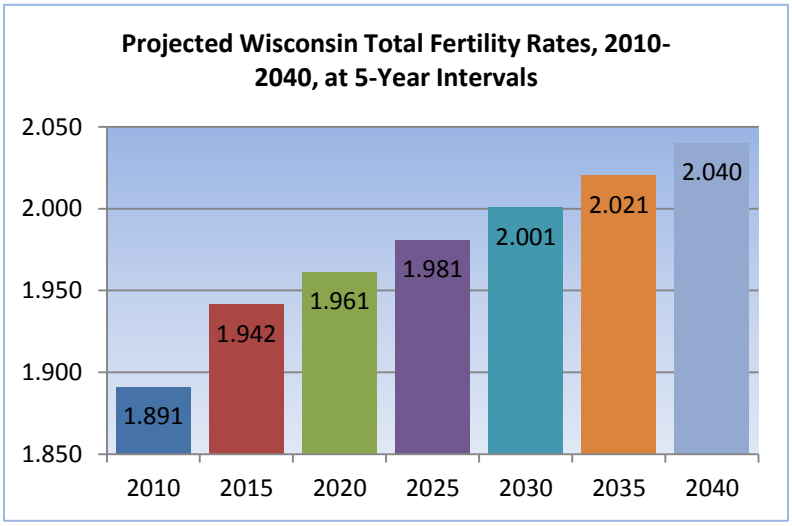
Data Source: WI Dept. of Health Services

through 2010.

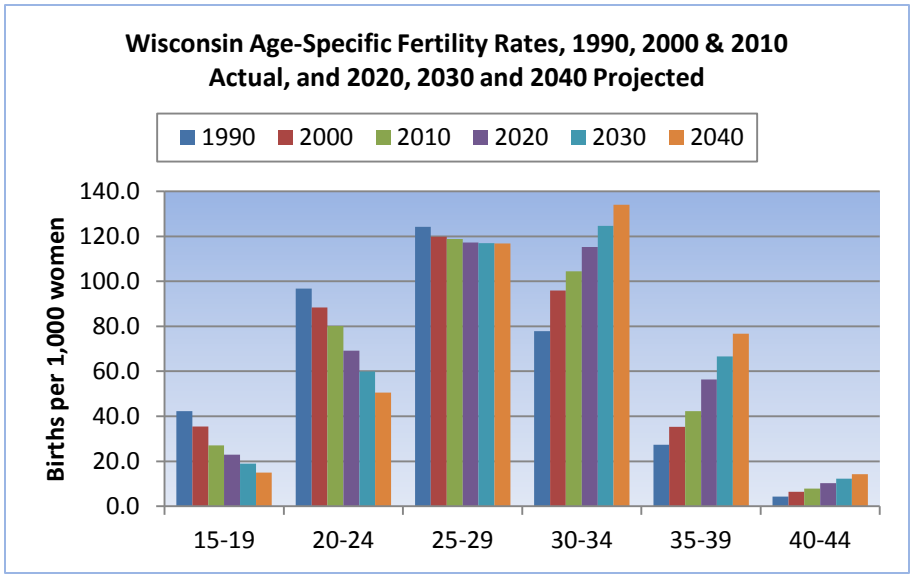


Data Sources: WI Dept. of Health Services, National Center for Health Statistics

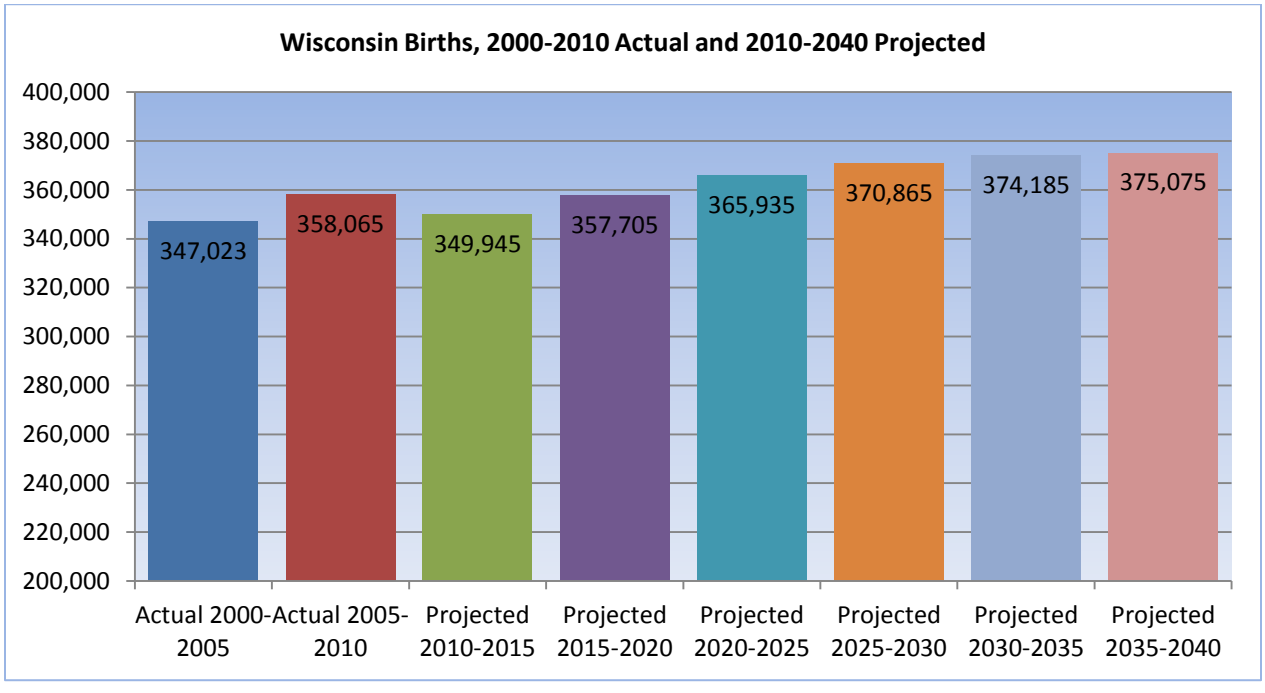
In creating future fertility rates for Wisconsin (or any state, the U.S., or most developed countries, for that matter), one must countervail this recent downward turn related to the 2007-2009 Great Recession. Recent academic research indicates that the current low period of fertility (and births) is a situation of delayed, but not foregone, child-bearing. In Wisconsin's case, it is expected that the fertility rate and number of births will increase again as the state's economy improves. The fertility rate is likely to return to pre-recession levels within the first five years of the projections period, then increase at a gradual pace through the remainder of the projections' time frame.



Underlying the total fertility rate are age-specific fertility rates (ASFRs), which are calculated and forecast for women, usually in five-year age groups, in their "fertile" years. Of particular note in Wisconsin is that, for the past two decades, the ASFRs for younger women—ages 10-14 through 25-29—have been decreasing and those for older women—ages 30-34 and higher—have been increasing. Hence, in projections mode, even though the overall fertility rate is increasing, the age-specific rates for younger women should show a continued downward pattern and for older women an ongoing upward pattern.

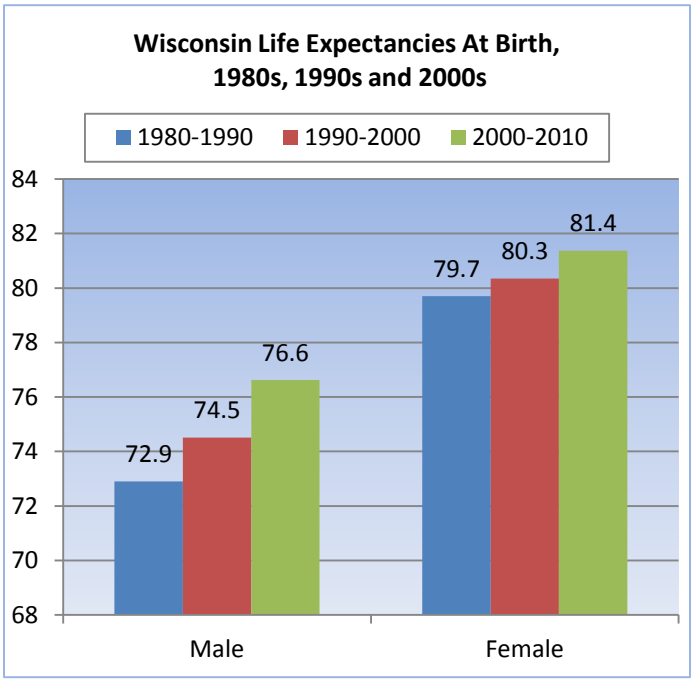


What do these assumptions and calculations mean for the number of projected births? After an initial decrease in the first five-year period, the expected increase in fertility rates, intersecting with a projected larger fertile female population over time, will increase the number of births gradually for most of the projections period.



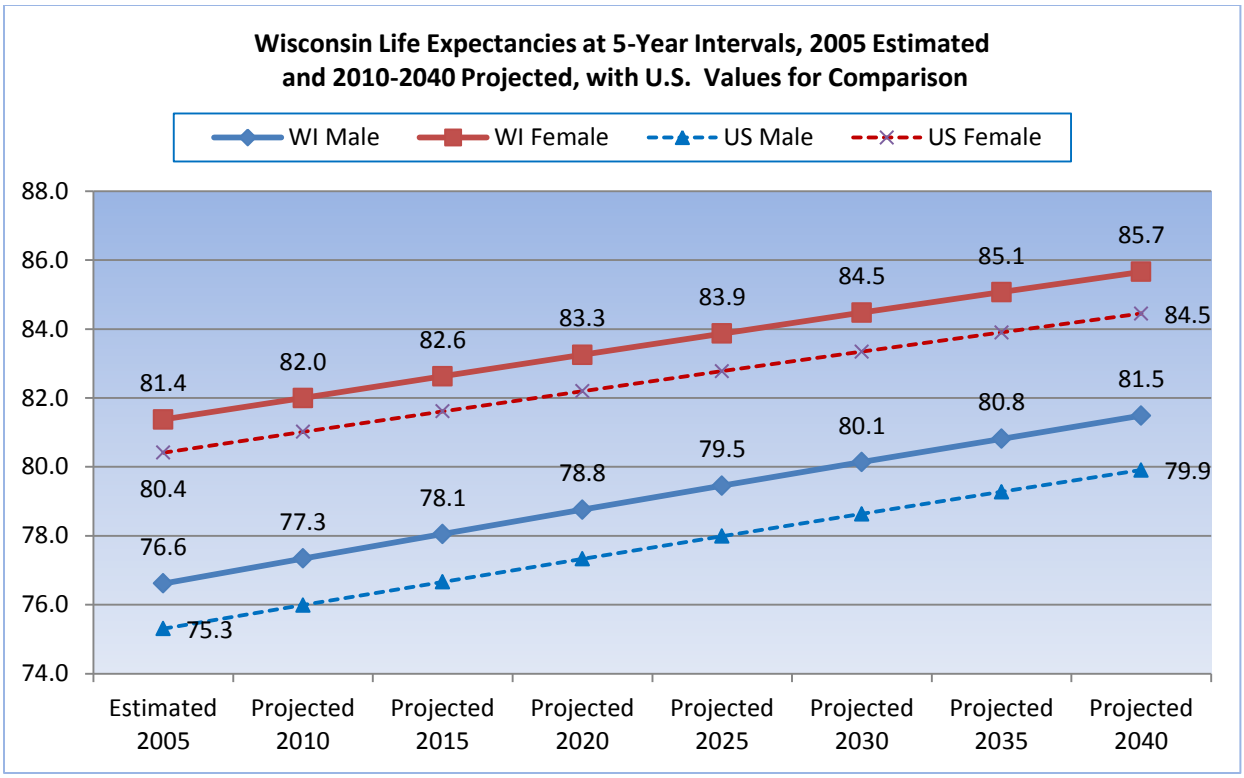
Deaths (Mortality)

Like fertility, there are useful summary measures for discussing mortality. The most common single-number metric is life expectancy at birth, which is usually calculated separately for men and women because each sex faces different mortality risks across their lifetimes. Similar to the total fertility rate, life expectancy is a synthesized one-number estimate based upon the mortality rates (or, conversely, survival rates) of age-specific cohorts over a defined period of time, such as a year or decade.

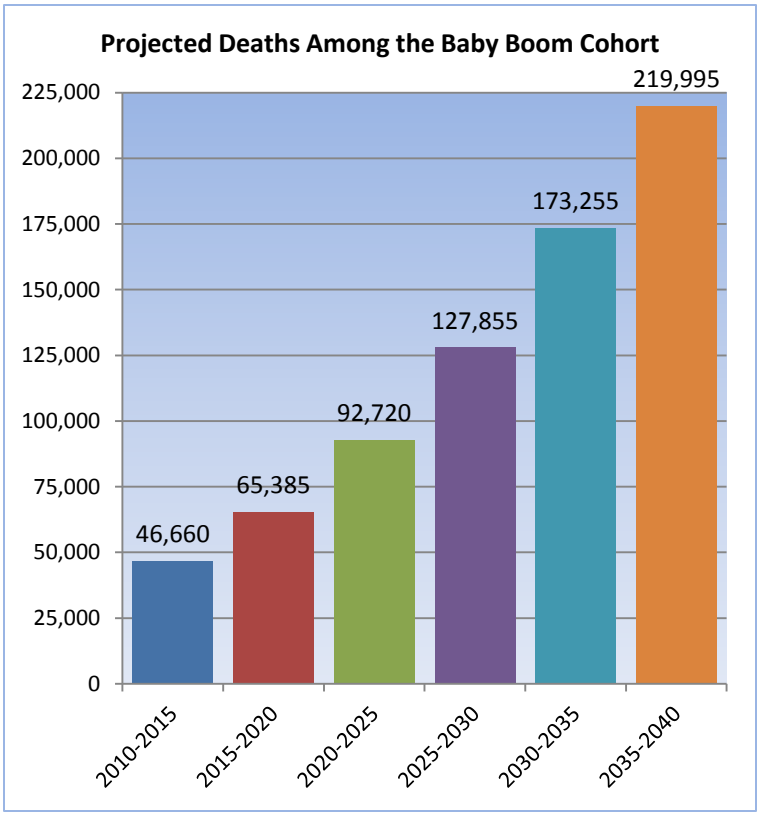


Wisconsin's recent history in life expectancy is a positive one. Over the past three decades, the state has seen steady improvement in the survivability of both men and women. In addition, the gain in life expectancy for males has progressed at a faster rate than for women, so that the gap between the sexes has decreased from nearly 7 years to about 5 years. Similar patterns have been seen at the national level as well. Finally, Wisconsin's life expectancies, relative to the U.S. values, have been higher across time. At the midpoint of the past decade, the state's life expectancies were 1.31 years higher than the nation's for men and 0.96 years higher for women.

Looking toward future decades, it is likely that the state will continue to outpace the national life expectancies. Using the Census Bureau's 2008 national projections as a guide, age-specific survival rates were calculated and then re-summarized to corresponding life expectancy values. As the graph on the next page indicates, the difference between Wisconsin's and the United States' projected life expectancies will widen slightly over the 2010 – 2040 period; the state's advantage for men will rise from 1.3 to 1.6 years, for women from 1.0 to 1.2 years.

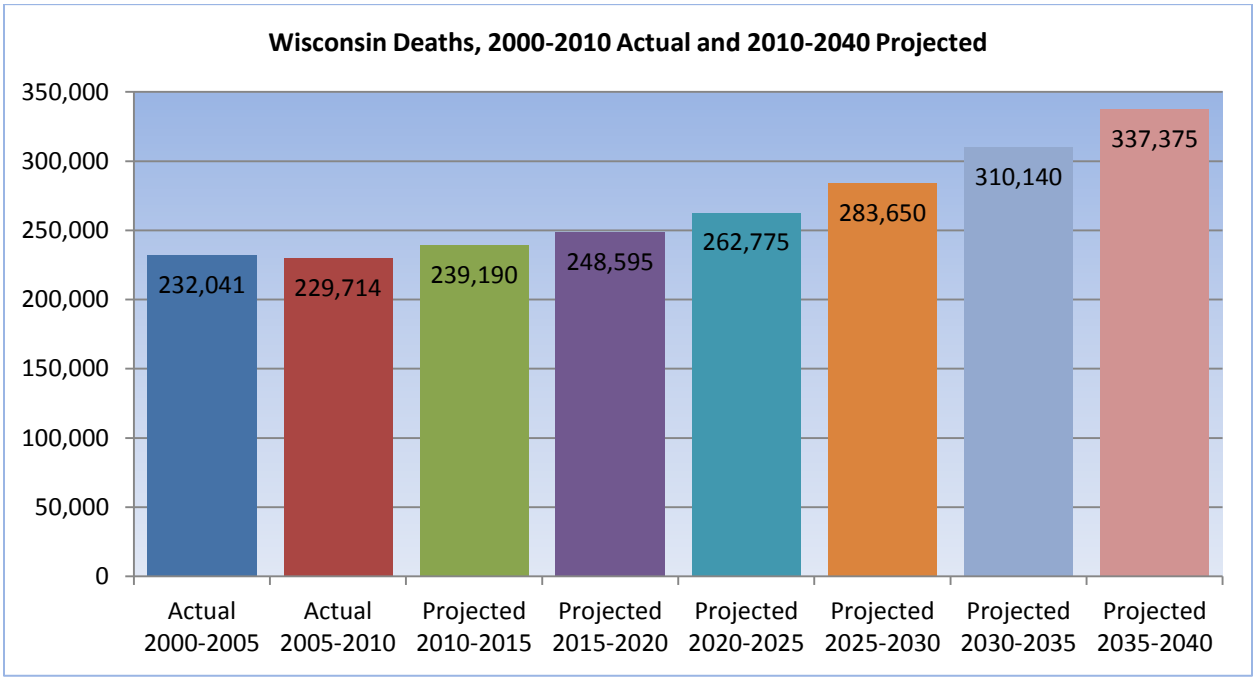


The leading edge of the Baby Boom will reach age 80 in 2026. Even with improvements in life expectancy, the sheer size of the "Boomer" cohort will lead to an inevitable increase in deaths, particularly across the final 15 years of the 2010 – 2040 projections period. The graph at right illustrates the projected increase in deaths for Wisconsin residents who were born in the 1946 – 1964 period. Across the 30-year projections, deaths among this cohort (persons of ages of 46-64 in 2010, approximately) will almost quintuple by the 2035 – 2040 interval.

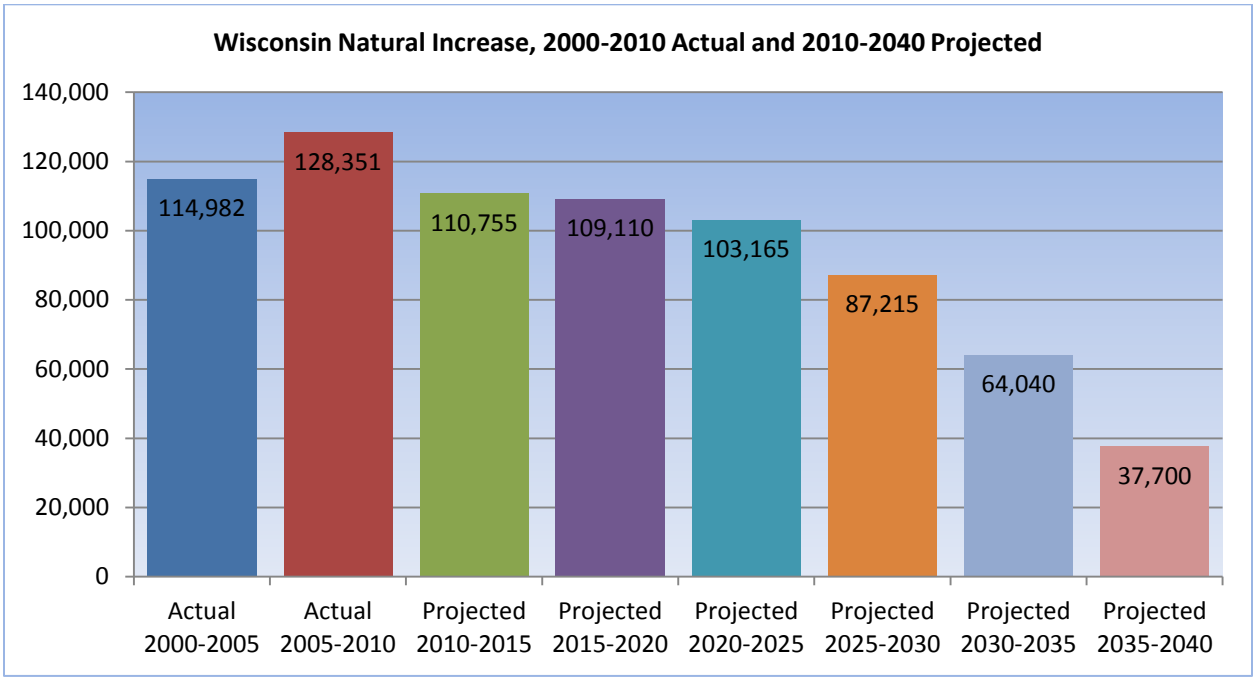


This demographic inevitability—the aging and eventual mortality of the Baby Boom generation—will impact the numeric and percentage growth of Wisconsin in the future.

Population growth consists of two basic elements: natural increase—births minus deaths—and migration. While the number of births will still grow over the next 30 years (illustrated on page 8), it will not keep pace with the rise in deaths, thus leading to a reduction in the natural increase component.



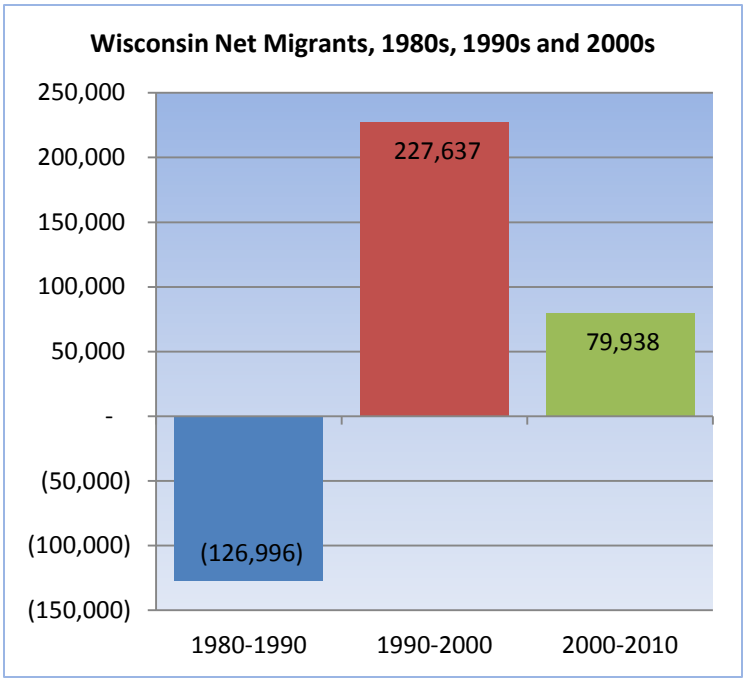
In short, natural increase's contribution to Wisconsin's population change will decline across time, to—in the final 5-year interval—roughly one-third of the numeric level seen in the 2000-2010 period.



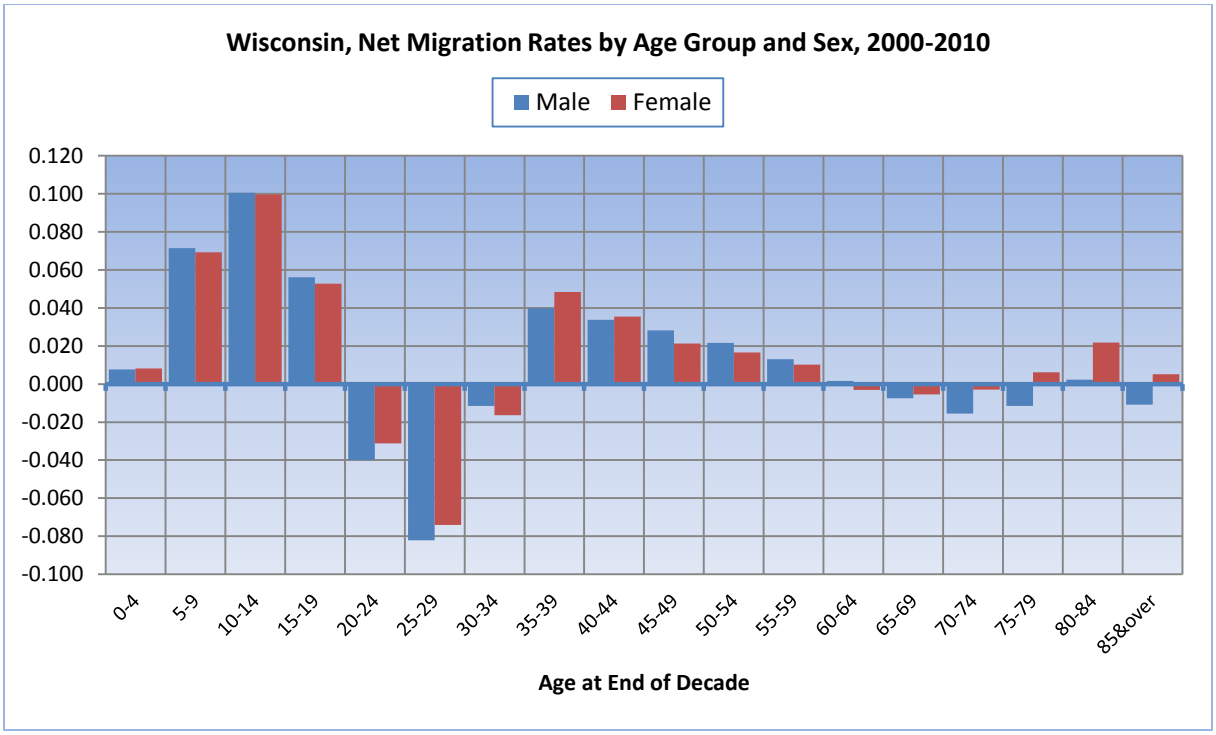
Migration

The measurement of migration is best understood as a "net" process. That is, people migrate into an area over a period of time, and others move out of that same area; the net gain or loss due to migration is the result of the in-flow minus the out-flow. These latter gross measures (in- and out-migration) are usually difficult to ascertain, unlike births and deaths that are recorded as official vital events. Thus, net migration is calculated through a residual process: it is the difference between total population change and natural increase.

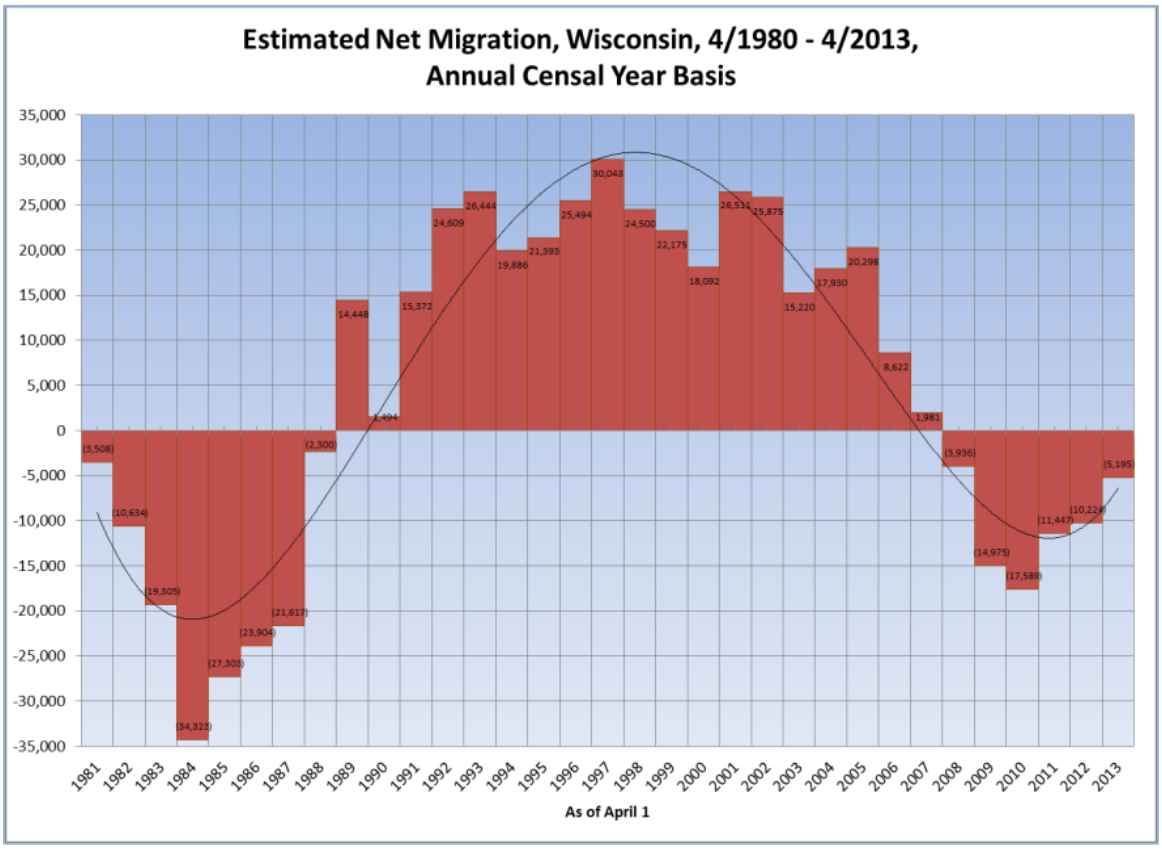
Wisconsin's net migration, in total, has varied extensively across the past three decades. After a decade of negative net migration in the 1980s—related in large part to the "Rust Belt" recession in the early part of the decade—migration rebounded strongly into positive territory in the 1990s. Net migration remained robust through the early part of the 2000s, but began to turn negative in the latter part of the decade, again traceable to an economic recession.



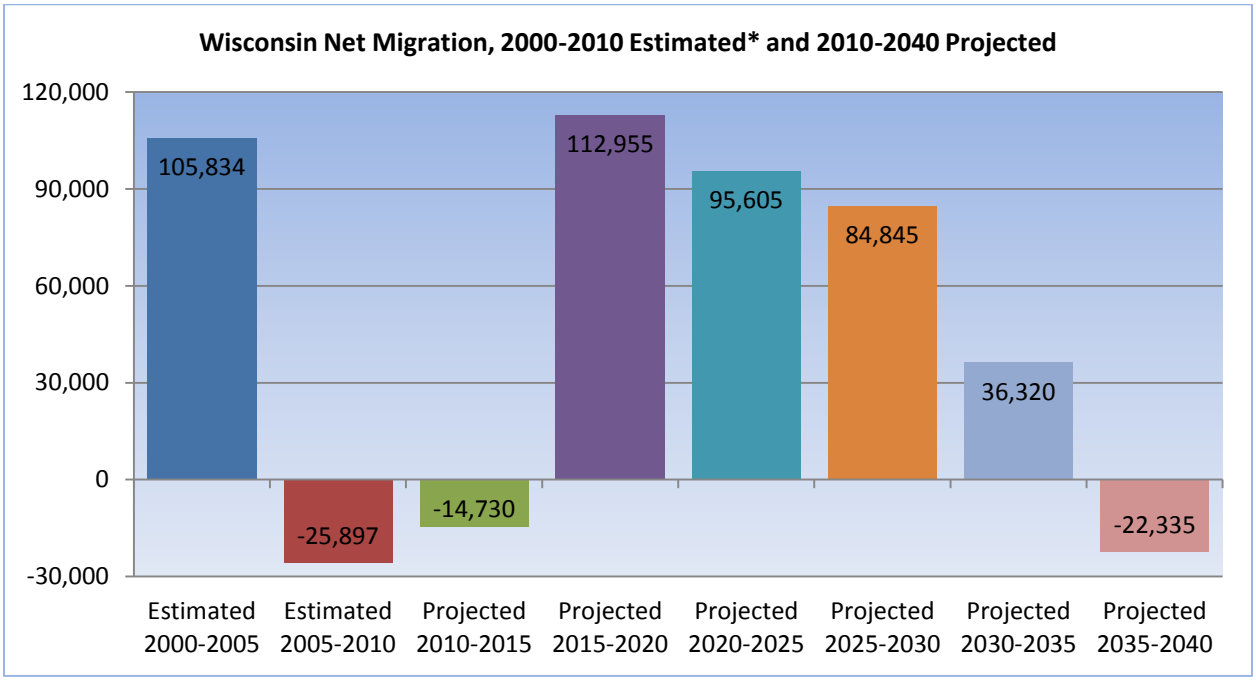
Net migration also follows a particular pattern based on age and sex. In Wisconsin, recent decades have been marked by net gains of young people ages 0-4 through 15-19 (the latter group being affected by the influx of out-of-state students attending Wisconsin's many universities and colleges), out-migration in the post-college cohorts ages 20-24 and 25-29 (sometimes through 30-34), and then gains in "young families" cohorts starting with ages 30-34 or 35-39. Adult migration tends to remain positive, but tapering, until about age 60; beyond that age—early retirees onward—migration tends to be neutral, slightly higher in some decades and slightly lower in others. The graph at the top of the next page shows the age-sex net migration rates for the state in the past decade. This pattern, or "signature," tends to hold across time: in decades with strong positive net gain, all of these rates will rise, usually with the strongest increases in the young-adult categories; in decades of net out-migration, all of these rates will fall, with the largest drops occurring among younger adults.



Decadal net migration by age produces a signatural pattern. When annual values of net migration—based on Demographic Services Center's forty years of estimates—are analyzed, a cyclical or periodic shape is apparent.



For this set of state population projections, this cyclical pattern was extended 30 years into the future. For the past six years, Wisconsin has been in a migration "trough," not unlike the early 1980s. However, the net out-flow appears to have "bottomed out." A gradual return to positive net migration is projected to occur as the economy improves. Subsequently, the migration component is forecast to be strongly positive for the three five-year periods from 2015 to 2030, similar in numbers to the 1990s. Then, following the cyclical pattern, net migration will "cool off" in the 2030-2040 decade. Nevertheless, over the entire 30-year period, Wisconsin is projected to gain nearly 300,000 residents through migration.



*Net migration for 2000-2005 and 2005-2010 is estimated because mid-decade 4/1/2005 population is estimated.

Age Distribution of the Population

Although the state's total population is expected to grow by 14 percent—and more than 800,000 residents—over the 30-year projection period, the change will be much greater in certain age groups and much lower in others. In particular, shifts in the age distribution will be heavily concentrated in the older age categories.

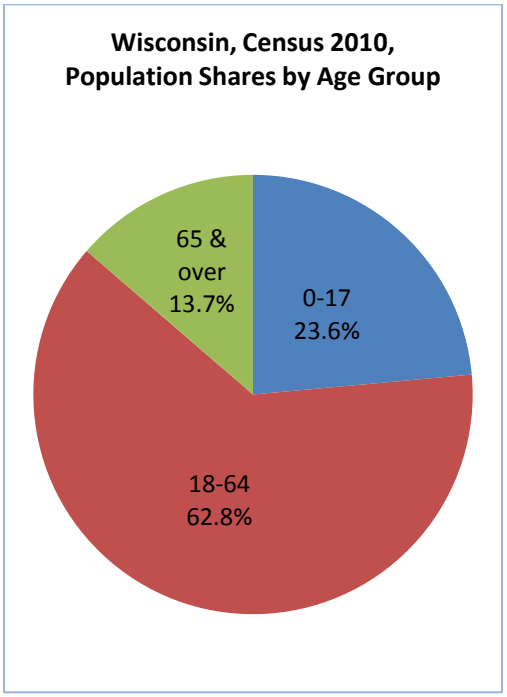
The adjoining table illustrates the Census 2010 and projected 2040 residents by significant age categories, and the projected numeric and percentage change of each group. It is clear that, while growth in the population below

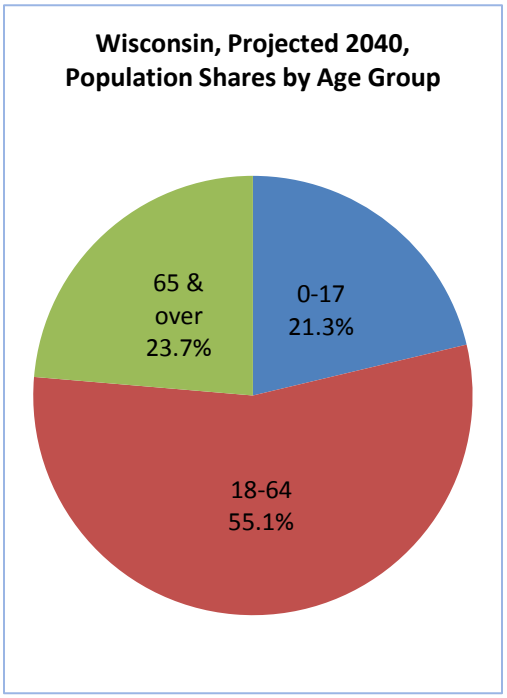
Wisconsin Population, 2010 Census and 2040 Projection, by Age Groups

Age Group	Census 2010	Projected 2040	Num. Change	Pct. Change
0-4	358,443	373,940	15,497	4.3%
5-17	981,049	1,007,370	26,321	2.7%
18-24	549,256	563,995	14,739	2.7%
25-44	1,447,360	1,493,595	46,235	3.2%
45-64	1,573,564	1,517,370	-56,194	-3.6%
65-84	658,809	1,251,765	592,956	90.0%
85 & over	118,505	283,600	165,095	139.3%
TOTAL	**5,686,986**	**6,491,635**	**804,649**	**14.1%**

age 65 will be relatively flat, the number of "young elderly" (ages 65-84) will almost double, and the "old elderly" (ages 85 and over) will nearly increase one and one-half. As indicated in the discussion on mortality and migration above, this growth in the elderly population will be due almost solely to the aging of the existing state's residents into these older age cohorts.

Finally, consolidating the age groups into three broad categories—under 18, 18 through 64, 65 and older—allows a comparison of the proportion of the population that each group formed at 2010 and is projected to form at 2040.





Wisconsin Population, 2010 - 2040, by Broad Age Groups							
Age Group	Census 2010	Projected 2015	Projected 2020	Projected 2025	Projected 2030	Projected 2035	Projected 2040
0-17	1,339,492	1,311,425	1,338,370	1,366,010	1,385,735	1,390,055	1,381,310
18-64	3,570,180	3,576,670	3,602,780	3,580,325	3,565,855	3,577,580	3,574,960
65 & over	777,314	894,920	1,063,930	1,257,515	1,424,320	1,508,635	1,535,365

The share of the population ages 0-17 will remain fairly similar, declining only a few percentage points and, numerically, growing only slightly from 1.339 million to 1.381 million. The share of 18-64 year olds is projected to drop more than seven percentage points and, numerically, barely growing from 3.570 million to 3.575 million. Finally, the share of the population age 65 and over will gain ten percentage points and, numerically, increase from 777,000 to 1.535 million. The number of elderly Wisconsin residents is forecast to exceed the number of children at some point during the latter half of the 2020s.

Wisconsin Population Projections, Data Tables

Total Population by 5-Year Age Groups

Age Group	Census 2010	2015	2020	2025	2030	2035	2040
0-4	358,443	348,765	367,375	374,170	378,340	377,720	373,940
5-9	368,617	363,655	364,545	382,055	387,965	387,985	382,295
10-14	375,927	377,655	383,845	382,700	399,955	401,440	396,070
15-19	399,209	379,425	392,775	397,510	395,015	408,260	404,610
20-24	386,552	380,885	373,460	384,870	388,465	381,420	388,390
25-29	372,347	370,675	376,555	367,990	378,155	377,090	365,050
30-34	349,347	368,245	377,935	382,245	372,535	379,075	373,355
35-39	345,328	349,490	379,710	388,135	391,530	377,460	379,205
40-44	380,338	343,535	358,305	387,720	395,265	394,665	375,985
45-49	437,627	375,320	349,630	363,245	392,195	395,540	390,445
50-54	436,126	431,060	376,700	350,300	363,770	390,595	391,455
55-59	385,986	427,445	425,420	371,900	346,125	359,210	385,420
60-64	313,825	371,940	414,895	413,495	362,275	337,175	350,050
65-69	227,029	295,185	352,625	394,550	394,370	345,885	322,205
70-74	173,467	207,400	272,405	326,790	366,910	367,960	323,370
75-79	141,252	150,335	182,195	240,540	290,250	327,625	329,970
80-84	117,061	113,175	122,575	149,890	199,680	242,920	276,220
85-89	75,603	77,980	77,200	84,965	105,640	142,595	175,915
90-94	33,113	38,845	42,065	43,580	49,025	60,845	81,480
95-99	8,610	10,430	12,835	14,575	15,380	17,495	22,365
100& up	1,179	1,570	2,030	2,625	3,065	3,310	3,840
Total	**5,686,986**	**5,783,015**	**6,005,080**	**6,203,850**	**6,375,910**	**6,476,270**	**6,491,635**

Male Population by 5-Year Age Groups

Age Group	Census 2010	2015	2020	2025	2030	2035	2040
0-4	183,391	178,310	187,960	191,315	193,460	193,040	191,205
5-9	188,286	186,000	186,555	195,530	198,365	198,270	195,375
10-14	192,232	192,975	196,650	195,955	204,695	205,265	202,355
15-19	204,803	194,170	201,605	204,465	203,060	209,510	207,125
20-24	196,897	194,615	190,970	197,235	199,595	195,560	198,340
25-29	189,349	188,565	192,585	188,360	194,090	193,835	186,770
30-34	178,120	186,840	192,285	195,620	190,730	194,425	191,570
35-39	174,619	177,620	192,660	197,480	200,285	192,990	194,060
40-44	191,738	173,475	182,405	196,990	201,305	201,930	192,180
45-49	218,539	188,940	176,835	185,250	199,570	201,690	199,800
50-54	218,303	214,725	189,470	177,105	185,400	198,640	199,430
55-59	192,952	213,200	211,105	186,515	174,550	182,775	195,830
60-64	155,756	184,820	205,685	204,040	180,780	169,355	177,580
65-69	109,168	144,745	173,050	193,360	192,490	170,915	160,440
70-74	81,067	97,920	131,135	157,705	177,030	177,095	157,770
75-79	62,181	67,525	82,715	111,770	135,455	153,180	154,190
80-84	47,549	46,955	52,045	64,605	88,400	108,385	123,810
85-89	26,326	28,655	29,070	32,925	41,765	58,240	72,675
90-94	9,226	11,755	13,540	14,510	16,920	21,650	30,270
95-99	1,743	2,365	3,185	3,910	4,315	5,145	6,840
100& up	155	195	290	430	555	645	800
Total	**2,822,400**	**2,874,370**	**2,991,800**	**3,095,075**	**3,182,815**	**3,232,540**	**3,238,415**

Female Population by 5-Year Age Groups

Age Group	Census 2010	2015	2020	2025	2030	2035	2040
0-4	175,052	170,455	179,415	182,855	184,880	184,680	182,735
5-9	180,331	177,655	177,990	186,525	189,600	189,715	186,920
10-14	183,695	184,680	187,195	186,745	195,260	196,175	193,715
15-19	194,406	185,255	191,170	193,045	191,955	198,750	197,485
20-24	189,655	186,270	182,490	187,635	188,870	185,860	190,050
25-29	182,998	182,110	183,970	179,630	184,065	183,255	178,280
30-34	171,227	181,405	185,650	186,625	181,805	184,650	181,785
35-39	170,709	171,870	187,050	190,655	191,245	184,470	185,145
40-44	188,600	170,060	175,900	190,730	193,960	192,735	183,805
45-49	219,088	186,380	172,795	177,995	192,625	193,850	190,645
50-54	217,823	216,335	187,230	173,195	178,370	191,955	192,025
55-59	193,034	214,245	214,315	185,385	171,575	176,435	189,590
60-64	158,069	187,120	209,210	209,455	181,495	167,820	172,470
65-69	117,861	150,440	179,575	201,190	201,880	174,970	161,765
70-74	92,400	109,480	141,270	169,085	189,880	190,865	165,600
75-79	79,071	82,810	99,480	128,770	154,795	174,445	175,780
80-84	69,512	66,220	70,530	85,285	111,280	134,535	152,410
85-89	49,277	49,325	48,130	52,040	63,875	84,355	103,240
90-94	23,887	27,090	28,525	29,070	32,105	39,195	51,210
95-99	6,867	8,065	9,650	10,665	11,065	12,350	15,525
100& up	1,024	1,375	1,740	2,195	2,510	2,665	3,040
Total	**2,864,586**	**2,908,645**	**3,013,280**	**3,108,775**	**3,193,095**	**3,243,730**	**3,253,220**

Total Population Change, 5-Year Intervals, by Period and Cumulatively

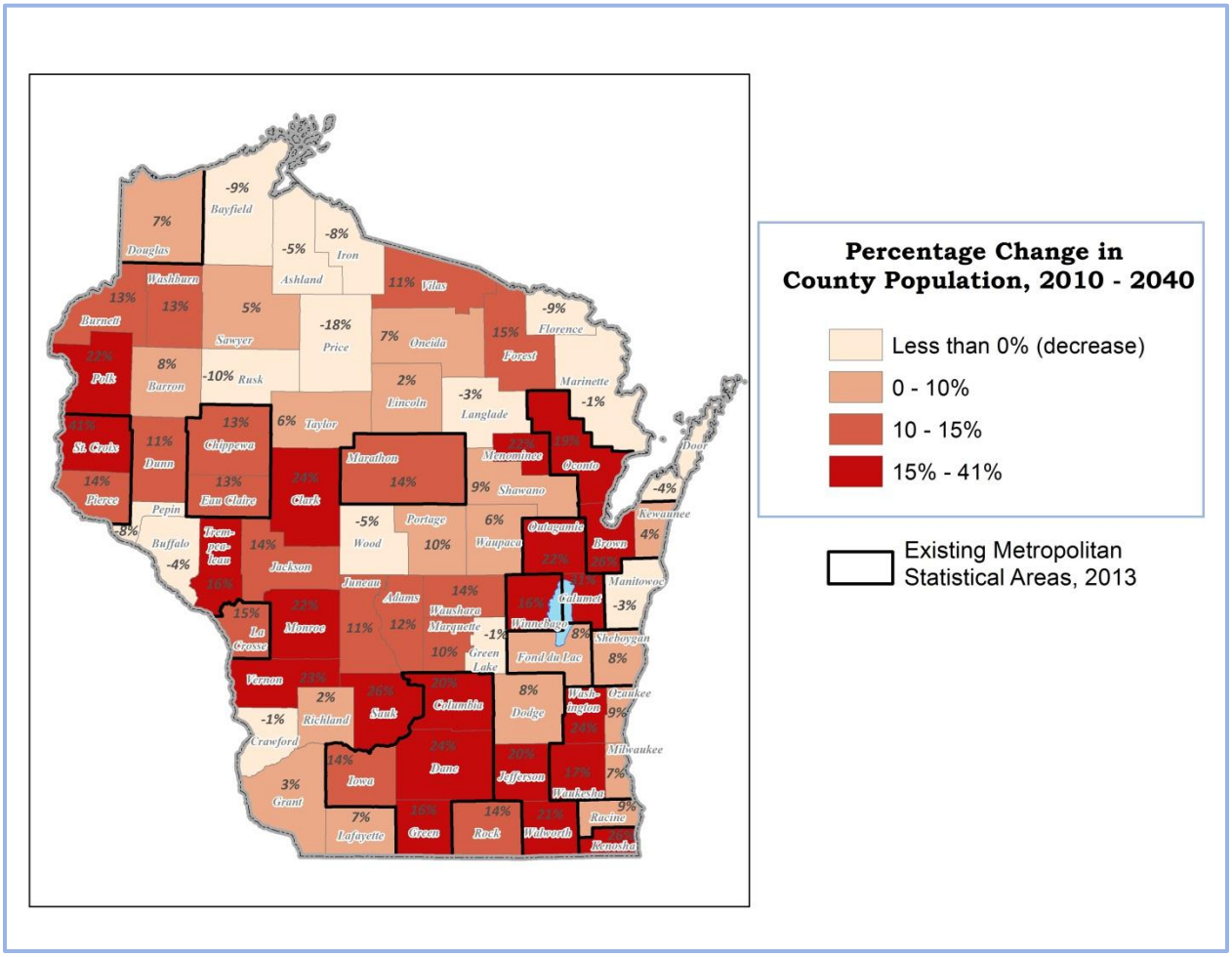
	Census 2010	2015	2020	2025	2030	2035	2040
Total Population	**5,686,986**	**5,783,015**	**6,005,080**	**6,203,850**	**6,375,910**	**6,476,270**	**6,491,635**
5-year Num. Change		96,029	222,065	198,770	172,060	100,360	15,365
5-year Pct. Change		1.7%	3.8%	3.3%	2.8%	1.6%	0.2%
Cumulative Num. Change		96,029	318,094	516,864	688,924	789,284	804,649
Cumulative Pct. Change		1.7%	5.6%	9.1%	12.1%	13.9%	14.1%

Total Population Change by Components of Change, 5-year Intervals

Component	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Births	349,945	357,703	365,936	370,865	374,184	375,074
Deaths	239,188	248,595	262,773	283,651	310,142	337,373
Natural Increase	110,757	109,108	103,163	87,214	64,042	37,701
Net Migration	-14,728	112,957	95,607	84,846	36,318	-22,336
Total Change	**96,029**	**222,065**	**198,770**	**172,060**	**100,360**	**15,365**

County Projections, 2010 - 2040

Across the full 30-year period of these projections, it is predicted that 57 of Wisconsin's 72 counties will have a population at 2040 that is higher than it was at 2010.



Most of the strong-gaining counties are in metropolitan statistical areas or are ones that adjoin metropolitan areas (e.g., Polk, Jefferson, Walworth), or are projected to have strong natural increase (e.g., Clark, Menominee, Trempealeau, Vernon).

In contrast, most of the counties that are projected to lose population, or have very low growth rates, are in the northern part of the state. These counties, which currently have higher percentages of older residents, will be most affected by natural decrease as time progresses. This pattern of some counties losing population is not unprecedented; for example, for the 1980 – 2010 period, 12 counties lost population.

Looking only at the 2010 – 2040 change masks the growth patterns within the 30-year time frame. Certain counties will reach population peaks prior to the end year, then decline as mortality has a greater effect in later years. However, there are a few that, based on the projections, are predicted to decline and stay below their 2010 Census counts.

Year of Peak Projected Population	
Year	**Counties**
2010	Buffalo, Price, Wood
2015	Bayfield, Pepin, Rusk
2020	
2025	Ashland
2030	Adams, Barron, Crawford, Door, Florence, Grant, Green Lake, Iron, Kewaunee, Langlade, Lincoln, Manitowoc, Marinette, Marquette, Oneida, Sawyer, Vilas, Waupaca
2035	Burnett, Columbia, Dodge, Douglas, Fond du Lac, Forest, Green, Iowa, Jackson, Juneau, Menominee, Oconto, Ozaukee, Polk, Racine, Richland, Shawano, Sheboygan, Taylor, Washburn, Waukesha, Waushara
2040	Brown, Calumet, Chippewa, Clark, Dane, Dunn, Eau Claire, Jefferson, Kenosha, La Crosse, Lafayette, Marathon, Milwaukee, Monroe, Outagamie, Pierce, Portage, Rock, St. Croix, Sauk, Trempealeau, Vernon, Walworth, Washington, Winnebago

Fastest-Growing and Largest Counties

Saint Croix County is projected to be the fastest-growing county, in terms of percentage change, through 2040, increasing by 41%. As a component county of the Minneapolis-Saint Paul metropolitan area, it also ranked as Wisconsin's top-growing county from 1980 to 2010.

Calumet County—containing much of the suburban growth southeast of Appleton—is predicted to be the second-fastest growing county, increasing by 31% by 2040.

Dane County, projected to be the sixth largest gainer in percentage terms, is expected to experience the highest numeric growth in the state through 2040.

Fastest Growing Counties (by Percent), 2010 - 2040				
County Name	**Census 2010**	**Projected 2040**	**Numeric Change**	**Percent Change**
Saint Croix	84,345	119,010	34,665	41.1%
Calumet	48,971	64,210	15,239	31.1%
Kenosha	166,426	209,670	43,244	26.0%
Brown	248,007	312,320	64,313	25.9%
Sauk	61,976	77,815	15,839	25.6%
Dane	488,073	606,620	118,547	24.3%
Washington	131,887	163,890	32,003	24.3%
Clark	34,690	42,980	8,290	23.9%
Vernon	29,773	36,520	6,747	22.7%
Menominee	4,232	5,170	938	22.2%

Among the state's largest counties, Milwaukee will continue its position as the most populous in the state and is projected to gain about 70,000 additional residents, increasing to more than 1 million residents. The four largest counties—Milwaukee,

Dane, Waukesha, and Brown—are predicted to maintain their ranked position, but Outagamie County is expected to pass Racine to become the 5th largest. In addition, Kenosha County is likely to exchange places with Winnebago, and Washington County will increase over time to surpass Marathon and become the 10th largest county.

Largest Counties (by Size at 2040), 2010-2040						
County Name	**Census 2010**	**Projected 2040**	**Numeric Change**	**Percent Change**	**Size Rank, 2010**	**Size Rank, 2040**
Milwaukee	947,735	1,016,250	68,515	7.2%	1	1
Dane	488,073	606,620	118,547	24.3%	2	2
Waukesha	389,891	455,720	65,829	16.9%	3	3
Brown	248,007	312,320	64,313	25.9%	4	4
Outagamie	176,695	215,290	38,595	21.8%	6	5
Racine	195,408	213,760	18,352	9.4%	5	6
Kenosha	166,426	209,670	43,244	26.0%	8	7
Winnebago	166,994	193,130	26,136	15.7%	7	8
Rock	160,331	182,860	22,529	14.1%	9	9
Washington	131,887	163,890	32,003	24.3%	11	10

Counties with Greatest Population Decline

As mentioned earlier, 15 counties are projected to lose population between 2010 and 2040. The ten with the predicted greatest percentage decline are shown below. Population losses will be due to both rising natural decrease (i.e., the number of deaths exceeding births) and reduced net in-migration, or actual out-migration.

Counties with Greatest Percent Decline, 2010 -2040				
County Name	**Census 2010**	**Projected 2040**	**Numeric Change**	**Percent Change**
Door	27,785	26,620	-1,165	-4.2%
Buffalo	13,587	13,000	-587	-4.3%
Wood	74,749	71,150	-3,599	-4.8%
Ashland	16,157	15,315	-842	-5.2%
Pepin	7,469	6,885	-584	-7.8%
Iron	5,916	5,420	-496	-8.4%
Bayfield	15,014	13,725	-1,289	-8.6%
Florence	4,423	4,030	-393	-8.9%
Rusk	14,755	13,310	-1,445	-9.8%
Price	14,159	11,645	-2,514	-17.8%

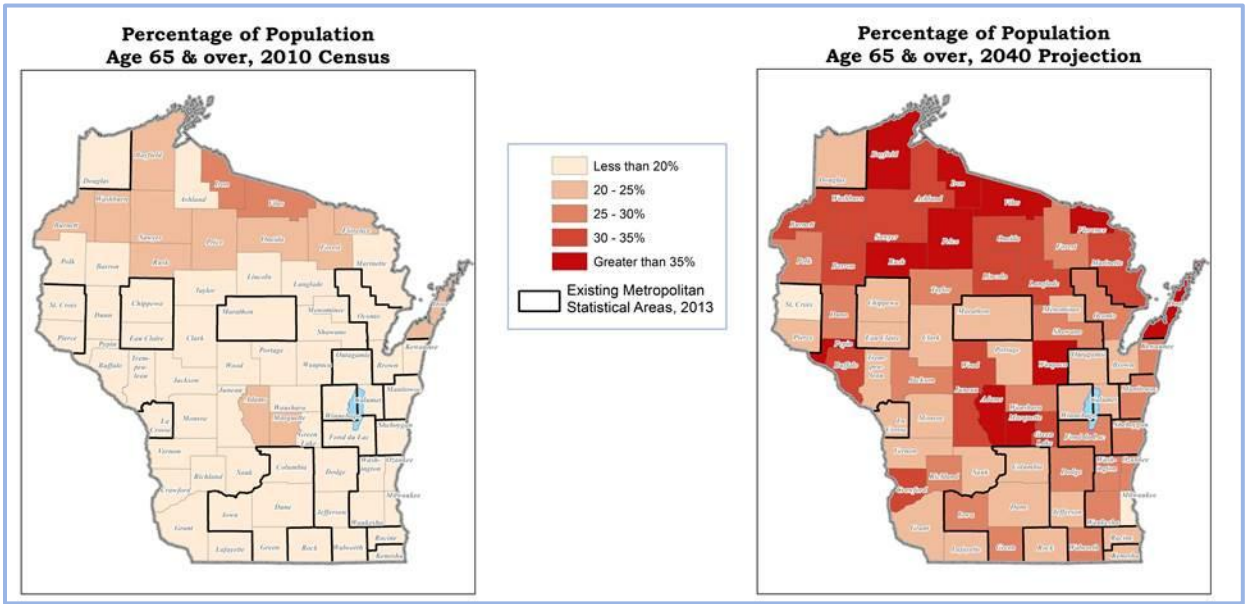
Age Distribution: Counties' 65-and-over Population

As noted in the state section, the projections indicate that the number of people age 65 and over will almost double numerically, and their share of the populace will rise from 13.7% to 23.7%, from 2010 to 2040. All counties will experience growth in their senior populations, ranging from 39% to 175% increases.

The progression toward much older populations can be viewed across time by a summarization of the percentage of each county's residents, in various ranges, at ten-year intervals in the projections series. Whereas nearly half of the counties had fewer than 15% of their populations age 65 and over in 2010, and none had greater than 30% (the highest being 26%), by 2040 no county will have fewer than 15% of its population being elderly, and one-third will have elderly populations greater than 30%.

Age 65 and Over as Pct. of Population	Number of Counties, 2010	Number of Counties, 2020	Number of Counties, 2030	Number of Counties, 2040
10-15%	31	7	0	0
15-20%	27	30	4	2
20-25%	12	20	27	25
25-30%	2	10	19	20
30-35%	0	5	14	14
35-40%	0	0	7	8
Greater than 40%	0	0	1	3

The two maps below illustrate the substantial change in the 65-and-over population of each county across the 30-year projections period. Counties in the far northern part of the state, in general, are projected to have more than 3 out of every 10 residents being seniors.



Municipal Projections, 2013 - 2040

Wisconsin's cities, villages and towns vary substantially in population size. At the 2013 estimates, cities ranged from 482 (Bayfield) to 596,500 (Milwaukee); villages from 60 (Big Falls, Waupaca County) to 35,710 (Menomonee Falls, Waukesha County), and towns from 39 (Wilkinson, Rusk County) to 21,580 (Grand Chute, Outagamie County). Given that there are 1,852 municipalities in Wisconsin currently, it is difficult to summarize such a disparate set of communities. However, some broad statements and data summaries can be crafted, as laid out below.

Projected Population Change in Cities, Villages and Towns

Aggregated by municipality type, all three classes are projected to gain more than 10% in population from 2013 through 2040.[2] Cities, which now constitute more than 55% of the state's population, will add the most residents numerically and will increase 11%. Villages, which account for more than 15% of Wisconsin's population currently, are predicted to gain more than 191,000 residents, increasing by nearly 22%. Towns, now containing almost 30% of the state's inhabitants, are projected to add more than 233,000 new people, an increase of 14%.

Municipality Type	Count at 2013	Estimate 2013	Projection 2040	Numeric Change	Percent Change
Cities	190	3,173,540	3,523,640	350,100	11.0%
Villages	406	874,820	1,065,950	191,130	21.8%
Towns	1,256	1,668,750	1,902,045	233,295	14.0%
TOTALS	**1,852**	**5,717,110**	**6,491,635**	**774,525**	**13.5%**

The shares of the state's population in each class of municipality are projected to shift only slightly through 2040, with villages increasing about 1% and cities decreasing by a similar percent. The share living in towns at 2040 is expected to remain very similar to that at 2013.

Municipality Type	Share, Estimate 2013	Share, Projection 2040
Cities	55.5%	54.3%
Villages	15.5%	16.4%
Towns	29.0%	29.3%

[2] As mentioned in the "Highlights" section, the state and county projections use the 2010 Census as their "point of departure" for calculating into the future. The municipal projections use the most recent Demographic Services Center's estimates (January 1, 2013) as their basis. In addition, the Village of Harrison incorporated from a portion of the Town of Harrison, Calumet County in March 2013. In order to create a consistent data set of municipalities across the projections time frame, proxy estimates for the village and town remnant were created for January 1, 2013.

Projected Population Change in by Size of Municipality

Wisconsin has a preponderance of small-sized municipalities. More than one-half of these local governments (978 of 1,852) contain fewer than 1,000 residents; in aggregate, they encompass only 10% of the state's population. By contrast, the largest 5% of municipalities (about 10,000 people and above) are home to 55% of the state's populace.

As can be seen in the table below, through 2040, the combined population in municipalities that currently have up to 500 residents is projected to remain virtually the same. Of these 396 communities, approximately 42% are predicted to gain people, 56% to lose people (2% will see no change in population). In the intervening years, the aggregate population will rise slightly through 2030, but then decline to 2040; even at 2030, the change for this group of communities will only be +4%.

The strongest percentage gains are expected in municipalities that currently have 2,000 to 50,000 residents. The projected population gain in these 433 municipalities will be more than two-thirds of the state's total growth. This pattern matches previous time periods; over the preior 20 to 30 years, the largest numeric and percentage gains occurred in mid-sized municipalities.

Municipality Size Range	Count at 2013	Estimate 2013	Projection 2040	Numeric Change	Percent Change
Less than 500	396	123,555	123,605	50	0.0%
500 – 1,000	582	431,040	465,990	34,950	8.1%
1,000 – 2,000	429	593,468	658,540	65,072	11.0%
2,000 – 5,000	267	813,528	953,180	139,652	17.2%
5,000 – 10,000	88	637,174	762,885	125,711	19.7%
10,000 – 50,000	78	1,548,815	1,808,260	259,445	16.8%
More than 50,000	12	1,569,530	1,719,175	149,645	9.5%
TOTALS	**1,852**	**5,717,110**	**6,491,635**	**774,525**	**13.5%**

Largest and Fastest-Growing Municipalities

Wisconsin's twelve largest municipalities, with current populations of 50,000 or more, contain more than one-fourth of the state's populace. As a group, they are projected to grow by 9.5% from 2013 through 2040; their aggregated numeric gain of almost 150,000 will be approximately one-fifth of the state' s increase.

The table below lists these largest cities in size order, as predicted at 2040. Only Racine is expected to experience a loss of population, and the decline will be slight. Furthermore, Kenosha is projected to have a stronger growth rate than Green Bay, thus becoming the 3rd largest city (surpassing Green Bay in 2020). Similarly, Waukesha's growth will move it past Appleton and Racine around 2030 to become the 5th largest. Finally, Janesville, Oshkosh and Eau Claire may change in order, although their projected populations at 2040 are so close that it is more reasonable to say that they will be in the 8th through 10th positions.

Largest Municipalities (by Size at 2040), 2010-2040						
Municipality	**Estimate 2013**	**Projection 2040**	**Numeric Change**	**Percent Change**	**Rank 2013**	**Rank 2040**
C Milwaukee	596,500	627,400	30,900	5.2%	1	1
C Madison	238,000	281,150	43,150	18.1%	2	2
C Kenosha	99,700	123,250	23,550	23.6%	4	3
C Green Bay	104,300	113,500	9,200	8.8%	3	4
C Waukesha	70,900	81,350	10,450	14.7%	7	5
C Appleton	73,150	80,605	7,455	10.2%	6	6
C Racine	78,700	76,650	-2,050	-2.6%	5	7
C Janesville	63,600	74,000	10,400	16.4%	10	8
C Oshkosh	66,300	73,800	7,500	11.3%	9	9
C Eau Claire	66,480	73,770	7,290	11.0%	8	10
C West Allis	60,300	61,850	1,550	2.6%	11	11
C La Crosse	51,600	51,850	250	0.5%	12	12

The state's projected fastest-growing municipalities, by percentage change, are listed in the table below. All can be described as suburban communities, within commuting distance of large cities either in Wisconsin or Minnesota.

Fastest Growing Municipalities (by Percent), 2010 - 2040					
Municipality	**County/ Counties**	**Estimate 2013**	**Projection 2040**	**Numeric Change**	**Percent Change**
T Lawrence	Brown	4,511	7,965	3,454	77%
V Hobart	Brown	7,070	12,480	5,410	77%
T Ledgeview	Brown	7,074	12,480	5,406	76%
V Sherwood	Calumet	2,763	4,715	1,952	71%
T Harrison	Calumet	1,282	2,185	903	70%
V Harrison	Calumet/Outagamie	9,708	16,550	6,842	70%
T Richmond	Saint Croix	3,339	5,385	2,046	61%
T Hammond	Saint Croix	2,136	3,440	1,304	61%
V Howard	Brown	18,348	29,370	11,022	60%
T Exeter	Green	2,041	3,230	1,189	58%
V Johnson Creek	Jefferson	2,818	4,455	1,637	58%
C Hudson	Saint Croix	13,187	20,780	7,593	58%
T Ixonia	Jefferson	4,540	7,145	2,605	57%
V Somerset	Saint Croix	2,642	4,100	1,458	55%
T Greenville	Outagamie	10,773	16,390	5,617	52%

APPENDIX 4.11.2-1 Employment Status Data

AFF will be offline permanently March 31, 2020.
Go to data.census.gov for new data releases. Questions? Click Here.

S2403

INDUSTRY BY SEX FOR THE CIVILIAN EMPLOYED POPULATION 16 YEARS AND OVER
2013-2017 American Community Survey 5-Year Estimates

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Versions of this table are available for the following years:

2017
2016
2015

1 - 27 of 27

Subject	Ashland city, Wisconsin									
	Total		Male		Percent Male		Female		Percent Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Civilian employed population 16 years and over	3,970	+/-205	1,968	+/-111	49.6%	+/-2.4	2,002	+/-167	50.4%	+/-2.4
Agriculture, forestry, fishing and hunting, and mining:	85	+/-39	74	+/-36	87.1%	+/-19.4	11	+/-17	12.9%	+/-19.4
Agriculture, forestry, fishing and hunting	85	+/-39	74	+/-36	87.1%	+/-19.4	11	+/-17	12.9%	+/-19.4
Mining, quarrying, and oil and gas extraction	0	+/-12	0	+/-12	-	**	0	+/-12	-	**
Construction	203	+/-94	185	+/-87	91.1%	+/-8.8	18	+/-19	8.9%	+/-8.8
Manufacturing	378	+/-106	310	+/-84	82.0%	+/-10.1	68	+/-46	18.0%	+/-10.1
Wholesale trade	46	+/-38	35	+/-27	76.1%	+/-24.9	11	+/-16	23.9%	+/-24.9
Retail trade	535	+/-127	243	+/-81	45.4%	+/-12.9	292	+/-107	54.6%	+/-12.9
Transportation and warehousing, and utilities:	109	+/-68	77	+/-56	70.6%	+/-30.8	32	+/-40	29.4%	+/-30.8
Transportation and warehousing	78	+/-53	46	+/-34	59.0%	+/-36.3	32	+/-40	41.0%	+/-36.3
Utilities	31	+/-37	31	+/-37	100.0%	+/-39.1	0	+/-12	0.0%	+/-39.1
Information	36	+/-22	22	+/-20	61.1%	+/-39.0	14	+/-17	38.9%	+/-39.0
Finance and insurance, and real estate and rental and leasing:	122	+/-62	27	+/-30	22.1%	+/-21.7	95	+/-53	77.9%	+/-21.7
Finance and insurance	111	+/-60	27	+/-30	24.3%	+/-23.7	84	+/-50	75.7%	+/-23.7
Real estate and rental and leasing	11	+/-17	0	+/-12	0.0%	+/-65.6	11	+/-17	100.0%	+/-65.6
Professional, scientific, and management, and administrative and waste management services:	187	+/-81	90	+/-61	48.1%	+/-22.6	97	+/-54	51.9%	+/-22.6
Professional, scientific, and technical services	93	+/-51	27	+/-26	29.0%	+/-22.7	66	+/-42	71.0%	+/-22.7
Management of companies and enterprises	0	+/-12	0	+/-12	-	**	0	+/-12	-	**

Subject	Ashland city, Wisconsin									
	Total		Male		Percent Male		Female		Percent Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Administrative and support and waste management services	94	+/-60	63	+/-54	67.0%	+/-33.0	31	+/-33	33.0%	+/-33.0
Educational services, and health care and social assistance:	1,347	+/-174	398	+/-102	29.5%	+/-5.8	949	+/-132	70.5%	+/-5.8
Educational services	485	+/-115	148	+/-62	30.5%	+/-10.1	337	+/-89	69.5%	+/-10.1
Health care and social assistance	862	+/-161	250	+/-88	29.0%	+/-7.5	612	+/-117	71.0%	+/-7.5
Arts, entertainment, and recreation, and accommodation and food services:	525	+/-139	276	+/-96	52.6%	+/-11.5	249	+/-86	47.4%	+/-11.5
Arts, entertainment, and recreation	35	+/-25	18	+/-16	51.4%	+/-36.0	17	+/-18	48.6%	+/-36.0
Accommodation and food services	490	+/-135	258	+/-92	52.7%	+/-12.1	232	+/-85	47.3%	+/-12.1
Other services, except public administration	179	+/-63	76	+/-38	42.5%	+/-18.3	103	+/-54	57.5%	+/-18.3
Public administration	218	+/-70	155	+/-58	71.1%	+/-13.6	63	+/-36	28.9%	+/-13.6

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

Explanation of Symbols:
An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
An '(X)' means that the estimate is not applicable or not available.

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

Industry codes are 4-digit codes and are based on the North American Industry Classification System 2012. The Industry categories adhere to the guidelines issued in Clarification Memorandum No. 2, "NAICS Alternate Aggregation Structure for Use By U.S. Statistical Agencies," issued by the Office of Management and Budget.

While the 2013-2017 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

AFF will be offline permanently March 31, 2020.
Go to data.census.gov for new data releases. Questions? Click Here.

S2403

INDUSTRY BY SEX FOR THE CIVILIAN EMPLOYED POPULATION 16 YEARS AND OVER
2013-2017 American Community Survey 5-Year Estimates

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Versions of this table are available for the following years:

2017
2016
2015

1 - 27 of 27

Subject	Ashland County, Wisconsin									
	Total		Male		Percent Male		Female		Percent Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Civilian employed population 16 years and over	7,366	+/-212	3,745	+/-128	50.8%	+/-1.5	3,621	+/-173	49.2%	+/-1.5
Agriculture, forestry, fishing and hunting, and mining:	259	+/-53	224	+/-46	86.5%	+/-6.8	35	+/-20	13.5%	+/-6.8
Agriculture, forestry, fishing and hunting	259	+/-53	224	+/-46	86.5%	+/-6.8	35	+/-20	13.5%	+/-6.8
Mining, quarrying, and oil and gas extraction	0	+/-14	0	+/-14	-	**	0	+/-14	-	**
Construction	537	+/-101	486	+/-91	90.5%	+/-3.5	51	+/-22	9.5%	+/-3.5
Manufacturing	943	+/-117	737	+/-95	78.2%	+/-4.9	206	+/-56	21.8%	+/-4.9
Wholesale trade	80	+/-42	62	+/-31	77.5%	+/-15.4	18	+/-18	22.5%	+/-15.4
Retail trade	882	+/-138	397	+/-86	45.0%	+/-8.2	485	+/-112	55.0%	+/-8.2
Transportation and warehousing, and utilities:	266	+/-74	212	+/-67	79.7%	+/-14.1	54	+/-41	20.3%	+/-14.1
Transportation and warehousing	200	+/-55	149	+/-43	74.5%	+/-17.3	51	+/-41	25.5%	+/-17.3
Utilities	66	+/-41	63	+/-42	95.5%	+/-6.8	3	+/-4	4.5%	+/-6.8
Information	79	+/-27	33	+/-21	41.8%	+/-21.6	46	+/-23	58.2%	+/-21.6
Finance and insurance, and real estate and rental and leasing:	263	+/-68	62	+/-34	23.6%	+/-10.9	201	+/-59	76.4%	+/-10.9
Finance and insurance	211	+/-62	45	+/-30	21.3%	+/-12.4	166	+/-54	78.7%	+/-12.4
Real estate and rental and leasing	52	+/-24	17	+/-13	32.7%	+/-22.5	35	+/-22	67.3%	+/-22.5
Professional, scientific, and management, and administrative and waste management services:	318	+/-83	170	+/-61	53.5%	+/-12.8	148	+/-56	46.5%	+/-12.8
Professional, scientific, and technical services	159	+/-56	54	+/-28	34.0%	+/-14.3	105	+/-46	66.0%	+/-14.3
Management of companies and enterprises	0	+/-14	0	+/-14	-	**	0	+/-14	-	**

Subject	Ashland County, Wisconsin									
	Total		Male		Percent Male		Female		Percent Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Administrative and support and waste management services	159	+/-64	116	+/-56	73.0%	+/-18.4	43	+/-34	27.0%	+/-18.4
Educational services, and health care and social assistance:	2,144	+/-197	541	+/-104	25.2%	+/-3.9	1,603	+/-158	74.8%	+/-3.9
Educational services	774	+/-123	225	+/-66	29.1%	+/-6.7	549	+/-97	70.9%	+/-6.7
Health care and social assistance	1,370	+/-177	316	+/-88	23.1%	+/-5.0	1,054	+/-138	76.9%	+/-5.0
Arts, entertainment, and recreation, and accommodation and food services:	863	+/-147	410	+/-102	47.5%	+/-7.4	453	+/-90	52.5%	+/-7.4
Arts, entertainment, and recreation	168	+/-37	89	+/-25	53.0%	+/-10.7	79	+/-27	47.0%	+/-10.7
Accommodation and food services	695	+/-143	321	+/-94	46.2%	+/-8.5	374	+/-89	53.8%	+/-8.5
Other services, except public administration	293	+/-70	135	+/-43	46.1%	+/-11.7	158	+/-55	53.9%	+/-11.7
Public administration	439	+/-84	276	+/-72	62.9%	+/-8.6	163	+/-42	37.1%	+/-8.6

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

Explanation of Symbols:
An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
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Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

APPENDIX 5.1.7.1-1 White River Form 80 Report

Xcel Energy®
RESPONSIBLE BY NATURE™

1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

March 30, 2015

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Subject: **FERC Form 80 – Recreation Report**
White River Hydro (FERC Project #2444)

Dear Secretary:

Enclosed is a copy of the FERC Form 80 Recreation Report for White River Hydro. A summary of licensee's methodology for gathering recreation data at all its projects will be submitted under separate cover as directed by Mr. Mark Ivy in his January 23, 2014 letter.

Should you have any questions regarding this filing, feel free to contact Matthew Miller of this office by telephone at (715) 737-1353 or by e-mail at matthew.j.miller@xcelenergy.com.

Sincerely,

William P Zawacki

William P. Zawacki
Director, Hydro Plants

Enclosure

c: R. Olson, S. Crotty, R. Volbrecht – Xcel Energy (e-mail)
Cheryl Laatsch – WDNR (e-mail)
White River Project Files

Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Form Approved
OMB No. 1902-0106
Expires: 09/30/2016
Burden 3.0 hours

General Information:
This form collects data on recreation amenities at projects licensed by FERC under the Federal Power Act (16 USC 791a-825r). This form must be submitted by licensees of all projects except those specifically exempted under 18 CFR 8.11 (c). For regular, periodic filings, submit this form on or before April 1, 2015. Submit subsequent filings of this form on or before April 1, every 6th year thereafter (for example, 2021, 2027, etc.). For initial Form No. 80 filings (18CFR 8.11(b)), each licensee of an unconstructed project shall file an initial Form No. 80 after such project has been in operation for a full calendar year prior to the filing deadline. Each licensee of an existing (constructed) project shall file an initial Form No. 80 after such project has been licensed for a full calendar year prior to the filing deadline. Filing electronically is preferred. (See http://www.ferc.gov for more information.) If you cannot file electronically, submit an original and two copies of the form to the: Federal Energy Regulatory Commission, Office of the Secretary, 888 First St., NE, Washington, DC 20426.

The public burden estimated for this form is three hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the collection of information. Send comments regarding the burden estimate or any aspect of this collection of information, including suggestions for reducing burden, to: FERC via e-mail DataClearance@ferc.gov; or mail to 888 First Street NE, Washington, DC 20426 (Attention: Information Clearance Officer) and Office of Management and Budget (OMB), via e-mail to oira_submission@omb.eop.gov; or mail to OMB, Office of Information and Regulatory Affairs, Attention: Desk Officer for FERC, Washington, DC 20503. Include OMB Control Number 1902-0106 as a point of reference. No person shall be subject to any penalty for failing to comply with a collection of information if the collection of information does not display a valid control number (44 U.S.C. § 3512 (a)).

Instructions:
a. All data reported on this form must represent publicly available recreation amenities and services located within the project boundary.
b. To ensure a common understanding of terms, please refer to the Glossary on page 3.
c. Report actual data for each item. If actual data are unavailable, then please estimate.
d. Submit a completed form for each development at your project.

Schedule 1. General Data

1. Licensee Name: NORTHERN STATES POWER CO
2. Project Name: WHITE RIVER
3. Project Number: 2444
4. Development Name: WHITE RIVER

Complete the following for each development if more than one.

8. Reservoir Surface Area at Normal Pool (acres): 56.00
9. Shoreline Miles at Normal Pool: 3.50
10. Percent of Shoreline Available for Public Use: 5.00

States Development/Project Traverses (List state with largest area within the development/project boundary first):

5. State #1: WI
6. State #2:

7. Type of Project License: (check one) Major [ ] Minor [✔]

11. Data Collection Methods (enter percent for each method used; total must equal 100%):

_____ traffic count/trail count
_____ attendance records
_____ staff observation
100.0(visitor counts or surveys
_____ estimate (explain)

For 2014, enter only the licensee's annual recreational construction, operation, and maintenance costs for the development (project). Also, enter the annual recreational revenues for that year.

Item	Licensee's Annual Recreation Costs and Revenues (In Whole Dollars)	
	Construction, Operation and Maintenance Costs	Recreation Revenues for Calendar Year
12. Dollar Values	$750.00	$0.00

13. Length of Recreation Season: Summer: From (MM/DD) 5/1 To 11/30 Winter: From (MM/DD) _____ To _____

Period	Number of visits to all recreational areas at development/project (in Recreation Days)	
	Annual Total	Peak Weekend Average (see Glossary)
14. Daytime	3,834	337
15. Nighttime	0	0

Respondent Certification: The undersigned certifies that he/she examined this report; and to the best of his/her knowledge, all data provided herein are true, complete, and accurate.

Matthew J. Miller	Hydro Licensing Specialist	(715) 737-1353
Legal Name	Title	Area Code/Phone No.
	03/30/15	2014
Signature	Date Signed	Reporting Year Ending

Title 18 U.S.C.1001 makes it a crime for any person knowingly and willingly to make to any Agency or department of the United States any false, fictitious or fraudulent statement or misrepresentation as to any matter within its jurisdiction.

Schedule 2. Inventory of Publicly Available Recreation Amenities Within the Project Boundary

16. Enter data for each Recreation Amenity Type (a). For User Free (b) and User Fee (c) enter the number of publicly available recreation amenities, located within the project boundary, regardless of provider. For FERC Approved (d) enter the number of amenities identified under User Free (b) and User Fee (c) for which the licensee has an ongoing responsibility for funding or maintenance (see Glossary for further detail). For Capacity Utilization(f), of the total publicly available amenities (b) + (c), compare the average non-peak weekend use (see Glossary) for each recreation amenity type (during the recreation season, with the highest use, reported on Schedule 1, Item 13) with the total combined capacity of each amenity type and enter a percentage that indicates their overall level of use. For example, if all public boat launches are used to half capacity during the non-peak weekend days, enter 50% (should use exceed capacity for an amenity type, enter the appropriate percentage above 100).

Recreation Amenity Type (a)	Number of Recreation Amenities			Total Units (e)	Capacity Utilization (%) (f)
	User Free (b)	User Fee (c)	FERC Approved (d)		
Boat Launch Areas. Improved areas having one or more boat launch lanes (enter number in column e) and are usually marked with signs, have hardened surfaces, and typically have adjacent parking.	1	0	1	1 Lanes	15
Marinas. Facilities with more than 10 slips on project waters, which include one or more of the following: docking, fueling, repair and storage of boats; boat/equipment rental; or sell bait/food (see Glossary FERC approved).	0	0	0	N/A	0
Whitewater Boating. Put-ins/Take-outs specifically designated for whitewater access.	0	0	0	N/A	0
Portages. Sites designed for launching and taking out canoes/kayaks and the improved, designated, and maintained trails connecting such sites (enter length of trail in column e).	1	0	1	1,320 Feet	10
Tailwater Fishing. Platforms, walkways, or similar structures to facilitate below dam fishing.	1	0	0	N/A	40
Reservoir Fishing. Platforms, walkways, or similar structures to facilitate fishing in the reservoir pool or feeder streams.	0	0	0	N/A	0
Swim Areas. Sites providing swimming facilities (bath houses, designated swim areas, parking and sanitation facilities).	0	0	0	0 Acres	0
Trails. Narrow tracks used for non-automobile recreation travel which are mapped and designated for specific use(s) such as hiking, biking, horseback riding, snowmobiling, or XC skiing (excludes portages, paths or accessible routes; See Glossary).	0	0	0	0 Miles	0
Active Recreation Areas. Playground equipment, game courts/fields, golf/disc golf courses, jogging tracks, etc.	0	0	0	0 Acres	0
Picnic Areas. Locations containing one or more picnic sites (each of which may include tables, grills, trash cans, and parking).	0	0	0	0 Sites	0
Overlooks/Vistas. Sites established to view scenery, wildlife, cultural resources, project features, or landscapes.	0	0	0	0 Acres	0
Visitor Centers. Buildings where the public can gather information about the development/project, its operation, nearby historic, natural, cultural, recreational resources, and other items of interest.	0	0	0	N/A	0
Interpretive Displays. Signage/Kiosks/Billboards which provide information about the development/project, its operation, nearby historic, natural, cultural, recreational resources, and other items of interest.	0	0	0	N/A	N/A
Hunting Areas. Lands open to the general public for hunting.	0	0	0	0 Acres	0
Winter Areas. Locations providing opportunities for skiing, sledding, curling, ice skating, or other winter activities.	0	0	0	0 Acres	0
Campgrounds. Hardened areas developed to cluster campers (may include sites for tents, trailers, recreational vehicles [RV], yurts, cabins, or a combination, but excludes group camps).	0	0	0	0 Acres	N/A
Campsites. Sites for tents, trailers, recreational vehicles [RV], yurts, cabins, or a combination of temporary uses.	0	0	0	N/A	0
Cottage Sites. Permanent, all-weather, buildings rented for short-term use, by the public, for recreational purposes.	0	0	0	N/A	0
Group Camps. Areas equipped to accommodate large groups of campers that are open to the general public (may be operated by public, private, or non-profit organizations).	0	0	0	0 Sites	0
Dispersed Camping Areas. Places visitors are allowed to camp outside of a developed campground (enter number of sites in clmn. e).	0	0	0	0 Sites	0
Informal Use Areas. Well used locations which typically do not include amenities, but require operation and maintenance and/or public safety responsibilities	0	0	0	0	0
Access Points. Well-used sites (not accounted for elsewhere on this form) for visitors entering project lands or waters, without trespassing, for recreational purposes (may have limited development such as parking, restrooms, signage).	0	0	0	N/A	0
Other. Amenities that do not fit in the categories identified above. Please specify (if more than one, separate by commas):	0	0	0	0	0

Glossary of FERC Form 80 Terms

Data Collection Methods. (Schedule 1, Item 11) – If a percentage is entered for the estimate alternative, please provide an explanation of the methods used (if submitted on a separate piece of paper, please include licensee name, project number, and development name)

Development. The portion of a project which includes:
(a) a reservoir; or
(b) a generating station and its specifically-related waterways.

Exemption from Filing. Exemption from the filing of this form granted upon Commission approval of an application by a licensee pursuant to the provisions of 18 CFR 8.11(c).

General Public. Those persons who do not have special privileges to use the shoreline for recreational purposes, such as waterfront property ownership, water-privileged community rights, or renters with such privileges.

Licensee. Any person, state, or municipality licensed under the provisions of Section 4 of the Federal Power Act, and any assignee or successor in interest. For the purposes of this form, the terms licensee, owner, and respondent are interchangeable *except where:*
(a) the *owner* or licensee is a subsidiary of a parent company which has been or is required to file this form; or
(b) there is more than one owner or licensee, of whom only one is responsible for filing this form. Enter the name of the entity that is responsible for filing this report in Schedule 1, Item 2.1.

Major License. A license for a project of more than 1,500 kilowatts installed capacity.

Minor License. A license for a project of 1,500 kilowatts or less installed capacity.

Non-Peak Weekend. Any weekend that is not a holiday and thus reflects more typical use during the recreation season.

Number of Recreation Amenities. Quantifies the availability of natural or man-made property or facilities for a given recreation amenity type. This includes all recreation resources available to the public within the development/project boundary. The resources are broken into the following categories:

User Free (Schedule 2, column b) - Those amenities within the development/project that are free to the public;

User Fee (Schedule 2, column c) - Those amenities within the development/project where the licensee/facility operator charges a fee;

FERC Approved (Schedule 2, column d) – Those amenities within the development/project required by the Commission in a license or license amendment document, including an approved recreation plan or report. Recreation amenities that are within the project boundary, but were approved by the licensee through the standard land use article or by the Commission through an application for non-project use of project lands and waters, are typically not counted as FERC approved, unless they are available to the public, but may be counted as either user free or user fee resources. The total FERC approved amenities column does not necessarily have to equal the sum of user free and user fee amenities.

Peak Use Weekend. Weekends when recreational use is at its peak for the season (typically Memorial Day, July 4th & Labor Day). On these weekends, recreational use may exceed the capacity of the area to handle such use. Include use for all three days in the holiday weekends when calculating Peak Weekend Average for items 14 & 15 on Schedule 1.

Recreation Day. Each visit by a person to a development (as defined above) for recreational purposes during any portion of a 24-hour period.

Revenues. Income generated from recreation amenities at a given project/development during the previous calendar year. Includes fees for access or use of area.

Total Units (Schedule 2, column e) – Provide the total length, or area, or number that is appropriate for each amenity type using the metric provided.

Trails. Narrow tracks used for non-automobile recreation travel which are mapped and designated for specific use(s) such as hiking, biking, horseback riding, snowmobiling, or XC skiing. Trails are recreation amenities which provide the opportunity to engage in recreational pursuits, unlike paths (means of egress whose primary purpose is linking recreation amenities at a facility) or accessible routes (means of egress which meets the needs of persons with disability and links accessible recreation amenities and infrastructure at a facility).

APPENDIX 6-1 Questionnaire Consultation

White River Hydroelectric Project

FERC No. 2444: White River, Ashland County, WI
Licensee: Northern States Power Company - Wisconsin (d/b/a Xcel Energy)

Installed Capacity: 1.2 megawatt (MW)

- Unit #1: 0.7 MW
- Unit #2: 0.5 MW

License Expires: July 31, 2025

Notice of Intent to Relicense Due: July 31, 2020

Project Operation: Run-of-River

Minimum Flow Requirement: 16 cubic feet per second, or inflow, whichever is less

Reservoir Elevation Requirements:

- Minimum: 710.4 ft msl
- Maximum: 711.6 ft msl (temp. variance increased maximum to 712.6 ft msl until 2021)

Approximate Reservoir Surface Acreage: 56 acres

Northern States Power Company-Wisconsin (d/b/a Xcel Energy) ("NSPW") has retained Mead & Hunt, Inc. ("Mead & Hunt") to assist with the federal relicensing process for the White River Hydroelectric Project ("Project") located on the White River in northern Wisconsin. Under Federal Energy Regulatory Commission ("FERC") regulations, NSPW is preparing a Preliminary Application Document ("PAD") that provides the FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project to help identify issues and related information needs, develop study requests and study plans, and prepare documents analyzing impacts. The PAD Information Questionnaire will be used to help identify sources of existing, relevant, and reasonably available information that is not in NSPW's possession.

1. Information about person completing this questionnaire:

   Name: _____ Title: _____

   Organization: _____

   Address: _____

   _____

   Phone: _____ Email: _____

2. Do you or your organization plan to participate in the 3 to 5 year-long licensing proceeding for the White River Hydroelectric Project?

   ☐ Yes ☐ No

3. Do you or your organization know of existing, relevant, and reasonably available information that describes the existing environment or known potential impacts of the Project?

   ☐ Yes ***(Please complete 3a thru 3f)*** ☐ No ***(Proceed to 4)***

   a. If yes, check box(es) to indicate the specific resource area(s) that the information relates to:

   ☐ Geology and soils
   ☐ Water resources
   ☐ Fish and aquatic resources
   ☐ Wildlife and botanical resources
   ☐ Wetlands, riparian, and littoral habitat
   ☐ Rare, threatened, and endangered species
   ☐ Recreational and land use
   ☐ Aesthetic resources
   ☐ Cultural resources
   ☐ Socio-economic resources
   ☐ Tribal resources
   ☐ Other resource information

Questions 3b – 3f are continued on the following pages

b. Briefly describe the information or list available documents:
(Additional information, if any, may be provided on page 4)

c. Where or how can NSPW obtain this information?

d. Please indicate whether there is a specific representative you wish to designate for potential follow-up contact by NSPW or NSPW's representative for the resource area(s) checked in 3a: ***(Additional information, if any, may be provided on page 4)***

Representative Contact Information

Name: _____ Title: _____

Address: _____

_____

Phone: _____ Email: _____

Name: _____ Title: _____

Address: _____

_____

Phone: _____ Email: _____

Questions 3e – 3f are continued on the following page

e. Are you aware of any particular issues pertaining to the specific resource area(s) identified in 3a? ***(Additional information, if any. may be provided on page 4)***

☐ Yes ***(Please list specific issues below)*** ☐ No

Resource Area	**Specific Issue**

f. Based on the issues identified in 3e, are you aware of any potential studies or information needs associated with the identified issues? ***(Additional information, if any, may be provided on page 4)***

☐ Yes ***(Please list below)*** ☐ No

Potential Studies or Information Needs

4. NSPW is investigating the use of the Traditional Licensing Process for the Hydroelectric Project. Do you have concerns with the use of the TLP? If so, please specify your concerns.

☐ Yes ***(Please describe concerns below)*** ☐ No

Traditional Licensing Process Concerns

5. NSPW is interested in any additional comments, questions, or information you have regarding the licensing of the Project. If the additional comments, questions, or information you provide below pertain to a particular question, please indicate the applicable question (such as 3b, 3d, 3e, 3f).

Additional comments, questions, or information

Please return this completed questionnaire to Mead & Hunt using the enclosed self-addressed, stamped envelope **within 30 days of receipt** to allow for follow-up by NSPW or NSPW's representative.

Not responding within 30 days will indicate you are not aware of any existing, relevant, and reasonably available information that describes the existing environment or known potential impacts of the Projects.

Comments and/or questions may also be sent via email to: Darrin.Johnson@meadhunt.com

Indian Tribes

Mr. Michael Wiggins, Chairman
Bad River Band of the Lake Superior Tribe of the Chippewa
P.O. Box 39
Odanah, WI 54861

Ms. Edith Leoso, THPO
Bad River Band of the Lake Superior Tribe of the Chippewa
P.O. Box 39
Odanah, WI 54861
THPO@badriver-nsn.gov

Mr. Clinton Parish, Chairman
Bay Mills Indian Community of Michigan
12140 W. Lakeshore Drive
Brimley, MI 49715

Mr. Marcus Ammesmake, THPO
Fond du Lac Band of the Minnesota Chippewa Tribe
1720 Big Lake Road
Cloquet, MN 55720

Ms. Karen Diver, Chairperson
Fond du Lac Band of the Minnesota Chippewa Tribe
1720 Big Lake Road
Cloquet, MN 55720
jillhoppe@fdlrez.com

Mr. Ned Daniels Jr., Chairman
Forest County Potawatomi Community of WI
3051 Sand Lake Road
Crandon, WI 54520

Mr. Michael LaRonge, THPO
Forest County Potawatomi Community of WI
5320 Wensaut Lane
P.O. Box 340
Crandon, WI 54520
Michael.LaRonge@FCPotawatomi-nsn.gov

Mr. Mark Azure, President
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana
656 Agency Main Street
Harlem, MT 59526

Mr. Michael Blackwolf, THPO
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana
656 Agency Main Street
Harlem, MT 59526

Ms. Mayann Gagnon, THPO
Grand Portage Band of the MN Chippewa Tribe
P.O. Box 428
Grand Portage, MN 55605

Mr. Norman Des Champe, Chairman
Grand Portage Band of the MN Chippewa Tribe
P.O. Box 428
Grand Portage, MN 55605

Mr. William Quackenbush, THPO
Ho Chunk Nation of WI
P.O. Box 667
Black River Falls, WI 54615
Bill.Quackenbush@Ho-Chunk.com

Mr. Gary Loonsfoot, THPO
Keweenaw Bay Indian Community
107 Bear Town Road
Baraga, MI 49908
gloonsfoot@kbic-nsn.gov

Mr. Warren Swartz, President
Keweenaw Bay Indian Community
17429 Beartown Road
Baraga, MI 44908

Mr. Mic Isham, Chairman
Lac Courte Oerilles Band of Chippewa Indians
13394 W Trepania Road
Bldg. No. 1
Hayward, WI 53843

Indian Tribes (continued)

Mr. Brian Bisonette, THPO
Lac Courte Oerilles Band of Chippewa Indians
13394 W Trepania Road
Bldg. No. 1
Hayward, WI 54543

Mr. Joseph Wildcat, Sr., President
Lac Du Flambeau Band of Lake Superior
Chippewa Indians
P.O. Box 67
Lac Du Flambeau, WI 54538

Ms. Melinda Young, THPO
Lac Du Flambeau Band of Lake Superior
Chippewa Indians
P.O. Box 67
Lac Du Flambeau, WI 54538
ldfthpo@ldftribe.com

Ms. Daisy McGeshick, THPO
Lac Vieux Desert Band of Lake Superior
Chippewa Indians of MI
P.O. Box 249
Watersmeet, MI 49969

Mr. James Williams, Chairman
Lac Vieux Desert Band of Lake Superior
Chippewa Indians of MI
E23968 Pow Wow Trail
Watersmeet, MI 49969

Ms. Amy Burnette, TPHO
Leech Lake Band of Chippewa Indians
190 Sailstar Drive NW
Cass Lake, MN 56633
amy.burnette@llojibwe.org

Ms. Carri Jones, Chairperson
Leech Lake Band of Chippewa Indians
6530 U.S. Hwy 2 NW
Cass Lake, MN 56633

Ms. Regina Gasco-Bentley, Chairperson
Little Traverse Bay Band of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740

Ms. Melissa Waitrolik, SHPO
Little Traverse Bay Band of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740

Ms. Joan Delabreau, Chairperson
Menominee Indian Tribe of Wisconsin
P.O. Box 910
Keshena, WI 54135

Mr. David Gignon, THPO
Menominee Indian Tribe of Wisconsin
W3426 Cty. VV W
P.O. Box 910
Keshena, WI 54135
dgrignon@mitw.org

Mr. Douglas Lankford, Chief
Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

Ms. Diane Hunter, THPO
Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

Ms. Melanie Benjamin, Chief Executive
Mille Lacs Band of Obibwe
43408 Oodena Drive
Onamia, MN 56359

Ms. Natalie Weyaus, THPO
Mille Lacs Band of Obibwe
43408 Oodena Drive
Onamia, MN 56359
natalie.weyaus@lillelacsband.com

Indian Tribes (continued)

Ms. Catherine Chavers, President
Minnesota Chippewa Tribe
P.O. Box 217
Cass Lake, MN 56633
cchavers@boisforte-nsn.gov

Stacy Cutbank, THPO
Oneida Tribe of Wisconsin
P.O. Box 365
Oneida, WI 54155
Sdanfor3@oneidanation.org

Ms. Tehassi Hill, Chairperson
Oneida Tribe of Wisconsin
P.O. Box 365
Oneida, WI 54155

Mr. Chad Able, Treaty Natural Resource Administrator
Red Cliff Band of Lake Superior Chippewa Indians
88385 Pike Road, Hwy 13
Bayfield, WI 54814

Mr. Brian Brainbridge, Chairperson
Red Cliff Band of Lake Superior Chippewa Indians
88385 Pike Road, Hwy. 13
Bayfield, WI 54814

Mr. Marvin Defoe, THPO
Red Cliff Band of Lake Superior Chippewa Indians
88385 Pike Road, Hwy. 13
Bayfield, WI 54814
marvin.defoe@redcliff-nsn.gov

Mr. Chris McGeschick, Chairman
Sokaogon Chippewa Community Mole Lake Band
3051 Sand Lake Road
Crandon, WI 54520

Mr. Adam Van Zile, THPO
Sokaogon Chippewa Community Mole Lake Band
3051 Sand Lake Road
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adam.VanZile@SCC-nsn.gov

Mr. Lewis Taylor, President
St. Croix Band of Lake Superior Chippewa
24663 Angeline Avenue
Webster, WI 54893

Ms. Shannon Holsey, President
Stockbridge Munsee Tribe of Mohican Indians
N8476 Mo He Con Nuck Road
Bowler, WI 54416

Ms. Sherry White, THPO
Stockbridge Munsee Tribe of Mohican Indians
P.O. Box 70
Bowler, WI 54416

Ms. Jaime Arsenault, TPO
White Earth Band of the Minnesota Chippewa
P.O. Box 418
White Earth, MN 56591
jaime.arsenault@whiteearth.com

Ms. Erma Vizenor, Chairperson
White Earth Band of the Minnesota Chippewa
P.O. Box 418
White Earth, MN 56591

State

Public Service Commission of Wisconsin
P.O. Box 7894
Madison, WI 53707

Wisconsin Cooperative Fishery Research Unit
UW Stevens Point
2100 Main Street
Stevens Point, WI 54481

Ms. Kathleen Angel, Wisconsin Coastal Management Program
Wisconsin Department of Administration
101 E. Wilson Street
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kathleen.angel@wisconsin.gov

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Ms. Cheryl Laatsch, FERC Coordinator
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Mr. Michael Ostrenga, NW Region Maintenance Supervisor
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michael.ostrenga@dot.wi.gov

Wisconsin Office of Attorney General
114 East State Capital
Madison, WI 53702

Wisconsin Office of the Governor
P.O. Box 7863
Madison, WI 53702

Mr. Tyler Howe, Office
Wisconsin State Historical Society
816 State Street
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tyler.howe@wisconsinhistory.org

Ms. Beth Meyers, District 74 Representative
Wisconsin State Assembly
P.O. Box 8952
Madison, WI 53708
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Ms. Janet Bewley, District 25 Senator
Wisconsin State Senate
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Madison, WI 53707
sen.bawley@legis.wisconsin.gov

Federal

Ms. Kimberly Bose, Secretary
FERC Office of General Counsel
888 First Street NE
Washington, DC 20426

Ms. Kimberly Bose, Secretary
FERC Office of Energy Projects
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Mr. Timothy Lapointe, Regional Director
U.S. Bureau of Indian Affairs Midwest Regional Office
5600 West American Boulevard
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Ms. Nannette Bischoff, FERC Coordinator, St. Paul District
U.S. Department of the Army Corps of Engineers
190 5th Street E
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Ms. Mary Manydeeds, Environmental Specialist
U.S. Department of the Interior – Bureau of Indian Affairs, Norman Pointe II Building
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Mr. Nick Utrup, Fisheries Biologist
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Field Supervisor
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Mr. Tokey Boswell, Regional Environmental Coordinator
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Ms. Angela Tornes, Midwest Hydropower Coordinator
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Ms. Jen Tyler, Mail Code: E-19J
U.S. Environmental Protection Agency – NEPA Implementation Section, Region V
77 W Jackson Boulevard, AR-18J
Chicago, IL 60604
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Mr. Glenn Grothman, U.S. Representative
U.S. Representative from Wisconsin District 6
1427 Longworth H.O.B.
Washington, DC 20515

Ms. Tammy Baldwin, Senator
U.S. Senator from Wisconsin
709 Hart Senate Office Building
Washington, DC 2510

Mr. Ron Johnson, Senator
U.S. Senator from Wisconsin
328 Hart Senate Office Building
Washington, DC 20510

Local

Ms. Heather Schutte, Clerk
Ashland County
201 Main Street
Room 202
Ashland, WI 54806
heather.schutte@co.wi.us

Mr. Brant Kucera, City Administrator
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601 Main Street W
Ashland, WI 54806
bkucera@coawi.org

Ms. Deb Lewis, Mayor
City of Ashland
601 Main Street W
Ashland, WI 54806

Mr. Matthew Lehto, Chairman
Town of White River
65617 Charles Johnson Road
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14ledo81@gmail.com

Other

Mr. James Fossum
River Alliance of Wisconsin
199 Janet Marie Lane
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Northwest Regional Planning Commission
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Spooner, WI 54801

Mr. Mike Arrowood, Chairman
Walleye for Tomorrow
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1414 W Hamilton
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Mr. Matt Miller, Hydro License Compliance Consultant
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Mr. James Zyduck, Director, Hydro Plants
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james.zyduck@xcelenergy.com

WDNR COMMENT

Darrin Johnson

From: Shawn Puzen
Sent: Wednesday, May 20, 2020 12:25 PM
To: Laatsch, Cheryl - DNR; Haller, Macaulay G - DNR
Cc: Antonuk, Connie J - DNR; Miller, Matthew J; Darrin Johnson; Shawn Puzen
Subject: RE: white river - questionnaire

Hi Cheryl,

It was mailed hard copy to your office on or about April 16th.

We look forward to receiving data from you in the near future.

Thanks,

SHAWN PUZEN
FERC HYDROPOWER LICENSING AND COMPLIANCE, WATER
Mead & Hunt
Direct: 920-593-6865 | Cell: 920-639-2480 | Transfer Files
meadhunt.com | LinkedIn | Twitter | Facebook | Instagram

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Sent: Wednesday, May 20, 2020 12:18 PM
To: Shawn Puzen <Shawn.Puzen@meadhunt.com>; Haller, Macaulay G - DNR <macaulay.haller@wisconsin.gov>
Cc: Antonuk, Connie J - DNR <Connie.Antonuk@wisconsin.gov>
Subject: white river - questionnaire

Hi Shawn- - I didn't receive the White River questionnaire for White River yet. I will work with our internal staff to gather available data for you as soon as we can.

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Cheryl Laatsch
Statewide FERC Coordinator
Bureau of Environmental Analysis and Sustainability
Wisconsin Dept of Natural Resources
N7725 Hwy 28
Horicon WI 53032
(T) 920-387-7869 (Fax) 920-387-7888
Cheryl.laatsch@wisconsin.gov


dnr.wi.gov

Darrin Johnson

From: Shawn Puzen
Sent: Friday, May 29, 2020 2:42 PM
To: Darrin Johnson
Subject: FW: White River WDNR Materials for PAD
Attachments: White River_P-2444 WQ_AIS SWIMS Pull.xlsx; Endangered Resources Review for the Proposed White River Hydro Project Relicensing.pdf

FYI

SHAWN PUZEN
FERC HYDROPOWER LICENSING AND COMPLIANCE, WATER
Mead & Hunt
Direct: 920-593-6865 | Cell: 920-639-2480 | Transfer Files
meadhunt.com | LinkedIn | Twitter | Facebook | Instagram

From: Haller, Macaulay G - DNR <macaulay.haller@wisconsin.gov>
Sent: Friday, May 29, 2020 2:26 PM
To: Shawn Puzen <Shawn.Puzen@meadhunt.com>; Miller, Matthew J <Matthew.J.Miller@xcelenergy.com>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: White River WDNR Materials for PAD

Hi Shawn and Matt,

As part of the proposed White River P-2444 relicensing, I've attached some materials from WDNR, which includes an Endangered Resources review and SWIMS data:

- White River P-2444 WQ AIS SWIMS Pull: Results from SWIMS for monitoring stations within the project boundary. Only includes data from past 10 years of monitoring work. Pulled in May 2020.
    - Data includes start date, station ID, station name, project name, monitoring description, and result

- Endangered Resources Review for the Proposed White River Hydro Project Relicensing **(confidential)**
    - Wood turtles are the main concern

I will be sending additional materials as they come in from our technical staff team.

Please let me know if you have any questions.

Have a good weekend,

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Macaulay Haller
Water Resources Management Specialist- Senior
Water Regulations and Zoning Specialist- Senior
Wisconsin Department of Natural Resources

WDNR COMMENT

Start Date/Time	Project(s)	Station ID	Station Name	Station Type	WBIC	Waterbody Name	Description	Result	Units
6/29/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	3.912731588	FEET
6/29/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
7/15/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	1.110129544	FEET
7/15/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
9/1/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	0.684026215	FEET
9/1/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
9/10/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	1.399608786	FEET
9/10/2010 0:00	Satellite Lake Clarity Monitoring 2010	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	What type of access point was this?	Ramp	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Before you installed the new AIS sign (Prevent the Spread), were there other AIS signs at the access point? - Yellow "Exotic Species Advisory" sign	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Before you installed the new AIS sign (Prevent the Spread), were there other AIS signs at the access point? - Green and white "Help Prevent the Spread sign"	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Before you installed the new AIS sign (Prevent the Spread), were there other AIS signs at the access point? - Green, white and red stop sign "Please Stop and"	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Before you installed the new AIS sign (Prevent the Spread), were there other AIS signs at the access point? - County ordinance sign	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Before you installed the new AIS sign (Prevent the Spread), were there other AIS signs at the access point? - Lake Association sign	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Before you installed the new AIS sign (Prevent the Spread), were there other AIS signs at the access point? - Other	Hydro Dam Sign explaining lake, pushed over by bull dozer.	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you remove any of these signs during your visit, or do you have plans in the near future? - Yellow "Exotic Species Advisory" sign	NO	

WDNR COMMENT

6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you remove any of these signs during your visit, or do you have plans in the near future? - Green and white "Help..Prevent the Spread" sign	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you remove any of these signs during your visit, or do you have plans in the near future? - Green, white and red stop sign "Please Stop and..."	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you remove any of these signs during your visit, or do you have plans in the near future? - County ordinance sign	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you remove any of these signs during your visit, or do you have plans in the near future? - Lake Association Sign	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	When installing the sign, were you able to reuse the post from previous DNR signs?	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If the waterbody was known to contain invasive species, was the red sticker "This Waterbody Is Known to Contain Invasive Species" applied to the bottom of the sign?	NO	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the sign installed facing the water so people leaving the water could read it or facing the launching area so people could read it?	Land	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	The location that best represents where the sign is currently located	Next to access point, facing launch area	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Does the access point appear to be in proper working order?	YES	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	How many people assisted in the sign installation?	2	
6/28/2011 0:00	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	How would you describe yourself (affiliation)?	County employee	
7/3/2011 0:00	Satellite Lake Clarity Monitoring 2011	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	2.544055541	FEET
7/3/2011 0:00	Satellite Lake Clarity Monitoring 2011	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Number of Adult Loons on Lake	0	LOON A
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Number of loon chicks on this territory today	0	LOON C
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Wind/Water Conditions	Ripples	
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Cloud Cover	Partly Cloudy	

WDNR COMMENT

7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Visibility	Excellent	
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Method of Observation	From Shore	
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Equipment Used	Binoculars	
7/16/2011 7:30	2011 Wisconsin Loon Population Survey	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Lake Access - Where did you get on the water or find access to view the lake?	Public Boat Landing	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Total Paid Hours Spent	2	HOURS
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Total Volunteer Hours Spent	0	HOURS
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in May?	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in June?	Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in July?	Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in August?	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor all Beaches and Boat Landings?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor perimeter of Whole Lake?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor docks and piers?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor other locations?	Right on the White River Dam (Hwy 112)	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you walk along the shoreline?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you observe entire shallow water area?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you use rake to extract plant samples?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you check underwater solid surfaces (boat hulls, dock legs, rocks)?	Frequently/Yes	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Banded Mystery Snail	No	

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7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Chinese Mystery Snail	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	CURLY-LEAF PONDWEED	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	EURASIAN WATERMILFOIL (MYRIOPHYLLUM SPICATUM L.)	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	FISHHOOK WATER FLEA	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Freshwater Jellyfish	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Hydrilla (Hydrilla verticillata)	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Purple loosestrife (Lythrum salicaria)	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Rusty Crayfish (Orconectes rusticus)	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	SPINY WATER FLEA	No	
7/29/2011 11:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	ZEBRA MUSSEL, ADULT	No	
8/28/2011 0:00	Satellite Lake Clarity Monitoring 2011	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	0.806448517	FEET
8/28/2011 0:00	Satellite Lake Clarity Monitoring 2011	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Waterbody Name	White River	
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Faucet Snails?	YES	
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Red Swamp Crayfish?	YES	
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for New Zealand Mudsnails?	YES	
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Quagga Mussels?	YES	

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9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Zebra Mussels?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Didymo?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Yellow Floating Heart?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Curly-Leaf Pondweed?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Eurasian Water-Milfoil?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Brazilian waterweed?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Hydrilla?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Flowering Rush?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Japanese Hops?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Phragmites?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for purple loosestrife?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Did you look for Japanese Knotweed?	YES
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Description of End Location	White River at the Highway 13 overpass.

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9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	End Longitude	90.84321
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	End Latitude	46.51644
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Description of Start Location	White River Flowage at the Highway 112 (Sanborn Avenue) overpass.
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Start Longitude	90.9033
9/9/2011 10:10	Project Riverine Early Detectors (Project RED)	10034358	White River Flowage - Flowage (Hwy 112) to White River (Hwy 13)	RIVER/STREAM	2892500	White River	Start Latitude	46.49847
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Waterbody Name	White River
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Start Latitude	46.4986
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Start Longitude	90.90998
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Description of Start Location	The Boat Launch/Canoe Portage at the White River Flowage, off Highway 112.
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	End Latitude	46.49437
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	End Longitude	90.93237
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Description of End Location	No obvious landmark: use listed GPS coordinates.
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Japanese Knotweed?	YES

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9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for purple loosestrife?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Phragmites?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Japanese Hops?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Flowering Rush?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Hydrilla?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Brazilian waterweed?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Eurasian Water-Milfoil?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Curly-Leaf Pondweed?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Yellow Floating Heart?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Didymo?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Zebra Mussels?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Quagga Mussels?	YES
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for New Zealand Mudsnails?	YES

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9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Red Swamp Crayfish?	YES	
9/15/2011 12:35	Project Riverine Early Detectors (Project RED)	10034360	White River Flowage - Flowage at Hwy 112 near Harley Hagstrom Rd	RIVER/STREAM	2892500	White River	Did you look for Faucet Snails?	YES	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Total Paid Hours Spent	6	HOURS
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Total Volunteer Hours Spent	0	HOURS
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in May?	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in June?	Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in July?	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did at least some data collectors monitor in August?	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor all Beaches and Boat Landings?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor perimeter of Whole Lake?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you monitor docks and piers?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you walk along the shoreline?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you observe entire shallow water area?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you use rake to extract plant samples?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you check underwater solid surfaces (boat hulls, dock legs, rocks)?	Frequently/Yes	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Banded Mystery Snail	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Chinese Mystery Snail	No	

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6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	CURLY-LEAF PONDWEED	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	EURASIAN WATERMILFOIL (MYRIOPHYLLUM SPICATUM L.)	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	FISHHOOK WATER FLEA	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Freshwater Jellyfish	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Hydrilla (Hydrilla verticillata)	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Purple loosestrife (Lythrum salicaria)	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Rusty Crayfish (Orconectes rusticus)	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	SPINY WATER FLEA	No	
6/6/2012 0:00	AIS Monitoring - Ashland County (Staff)	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	ZEBRA MUSSEL, ADULT	No	
8/7/2012 0:00	Satellite Lake Clarity Monitoring 2012	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	11.15350486	FEET
8/7/2012 0:00	Satellite Lake Clarity Monitoring 2012	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
8/30/2012 0:00	Satellite Lake Clarity Monitoring 2012	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	1.230872204	FEET
8/30/2012 0:00	Satellite Lake Clarity Monitoring 2012	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
9/28/2014 0:00	Satellite Lake Clarity Monitoring 2014	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	0.814696	FEET
9/28/2014 0:00	Satellite Lake Clarity Monitoring 2014	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
9/7/2015 0:00	Satellite Lake Clarity Monitoring 2015	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	1.813085387	FEET
9/7/2015 0:00	Satellite Lake Clarity Monitoring 2015	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N	
9/17/2015 0:00	2018 CWA Impairment Assessments	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Assessment River Station Natural Community	LARGE RIVER	
9/17/2015 0:00	2018 CWA Impairment Assessments	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Non-Wadeable Stream 10 Year Mean mIBI Assessment Value	70	

WDNR COMMENT

9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPHEMEROPTERA BAETIDAE BAETIS	2
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	TRICHOPTERA HYDROPSYCHIDAE CHEUMATOPSYCHE	9
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	TRICHOPTERA HYDROPSYCHIDAE CERATOPSYCHE	4
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	TRICHOPTERA HYDROPSYCHIDAE CERATOPSYCHE MOROSA MOROSA FORM SCHMUDE, HILSENHOFF 1986	11
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	TRICHOPTERA HYDROPTILIDAE HYDROPTILA	32
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	TRICHOPTERA POLYCENTROPODIDAE NEURECLIPSIS	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PLECOPTERA PERLIDAE ACRONEURIA	9
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	HILSENHOFF'S BIOTIC INDEX (HBI)	5.948
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	FAMILY-LEVEL BIOTIC INDEX (FBI)	6.006
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	HBI Max 10	5.304
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	SPECIES RICHNESS	40
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	GENERA RICHNESS	36
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT EPT INDIVIDUALS	16

WDNR COMMENT

9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT EPT GENERA	22
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT CHIRONOMIDAE INDIVIDUALS	81
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	SHANNON'S DIVERSITY INDEX	4.078
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT SCRAPERS	2
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT FILTERER	35
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT SHREDDERS	6
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	PERCENT GATHERERS	28
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Family Rank 1	CHIRONOMIDAE
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Family Rank 2	HYDROPTILIDAE
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Family Rank 3	HYDROPSYCHIDAE
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Family Rank 4	LEPTOPHLEBIIDAE
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Family Rank 5	HEPTAGENIIDAE
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Genus Rank 1	RHEOTANYTARSUS

WDNR COMMENT

9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Genus Rank 2	PARATANYTARSUS
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Genus Rank 3	CONCHAPELOPIA
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Genus Rank 4	HYDROPTILA
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Genus Rank 5	DICROTENDIPES
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPHEMEROPTERA HEPTAGENIIDAE	2
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPHEMEROPTERA LEPTOPHLEBIIDAE	23
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 ORTHOCLADIUS (ORTHOCLADIUS)	15
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 PARAKIEFFERIELLA -- PUPA	3
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 PARAMETRIOCNEMUS	11
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 ORTHOCLADIUS (SYMPOSIOCLADIUS) LIGNICOLA	2
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 THIENEMANNIELLA	2
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 THIENEMANNIELLA -- PUPA	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 TVETENIA BAVARICA GROUP BODE 1983	1

WDNR COMMENT

9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4	13
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 PARATANYTARSUS	21
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 PARATANYTARSUS SPECIES A HILSENHOFF, UNPUBL.	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 PARATANYTARSUS SPECIES B HILSENHOFF, UNPUBL.	41
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 RHEOTANYTARSUS	150
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 RHEOTANYTARSUS -- PUPA	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 TANYTARSUS	3
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 CRYPTOCHIRONOMUS	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 POLYPEDILUM	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 POLYPEDILUM (POLYPEDILUM) FALLAX GROUP EPLER 2001	3
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA EMPIDIDAE HEMERODROMIA	3
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 DICROTENDIPES	32
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 MICROTENDIPES PEDELLUS GROUP PINDER, REISS 1983	7

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9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 MICROTENDIPES RYDALENSIS GROUP PINDER, REISS 1983	5
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 NILOTHAUMA	7
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	TROMBIDIFORMES HYGROBATIDAE HYGROBATES	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPHEMEROPTERA HEPTAGENIIDAE MACCAFFERTIUM VICARIUM/LUTEUM DIMICK, UNPUBL.	10
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TIPULIDAE ANTOCHA	12
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 POLYPEDILUM (URESIPEDILUM) FLAVUM	19
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DEPO Percent Individuals (DEP_PC_CNT)	20.64
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DEPO Genera (DEPO_G)	13
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DEPO, percent genera (DEP_PC_GEN)	33.333
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPT Genera (EPT_GENERA)	8
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPT Individuals (EPT_COUNT)	103
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPT Percent Individuals (EPT_PC_CNT)	16.48
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Amph Percent Individuals (AMP_PC_CNT)	0

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9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPT Percent Genera (EPT_PC_GEN)	22.857
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Isop Percent Individuals (ISO_PC_CNT)	0
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Isop Genera (ISOP_G)	0
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Isop Percent Genera (ISO_PC_GEN)	0
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Dipt Percent Genera (DIP_PC_GEN)	77.143
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Dipt Percent Individuals (DIP_PC_CNT)	83.52
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Chir Percent Individuals (CHI_PC_CNT)	81.12
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Chir Percent Genera (CHI_PC_GEN)	71.429
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Gatherers Percent Individuals (GAT_PC_CNT)	28.015
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Gatherers Percent Genera (GAT_PC_GEN)	35.484
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Scrapers Percent Individuals (SCR_PC_CNT)	2.226
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Shredders Percent Individuals (SHR_PC_CNT)	5.937
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Insect Taxa (INSECT_T)	39

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9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Insect Percent Individuals (INSECT_PI)	99.84
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	EPT Taxa (EPT_T)	8
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Dominance 3 Percent Individuals (DOM3_PI)	38.978
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Intolerant EPT 2 Percent Individuals (INTOL_EPT2_PI)	4.792
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Tolerant Chir Percent Individuals (TOL_CHIR8_PI)	13.578
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Functional Trait Niches (ECOFTN)	8
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Amph Isop Percent Individuals (A_I_PC_CNT)	0
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Species Richness (Wadable IBI Intermediate)	40
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMIDAE	1
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TANYPODINAE 0	21
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TANYPODINAE 0 CONCHAPELOPIA	53
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TANYPODINAE 0 MEROPELOPIA	15
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TANYPODINAE 0 NILOTANYPUS	9

WDNR COMMENT

9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TANYPODINAE 0 ZAVRELIMYIA	1	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1	6	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 PARAKIEFFERIELLA	15	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 CORYNONEURA	6	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 CRICOTOPUS (CRICOTOPUS) BICINCTUS GROUP CRANSTON ET AL. 1983	8	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 SUBLETTEA	3	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA TANYPODINAE 0 ABLABESMYIA (ABLABESMYIA)	10	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 CRICOTOPUS (CRICOTOPUS) TRIFASCIA GROUP CRANSTON ET AL. 1983	1	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 CRICOTOPUS - PUPA	3	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA ORTHOCLADIINAE 1 NANOCLADIUS	13	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Mean Pollution Tolerance Value	5.556	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	Macroinvertebrate Index of Biotic Integrity (IBI), Non-Wadable	70	
9/17/2015 0:00	Large River Macroinvertebrate Sampling	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	DIPTERA CHIRONOMINAE 4 PARATANYTARSUS LONGISTYLUS	10	
10/3/2016 0:00	Satellite Lake Clarity Monitoring 2016	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Water Clarity - Predicted Secchi Depth Derived from Satellite Imagery	0.51608118	FEET

WDNR COMMENT

10/3/2016 0:00	Satellite Lake Clarity Monitoring 2016	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Satellite derived water clarity greater than max depth of lake	N
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	FISHHOOK WATER FLEA	No
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	SPINY WATER FLEA	No
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	ZEBRA MUSSEL, VELIGER	No
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Didymo?	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Yellow Floating Heart?	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Quagga Mussels?	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Phragmites?	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Hydrilla?	YES

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Have you consolidated all of your samples into one composite bottle?	Yes	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Name of plankton sample analyst	Shelby Kail	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Name of plankton sample analyst	Shelby Kail	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Fanwort?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Secchi Depth	0.25	METER
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Japanese Knotweed?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for purple loosestrife?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Japanese Hops?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Flowering Rush?	YES	

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Brazilian waterweed?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Eurasian Water-Milfoil?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Curly-Leaf Pondweed?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Zebra Mussels?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for New Zealand Mudsnails?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Red Swamp Crayfish?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Faucet Snails?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Number of net tows	1	TOWS
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Number of net tows	1	TOWS

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Depth of tows	2	METER
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 2 - Latitude	46.29869	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 2 - Longitude	-90.54632	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 2 - Number of net tows	1	TOWS
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 3 - Latitude	46.29864	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 3 - Longitude	-90.54616	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you collect a specimen sample?	NO	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you collect a specimen sample?	NO	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you collect a specimen sample?	NO	

WDNR COMMENT

7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you collect a specimen sample?	NO		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you collect a specimen sample?	YES		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 3 - Number of net tows	1		TOWS
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo?	NO		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo?	YES		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo?	NO		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo?	YES		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo?	NO		
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	Unknown species is same unkown snail as collected at search site 1		

WDNR COMMENT

7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	No AIS found
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	No AIS found
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	No AIS found
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	No AIS found
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	Unkown species is a kind of snail, Native iris (Iris versicolor) present at this site. No AIS found
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Species Name	Narrow-leaf cattail (Typha angustifolia)
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Species Name	Narrow-leaf cattail (Typha angustifolia)
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Species Name	Narrow-leaf cattail (Typha angustifolia)
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Species Name	Narrow-leaf cattail (Typha angustifolia)

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Species Name	Unknown Species
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Latitude	46.2986
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Latitude	46.2986
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Longitude	-90.54595
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site 1 - Longitude	-90.54595
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Banded mystery snails?	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Boat Landing 1
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Search Site 5
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Search Site 4

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Search Site 3
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Meander Survey 3
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Meander Survey 2
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Meander Survey 1
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Search Site 2
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Site Number	Search Site 1
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Density of Aquatic Invasive Species (1)	3-many small beds or scattered plants or colonies of invertebrates
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Density of Aquatic Invasive Species (1)	5-dense plant, snail or mussel growth covering most shallow areas
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Density of Aquatic Invasive Species (1)	4-dense plant, snail or mussel growth in a while bay or portion of the lake

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Density of Aquatic Invasive Species (1)	4-dense plant, snail or mussel growth in a while bay or portion of the lake	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Density of Aquatic Invasive Species (1)	2-one or a few plant beds or colonies of invertebrates	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Density of Aquatic Invasive Species (2)	2-one or a few plant beds or colonies of invertebrates	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Species Name (2)	Unknown Species	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Chinese mystery snails?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Water Chestnut?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Spiny Waterfleas?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Volume of sample that was analyzed (ml)	50	ML
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Date sample was analyzed	12/18/2018	

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Date sample was analyzed	11/20/2018
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Total Volunteer Hours Spent	0
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the aquatic invasive species found live or dead?	Live
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the aquatic invasive species found live or dead?	Live
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the aquatic invasive species found live or dead?	Live
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the aquatic invasive species found live or dead?	Live
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the aquatic invasive species found live or dead?	Live
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Was the aquatic invasive species found live or dead? (2)	Live
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Rusty crayfish?	YES

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Fishhook Waterfleas?	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	If you did not snorkel, why not?	Water clarity too poor	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Asiatic clam (Corbicula)?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Diameter of zooplankton net opening	50	CM
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you find what you suspect are Spiny Water Fleas in this waterbody?	No	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you find what you suspect are Fishhook Water Fleas in this waterbody?	No	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Parrot Feather?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Water Hyacinth?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Water Lettuce?	YES	
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Yellow Flag Iris?	YES	

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you snorkel the search sites?	NO

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo? (2)	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Total Paid Hours Spent	6
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for European frogbit	YES
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49842
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49752
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49583
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.4924
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49413
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49573

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7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49666
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49823
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Latitude of sample	46.49843
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.90997
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.90953
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.9121
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.92008
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.91626
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	90.91438

WDNR COMMENT

7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.91483
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.91395
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Longitude of sample	-90.91255
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you collect a specimen sample? (2)	NO
7/12/2018 0:00	Aquatic Invasive Species Early Detection 2018, AIS Occurrence Records - 'Other' Records Reviewed	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you look for Starry stonewort?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Additional Comments about Aquatic Invasives Monitoring	No AIS Detected!
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Waterbody Name	White River Flowage
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Start Latitude	46.498552
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Start Longitude	-90.910028

WDNR COMMENT

9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Description of Start Location	White River Flowage Boat Landing
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	End Latitude	46.496009
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	End Longitude	-90.931589
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Description of End Location	Use Lat/Long. Remote Area; No Distinct Landmarks.
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Japanese Knotweed?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for purple loosestrife?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Phragmites?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Japanese Hops?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Flowering Rush?	YES

WDNR COMMENT

9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Hydrilla?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Brazilian waterweed?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Eurasian Water-Milfoil?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Curly-Leaf Pondweed?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Yellow Floating Heart?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Didymo?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Zebra Mussels?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Quagga Mussels?	YES
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for New Zealand Mudsnails?	YES

WDNR COMMENT

9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Red Swamp Crayfish?	YES	
9/17/2019 9:58	ASHLAND COUNTY: Ashland County AIS Education, Prevention, & Planning - Project Red	10000622	White River Flowage	RIVERINE IMPOUNDMENT	2894200	White River Flowage	Did you look for Faucet Snails?	YES	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Observer Name (if not already recorded)	Scott Caven	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Organization	Ashland County LWCD	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Observer Email	scott.caven@co.ashland.wi.us	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	What type of access point was this?	Carry-in	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Waterbody Type	River/Stream	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Did you take a photo?	Yes	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Purpose of AIS Sign Visit?	Inspection	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	AIS Sign Type	Prevent the Spread boat launch sign	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	AIS Sign Condition	Adequate	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	The location that best represents where the sign is currently located	On a post at pier/dock	
11/5/2019 14:27	Signage Installation - Ashland County	10019547	White River Flowage -- Access - STH 112	LAKE-BOAT LANDING	2894200	White River Flowage	Which direction is the sign facing?	Facing Launch Area (Upland) - Sign seen as boater is launching	
<no data>	AIS Incident Reports - Bayfield County	023127	White River Downstream Hwy 112 Near Ashland WI	RIVER/STREAM	2892500	White River	<no data>	<no data>	<no da

WDNR COMMENT

Darrin Johnson

From: Shawn Puzen
Sent: Thursday, June 4, 2020 3:59 PM
To: Darrin Johnson
Subject: FW: White River WDNR Materials for PAD
Attachments: White River P-2444 Relicensing WDNR Fish Data.zip

Found it….

SHAWN PUZEN
FERC HYDROPOWER LICENSING AND COMPLIANCE, WATER
Mead & Hunt
Direct: 920-593-6865 | Cell: 920-639-2480 | Transfer Files
meadhunt.com | LinkedIn | Twitter | Facebook | Instagram

120 YEARS OF SHAPING THE FUTURE

From: Haller, Macaulay G - DNR <macaulay.haller@wisconsin.gov>
Sent: Wednesday, June 3, 2020 5:12 PM
To: Shawn Puzen <Shawn.Puzen@meadhunt.com>; Miller, Matthew J <Matthew.J.Miller@xcelenergy.com>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: RE: White River WDNR Materials for PAD

Hi Shawn,

I have included information from fisheries staff regarding White River.

I've also included a statement from one of our ecologists: "I was on the flowage several years ago when they were drawing it down, tossing common floaters (freshwater mussel species) into deeper water to prevent at least some of them from desiccating. I also picked up a dead loon from the shoreline at that time and sent it in for necropsy."

Thanks,
Macaulay

From: Haller, Macaulay G - DNR
Sent: Tuesday, June 2, 2020 8:08 AM
To: 'shawn.puzen@meadhunt.com' <shawn.puzen@meadhunt.com>; 'Miller, Matthew J' <Matthew.J.Miller@xcelenergy.com>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: RE: White River WDNR Materials for PAD

Hi Shawn,

I have included information from wildlife and conservation staff regarding White River. I will be sending additional materials as they come in from our technical staff.

Wildlife:

WDNR COMMENT

Staff wildlife biologist not aware of any wildlife surveys or data collected within the project boundary, recommended *White River Property Group Master Plan (attached).*

Mussels:

At this time, conservation staff have no mussel records in the Mussel Database for the White River in Ashland County. The only records for the White or its tributaries are from the West Fork of the White in Bayfield Co. Eastern Elliptio is the only listed species. It is Special Concern, and would likely occur in the White River, as well as the other species listed. These are old records, but would still expect this mussel assemblage to still be present.

Mussels from West Fork White River Bayfield Co,
Creek Heelsplitter - Lasmigona compressa (1994)
Cylindrical Papershell - Anodontoides ferussacianus (1994)
Eastern Elliptio - Elliptio complanata (1994)
Fluted-shell - Lasmigona costata (1994)
Giant Floater - Pyganodon grandis (1994)

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Macaulay Haller
Water Resources Management Specialist- Senior
Water Regulations and Zoning Specialist- Senior
Wisconsin Department of Natural Resources
Macaulay.Haller@wisconsin.gov

dnr.wi.gov

From: Haller, Macaulay G - DNR
Sent: Friday, May 29, 2020 2:26 PM
To: 'shawn.puzen@meadhunt.com' <shawn.puzen@meadhunt.com>; 'Miller, Matthew J' <Matthew.J.Miller@xcelenergy.com>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: White River WDNR Materials for PAD

Hi Shawn and Matt,

As part of the proposed White River P-2444 relicensing, I've attached some materials from WDNR, which includes an Endangered Resources review and SWIMS data:

- White River P-2444 WQ AIS SWIMS Pull: Results from SWIMS for monitoring stations within the project boundary. Only includes data from past 10 years of monitoring work. Pulled in May 2020.
    - Data includes start date, station ID, station name, project name, monitoring description, and result

- Endangered Resources Review for the Proposed White River Hydro Project Relicensing **(confidential)**
    - Wood turtles are the main concern

I will be sending additional materials as they come in from our technical staff team.

Please let me know if you have any questions.

Have a good weekend,

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Macaulay Haller
Water Resources Management Specialist- Senior
Water Regulations and Zoning Specialist- Senior
Wisconsin Department of Natural Resources
Macaulay.Haller@wisconsin.gov

dnr.wi.gov

White River P-2444

Fish:

Email Attachment Descriptions:

1) Biological and Social Dynamics of White River Brown Trout Fishery 2014-2015: The 2014-2015 White River study was initiated to update trout population, trout catch, and harvest and angler attitudes. This report compares recent with historic data and update management recommendations based on what was learned from 2005 to 2015. Pages 34-39 provide direction for future fisheries management efforts on the White River.
2) FERC_White_River_relicense_data_nonwadable_trend.xlsx: Fisheries data for White River upstream from White River Flowage (WRF)
3) Nonwadable trend station map.doc: Map showing location of email attachment 2 (White River upstream from WRF)
4) White_River_Flowage_Sea_Lamprey_Weir_Catch_1956_1960_SN1.pdf: Fish survey data for WRF
5) White_River_Flowage_6_1966_General_Survey_Report.pdf: Fish survey data for WRF
6) White_River_Flowage_6_1966_Original_Data_SN3.pdf: Fish survey data for WRF
7) White_River_Flowage_Aging_Data_6_1966.pdf: Fish survey data for WRF
8) White_River_Flowage_5_1983_SN3.pdf: Fish survey data for WRF
9) White_River_Flowage_4_1990_SN1.pdf: Fish survey data for WRF
10) White_River_Flowage_4_2015_SN1.pdf: Fish survey data for WRF

Fisheries Data

1) Downstream of Dam: DNR Fisheries database was reviewed and Fisheries staff did not find any data for the project area. Older data (various years from 1963-1981) exist for a station nearly 15 miles downstream.

2) Upstream of Dam:

    a. White River Flowage (WRF, Ashland County): See attached survey data (attachments 4-10).

    b. White River upstream of the WRF (Bayfield County): There is an extensive survey history. While much of this data is located a considerable distance upstream (on some of the 'upper-white' and its headwater tributaries), there are a few surveys that might reflect or relate to the fishery in the WRF directly. More specifically:
        i. Non-wadable trend survey (located @ Sutherland Road). This is planned to be conducted every-other year, flows allowing.
        ii. Lower-white River non-wadable survey (Mason – WRF), using inflatable zodiac not conducted often, but provides the best picture of the fishery

immediately upstream of the WRF. The most recent datapoint we have is 2005.

iii. Creel Survey of the White River (conducted every 10 years). See email attachment 1.

Fisheries, Lands Management Plans

1) The White River within the project area is within the Superior Coastal Plain Master Plan geographic area: https://embed.widencdn.net/pdf/plus/widnr/3rv49zubit/SCP_RegionalMasterPlan.pdf?u=umm5nf&showinbrowser=true

2) The Master Plan only refers to the White River Fishery Area and White River Wildlife Area; no specific management instructions. Instead, these areas are administered through the White River Property Group Master Plan (https://dnr.wi.gov/files/PDF/pubs/lf/LF0072.pdf). The plan includes that part of the White River Fishery Area on the south side of the river, downstream from the dam (green shade polygon in middle of map, below).

3) The Lake Superior Fisheries Management Plan (https://dnr.wi.gov/topic/fishing/lakesuperior/LakeSuperiorFishManagementPlan.html) also has a minor role in the project area, as it includes Lake Superior tributaries upstream to the first impassable barrier (i.e., White River Dam). Currently, the draft plan is being reviewed by the NRB and is anticipated to be finalized later this year.

Surface Water Data Viewer Fish Management Layer

- Class II trout stream upstream and downstream of WRF
- Sturgeon waters downstream of WRF

Biological and Social Dynamics of the White River Brown Trout Fishery, 2014-2015 WBIC – 2892500

Chris Coffin, WDNR fisheries technician, displays a White River brown trout caught during sampling in 2015. Photo: Scott Toshner

Scott Toshner, Kirk Olson and Chris Coffin
Wisconsin Department of Natural Resources
Northern District - Brule
March, 2016

Executive Summary

The White River is one of only eight trout streams in Wisconsin containing more than 40 miles of Class I or II trout water. The river is known for its top quality brown trout *Salmo trutta* fishery that is relatively inaccessible by roads. The 2014-2015 White River study was initiated to update trout population, trout catch and harvest and angler attitudes, based on the recommendations of Toshner and Manz (2008). In this report we compare recent with historic data and update management recommendations based on what was learned from 2005 to 2015. This study utilized many of the same methodologies that were developed in historic surveys on the White River.

Brown trout density from 2014 to 2015 has declined below the management recommendation of 300 -550 fish/mile (Toshner and Manz, 2008), which was the density thought to be adequate to maintain natural recruitment. These lower densities were likely the result of one or more small year classes of brown trout in the system. Densities of brown trout ≥ 6 inches have declined to 125 fish/mile in 2014-2015, compared to the consecutive year average of 523 fish/mile from 1984 to 2005. Additionally, we observed a substantial decline in age-I brown trout in 2013 and 2014 at all six trend stations located on tributaries and upper reaches of the White River, likely leading to weak year classes on the lower White. The cause of low year class strength may be related to several factors. Two of which may be severe winters in 2012/2013 and 2013/2014 and a large rain event in July of 2013 which caused a fish kill.

Our results indicate the brown trout decline in density is likely not from angler over-harvest. The average exploitation of brown trout ≥ 6 in was the lowest ever observed in 2014-2015 (11%) and exploitation did not exceed 20% in the two most recent creel surveys in 1992-1993 and 2004-2005. Exploitation of large brown trout (≥ 15 in) was 10 % in the current survey, declining from1992-1993 and 2003-2004 exploitation rates of 22% and 25%, respectively.

Regulation changes may have been partly responsible for the higher proportion of brown trout ≥ 15 in observed in surveys post regulation change. A more restrictive regulation was implemented in 2016. The genesis of this regulation was the rule simplification process for trout fishing regulations that began in 2013. In light of the 2014 and 2015 survey information, decreasing angler harvest is warranted even though angler exploitation is currently at a low level. Since the density of brown trout is now well below management recommendations, we feel that all management tools should be used to limit exploitation of adult fish. Future surveys will document changes in brown trout density and if densities rise to within or above management goals, a less restrictive regulation should be considered.

Annual trend monitoring on both wadable and non-wadable stations on the White River has provided useful information. Wadable trend station data has shown the possible link between recruitment in the tributaries of the White River and density of brown trout in lower sections of the White River. Wadable trend monitoring stations indicated that age-I brown trout abundance in the tributaries to the White River has the most potential for estimating year class strength. Stable isotope analysis revealed upstream spawning movements of brown trout from lower reaches to the headwaters of the South Fork of the White River.

One hundred and forty seven anglers responded to the angler questionnaire. Angler opinion corroborated population estimate data in regard to lower abundance of brown trout in the White River. In 2014 and 2015, 78% of respondents said they were either very satisfied or somewhat satisfied with their fishing experiences on the White River. There was nearly an even split of bait choices among anglers. The more conservative regulation starting in 2016 on the White River was viewed as having a positive impact on the fishery by the majority of anglers (61%), though live bait anglers preferred it less than fly anglers. However, when asked whether they favor or oppose the regulation, anglers were evenly split, with bait anglers more strongly

opposing the regulation (70%) than fly anglers (20%). The lack of angler recruitment on the White River may be a cause for concern. The percent of anglers 50 years of age or older increased from 48% in 2006 to 68% in 2015. Increasing angler recruitment on the White River will be critical for maintaining public interest in the watershed and justifying continued fisheries management activities.

Management recommendations for the White River include: (1) Maintain 300-550 brown trout/mile $\geq$ 6 inches; (2) retain current regulations at this time and consider more liberal harvest regulations if the brown trout population increases to levels within management goals; (3) discern, through the use of expanded stable isotope studies, coarse-scale movement patterns of adult brown trout to identify spawning areas and summer and winter home ranges; (4) continue an active monitoring program with population estimates, angler questionnaires and creel surveys every 10 years and bi-annual non-wadable and annual wadable index stations. (5) work with interested parties to assist in accomplishing management recommendations and support the many groups that are preserving the White River and its watershed.

Table of Contents

Introduction

The White River is one of only eight trout streams in Wisconsin containing more than 40 miles of Class I or II trout water and has been known as a top quality brown trout fishery with limited road access. The 2014-2015 White River study was initiated to gather additional trout population, trout catch and harvest and angler attitudes regarding the fishery, following the management recommendations in Toshner and Manz (2008). In this report we compare recent to historic data and update management recommendations based on what we learned between 2005 and 2015.

The White River watershed is located in northwestern Wisconsin. The river originates in the Chequamegon National Forest in central Bayfield County and is the largest river in the county. The river flows east from its origin near Delta, 32 miles and enters Ashland County. A forty-nine foot power dam, located just inside Ashland County, creates the 56-acre White River Flowage and prevents upstream movement of fish from Lake Superior. Below the power dam, the river flows northeast 14 miles to its junction with the Bad River near Odanah and then another 4 miles into Lake Superior (Avery 1990). Numerous tributaries enter the White River, the largest of which is the Long Lake Branch that originates from Lake Owen in Bayfield County and joins the White River near the downstream end of the Bibon Swamp Natural Area. Eighteen Mile and Twenty Mile Creeks are the second and third largest tributaries to the White River and join the Long Lake Branch north of Grandview in the southern edge of the Bibon Swamp (Figure 1).

The average daily discharge of the White River (1949 to 2005) near the power dam is 273 cubic feet per second (cfs) (USGS, station number: 04027500, waterdata.usgs.gov). April has the highest monthly average discharge (572 cfs) and January has the lowest monthly average

discharge (182 cfs). Peak streamflow from 1949 to 2014 was 6,720 cfs recorded on July 24, 2005.

In the late 1800s the White River and its tributaries were used extensively to transport and process timber logged in the watershed. Many of the dams found throughout the watershed had their origins from the logging period. These dams were used either for power production for mills or as storage devices that could be opened or blown out in spring to float the logs to downstream locations. Logging activity from the turn of the 20th century still impacts water quality and channel morphology.

Citizens, local politicians and resource managers have worked to protect the White River watershed since the 1950s. Motor boats have been prohibited on the White River above State Highway 63 since 1967 when the Delta and Mason town boards adopted such action to secure the future of the unique recreational opportunities offered by the river. In addition, there are four major land protection areas on the White River that now encompass the headwaters to where the White River enters Tribal lands. The four protection areas include two fisheries areas (White River Fishery Area and the White River Fisheries - Expansion), a natural area (Bibon Swamp Natural Area) and a wildlife area (White River Wildlife Area). The White River Fisheries Area was established first in 1961 and the expansion was established in 2004.

The White River and its tributaries have a diverse fishery with nearly 40 species of fish identified (Appendix I, Table 1). Historic fish management of the White River and its watershed has included fisheries surveys, stocking, various length and bag regulations, installation of instream habitat improvement structures, headwater spring pond dredging and beaver *castor canedensis* control activities. Trout population surveys in the Bibon Swamp section of the White River occurred in 1984, 1985, 1986, 1988, 1989, 1992, 1993, 2003, 2004 and 2005. Creel surveys occurred in 1984, 1985, 1992, 1993, 2004 and 2005. Various other surveys have

occurred on upper sections of the White River and its tributaries. These surveys mainly utilized backpack and towable electrofishing units. Objectives of these surveys were to assess fish passage and instream habitat improvement, or as part of the statewide wadable baseline monitoring program.

The White River has a long stocking history and has been stocked predominately with brook trout, brown trout and rainbow trout since at least 1920 according to records from the Wisconsin Fish Commission, and 1933 according to records from the Brule DNR office file (Appendix I, Table 2). The exception was one stocking of black bass (unknown species) in 1935. From 1933 to 1948 a combination of brook trout, brown trout, and rainbow trout were stocked primarily as fingerlings. Stocking from 1949 to 1969 consisted mostly of brown trout and brook trout; however the age of fish stocked during this period was mostly yearlings. Brown trout were stocked from 1949 to 1981 as predominately yearlings. Since 1981 no stocking has occurred and the fishery has been maintained by natural reproduction. Historic hatchery records indicate that the strain of brown trout stocked into the White River originally came from Europe in the early 1900s. The strain was started in the Nevin Hatchery and transferred to the Wild Rose Hatchery in 1946 where it was crossed with a strain from Cortland, New York.

The fishing season on the White River opens the first Saturday in May and ends October 15th. Trout fishing regulations have changed over time on the White River. Prior to 1990, bag and length restrictions on the White River included a 6 in minimum length limit, a daily bag limit of 10 trout in May (only 5 browns and rainbows), and a daily bag of 10 trout of any species from June through September. In 1990, from downstream of Pikes River Road bridge to the White River dam was changed to a Category 5 (3 trout over 9 in, only 1 brown trout over 15 in; Figure 1). Upstream from Pikes River Road Bridge the fishing regulation was changed to a Category 2

(7 in minimum length and 5 trout daily bag limit). The 1990 change in regulations was in response to excessive angler exploitation of brown trout ≥ 15 in (Avery 1990).

Several changes to angling regulations have been made in 2016 as a result of the statewide push toward trout regulation simplification. Beginning in 2016, all of the White River and its tributaries are open to catch and release fishing (first Saturday in January to the first Friday in May) upstream of the power dam. Additionally, the White River upstream of Pike River Road, unnamed tributaries to the White River and East, West and South Forks of the White River have been changed to a 8 in minimum length and 3 trout daily bag limit in 2016. The White River downstream of Pike River Road and the Long Lake Branch of the White River changed to a18 in minimum length and 1 trout daily bag limit. Tributaries to the Long Lake Branch of the White River changed to a no minimum length limit and 5 trout daily bag limit. These regulation changes resulted from a statewide trout regulation simplification effort, which removed the historic regulations categories on the White River system from which managers could choose. Data presented in this report had not been collected when these regulation changes were made.

Recent management efforts have focused on fisheries surveys, beaver control, land acquisition and habitat improvement and protection. Land acquisition has been occurring in all of the various management areas as funding has been available and where landowners have been willing to sell or provide easements. Over 1,000 acres have been purchased by the State of Wisconsin since 2006 within the property boundaries. Stream habitat projects have mainly been focused on stretches of stream near the headwaters area. Controlling glossy buckthorn infestations and maintaining instream habitat improvements have been the main activities involving stream habitat since 2006.

The primary objectives of this report were to: (1) determine brown trout abundance, size structure, growth, movement patterns, (2) estimate angler pressure, harvest and attitudes on the White River and (3) compare these estimates to previous surveys on the White River. In addition, we describe the size structure and relative abundance of northern pike in the White River and results from water temperature monitoring in the White River and its tributaries.

Methods

Trout Populations

A 21.3 mile reach of the White River, beginning at Pikes River Road Bridge and continuing downstream to Bibon Road Bridge was selected for the study and was the same reach studied in historic fishery surveys (Avery 1990, Avery 1999; Fig. 1). Two, 4-mile long electrofishing stations were surveyed in 2014 and 2015 and encompassed two thirds of the historic survey stations per recommendations from Toshner and Manz 2008. Station start positions were located at the confluence of Bolon Creek and the White River and the Sutherland Bridge crossing (Figure 1). Data collected in 2014-2015 was compared to data collected in 1984-1986, 1988-1989, 1992-1993 and 2003-2004.

Mark-recapture electrofishing surveys using two mini-boomshocker boats, one following the other a short distance behind, were conducted from 2014-2015. Both mini-boomshocker units utilized two-booms. All electrofishing surveys progressed downstream during daylight using DC electricity (240 volts, 6.0 amps, on average). One pass was completed for each station for both the mark and recapture portions of the survey. Both brown and brook trout captured on the marking run were measured to the nearest 0.1 in total length, weighed, given a temporary fin clip and released within the station at least ½ mile from either the start or end of the station sampled. Both brown and brook trout captured on the recapture run were examined for marks,

measured and released. Mark and recapture electrofishing runs were separated by one day to allow fish to redistribute between runs. Although some 3.0 - 5.9 in brown trout were captured each spring, the efficiency of their capture was poor, thus this discussion refers only to brown trout ≥ 6 in.

Brown trout population abundance was estimated with the Bailey modification of the Petersen estimator for trout ≥ 6 in (Ricker 1975). Population estimates for each station were divided into inch groups based upon the proportion of unmarked trout captured in each inch group on both the mark and recapture runs. Estimates and their variances were combined to determine total population parameters. Confidence intervals for mean brown trout density during each time period (combination of consecutive years) was estimated using population estimates from each sampling reach (n = 2-3 for each time series) as replicates. Trends in population abundance were evaluated using linear regression. Average lengths of trout were determined based on measurements from all stations and trends evaluated using linear regression. Population estimates were not calculated for brook trout due to their low abundance.

Scale samples were taken from 5 brown trout per 0.5 in group during electrofishing surveys and scales and otoliths were taken from angler harvested fish (as available) for age and growth analysis. Scale age was estimated by viewing scales under a 30X microfilm projector. Sagittal otolith age was determined by cross section and magnification under a compound microscope at 4X magnification. Age at length was back calculated using scale annulus measurements in 2003 and 2005 due to growth observed after annulus formation. Back calculation of lengths from scales relies on recognition of annual growth markings (annuli) on scales to calculate an estimated body length associated with each annulus. Body lengths estimated in this way make up a growth history, from which growth rate can be inferred (Pierce et al. 1996). The Fraser-Lee proportional method was used in back calculation of scales (Fraser

1916, Lee 1920). In 2004 and 2015, age at length was not back calculated because annulus formation was occurring at the time of the capture. Von Bertalanffy growth curves were modeled to estimate length at infinity for the scale samples collected during electrofishing and for scale and otolith samples from angler harvested fish.

Sport Fishery

In 2014 and 2015, a partial creel survey was conducted in the White River Study area from Pike River Road to Bibon Road (Figure 1). The creel occurred between the first Saturday in May and the end of the Hex (*Hexagenia limbata*) Hatch in mid-July. Though previous creel surveys occurred throughout the open fishing season (first Saturday in May to the end of September), Toshner and Manz (2008) recommended this shortened creel period given the limited pressure that occurs after the hex hatch and the consistency of seasonal trends in angler pressure. Otherwise, we followed the design described by Toshner and Manz (2008).

A stratified, random design was used to quantify angler effort and harvest (e.g. Avery 1990, Avery 1999, Toshner and Manz 2008). Creel clerks worked at randomly assigned 8 hour AM (6:00-14:00) or PM (14:00 – 22:00) shifts during three randomly selected weekdays and on both weekend days. Creel clerks followed this schedule throughout the creel period except during opening weekend (16 hour shifts were worked between 6:00 – 22:00) and the hex hatch (shifts were adjusted two hours later to improve coverage). During their shift, creel clerks conducted instantaneous car counts at 2-hour intervals, visiting all access points in the study area. Between instantaneous car counts, anglers completing fishing trips were interviewed to allow an estimate of mean angler hours per vehicle, catch rates and harvest rates.

Pressure was estimated separately for weekend and weekdays within seven strata (opening weekend, remainder of May, June before the hex hatch, hex hatch, July after the hex

hatch, August and September). Catch and harvest rates were also estimated separately within each of the seven strata. We used the following equation to estimate pressure within each:

$$\left[\sum_{i=1}^{n}(C_i T_i)\right](A_{wd})(WD) + \left[\sum_{i=1}^{n}(C_i T_i)\right](A_{wed})(WED)$$

where, n is the number of car counts possible in a day, C_i is the mean number of cars present at each car count period i, T_i is the time interval represented by each car count, A_{wd} is the mean number of anglers per car on weekend days and holidays, A_{wed} is the mean number of anglers per car on weekend days and holidays, WD is number of weekdays in the month, and WED is the number of weekend days in the month. Fishing pressure for opening weekend was estimated separately following a similar (same?) equation.

Total harvest for each stratum was estimated by multiplying harvest rate from creel clerk interviews and angler pressure within each stratum. Though previous studies incorporated information from voluntary angler catch cards (Avery 1990, 1999), we only used information from creel clerk interviews. Because our creel survey ended in Mid-July (end of the hex hatch), we expanded angler pressure for the remainder of the trout season based on angler pressure estimates from 2004 and 2005. We also used the mean harvest rate from surveyed strata to estimate total harvest for the entire trout season, excluding opening weekend in 2014 because of unprecedented weather conditions. Harvest within each size class was estimated by taking the proportion of creeled fish in a size class (using creel clerk interviews) and multiplying the result by the total harvest. Exploitation was estimated by dividing harvest by abundance.

Annual electrofishing survey

Annual single-pass electrofishing surveys were conducted on six wadable sites in the White River Watershed between 2007 and 2015 and at one non-wadable station in the lower

White River between 2006 and 2015. Wadable sampling took place during the month of August when water levels were within 0.2 m of the normal water level. Non-wadable sampling generally took place in late March after ice out. The non-wadable station encompassed the area from Sutherland Road to the primitive campsite for all survey years except 2015 when the station end was one half mile upstream of the primitive campsite. A comparable survey on the non-wadable station was not completed in 2013 due to high water and late ice. In 2014, an error resulted in the catches of the leading and trailing boats being combined. In order to make 2014 catch per unit effort comparable, we corrected the total catch per unit effort to that of a single boat, based on previous data from two boat surveys on the river. All fish collected were identified, enumerated and measured to the nearest 0.1 inch. Fish were classified into three age categories (age-0, age-I and older than age-I) based on a visual evaluation of length frequency histograms and length at age information from a previous scale analysis (Toshner and Manz 2008). A Ricker stock-recruitment curve (assuming log-normal error) was fit to the data to examine the relationship between age-0 relative abundance and age-I abundance the following year (e.g. Maceina and Pereira 2007).

We examined trends in catch per effort (CPE) and the influence of temperature and flow on relative abundance of age-0 and age-I brown trout within each site. Flow data were collected from the USGS gauge on the lower White River (USGS, waterdata.usgs.gov, station: 04027500) and temperature data were collected from a weather Station in Brule, WI . We summarized flow data by taking the mean daily flow for each season during open water (spring, summer and fall) and temperature by estimating winter degree days (base 20°F) and summer degree days (base 75°F) for each season. Simple linear regression and multiple linear regression (backward variable selection) were used to evaluate relationships between relative abundance and environmental conditions. Residuals plots were examined for normality and homoscedasticity. Summer degree

days was excluded from our analysis as it was highly correlated to winter degree days and winter degree days were more often strongly correlated to relative abundance.

Stable Isotope Analysis

Samples for C and N stable isotope analysis were collected during the 2015 field season on the White and the South Fork of the White River (Figure. 2). Adipose fins were collected in place of muscle samples to limit sampling mortality. Several studies have identified adipose fins as a suitable proxy for brown trout and other Salmonids (Jardine et al. 2005, Hanisch et al. 2010, Graham et al. 2013). Samples were collected haphazardly except for a portion of the fall sample, when larger (>9 in) spawning fish were targeted. Adipose fin clips were collected from brown trout in the main stem of the White River during late March (n = 20) and early August (n = 6). Brown trout in the south fork of the White River were sampled during early August (n = 13) and early November (n = 23; when active spawning was observed).

Samples were dried, homogenized and placed in tin capsules after collection. Sample processing was contracted through UC Davis Stable Isotope Facility (cost: $8 per sample, 2016 USD) and results were reported in the delta (δ) notation, using Peedee Belemite carbonate and atmospheric nitrogen as standards:

$$\delta(‰) = \left[\left(\frac{R_{Sample}}{R_{Reference}}\right) - 1\right] * 1000$$

where R_{Sample} is the ratio of heavy isotope to light isotope ($^{13}C/\ ^{12}C$ or $^{15}N/\ ^{14}N$) of the sample and $R_{Reference}$ is the ratio of heavy isotope to light isotope of the standard. Samples were adjusted for lipid content using C:N as a proxy for lipid content and following the correction equation of Hoffman and Sutton (2010).

Relationships between length and stable isotope signatures were examined across all brown trout using simple linear regression. Because $\delta^{15}N$ was linearly correlated to length across all brown trout sampled, a length adjustment (e.g. Fraser et al. 1998) was applied following the equation:

$$Y_i' = Y_i - b(L_i - L)$$

Where L_i is the total length for fish i, L is the mean total length of all fish sampled, Y_i' is the size-corrected $\delta^{15}N$ value for fish i, Y_i is the uncorrected $\delta^{15}N$ value for fish i and b is the slope of the linear regression line for total length vs. $\delta^{15}N$. This adjustment allowed the examination of $\delta^{15}N$ signatures independent of length. We compared length adjusted $\delta^{15}N$ and lipid adjusted $\delta\ ^{13}C$ among fish from sites sampled prior to spawning using one-way ANOVA.

Angler Questionnaire

The methods for the angler questionnaire were similar to those used by Toshner and Manz (2008). The questionnaire, with cover letter describing the survey, was delivered in October following the closure of the inland fishing season. To increase response rate, one additional mailing was made to non-respondents and "reminder" post-cards were sent on another occasion. In all, anglers were given approximately two months to respond. A return envelope, with postage was included with each questionnaire. .

The questionnaire was designed to gauge angler motivation, satisfaction, participation, and years of experience. The questionnaire included questions on where and how anglers fished, each angler's history on the White River, and angler opinions on regulations and the fish they catch. In order to evaluate differences in attitudes between user groups, anglers were also asked what type of angling method they preferred (i.e. worms/live bait, artificial lures or fly fishing). Almost all of the questions included in the survey were close-ended questions where the answer choices were provided (see Appendix II for the complete questionnaire and answers by percentage). Close ended questions are preferable when more quantitative data is desired on participation rates and the intensity of feelings pertaining to issues regarding the fishery (Dillman 1978; Fenske 1983).

Northern pike

Northern pike sampled in all stations during 2014-2015 were processed much like the trout captured. Abundance could not be determined for northern pike due to low catch rate.

Temperature Monitoring

Onset© Computer Corporation Hobo® Water Temp Pro continuous temperature monitoring devices were installed at 7 sites in the White River Watershed to record water temperatures during 2002-2015. Water temperatures were recorded at ½ to 1 hour increments. The Wild Rivers Chapter of Trout Unlimited deployed, maintained and downloaded water temperature data using Box Car Pro 4.3 software from 2002 to 2005. WDNR deployed, maintained and downloaded water temperature data using Hoboware software from 2010 to 2015. Maximum daily mean temperatures from June through August (summer) were used for site and historic comparison purposes and to determine whether the stream was cold (< 20.7 C), cool (20.7 C to 24.6 C) or warm (> 24.6 C; Lyons et al. 1996).

WDNR COMMENT

Results

Trout populations

Brown trout (N = 1,316) and brook trout (N = 32) were captured during spring electrofishing surveys of the White River in 2014-2015 (N excludes recaptured fish). Brown trout comprised more than 98% of the trout captured and therefore is the primary species referred to in this report. The low frequency of brook trout is similar to historic surveys (Avery 1990, Toshner and Manz 2008).

Brown trout density declined between 1984 and 2015 ($R^2 = 0.72$, $p < 0.0001$, Figure 4). Brown trout density reached its highest level in 1988-1989 at 656 fish/mile and declined to its lowest level in 2014-2015 at 125 fish/mile (Figure 3; Appendix I, Table 3). Yearly and within station variation of brown trout density was often considerable. Annual brown trout density averaged 448 (N= 12, 1 SD = 200) fish/mile from 1984 to 2015 but ranged from 93 fish/mile (2015) to 757 fish/mile (1988; Figure 4; Appendix I, Table 4). The lowest annual brown trout densities of 139 and 93 fish/mile occurred in 2014 and 2015, respectively. Individual station brown trout density also differed but generally showed a decline with time. Between 1984 and 2015, density of brown trout (≥ 6 in) ranged from 77 fish/mile to 964 fish/mile in the various stations sampled (Appendix I, Table 4).

Compared to previous surveys, fewer fish were present in the 7.0 to 15.0 inch length groups in 2014 and 2015 (Figure 5). Density of 6 to 8.9 inch brown trout ranged from 31 fish/mile in 2014-2015 to 196 fish/mile in 1984-1986 (Appendix I, Table 3). Brown trout densities between 9 and 14.9 inches ranged from 34 fish/mile in 2014-2015 to 409 fish/mile in 1988-1989. Density of brown trout ≥15 inches ranged from 27 fish/mile in 1984-1986 to 64 fish/mile in 1992-1993 (Figure 6). The second highest density of brown trout ≥15 inches by sampling period

occurred in 2014-2015 (60 fish/mile). Mean length of brown trout has increased significantly over time ($R^2 = 0.5$, $P = 0.030$; Figure 7).

Brown trout sampled during the 2015 population estimate ranged in age from II to VII based on scale samples (Figure 8). Age-II brown trout accounted for 8% of the population in 2015 versus an average of 40% from 2003-2005. Age-II and age-III brown trout accounted for 27% of the population in 2015 versus an average of 69% from 2003-2005. Brown trout growth was similar among survey years (Figure 9). Age-II and age-IV brown trout averaged 7.7 and 13.7 inches, respectively, for all survey years. The oldest brown trout, age-VIII using scales as an aging structure, were represented in 2005 and 2015 but not in 2003 and 2004.

Agreement among age estimates determined from paired samples of scales and otoliths taken from individual angler harvested fish was 36% (Figure 10). When age estimates from structures differed, 83% and 13% were within 1 and 2 years of age, respectively. The maximum age difference of three years was a 14.9 inch brown trout which had a scale age of five and an otolith age of two. Relative to otoliths, scales appear to underage fish with a scale age of three but overage fish with a scale age of four and older. When age estimates from age structures differed, otoliths suggest fish with scale age of four and older were overaged by one to two years 77% of the time. The oldest brown trout aged by use of an otolith was age-X and was 20.5 inches in length. Length at infinity of brown trout derived from von Bertalanffy modeling was variable amongst aging structure and sampling method. Scale samples taken during electrofishing sampling produced a length at infinity of 39.1 inches. Length at infinity from samples of otoliths and scales taken from angler harvested brown trout were 43.0 and 25.0 inches, respectively.

Brook trout represented 2.5% of all trout captured in the White River from 2014-2015, similar to the 2003-2005 survey (1.6%). Relative abundance of brook trout for 2014-2015 was

0.9 fish/mile in the population estimate stations (Figure 1). In comparison, relative abundance of brook trout was 3.7 fish/mile in 2003 and 2005. Brook trout relative abundance was not available from surveys prior to 2003 on the White River.

Sport Fishery

Angler pressure in 2014 and 2015 was lower than previous years when a creel had occurred (Figure 11). Estimated angler hours declined by 3,766 hours (on average) since the 2004 and 2005 comprehensive survey. Total harvest, catch rate, harvest rate and exploitation also declined on average, when compared to previous surveys (Figure 12, 14 and 15). Though all these values decreased on average in 2014 and 2015, there were large differences in estimates between 2014 and 2015.

Estimates for catch and harvest rates, angler pressure, total harvest and exploitation all increased from 2014 to 2015. Total angler pressure increased by 927 hours between 2014 and 2015, with the greatest increases occurring in month of May (Figure 15). Catch rates in 2015 also increased to levels observed in previous years (Figure 13). Exploitation of brown trout ≥ 6 in. increased 12% between 2014 and 2015, and was similar to exploitation estimates after 1985. Exploitation of brown trout ≥ 15 in. increased slightly between 2014 and 2015 (2%) but remained lower than all other previous estimates of exploitation (Figure 14).

Annual electrofishing surveys

Catch per unit effort (catch/mile. CPUE) of brown trout was highly variable on the non-wadable station from 2006 to 2015 (Figure 16). Mean CPUE for brown trout surveyed in the non- wadable station was 76 fish/mile (1 SD = 25.7, N = 8) and ranged from 115 fish/mile in 2012 to 29.5 fish/mile in 2015. Correlation between mean CPUE of age-I brown trout from the wadable trend monitoring stations and the CPUE of brown trout 10.0 to 14.9 inches in length (representing age-III + brown trout) from the non-wadable trend monitoring station in the Bibon

Swamp showed a non-significant correlation (R^2 = 0.6, P = 0.13; Figure 17). However, the lowest and highest mean CPUE of age-I brown trout from wadable trend stations produced the lowest and highest CPUE of age-III brown trout two years later in the non-wadable trend station, respectively.

Catch per unit effort (catch/mile) of age-I and older brown trout was highly variable on Twenty Mile Creek (CV = 77 %) and moderately variable within the remaining trend sites (CV = 25% - 47%, mean CV = 42%). Catch per unit effort of age-I and older brown trout were highly correlated among the Long Lake Branch, Twenty-mile Creek, Eighteen-mile Creek, the upper White River and the lower White River (r = 0.78- 0.92) but not the South Fork of the White and the East Fork of the White (r = -0.02 – 0.50, Figure 18). Generally, catch per unit effort was highest on the South fork (mean CPE = 1270), lowest on the lower white river (mean CPE = 69) and variable among the remaining sites (mean CPE = 389-897, Figure 19). Relative abundance of both age-I and age-I and older brown trout dropped sharply at nearly every site in 2013 and relative abundances were the lowest observed in 2013 or 2014 at every trend station (Figure 18 and 19).

Age-0 brown trout catches were highly variable at wadable trend stations (CV = 57% - 96%, mean CV = 76%) except the South Fork of the White River (CV = 38%). Age-0 catch per unit effort was not as strongly correlated among sites as age-I and older catches. Age-0 catch per unit effort was highly correlated among the East Fork, Twenty Mile Creek and the upper White River (r = 0.79 – 0.857) and correlations were lower among other sites (r = -0.12 – 0.68). Age-0 CPE was highest on the South Fork (mean CPE = 4,579), lowest on Twenty Mile Creek (mean CPE = 167 trout/mile) and variable among remaining sties (mean CPE = 236 – 1,160, Figure 20 and 21). In 2013 and 2014 we did not capture any age-0 brown trout on Eighteen Mile Creek and Twenty Mile Creek, respectively.

Only the upper White River had a significant Ricker stock-recruitment relationship between age-0 CPE and age-I CPE the following year (observed vs. predicted, $R^2 = 0.598$, P = 0.025). The Ricker model did not fit the relationships between age-0 CPE and age-I CPE at the remaining sites well (observed vs. predicted, $R^2 = 0.03 – 0.26$, P = 0.16 – 0.73). Winter degree days (base 25ºF) had a significant negative correlation to relative abundance of age-I and older fish at three sites (upper White River, lower White River and the South Fork of the White River, $R^2 = 0.45 – 0.47$, P <0.05). A multiple regression model, including winter degree days and summer mean flow fit relative abundance of age-I and older fish in Eighteen Mile Creek (P = 0.0261). Age-0 relative abundance was positively correlated to fall flows on the Long Lake Branch (R^2 =, P = 0.044), and summer flows were positively correlated to age-0 CPE on Twenty Mile Creek ($R^2 = 0.633$, P = 0.0104).

Stable Isotope Analysis

Brown trout sampled in the summer on the upper South Fork of the White River had a significantly enriched $\delta\delta^{13}$C signature relative to brown trout sampled in the summer on the lower South Fork, near the confluence with the West Fork, and the main stem of the White in both spring and summer (Tukey's HSD, p<0.001, Figure 22). $\delta\delta^{13}$C signatures of brown trout sampled during the summer on the South Fork decreased with distance from Lake Two (Figure 23). Length adjusted δ^{15}N signatures for brown trout sampled in the summer on the South Fork of the White River overlapped with fish sampled in the spring on the upper White River, but were significantly depleted relative to fish sampled in the summer on the upper White River and fish sampled in the spring on the lower White River (Figure 23).

Three of the 23 fish we sampled during the fall on the upper South Fork had signatures within the range of fish sampled during spring and summer lower in the watershed (near the mouth of the South Fork and in the White River, Figure 23). These fish ranged in size from 10.1-

19.7 in. in total length. Of the remaining twenty, twelve had signatures within the range of fish sampled in the upper South Fork during the summer, seven had signatures more enriched than any fish we had previously sampled and one fish had a signature in the area of overlap between lower river sites and the upper South Fork (Figure 24).

Angler Questionnaire

Questionnaire return rates were 77.0% (147 out of 191) in 2015 and 72.8% (233 out of 320) in 2006. These are above average response rates considering that full-participation percentages are between (43-64%) as stated by (Sztramko et al. 1991). Respondents comprised a broad spectrum of ages and experience, and traveled from near and far to fish the White River. Ninety Three percent of respondents in the 2015 survey were male, which was similar to the 2006 survey (94%). The age composition of anglers that responded to the survey has increased. The 2015 survey showed that 68% of anglers were 50 years or older compared to 48% in the 2006 survey. The average age of anglers also increased from 48 in 2006 to 53 in 2015. Over three quarters of all anglers had fished the White River for more than 11 years. Just under half (48%) of respondents were local anglers, traveling less than 50 miles one way to reach their fishing location, while 39% traveled between 50 and 200 miles, and 14% traveled over 200 miles. The longest distance an angler traveled was 1,850 miles one way.

Fishing experience satisfaction among anglers was high but has decreased slightly over time. In 2014 and 2015, 78% of respondents said they were either very satisfied or somewhat satisfied with their fishing experiences on the White River which compares to 84% of anglers who answered similarly in 2006. However, the percentage of anglers who were “very satisfied” with their fishing experience declined from 37% in 2006 to 26% in 2015 and the percent of anglers “not at all satisfied” increased from 2% in 2006 to 8% in 2015. The average number of days anglers fished the White River ranged between 6 and 8 days for 2014 and 2015 survey

periods. Fishing the White River ranks as one of the most important fishing destinations for 68% of respondents. Over half (53%) of respondents in the 2015 survey thought that fishing on the White River has probably or definitely worsened compared to 49% in 2006.

Anglers were passionate with regard to how they fish the White River. Popular angling methods include fly fishing, use of live bait (worms), and artificial lures. A total of 50% of respondents answered that they never use live bait and 37% answered that they would never fly fish. Fifty six percent of respondents answered that they would never use artificial lures.

The average length of brown trout considered a trophy by anglers increased from 20 inches in 2006 to 25 inches in 2015. A total of 55% of respondents said the largest brown trout that they have caught in the White River was over 20 in. Many White River anglers practice live release of legal length trout. The majority (82%) of respondents in 2015 said they released some legal trout and kept others, with 30% releasing all legal trout. Only 6% of respondents said they kept all legal trout. Most anglers (90%) felt that the practice of live release of legal length trout has either increased or remained the same since they have been fishing the White River.

The more conservative regulation starting in 2016 on the White River, with an 18-inch length and a bag limit of one trout, was viewed as having a positive impact on the fishery by 61% of respondents, while 14% viewed it as neither positive nor negative, and 25% viewed it as probably or definitely negative. Eighty percent of anglers that never use live bait viewed the regulation change as having a positive effect on the White River. Anglers that never fly fish also believe that the regulation change will have a positive effect on the White River brown trout fishery but they were fewer (50% positive). Thirty three percent of anglers that would never fly fish viewed the more restrictive regulation as having a negative impact on the brown trout population.

When it came to the question of whether or not respondents favor or oppose trout regulations with an 18-inch minimum length and a bag limit of one trout, (47%) of respondents would definitely or probably oppose, and 44% of respondents would definitely or probably favor, and 9% were not sure. Seventy three percent of anglers that never use live bait favor the more conservative regulation. On the other hand, 70% of anglers that never fly fish oppose the more conservative regulation.

Northern Pike

A total of 13 northern pike were captured in White River surveys from 2014-2015, compared to 49 captured from 2003-2005. Mean length of northern pike from 2014-2015 was 26.4 inches (SD = 3.5, N = 13) and ranged from 18.0 to 30.2 inches. Mean length of northern pike from 2003-2005 was 21.0 inches (SD = 6.3, N = 49) and ranged from 7.2 to 35.8 inches.

Temperature Monitoring

Water temperatures during summer months in the White River system were colder in 2010-2012 and 2015 than 2002-2004, with the exception of the East Fork of the White River which had higher temperatures in 2010-2012 and 2015 than the 2002-2004 (Figure 26). Maximum summer daily mean temperatures (MSDMT) on Eighteen Mile Creek and the South Fork of the White River indicated cold water conditions throughout the survey period. MSDMT changed from cool to cold between survey periods on the White River at Pike River Road and Sutherland Bridge, the Long Lake Branch of the White River at Taylor Lane and Twenty Mile Creek at North Sweden Road. In contrast, mean, maximum and minimum air temperatures increased from 2002-2004 to 2010-2012, 2015 (WI State Climatological Survey).

Summary and Discussion

The White River was surveyed in 2014-2015 to determine the status of the fishery, add to the information collected in previous surveys and report on additional data collected per

management recommendations made by Toshner and Manz (2008). More specifically, we analyzed brown trout population parameters, creel survey metrics, wadable and non-wadable trend station data, brown trout movement via stable isotope analysis and changes in angler perceptions/ dynamics and angler opinions on regulations.

Brown trout density in the White River has been variable from year to year and station to station from 1984 to 2015. When consecutive years and stations within years are combined, however, the trend indicates a decrease in the brown trout abundance ≥ 6 inches. Densities of brown trout ≥ 6 inches have declined to 125 fish/mile in 2014-2015, compared to the consecutive year average of 523 fish/mile from 1984 to 2005. Brown trout density from 2014 to 2015 has fallen below the management recommendation of 300 to 550 fish/mile (Toshner and Manz, 2008), which was the density thought to be adequate to maintain natural recruitment. These lower densities were likely the result of one or more small year classes of fish in the system. Relative abundance of age-I brown trout at our long term trend stations declined sharply in 2013 and was the lowest observed at every station in 2013 or 2014, indicating weak year class strength in those years. Severe winters may have had an effect on age-I year class strength in the tributaries in 2012/2013 and 2013/2014. Winter degree days had a significant negative correlation on several tributaries to the White River that are thought to strongly contribute to recruitment. Overwinter mortality has been shown to regulate abundance in other populations of stream dwelling salmonids (Hunt 1969, Meyer and Griffith 1997). In addition, an extreme rain event in the late July of 2013, when approximately 7 inches of rain fell in a 24 hour period at Sutherland Bridge, caused a fish kill event. The fish kill was likely caused by the flushing of wetlands surrounding the White River which had low levels of dissolved oxygen at a time when water temperatures where warm, thus reducing available oxygen to trout. Quantifying the extent of the 2013 fish kill is difficult due to the remote nature and turbid water of the Bibon Swamp,

but anglers reported seeing in excess of 80 dead brown trout between Sutherland Bridge and Goldbergs Landing in the days following the rain event. The severity of the 2013 fish kill may have been high based on results from the non-wadable trend station data that indicated relative abundance of brown trout was the highest in 2012 from the time period from 2006 to 2012. The high relative abundance from the non-wadable trend station in 2012 would have been expected to carry over to the 2014 and 2015 population estimates, but this did not occur.

There has been a shift in the brown trout population size structure since the late 1980s toward larger fish. A shift in size structure toward larger fish seems desirable but may warrant concern. Reduction of new recruits into a population will shift a population size structure to larger, older fish if recruitment is low (Toshner 2004, Margenau et al. 2008, Zale et al. 2012). Length frequencies of brown trout in 2014 and 2015 exhibited low numbers of fish in the 7.0 to 8.9 inch and 9.0 to 15.0 inch length groups when compared to historic surveys (Figure 5). Furthermore, age-II and age-III brown trout accounted for 27% of the population in 2015 versus an average of 69% from 2003-2005. Both length frequency and age distribution of brown trout indicate low recruitment may be a likely cause for lower brown trout densities in the White River in 2014 and 2015.

Our results indicate the brown trout decline in density is likely not from angler over-harvest. The average exploitation of brown trout ≥ 6 inches has steadily declined from 35% in 1984-1985 to the all-time low of 11% in 2014-2015. Exploitation of large brown trout (≥ 15 inches) was 10 % in the current survey and also declined compared to the 1992-1993 and 2003-2004 exploitation rates of 22% and 25%, respectively. An 11% exploitation rate is generally considered sustainable, even for slow growing or sporadically recruiting salmonids (Hansen 1996, Ebner et al. 2008). However, even 11% exploitation could negatively impact the population if recruitment remains low.

A more restrictive regulation will be implemented beginning in 2016. The genesis of this regulation was the rule simplification process for trout fishing regulations that began in 2013. The former regulation was no longer available for use; the choice involved either a more liberal regulation or a more conservative regulation. At the time of the decision data present in this report had yet to be collected, but erring on the conservative side was thought to be prudent. In light of the 2014 and 2015 survey information decreasing angler harvest is warranted even though angler exploitation is currently low. Since the density of brown trout is now below management recommendations, using all available management tools to limit exploitation becomes reasonable. Future surveys will document changes in brown trout density and if recruitment increases and densities rise to within or above management goals, consideration of a less restrictive regulation should be considered.

Potential outcomes of a more restrictive regulation may include a decreased abundance of brown trout if intra-specific competition (i.e. predation of large brown trout on small brown trout) is affecting recruitment (Dong and DeAngelis 1998). However, historical data suggests that this is unlikely given the number of brown trout ≥ 15 inches has remained consistent between 1993 and 2015 while the number of brown trout from 6 to 14.9 inches has been widely variable.Anderson and Nehring (1984) found that a catch-and-release regulation in a wild trout population in Colorado had catch rates that average 48% greater than in the standard regulation of the same stream that had the additional benefit of catchable-size trout stocking. They also found that catch rate of trophy sized trout (≥ 15 inches) was 28 times greater in the catch and release section than in the harvest section. Carline et al. (1991) similarly found that catch rates of brown trout increased from 0.2 to 1.3/h after the implementation of a catch and release only regulation on a Pennsylvanian trout stream, they also found that abundance of age-I and older brown trout increased by 165%.

We did not detect a significant relationship between age-I brown trout abundance in headwater reaches (wadable trend stations) and age-III abundance on the lower White two years later. However, our sample size was small (N = 5) and there are initial indications that a positive relationship may exist between the two. Therefore, we recommend continuing annual sampling on the wadable trend stations and annual sampling on the non-wadable trend station.

Relative abundance of age-0 brown trout in our annual trend stations was highly variable. Age-0 abundances fluctuated widely and patterns were not always consistent across sites or years. It appears that synchronicity in age-0 relative abundance occurred in some years but not others (e.g. in 2012 vs. 2007; Figure 20 and 21). It may be that stream specific conditions (e.g. differences in flow and temperature regimes) are causing this variability. Age-0 relative abundance was not usually related to age-I abundance in the following year, except on the upper White River, where we documented a significant stock recruitment relationship.

Interestingly, age-I and older relative abundance was highly synchronous among four of the six trend stations. This suggests that stream conditions experienced across the watershed influence the relative abundance of age-1 and older brown trout at these sites. Winter intensity (winter degree days) was the stream variable most frequently correlated to age-I and older abundance (four sites, negative correlations). Over winter mortality of stream trout can be substantial (Hunt 1968, Meyer and Griffith 1997) and has largely been attributed to depletion of energy reserves (Cunjak 1988, Hutchings et al. 1999). However, our results should be interpreted with caution given the correlations among measured stream conditions (e.g. negative relationship between summer degree days and winter degree days) and the possibility of correlations with unmeasured stream conditions.

Brown trout $\delta^{13}C$ signatures decreased from the upper South Fork to the main stem of the White River which is inconsistent with patterns described in other watersheds (Doucett et al. 1996, Finlay 2001). We expected fish $\delta^{13}C$ signatures to increase in a downstream direction due to a combination of increased in-stream productivity and decreased proportional contribution from terrestrial sources (Doucett et al. 1996, Finlay 2001). The headwaters of the South Fork begin in a large, productive spring pond complex, including Lake Two (16 acres, 7 ft. max. depth). Primary producers within these spring complexes may be enriched in $\delta^{13}C$ (relative to downstream river reaches) due to high productivity coupled with low water velocities (Finlay et al. 1999, Finlay 2004, Ishikawa 2012) and this carbon may be contributing to fish production downstream from Lake Two, resulting in the pattern we observed. Regardless, the high degree of separation between brown trout sampled in the upper South Fork and those sampled in the lower South Fork and White River allowed us to distinguish between fish originating from each location. Though some overlap between South Fork and White River $\delta^{13}C$ signatures occurred, only one brown trout sampled during the fall spawning on the upper South Fork had a value within the range of overlap (Figure 23).

Based on $\delta^{13}C$ signatures, three of the 23 brown trout sampled during spawning on the South Fork originated from the lower South Fork or the White River. One of these brown trout was larger than any that had been captured in previous surveys on the South Fork (19.7 in. total length, WDNR unpublished data, 21 surveys, 1978-2015), while fish over 19 in. are relatively common in the White River (Toshner and Manz 2008). Twelve brown trout had signatures within the range of fish sampled during the summer on the South Fork and one fish had a signature that fell within the range of overlap between upstream and downstream reaches on the lower South Fork and White River. The remaining fish (n = 7) were more enriched than any fish

we sampled earlier in the season and likely originated upstream of our summer sampling sites (Figure 23).

This is one of a few studies that have applied naturally occurring carbon and nitrogen stable isotopes to describe movements of fish within a river system (Cunjak et al. 2005, Sepuvelda et al. 2009, Ramsay et al. 2012) and the only study, that we are aware of, which has documented the utility of carbon stable isotopes to discriminate between fish occupying stream reaches < 2.5 mi. apart. Given the small spatial scale, we observed an extremely wide range of carbon isotope signatures in fish sampled during summer (-21.3 to -30.3 $\delta^{13}C$) on the South Fork. Doucett et al. (1996) documented a similar range of $\delta^{13}C$ signatures in resident trout from sites separated by 11.2 mi. The gradient we described may be present in other tributaries that begin as productive lakes or springs in the watershed (e.g. West Fork, East Fork). Carbon isotopes may be used to track spawning movements at these sites.

Without samples from each nearby tributary, it is possible that the $\delta^{13}C$ depleted brown trout we sampled during the fall attained their signature in another tributary of the White that was not sampled (e.g. West Fork). It is also possible that some of the brown trout we sampled during the spring and summer may have been migrants from other reaches. This would be unlikely for brown trout sampled in the summer since movements of stream dwelling brown trout are generally low during summer (Clapp et al. 1990, Meyers et al. 1992, Ovidio et al. 1998, Burrell et al. 2000). Future work should compare $\delta^{13}C$ samples from invertebrates or more sedentary fish species (e.g. sculpin, Cunjak et al. 2005) from each major tributary in the upper White River to validate our current $\delta^{13}C$ baselines and interpretation of these data.

Our results highlight the connectivity of brown trout in the White River, and are consistent with the extensive literature on brown trout spawning movements via telemetry (Clapp

et al. 1990, Meyers et a. 1992, Ovidio et al. 1998, Burrell et al. 2000, Davis et al. 2015). The WDNR has invested extensive resources into protecting the watershed of the South Fork and enhancing in-stream fish habitat. Our results indicate that this work is not only supporting the local brown trout population but likely downstream populations as well.

Continuous temperature monitoring in the White River watershed from 2010 to 2015 was compared to results from 2002 to 2004. The maximum summer daily mean temperature was lower or stable at all monitoring locations with the exception of the East Fork of the White River, which had increased temperatures. In contrast, mean, maximum and minimum air temperatures increased from 2002-2004 to 2010-2012, 2015 (WI State Climatological Survey). In stream temperature dynamics are complex and influenced by a range of other variables (Poole and Berman, 2001). The contradiction between decreasing water temperature and increasing air temperature during survey periods may be partially explained by increased groundwater discharge into the White River during the 2010 to 2015 survey period. The drought of the mid-2000's and subsequent end of the drought in the late 2000's could have provided a mechanism for increased ground water discharge that buffered higher air temperatures from 2010 to 2015. Changing flow and temperature regimes due to climate change have the potential to substantially impact abundances of stream dwelling salmonids (Dunham et al. 2015). Modeled changes in stream temperature due to climate change (FishVis data viewer, http://ccviewer.wim.usgs.gov/FishVis/#) indicate that increased water temperatures in the mid to late 21st century may reduce thermal habitat for cold water species such as brown and brook trout. Due to these concerns, summer water temperature monitoring should be continued to monitor water temperature regimes in the White River and its tributaries.

The social component of anglers on the White River is complex. Replication of many aspects of the angler questionnaire from 2006 allowed comparison to responses from the angler questionnaire from 2015. Angler opinion corroborated population estimate data in regard to lower abundance of trout in the White River. When asked if fishing has improved or worsened those who indicated "worsened" cited fewer trout as the reason in 2006 (14%) increased to 40% in 2015. There remained a nearly even split of bait type choices among anglers however, anglers who answered they would "never" fly fish decreased by 7% and those who answered they would never use live bait increased by 11% from 2006 to 2015. The more conservative regulation starting in 2016 on the White River, with an 18-inch length and a bag limit of one trout was viewed as having a positive impact on the fishery by the majority of anglers (61%), although anglers who fished with live bait preferred it less than those who fly fish. However, when asked whether they favor or oppose the new regulation anglers were evenly split. Anglers who fished with bait strongly opposed the new regulation (70%) whereas anglers who fly fish strongly favored the new regulation (73%). Fortunately for bait anglers, sections of the White River, the Long Lake Branch of the White River and their tributaries still allow harvest opportunity and have an 8 inch minimum length restriction and a daily bag limit of 3 trout. If brown trout densities increase in future surveys, consideration should be given to liberalization of the regulations to allow anglers increased harvest opportunity. A lack of angler recruitment may be cause for concern on the White River. The average age of anglers who completed the questionnaire increased from 48 years in 2006 to 53 years in 2015. The percent of anglers 50 years of age or older increased from 48% in 2006 to 68% in 2015. Increasing angler recruitment on the White River will be critical for maintaining public interest in the watershed and justifying continued fisheries management activities.

WDNR COMMENT

Evaluation of previous management objectives (Toshner and Manz 2008, Italics) and future Recommendations

1. Population goals. *Proposed a management goal of 300-550 brown trout/mile ≥ 6 inches. At that density recruitment should be adequate to support the fishery*.

Brown trout densities from the 2014 and 2015 surveys for brown trout ≥ 6 inches have declined to 125 fish/mile and have decreased below the goal. Reasons for this are likely linked to low recruitment caused by harsh winters in 2012/2013 and 2013/2014 and the summer of 2013 fish kill caused by a large rain event. If recruitment increases in the future we expect brown trout densities to increase.

2. Regulations. *Implementation of regulation changes were not advised because harvest in the 2004 and 2005 creel surveys on the White River indicated angler exploitation was not limiting abundance of brown trout.*

The regulations on the White River have been changed as a result of the statewide trout regulation simplification process which began in 2013. In light of the decline of the brown trout population in the most recent survey the more restrictive regulation may be appropriate if only to provide a small degree of protection to the population. If future surveys show an increase in brown trout densities to within or above population management goals, consideration should be given to liberalizing regulations to allow anglers to harvest more brown trout.

3. Monitor recruitment. *Counting redds in the fall in tributaries that are known recruitment sources for the White River and comparing those to year class strength was proposed to provide information on the importance of the specific habitat types in the watershed.*

Redd counts were attempted in 2008 with the aid of volunteers. Results were difficult to discern and few redds were identified. This may have been due to timing of the investigation. In any case, the effort required and the usefulness of these data encouraged us to explore other routes to investigate recruitment and these are explored in this report.

Recommended continuous temperature monitoring data collection.

Continuous temperature monitoring data has been collected and results are included in this report.

4. Trout movement/passage. *Recommended studying movement patterns of brown trout.*

A grant proposal for radio tagging brown trout was submitted in 2009 to the Great Lakes Fish and Wildlife Restoration Initiative and was not chosen for funding. The cost of the radio tagging study was estimated to be $89,000. Due to the advancement of stable isotope technology and the low cost associated with this technique (~$1,000 for study described in this report) we used the method to demonstrate brown trout movement within the White River watershed. The results of which are included in this report along with management recommendations for further use of this technique.

Recommended completion of relative abundance surveys on the area of the White River from State Highway 63 downstream to the dam.

WDNR COMMENT

This section of the White River was sampled for the first time in 2005. Results showed low abundance of brown trout in the area which correlated to the high water temperatures observed in the section of river. While the lower section of the White River may be seasonally important to brown trout, completion of surveys in this logistically challenging section of river were considered lower priorities when compared to the annual trend monitoring and period population estimates, creel surveys and angler questionnaires.

Recommended exploring the condition of fish passage from Eighteen Mile Creek to the Long Lake Branch.

A fish passage survey evaluation was completed in 2009. Results of the survey indicated brown and brook trout could pass the area from the Long Lake Branch of the White River into Eighteen Mile Creek. We also found that all sizes of both brown and brook trout could navigate this heavily braided stream segment (Toshner 2009).

Proposed continued funding of beaver control activities for the White River system as a whole both for fish passage and water temperature concerns from dams.

Beaver control in the White River watershed is ongoing and is contracted by WDNR through the United States Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS). APHIS removed over 250 beaver and over 270 beaver dams from 2007 to 2016 in the White River watershed.

5. Northern pike. *Proposed continued monitoring of northern pike in the White River.*

Northern pike continued to be sampled during monitoring activities on the White River. The numbers of northern pike capture declined from 49 in the 2003 to 2005 survey to 13 in the 2104 to 2015 survey.

6. Age validation. *Recommended the use of otoliths from angler harvested brown trout for comparison to scales to generate aging data and to discern differences in brown trout longevity.*

Otoliths were collected from angler harvested brown trout in 2014 and 2015 and results are presented in this report. Prior to the use of otoliths for age interpretation the oldest scale age for a brown trout was 8 years. Otoliths helped identify a 10 year old brown trout that was 20.5 inches in length. We found that interpretation of both scales and otoliths present challenges when trying to accurately determine the age of brown trout. We propose an age validation study using coded wire tags on age-I brown trout sampled in the wadable trend monitoring stations. This method would provide a "known" age fish sample that we could use to correlate with aging data in the future. We also recommend collection of both otoliths and scales from the tagged brown trout when encountered during surveys. Until results from an age validation study are analyzed, population estimate surveys should continue to collect a subsample of scales which can be used to provide comparative data to historic surveys. Accurate age assessment is important to determine year class strength in the White River.

7. Future surveys. *Proposed future population, creel, angler questionairre and continuous temperature monitoring surveys on the White River should be conducted every 10 years.*

WDNR COMMENT

The 2014-2015 survey accomplished this recommendation. We propose to continue this frequency with the next comprehensive survey to be scheduled for 2024-2025.

Proposed utilizing stations longer in length due to movement out of the one mile stations and considerable differences found between the alternate stations surveyed in 2005 and the historic locations along with the advantage of including a larger portion of the study area. The proposal called for three stations, each four miles in length.

The 2014-2015 survey utilized two stations that were each four miles in length, the upper and middle stations. Logistically the sampling of the lower station would require an extra two electrofishing days and is in a location that is difficult to access, therefore we recommend future surveys utilize the upper and middle stations only. We feel that these stations adequately represent the study area, especially in terms of where angler effort is concentrated and will adequately reflect population trends in the White River as a whole. In addition, these stations require only one week to survey which is important since the timing of the survey conflicts with lake survey efforts the Brule Fishery office conducts annually.

Recommended annual electrofishing survey be completed on the middle station utilizing one mini-boomshocker with one pass to provide relative abundance, length frequency and year class strength information on brown trout.

This recommendation has been completed with the exception of 2013, which was due to unconducive weather conditions. The results of this survey are presented in this report. We recommend the annual frequency of this survey to continue. In correlation with the non-wadable trend station monitoring we recommend annual wadable trend monitoring to continue. We propose sampling the wadable trend stations of Twenty Mile Creek, Eighteen Mile Creek, Long

Lake Branch of the White River, South Fork of the White River and East Fork of the White River. The list of stations eliminates the wadable station on the White River due to the inability to efficiently sample this location. The continuation of wadable stream trend monitoring enables the quantification of year class strength through the use of age-I brown trout abundance.

Proposed several recommendations for future creel surveys.

Due to our desire to maintain the comparability of creel surveys the protocol remained similar in 2014-2015. Shortening the creel survey to reduce the cost of gathering data was the only creel recommendation acted upon in 2014-2015.

8. Partners. *Recommended working with interested parties to assist in accomplishing management recommendations, the completion of which will help further our understanding of the unique fishery that the White River* supports.

Partners worked with include, Bayfield Regional Conservancy, Bibon Swamp Advisory Committee, Friends of the White River, United States Forest Service, United States Fish and Wildlife Service, West Wisconsin Land Trust and The Wild Rivers Chapter of Trout Unlimited. Further protection of the White River watershed has occurred since the prior report. Hundreds of acres have been acquired and protected and numerous public education events held. Continuing and possibly expanding these efforts are encouraged in the future.

WDNR COMMENT

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Table 1. Description of the seven strata used in the 2014 and 2015 creel survey.

Strata	Time period
1	Opening Weekend
2	Remainder of May
3	June before the Hex hatch
4	Hex hatch
5	Remainder of July
6	August
7	September

Table 2. Angler pressure estimates for 1984-2015. Estimates prior to 2014 included information from angler questionnaires, only angler interviews were used after 2005. Pressure by strata were only available for 2004-2015.

Fishing pressure (angler hours)

Year	Strata 1	Strata 2	Strata 3	Strata 4	Strata 5	Strata 6	Strata 7	Total
1984								**9760**
1985								**12087**
1992								**12676**
1993								**13377**
2004	786	1841	792	1987	284	575	747	**7013**
2005	595	2862	665	1567	315	459	598	**7061**
2014	138	673	356	1051	120	204	266	**2807**
2015	510	858	538	1045	159	272	353	**3734**

Table 3. Catch and harvest rates of trout from the White River study area. Estimates for July after the hex hatch through September in 2014 and 2015 were based on mean catch rates for surveyed period, excluding opening weekend 2014.

Creel Strata	Trout Species	2004 Catch/Hr	2004 Harvest/Hr	2005 Catch/Hr	2005 Harvest/Hr	2014 Catch/Hr	2014 Harvest/Hr	2015 Catch/Hr	2015 Harvest/Hr
Strata 1	Brown	0.42	0.22	0.51	0.34	0.03	0.01	0.19	0.12
	Brook	0.03	0.01	0.02	0.01	0.00	0.00	0.04	0.03
	Total	0.45	0.23	0.53	0.35	0.03	0.01	0.23	0.14
Strata 2	Brown	0.75	0.30	0.72	0.25	0.14	0.05	0.50	0.12
	Brook	0.07	0.03	0.05	0.01	0.02	0.00	0.08	0.03
	Total	0.82	0.33	0.77	0.26	0.17	0.05	0.58	0.15
Strata 3	Brown	1.09	0.18	0.81	0.21	0.22	0.08	0.56	0.12
	Brook	0.04	0.00	0.09	0.00	0.02	0.01	0.16	0.01
	Total	1.13	0.18	0.90	0.21	0.24	0.09	0.72	0.13
Strata 4	Brown	0.52	0.12	0.23	0.07	0.34	0.05	0.34	0.05
	Brook	0.00	0.00	0.02	0.00	0.03	0.00	0.06	0.00
	Total	0.52	0.12	0.25	0.07	0.37	0.05	0.40	0.05
Strata 5	Brown	1.16	0.10	0.55	0.11		0.06		0.10
	Brook	0.30	0.00	0.11	0.05		0.00		0.02
	Total	1.46	0.10	0.66	0.16				
Strata 6	Brown	1.16	0.10	0.41	0.03		0.06		0.10
	Brook	0.30	0.00	0.19	0.06		0.00		0.02
	Total	1.33	0.09	0.60	0.09				
Strata 7	Brown	0.43	0.15	0.49	0.14		0.06		0.10
	Brook	0.25	0.00	0.05	0.00		0.00		0.02
	Total	0.68	0.15	0.54	0.14				
Season Average	Brown	0.79	0.17	0.53	0.16				
	Brook	0.14	0.01	0.08	0.02				
	Total	0.93	0.17	0.61	0.18	0.20	0.05	0.48	0.12

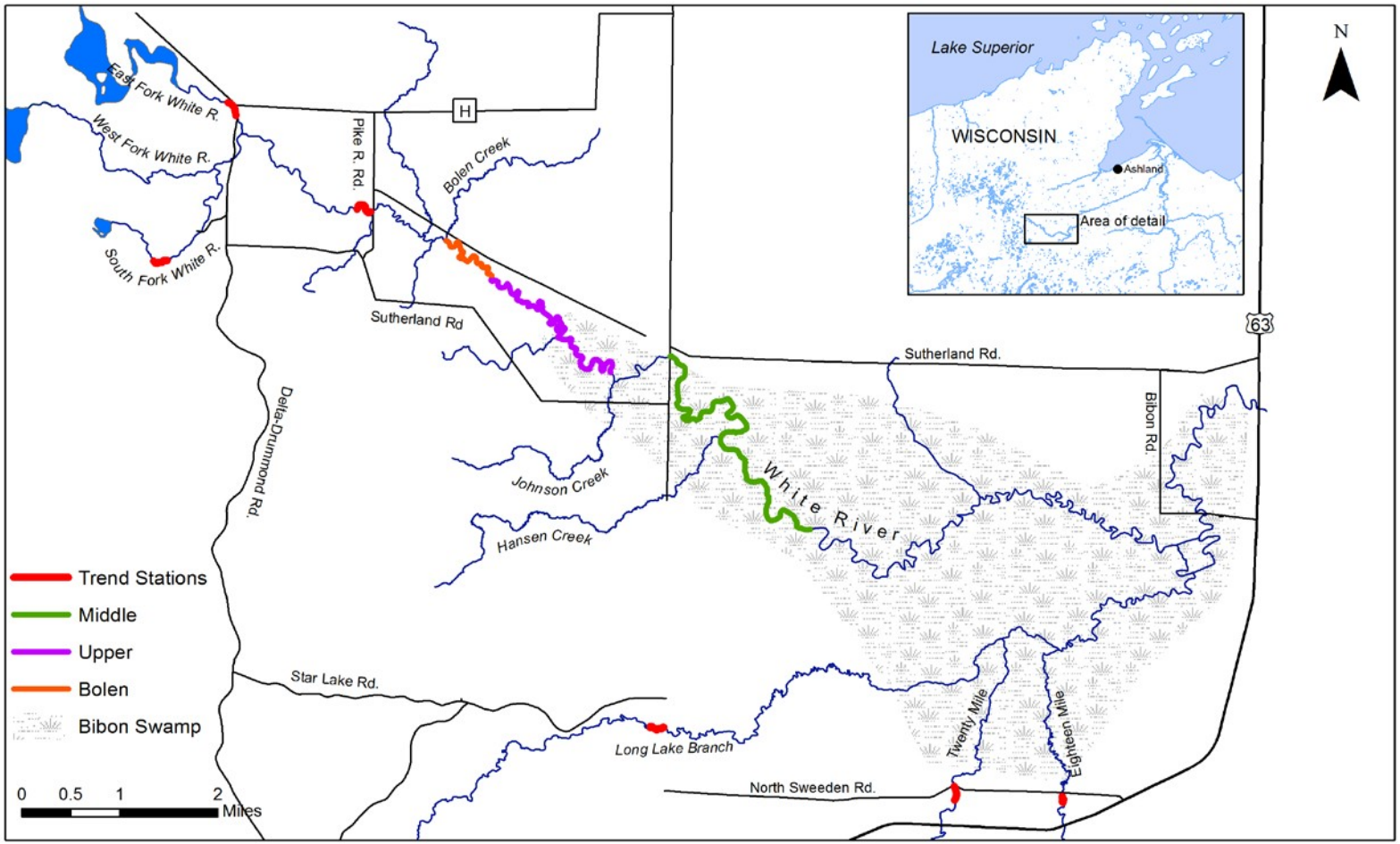


Figure 1. Map of the White River Watershed, 2014 and 2015 population estimate reaches and long term trend stations, Bayfield County, Wisconsin.

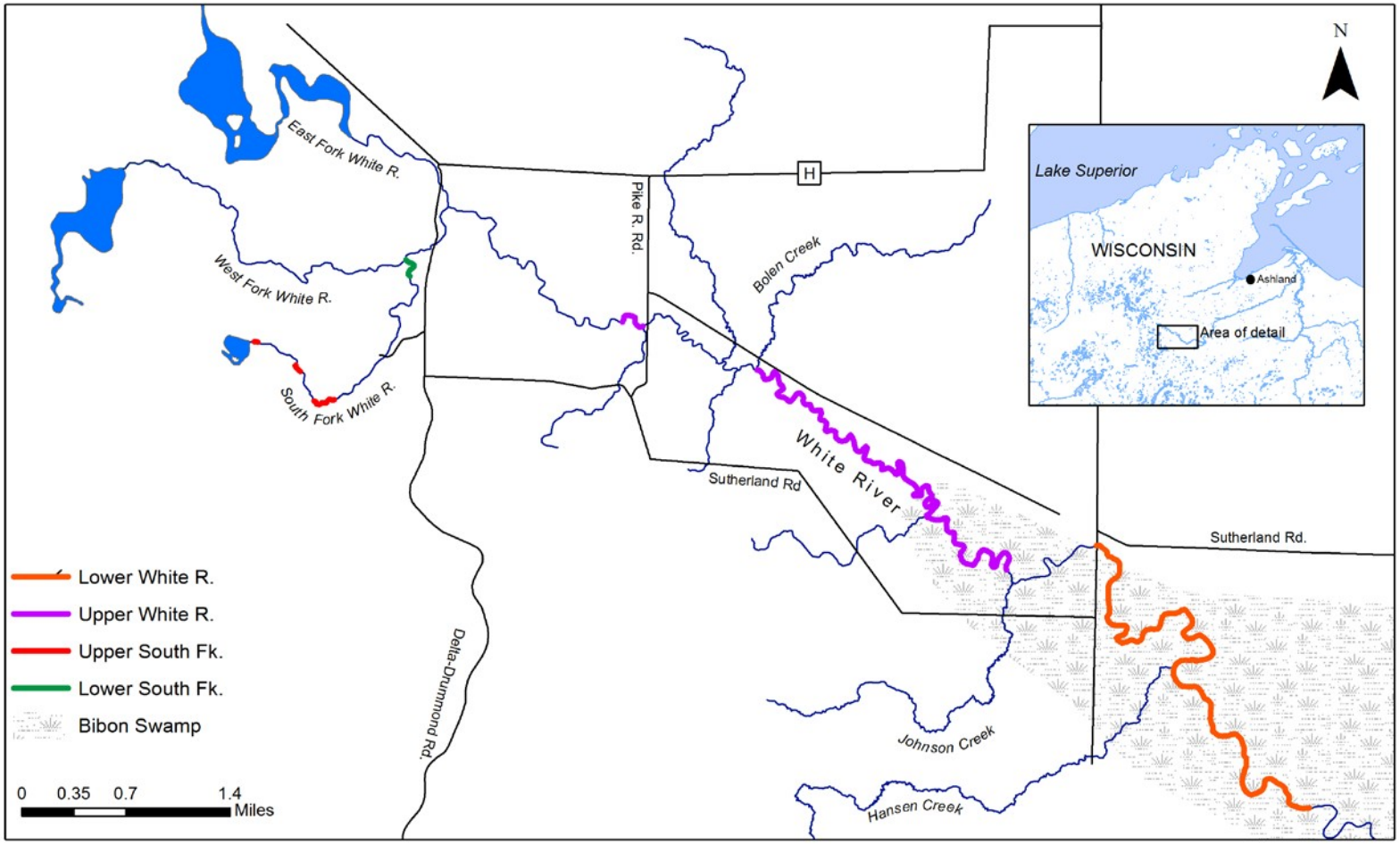


Figure 2. Location of sampling reaches for brown trout stable isotope analysis.

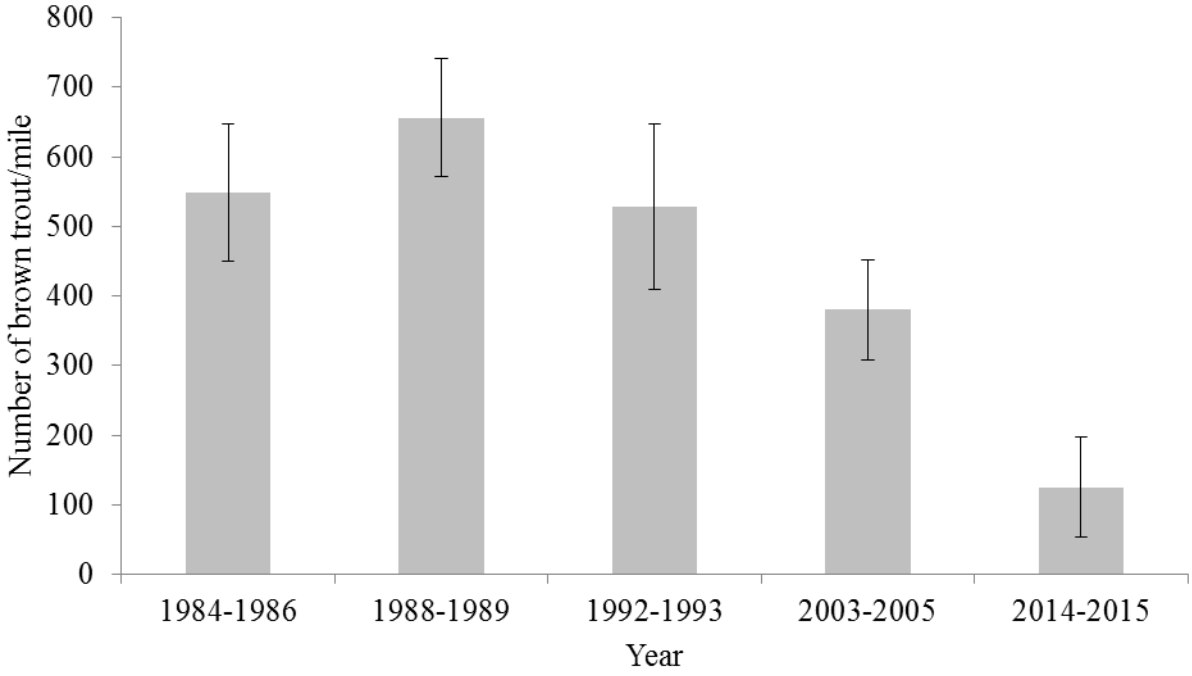


Figure 3. Density of brown trout ≥ 6 inches (fish/mile ± 95% confidence intervals) by consecutive years combined and all stations combined in White River, Bayfield County, Wisconsin.

WDNR COMMENT

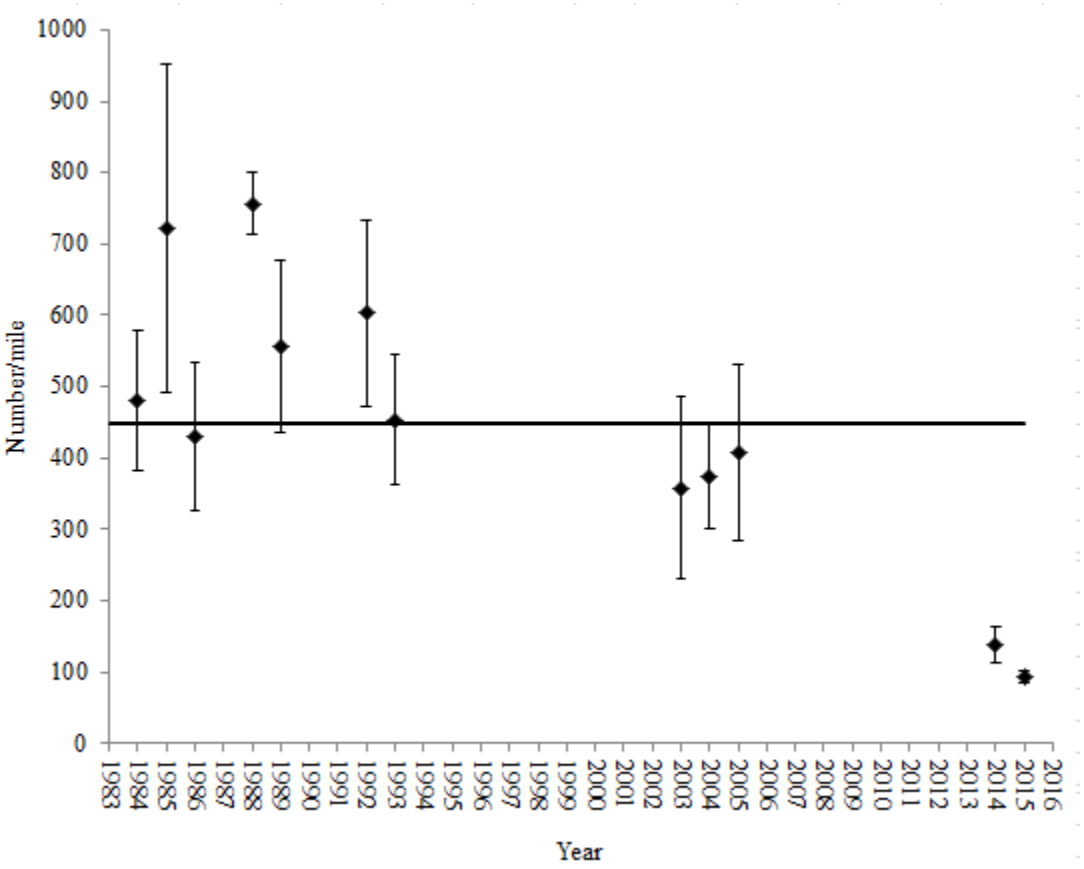


Figure 4. Number of brown trout ≥ 6 inches (fish/mile ± 95% confidence intervals) by year with all stations combined in White River, Bayfield County, Wisconsin. Horizontal line represents average brown trout density (448 fish/mile).

WDNR COMMENT

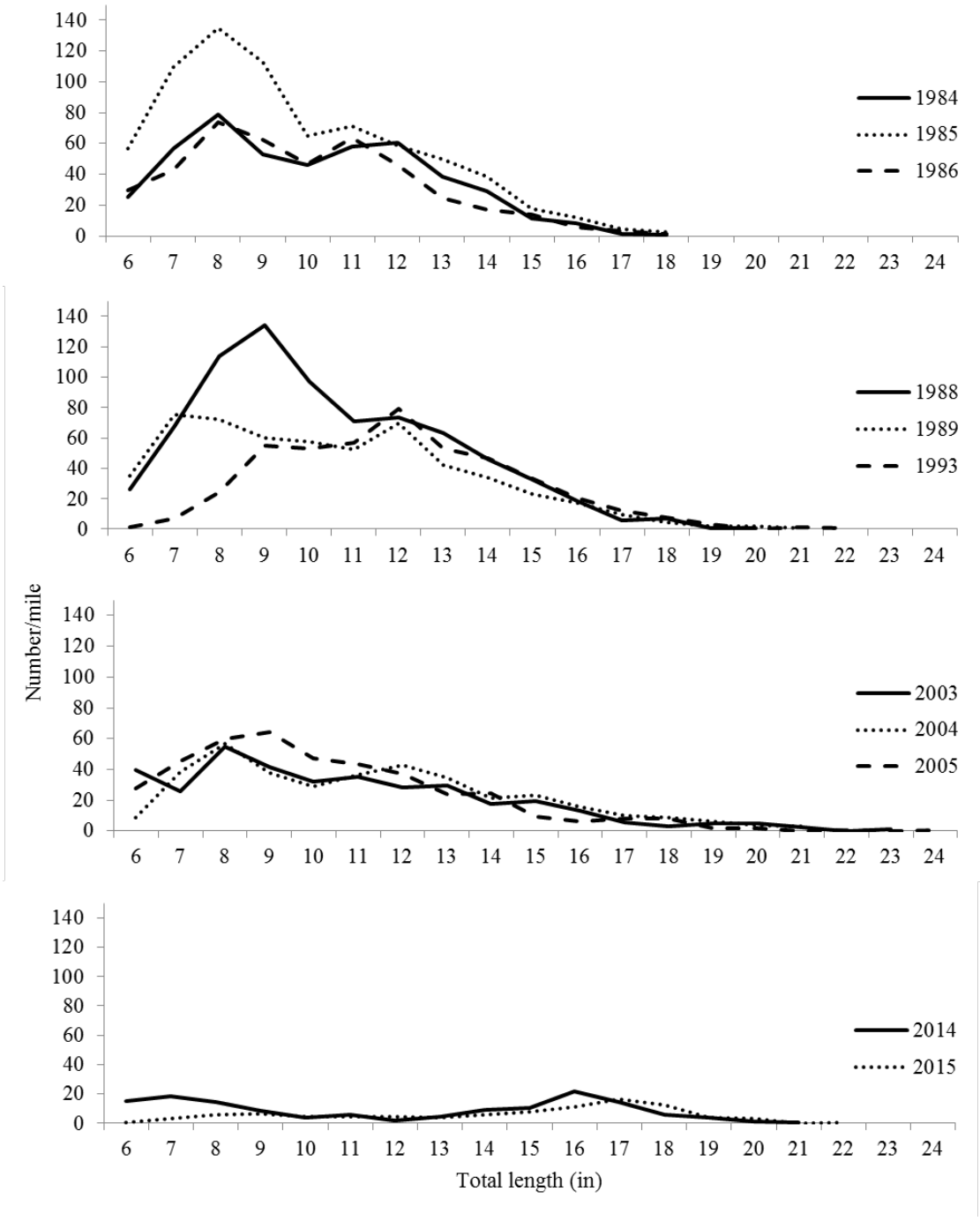


Figure 5. Brown trout abundance by length with all stations combined, White River, Bayfield County, Wisconsin.

WDNR COMMENT

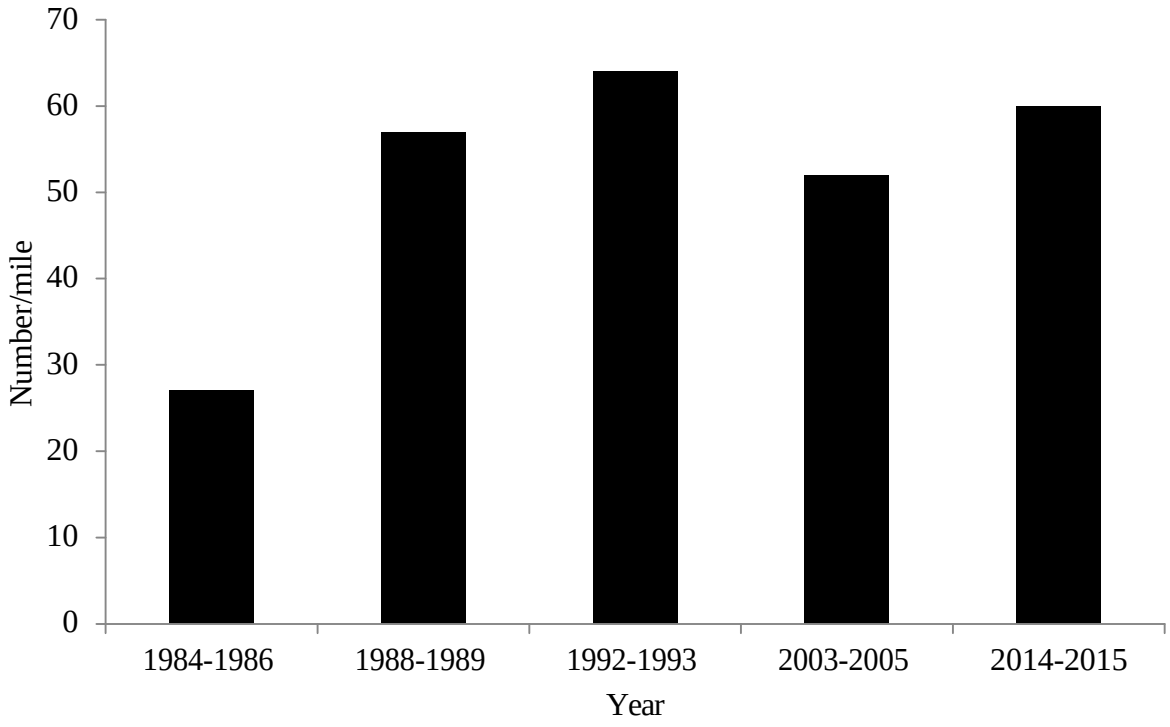


Figure 6. Density of brown trout ≥ 15 inches consecutive years combined and all stations combined in White River, Bayfield County, Wisconsin.

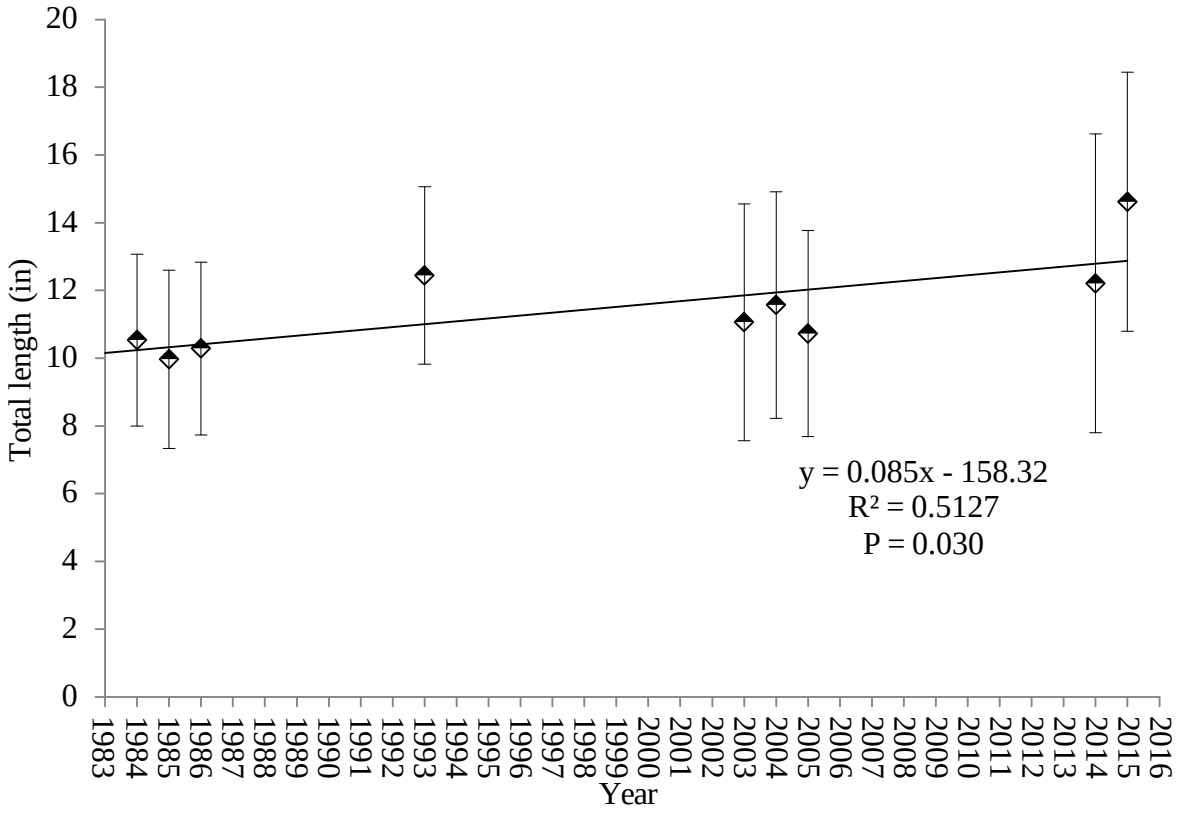


Figure 7. Mean length of brown trout by year with all stations combined in White River, Bayfield County, Wisconsin. Errors bars represent ± 1 SD. Solid line represents linear trend.

WDNR COMMENT

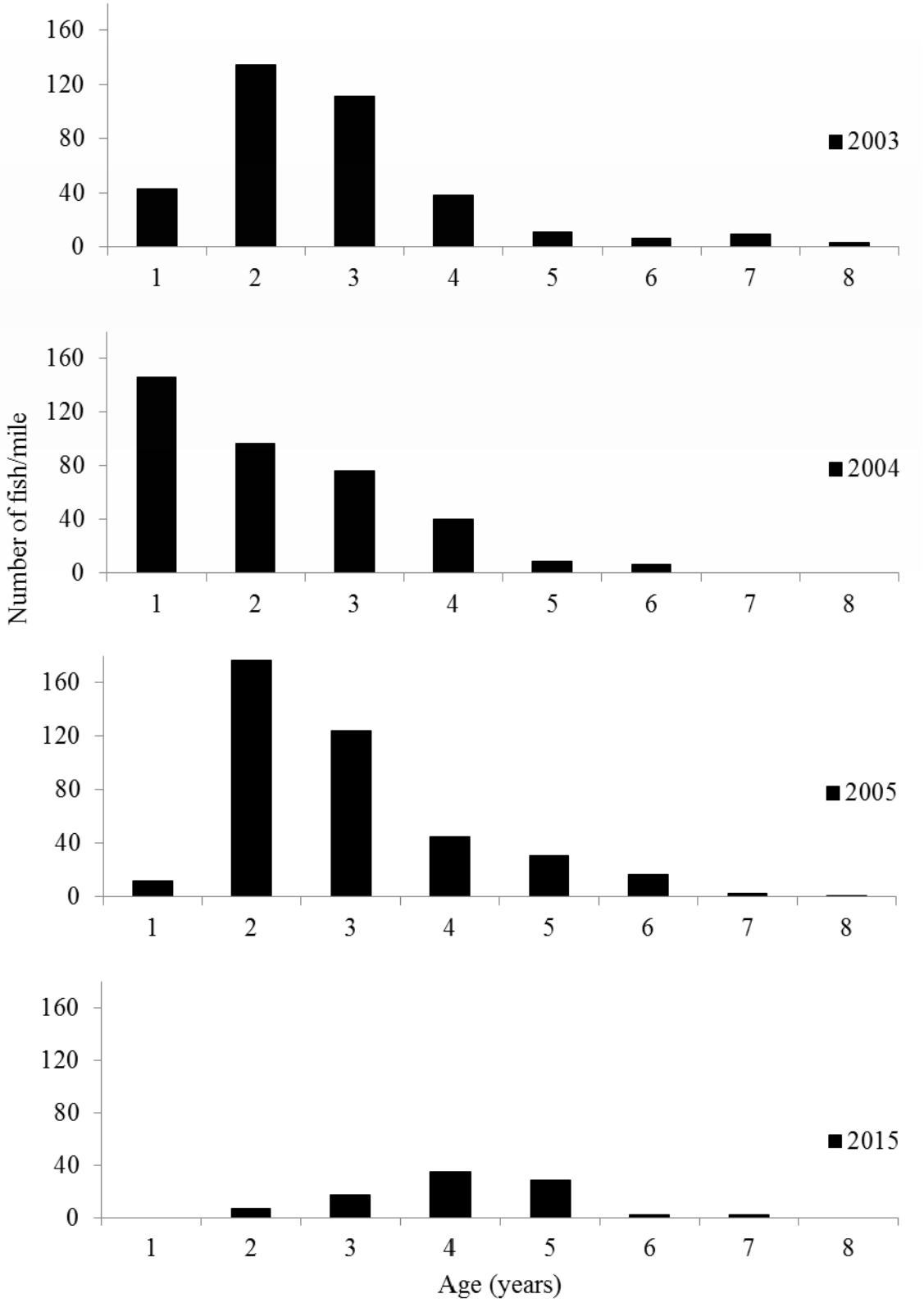


Figure 8. Density of brown trout by age and year, White River, Bayfield County, Wisconsin.

WDNR COMMENT

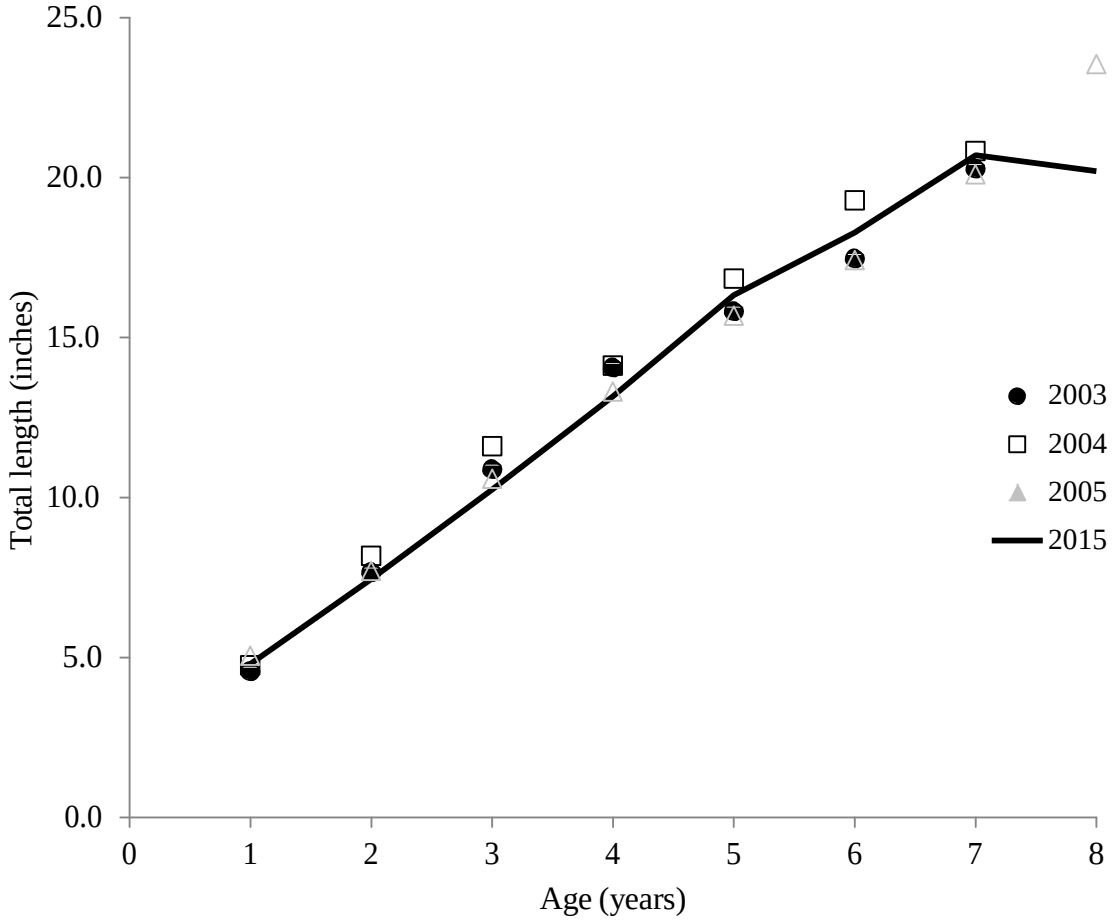


Figure 9. Brown trout length at age, White River, Bayfield County, Wisconsin, 2003-2015. Mean length at age in 2003 and 2005 determined from Frazier-Lee back calculations.

WDNR COMMENT

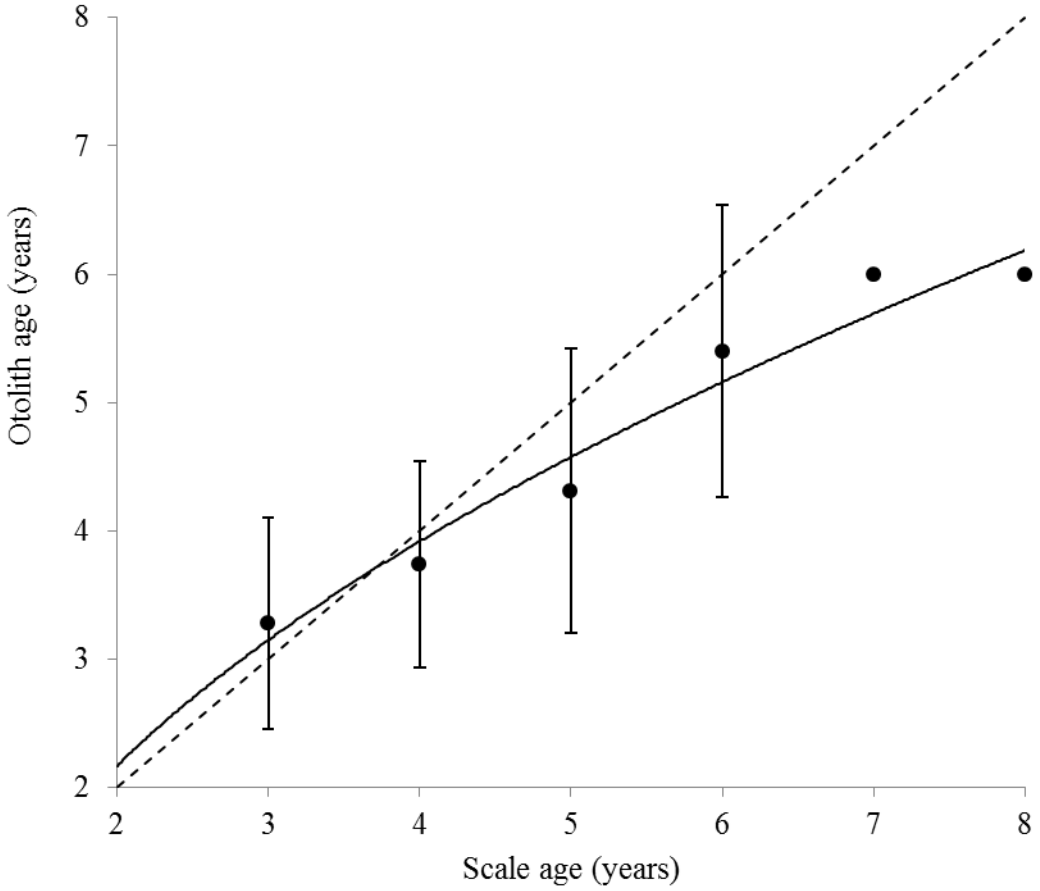


Figure 10. Mean otolith age (circles) compared to the estimated scale age for angler harvested brown trout during the 2014 and 2015 fishing seasons, White River, Bayfield County, Wisconsin. Errors bars represent ± 1 SD. Solid and dashed lines represent the age bias curve and theoretical 1:1 agreement, respectively.

WDNR COMMENT

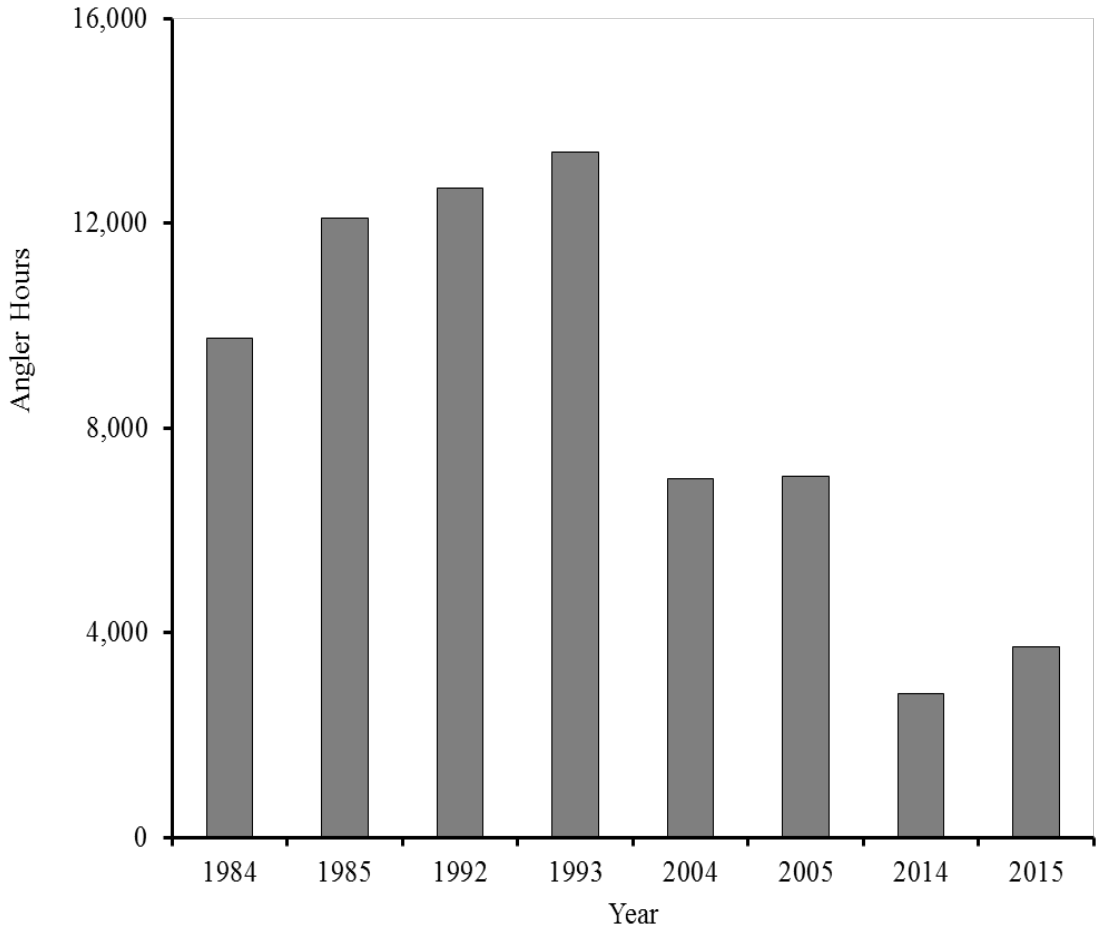


Figure 11. Total angler hours expended between 1984 and 2015 on the White River, Bayfield County, Wisconsin.

WDNR COMMENT

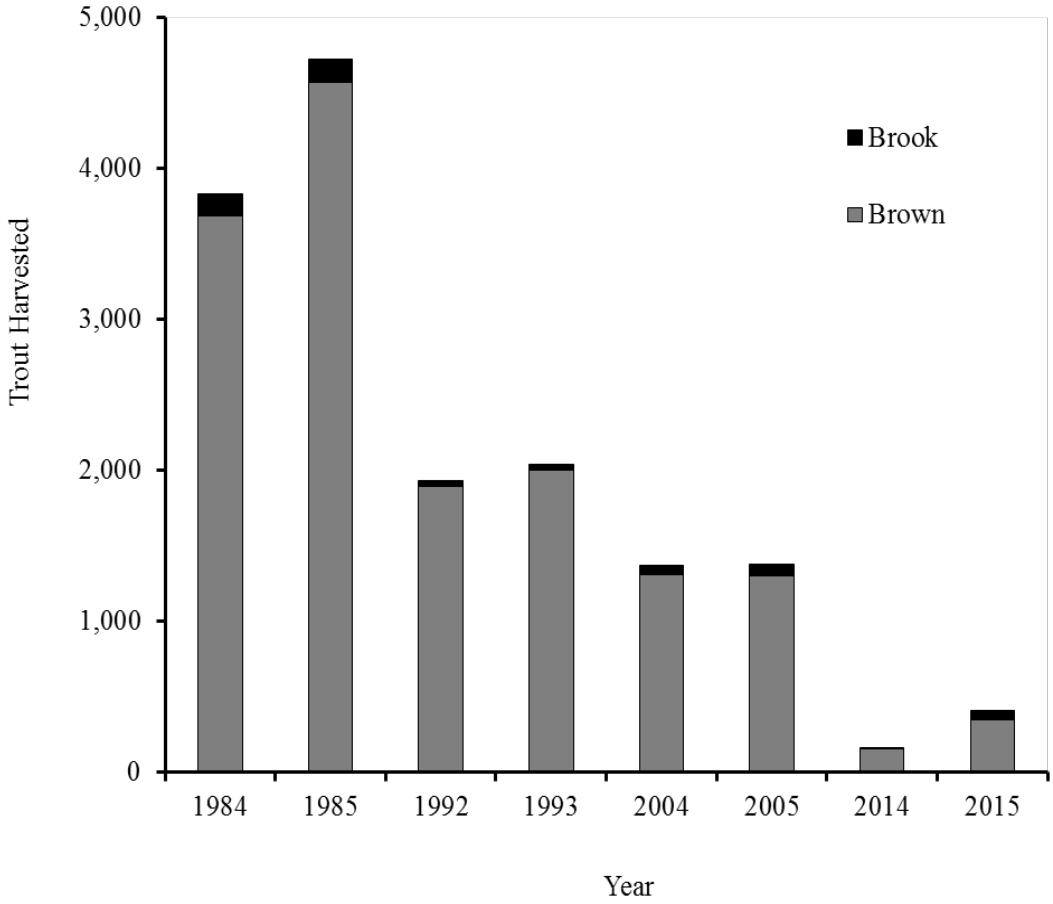


Figure 12. Total harvest of brook and brown trout between 1984 and 2015 on the White River, Bayfield County, Wisconsin.

WDNR COMMENT

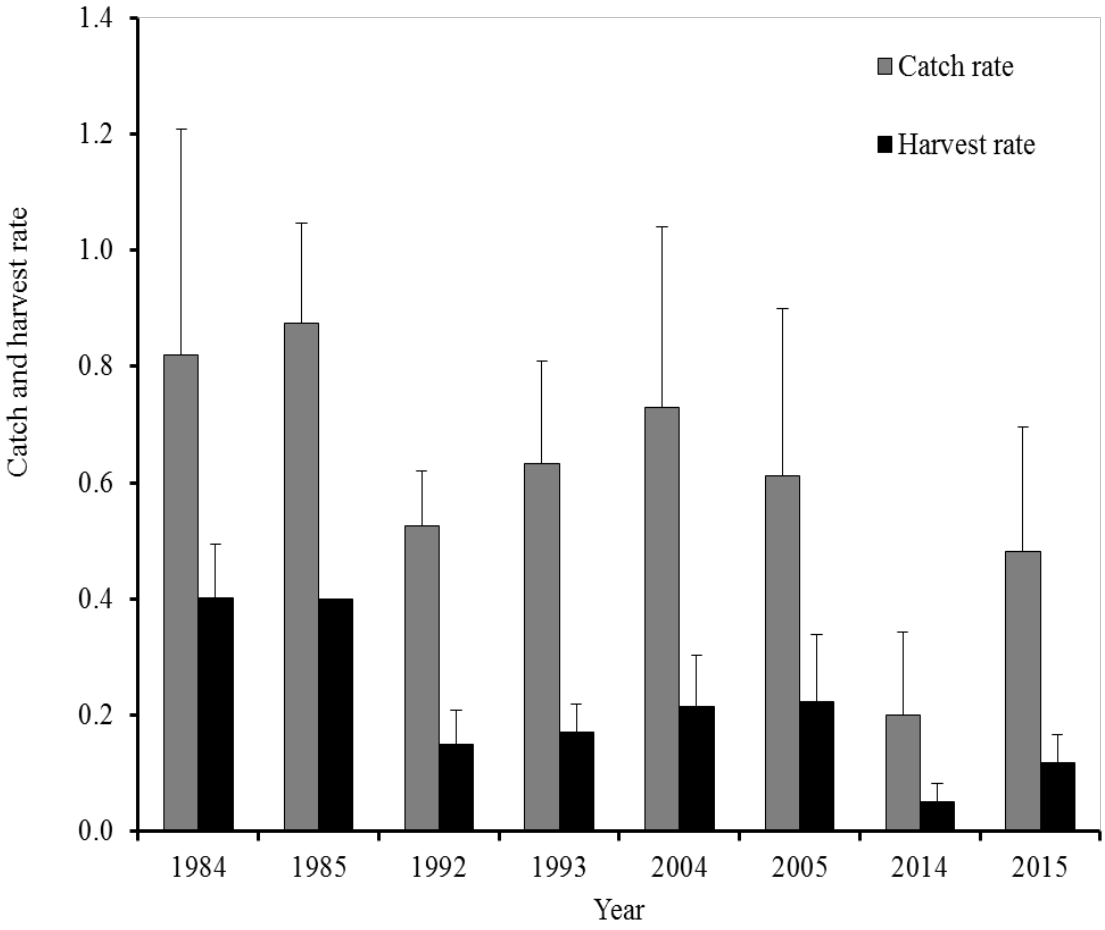


Figure 13. Mean catch and harvest rates (± 1 SD) for creel surveys conducted between 1984 and 2015 on the White River, Bayfield County, Wisconsin. Between 1984 and 1993, harvest and catch rates were estimated by incorporating both creel clerk interviews and voluntary reporting by anglers. After 1993, only creel clerk interviews were used for catch and harvest calculations.

WDNR COMMENT

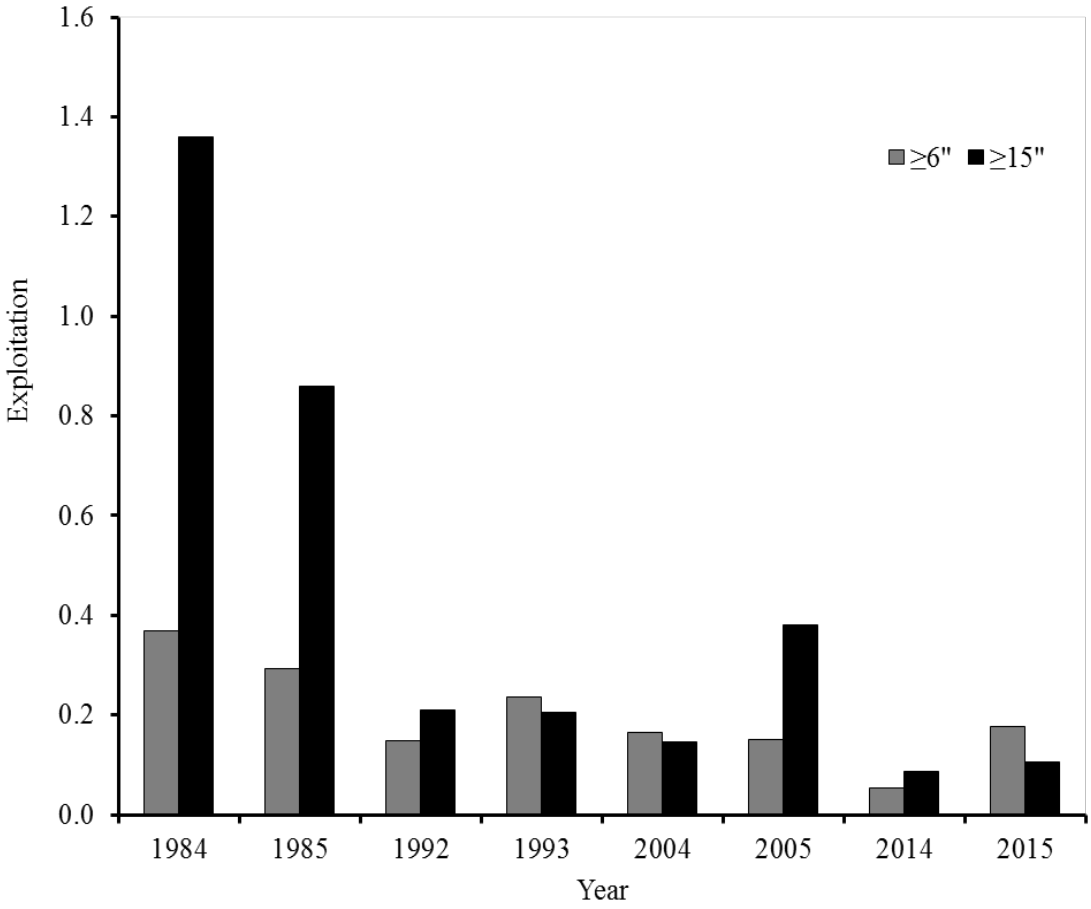


Figure 14. Exploitation of brown trout ≥ 6 inches and ≥ 15 inches on the White River, Bayfield County, Wisconsin.

WDNR COMMENT

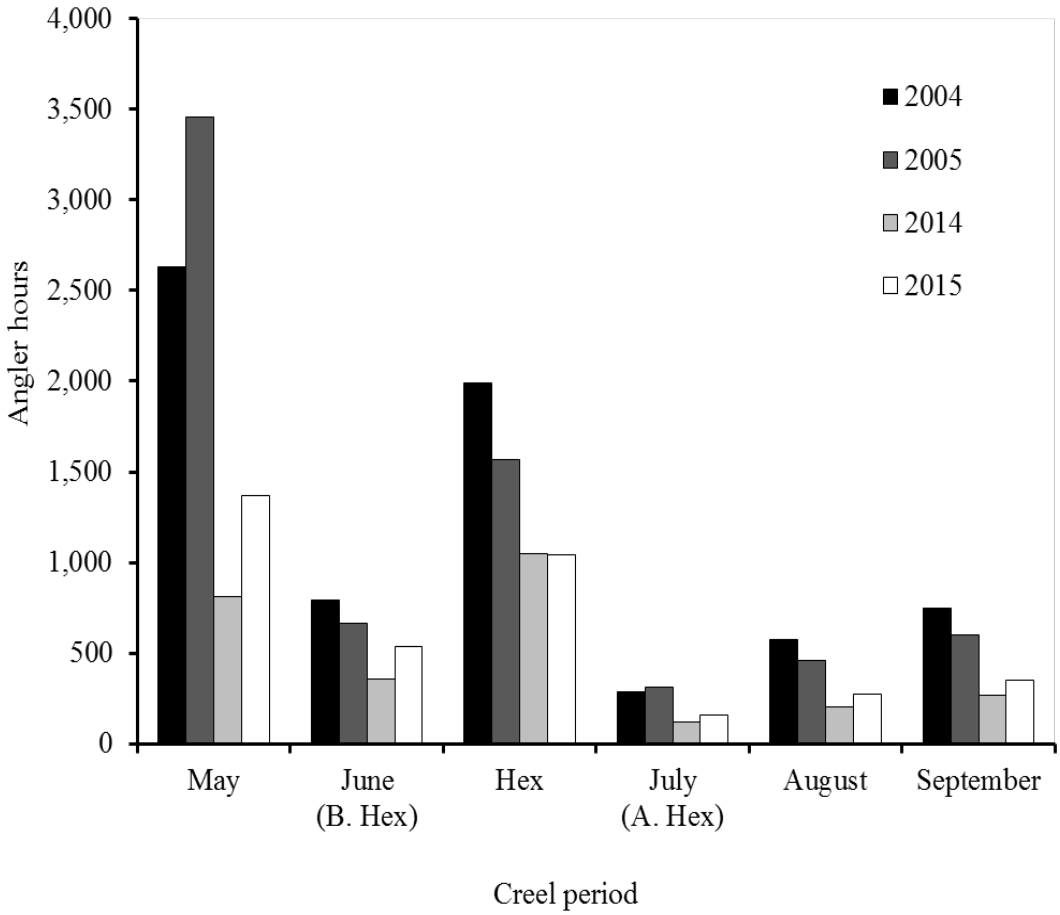


Figure 15. Total angler hours separated by creel period for the White River, Bayfield County, Wisconsin. June (B. Hex) = June prior to the hex hatch, Hex = during the hex hatch in late June and early July, July (A. Hex) = July after the hex hatch.

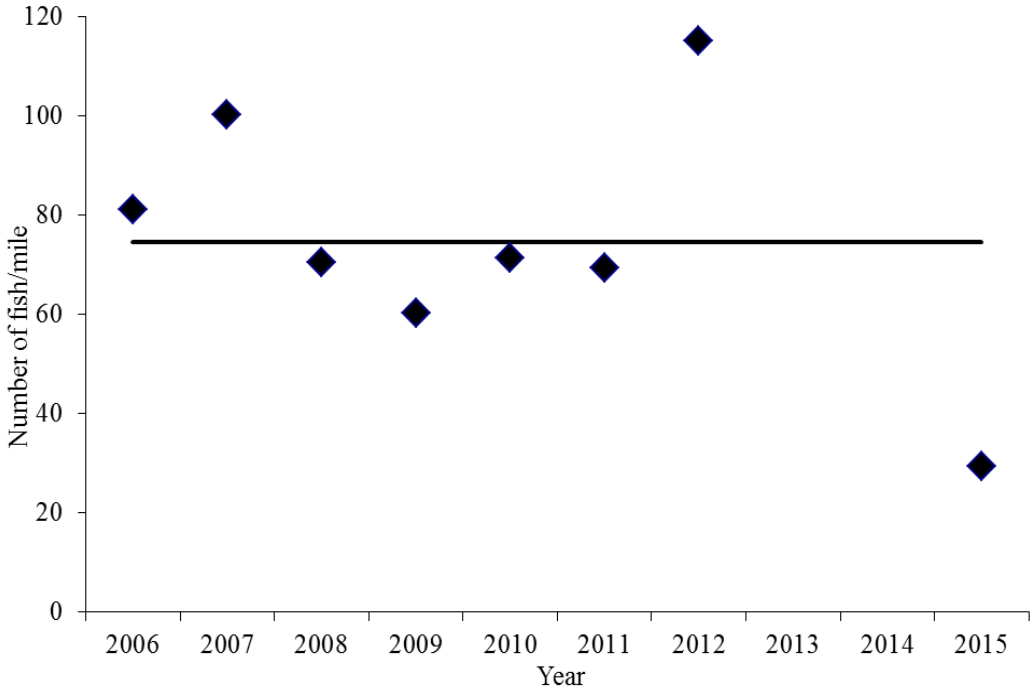


Figure 16. Relative abundance of brown trout at non-wadable long term trend station on the White River, Bayfield County, WI. Solid black line represents the mean relative abundance (75 fish/mile).

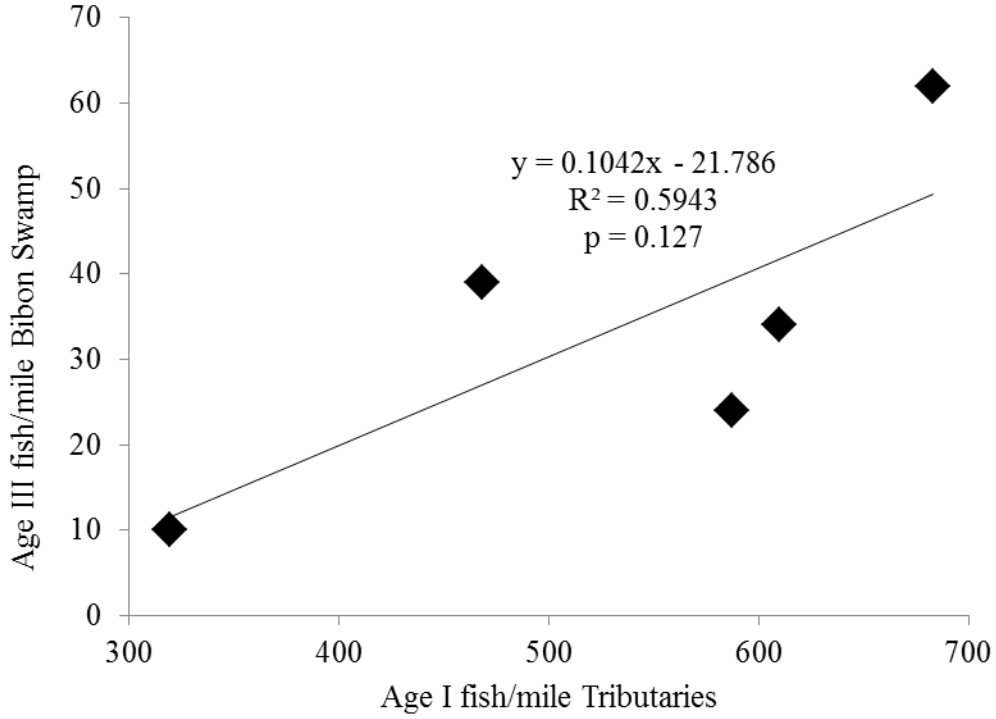


Figure 17. Relation of age-I brown trout sampled in wadable tributary trend stations to age-III brown trout found two years later in the non-wadable trend station in the Bibon Swamp, White River, Bayfield County, Wisconsin. Solid line represents linear trend.

WDNR COMMENT

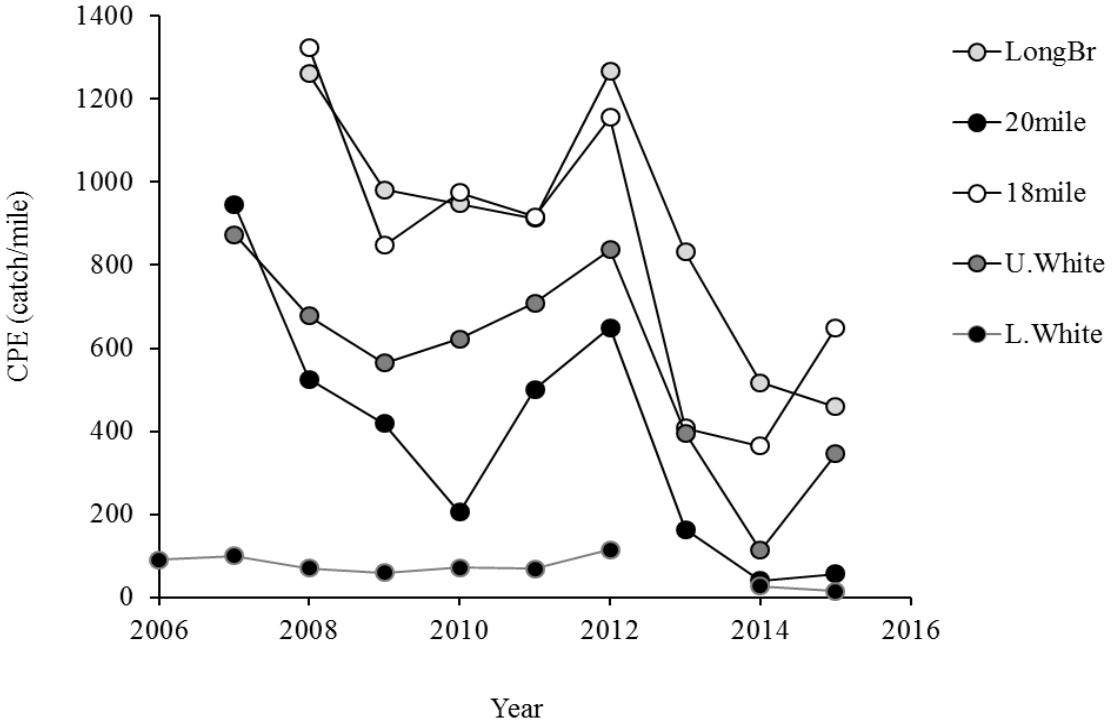


Figure 18. Relative abundance of age-I and older brown trout at long term trend station in the White River Watershed, Bayfield County, WI.

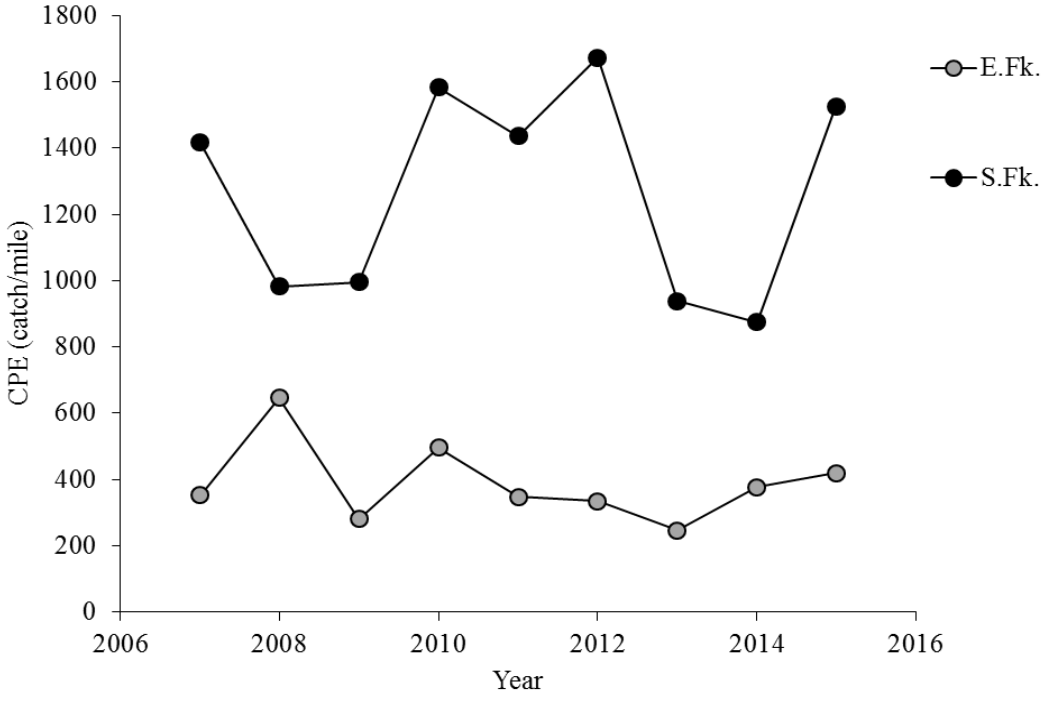


Figure 19. Relative abundance of age-I and older brown trout at long term trend station in the White River Watershed, Bayfield County, Wisconsin.

WDNR COMMENT

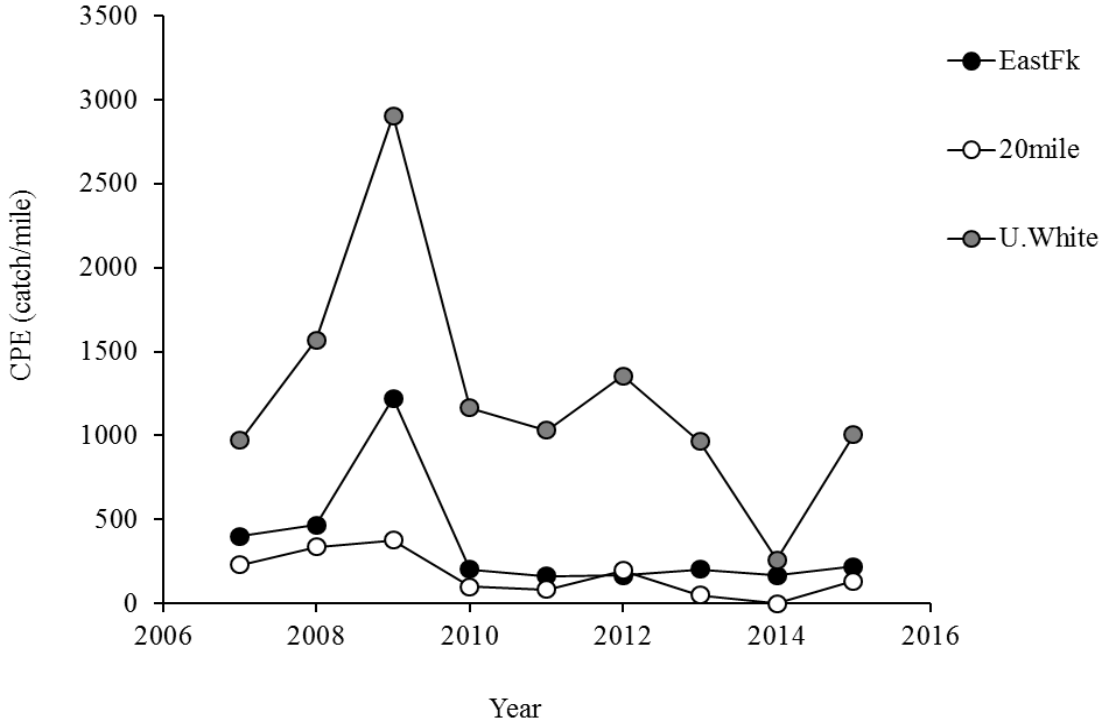


Figure 20. Relative abundance of age-0 brown trout at long term trend station in the White River Watershed, Bayfield County, Wisconsin.

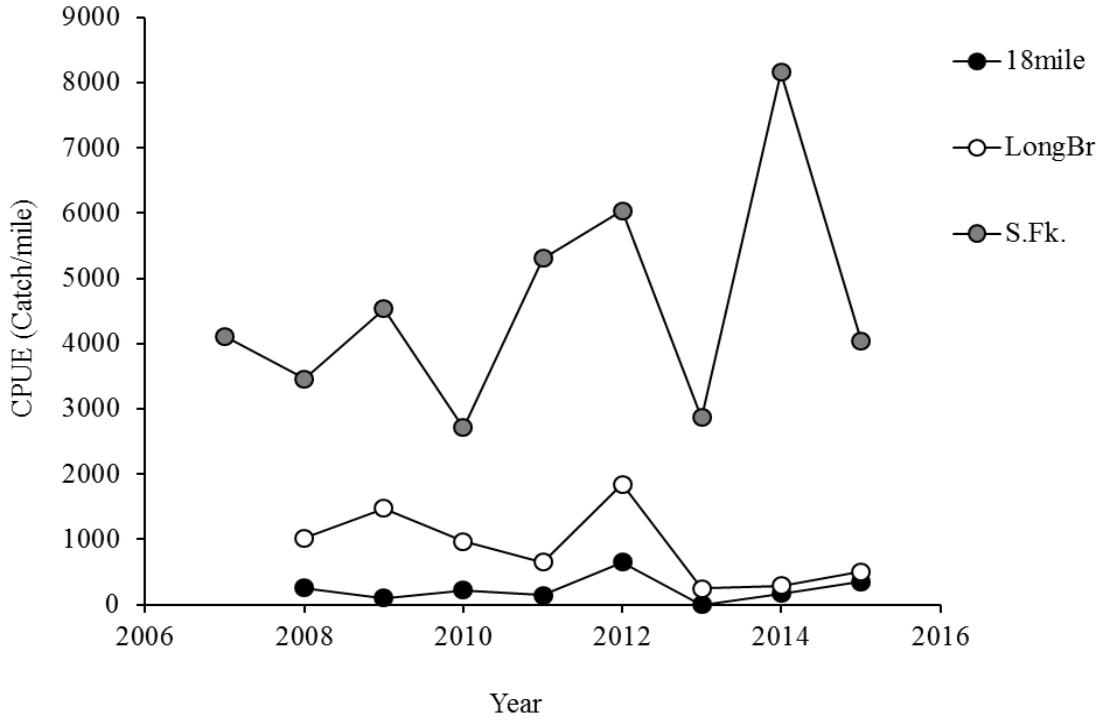


Figure 21. Relative abundance of age-0 brown trout at long term trend station in the White River Watershed, Bayfield County, Wisconsin.

WDNR COMMENT

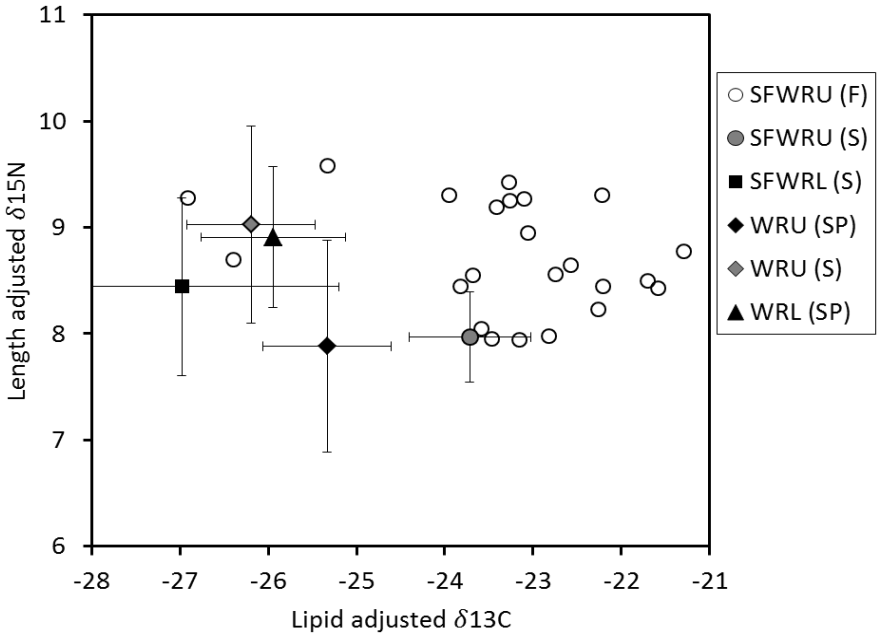


Figure 22. Lipid adjusted $\delta\delta^{13}$C and length adjusted $\delta\delta^{15}$N values for brown trout sampled on the lower White River during March (black triangle), upper White River during March (black diamond) and August (grey diamond), South Fork of the White River in August (grey circle) and November (open circles).

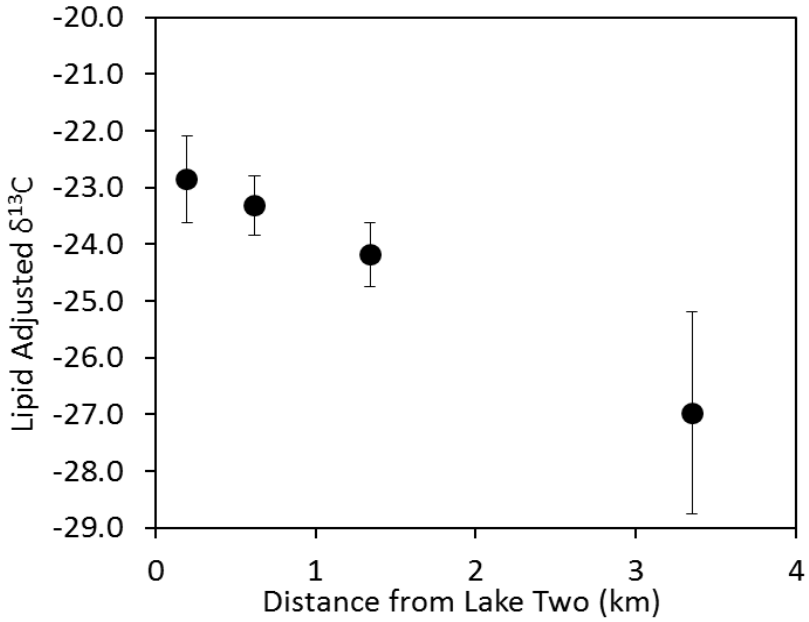


Figure 23. Closest point sampled in fall and does not include three outliers which had d13C signatures similar to lower river brown trout (see figure 24).

WDNR COMMENT

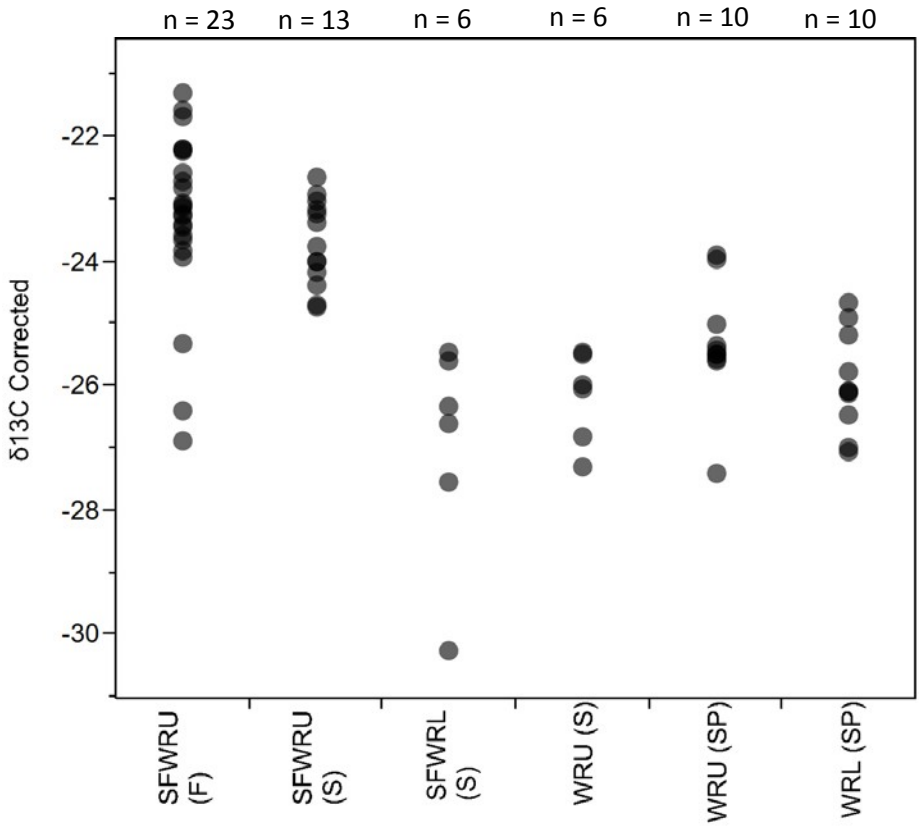


Figure 24. Lipid corrected $\delta^{13}C$ signatures for brown trout sampled in the White River and the South Fork of the White River. SFWRU (F) = brown trout sampled during the fall on the upper South Fork of the White River, SFWRU (S) = brown trout sampled during the summer on the upper South Fork of the White River, WRL (SP) = brown trout sampled during the spring on the lower White River, WRU (S) = brown trout sampled during the summer on the upper White River, WRU (SP) = brown trout sampled during the spring on the upper White River.

WDNR COMMENT

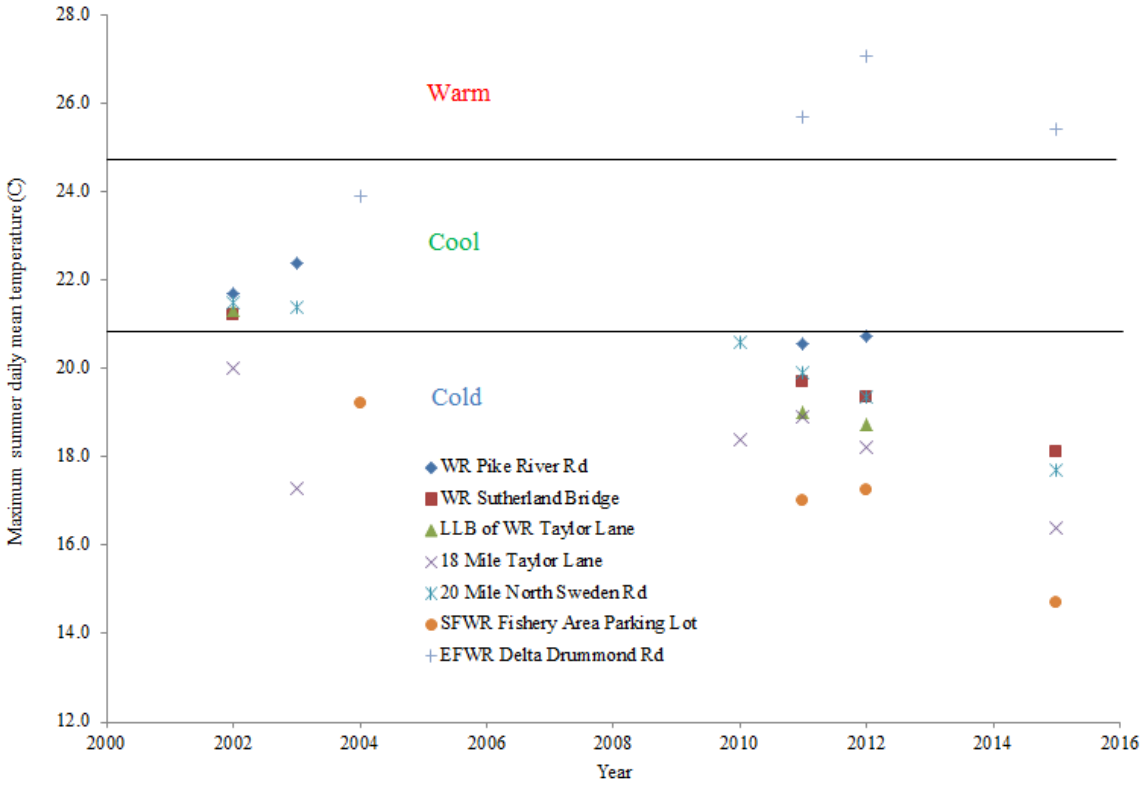


Figure 26. Maximum summer daily mean temperature (MSDMT) at seven locations in the White River Watershed, Bayfield County, Wisconsin, 2002-2015. Warm, cool and cold clasifications as defined by Lyons et al. 1996.

Appendix I, Table 1. Common and scientific names of fish species found in the White River, Bayfield County, Wisconsin.

Common Name	Scientific Name
chestnut lamprey	*Ichthyomyzon castaneus*
northern brook lamprey	*Ichthyomyzon fossor*
brook trout	*Salvelinus fontilalis*
brown trout	*Salmo trutta*
rainbow trout	*Oncorhynchus mykiss*
tiger trout	*Salvelinus fontilalis X Salmo trutta*
central mudminnow	*Umbra limi*
northern pike	*Esox lucius*
blackchin shiner	*Notropis heterodon*
blacknose dace	*Rhinichthys atratulus*
blacknose shiner	*Notropis heterolepis*
bluntnose minnow	*Pimephales notatus*
brassy minnow	*Hybognathus hankinsoni*
common shiner	*Luxilus cornutus*
creek chub	*Semotilus atromaculatus*
fathead minnow	*Pimephales promelas*
finescale dace	*Phoxinus neogaeus*
golden shiner	*Notemigonus crysoleucas*
hornyhead chub	*Nocomis biguttatus*
longnose dace	*Rhinichthys cataractae*
mimic shiner	*Notropis volucellus*
northern redbelly dace	*Phoxinus eos*
pearl dace	*Margariscus margarita*
white sucker	*Catostomus commersoni*
shorthead redhorse	*Moxostoma macrolepidotum*
black bullhead	*Ameiurus melas*
tadpole madtom	*Noturus gyrinus*
troutperch	*Percopsis omiscomaycus*
brook stickleback	*Culaea inconstans*
largemouth bass	*Micropterus salmoides*
smallmouth bass	*Micropterus dolomieu*
bluegill	*Lepomis macrochirus*
pumpkinseed	*Lepomis gibbosus*
rock bass	*Ambloplites rupestris*
Iowa darter	*Etheostoma exile*
johnny darter	*Etheostoma nigrum*
yellow perch	*Perca flavescens*
mottled sculpin	*Cottus bairdi*
slimy sculpin	*Cottus cognatus*

Appendix I, Table 2. Fish stocking history of White River, Bayfield County, Wisconsin.

Year	Species	Number Stocked	Size
1933	Brook Trout	4,800	
1934	Brook Trout	4,776	
1935	Brown Trout	18,000	Fingerling
	Bass	480	
1936	Brook Trout	9,990	Fingerling
1937	Brook Trout	24,000	Fingerling
1939	Rainbow Trout	25,000	Fingerling
	Brown Trout	4,000	Fingerling
1940	Rainbow Trout	40,026	Fingerling
	Brown Trout	2,000	Fingerling
1941	Brown Trout	15,000	Fingerling
	Rainbow Trout	32,000	Fingerling
	Rainbow Trout	225	Adult
1942	Brown Trout	48,812	Fingerling
	Rainbow Trout	25,500	Fingerling
1943	Rainbow Trout	12,000	Fingerling
	Brown Trout	34,600	Fingerling
1944	Rainbow Trout	9,000	Fingerling
	Brown Trout	19,000	Fingerling
1946	Brown Trout	23,500	Fingerling
1947	Brown Trout	40,000	Fingerling
	Rainbow Trout	30,000	Fingerling
1948	Brown Trout	52,200	Fingerling
1949	Brown Trout	1,600	Yearling
	Brown Trout	28,100	Fingerling
1950	Brown Trout	2,100	Yearling
	Brown Trout	26,100	Yearling
1951	Brown Trout	850	Yearling
	Brown Trout	6,000	Fingerling
1952	Brown Trout	6,000	Yearling
1953	Brown Trout	4,800	Yearling
1954	Brown Trout	2,000	Yearling
1955	Brook Trout	1,000	Yearling
	Brown Trout	500	Yearling
	Rainbow Trout	1,000	Yearling
1956	Brown Trout	3,386	Yearling
1957	Brown Trout	2,850	Yearling
1958	Brown Trout	2,000	Yearling
1959	Brown Trout	1,500	Yearling
	Rainbow Trout	1,000	Yearling
1963	Brown Trout	6,750	Yearling
	Brown Trout	3,876	Fingerling
	Rainbow Trout	5,467	Yearling
1964	Brown Trout	7,250	Yearling
1965	Brown Trout	4,750	Yearling
	Brown Trout	5,000	Fingerling
1966	Brown Trout	5,750	Yearling

Appendix I, Table 2 (continued). Fish stocking history of White River, Bayfield County, Wisconsin.

Year	Species	Number Stocked	Size
1967	Brook Trout	4,500	Yearling
1967	Brown Trout	5,000	Yearling
1968	Brook Trout	2,500	Yearling
	Brown Trout	5,000	Yearling
1969	Brook Trout	15,000	Fingerling
	Brown Trout	7,000	Yearling
1970	Brown Trout	4,200	Yearling
1971	Brown Trout	6,250	Yearling
1972	Brown Trout	4,250	Yearling
1973	Brown Trout	4,250	Yearling
1974	Brown Trout	4,250	Yearling
1975	Brown Trout	4,250	Yearling
1976	Brown Trout	4,250	Yearling
1977	Brown Trout	6,250	Yearling
1978	Brown Trout	3,000	Yearling
1979	Brown Trout	2,000	Yearling
1980	Brown Trout	2,000	Yearling
1981	Brown Trout	2,000	Yearling

WDNR COMMENT

Appendix I, Table 3. Average spring brown trout density (fish/mile) by length intervals and station in the White River, Bayfield County, Wisconsin. Includes only trout ≥ 6 in. 95% confidence intervals are in parenthesis.

Length Group (in)	1984-86 Stations				1988-89 Stations			
	Sutherland	Goldberg	Primitive	Avg.	Sutherland	Goldberg	Primitive	Avg.
6.0 - 8.9	133	211	245	196	134	176	260	190
9.0 - 14.9	256	383	279	306	409	461	357	409
≥ 15.0	19	21	40	27	28	60	84	57
Total	408 (115)	615 (314)	564 (147)	529 (98)	571 (103)	697 (50)	701 (57)	656 (85)

Length Group (in)	1992-93 Stations				2003-05 Stations			
	Sutherland	Goldberg	Primitive	Avg.	Sutherland	Goldberg	Primitive	Avg.
6.0 - 8.9	75	42	51	56	117	94	150	120
9.0 - 14.9	514	328	383	408	257	160	207	208
≥ 15.0	35	49	109	64	62	59	34	52
Total	624 (115)	419 (41)	543 (60)	528 (119)	437 (58)	313 (53)	391 (146)	380 (72)

Length Group (in)	2014-15 Stations		
	Bolen	Sutherland	Avg.
6.0 - 8.9	43	20	31
9.0 - 14.9	42	27	34
≥ 15.0	77	43	60
Total	161 (52)	90 (13)	125 (72)

WDNR COMMENT

Appendix I, Table 4. Spring brown trout density (fish/mile) by length intervals and station in the White River, Bayfield County, Wisconsin. Includes only brown trout ≥ 6 in. 95% confidence intervals are in parenthesis.

	1984				1985			
	Stations				Stations			
Length Group (in)	Sutherland	Goldberg	Primit ive	Avg.	Sutherland	Goldberg	Primit ive	Avg.
6.0 - 8.9	138	109	229	158	198	361	338	299
9.0 - 14.9	401	229	267	299	282	582	329	398
≥ 15.0	34	17	20	24	25	21	62	36
Total	573 (244)	355 (72)	516 (139)	481 (98)	505 (92)	964 (214)	729 (180)	733 (230)

	1986				1988			
	Stations				Stations			
Length Group (in)	Sutherland	Goldberg	Primit ive	Avg.	Sutherland	Goldberg	Primit ive	Avg.
6.0 - 8.9	108	163	168	146	154	196	245	198
9.0 - 14.9	203	337	240	260	536	536	427	500
≥ 15.0	9	26	39	25	30	72	74	59
Total	320 (48)	526 (80)	447 (78)	431 (104)	720 (156)	804 (74)	746 (68)	757 (43)

	1989				1992			
	Stations				Stations			
Length Group (in)	Sutherland	Goldberg	Primit ive	Avg.	Sutherland	Goldberg	Primit ive	Avg.
6.0 - 8.9	114	155	275	181	101	57	80	79
9.0 - 14.9	282	386	287	318	551	356	504	470
≥ 15.0	26	48	94	56	12	42	108	53
Total	422 (70)	589 (67)	656 (94)	556 (121)	664 (86)	454 (54)	692 (93)	603 (130)

	1993				2003			
	Stations				Stations			
Length Group (in)	Sutherland	Goldberg	Primit ive	Avg.	Sutherland	Goldberg	Primit ive	Avg.
6.0 - 8.9	49	27	22	33	166	141	52	120
9.0 - 14.9	477	300	262	346	250	174	130	185
≥ 15.0	58	56	110	75	63	56	41	54
Total	584 (75)	384 (58)	394 (72)	454 (113)	479 (91)	371 (60)	224 (56)	358 (128)

	2004				2005			
	Stations				Stations			
Length Group (in)	Sutherland	Goldberg	Primit ive	Avg.	Bolen Creek	Johnson Creek	Lower Bibon	Avg.
6.0 - 8.9	63	67	200	110	123	74	198	132
9.0 - 14.9	226	164	206	199	296	142	285	241
≥ 15.0	82	71	46	67	41	50	13	35
Total	371 (68)	302 (63)	452 (120)	375 (75)	460 (70)	267 (37)	496 (58)	408 (123)

	2014				2015		
	Stations				Stations		
Length Group (in)	Bolen	Sutherland	Avg.		Bolen	Sutherland	Avg.
6.0 - 8.9	69	36	48		16	4	10
9.0 - 14.9	57	23	34		26	31	29
≥ 15.0	87	43	58		67	42	54
Total	213 (76)	102 (21)	139 (26)		109 (14)	77 (11)	93 (9)

Appendix II
White River Angler Questionnaire
Final Results 2004-2005 compared to 2014-2015

SECTION I: FISHING THE WHITE RIVER IN 2004 & 2005 - 2014 & 2015

1. What area of the White River did you fish most often in? **(check one)**

Years 04-05	14-15	
13%	11.5	From Pikes Road Bridge upstream, including headwater areas
48	40.8	From Pikes Road Bridge downstream to Sutherland Bridge
30	40.0	From Sutherland Bridge downstream to Bibon Road Bridge
9	7.7	Downstream of Bibon Road Bridge

2. About how many days did you spend at least part of the day fishing the White River?

Days	2004 Percent	2005 Percent	2014 Percent	2015 Percent
0	7%	11%	11%	5%
1 – 2	23	24	18	24
3 – 4	28	27	19	28
5 – 10	21	24	36	30
> 10	20	16	16	14
Ave. days	8	7	7	6
Max	200	150	60	40

3. How did you typically fish the White River – did you fly fish, use live bait, or artificial lures? **(circle one number for each type of fishing)**

	Live bait	2004-2005 Artificial	Fly fishing
Never	39%	36%	44%
Sometimes	8	23	12
Often	24	23	9
Always	29	18	35

	Live bait	2014-2015 Artificial	Fly fishing
Never	50%	56%	37%
Rarely	3	8	7
Sometimes	10	11	5
Often	14	14	7
Always	22	12	43

4. How many miles one-way did you typically travel to reach your fishing location on the White River during?

1-way miles	04-05 Percent	14-15 Percent
1 – 10	24%	26
11 – 20	14	13
21 – 50	14	9
51 – 100	17	16
101 – 200	20	23
> 200	11	14
Ave. miles	87	109
Max	650	1850

5. Overall, how satisfied were you with your fishing experiences on the White River? **(check one)**

04-05 Percent	14-15 Percent	
37%	26	Very satisfied
47	52	Somewhat satisfied
14	15	Not too satisfied
2	8	Not at all satisfied

6. Your satisfaction with White River fishing may have been influenced by some of the following. To what extent do you disagree or agree that each of the following statements affected your satisfaction with fishing the White River. **(circle one number for each item)**

(Percent responding read across →)

	2004-2005				
	Strongly disagree	Slightly disagree	Neither	Slightly agree	Strongly agree
Water quality on the river is poor	54%	19	14	11	2
There are too many anglers	26%	33	17	20	5
I don't catch many fish	22%	28	14	27	9
I catch too many small fish	25%	22	31	16	6
I don't catch enough trophy fish	15%	19	27	27	12
The daily bag limit is too low	51%	13	20	13	3
The regulations are complicated	42%	15	19	15	10
The regulations are restrictive	43%	15	24	13	5

	2014-2015				
	Strongly disagree	Slightly disagree	Neither	Slightly agree	Strongly agree
Water quality on the river is poor	52%	20	20	6	3
There are too many anglers	44%	21	17	15	3
I don't catch many fish	17%	16	15	38	14
I catch too many small fish	28%	27	25	14	6
I don't catch enough trophy fish	21%	17	27	21	14
The daily bag limit is too low	53%	11	23	8	5
The regulations are complicated	50%	18	12	16	5
The regulations are restrictive	50%	15	17	13	5

SECTION II: YOUR HISTORY ON THE WHITE RIVER

1. For about how many years have you fished the White River in Bayfield County in the Bibon Swamp area, anywhere between Pikes Road Bridge and Bibon Road Bridge?

	04-05	14-15
Years	Percent	Percent
1 – 2	11%(7% 1year)	10% (3% 1 year)
3 – 5	14	6
6 – 10	18	8
11 – 20	19	23
21 – 30	19	20
> 30	19	33
Ave. yrs	18	24
Max	58	60

2. In what year did you first fish the White River?

2004-2005		2014-2015	
Year(s)	Percent	Years	Percent
2005	4%	2015	3
2004	5	2014	4
2000-03	15	2010 – 13	9
1990-99	26	2000 – 09	14
1980-89	14	1990 – 99	22
1970-79	21	1980 – 89	16
Before 1970	14	1970 –79	20
		Before 1970	12
Mean	1986	Mean	1989
Min	1940	Min	1955

3. In the past ten years how many years have you fished the White River? **(check one)**

1996-2005 Percent	2006-2015 Percent	
14%	13%	Less than 3 years
13	7	3 – 4 years
10	6	5 – 6 years
10	11	7 – 8 years
53	63	9 – 10 years

4. During the 10 year period in general, would you say the number of days in a year you fish the White River has been increasing, decreasing or staying about the same? **(check one)**

1996-2005 Percent	2006-2015 Percent	
9%	9	Increasing
29	26	Decreasing
61	65	Staying about the same

5. How important is fishing the White River to you in comparison to all of your other fishing destinations? Would you say that fishing the White River is… **(check one)**

04-05 Percent	14-15 Percent	
5%	18	My most important fishing destination
66	68	One of the most important fishing destinations
21	12	No more important than any other of my fishing destinations
8	1	Less important than most of my other fishing destinations
1	2	Not at all important to me as a fishing destination
	1	I do not fish any other waters

6. In the past three years have you fished other rivers or streams for trout in Wisconsin? **(check one) (If No please go to question 8)**

04-05 Percent	14-15 Percent	
84%	83	Yes
16	17	No

7. Compared to other trout rivers or streams in Wisconsin would you say the fishing quality on the White River is…**(check one)**

04-05 Percent	14-15 Percent	
17%	19	Much better
40	32	Somewhat better
25	21	About the same
14	23	Somewhat worse
4	5	Much worse

8. In the years that you've fished the White River, how would you say each of the following has changed?

(check one for each item)

(Percent responding read across →)

2004-2005

Number of fish I catch	Increasing	Remained stable	Decreasing
	4%	40	56
Average size of fish I catch	Larger	Remained stable	Smaller
	9%	53	38
Water quality	Better	Remained stable	Worse
	2%	86	12
Crowding from other anglers	More crowded	Remained stable	Less crowded
	32%	53	15
Overall management of the river	Better	Remained stable	Worse
	23%	65	13

2014-2015

Number of fish I catch	Increasing	Remained stable	Decreasing
	4%	36	59
Average size of fish I catch	Larger	Remained stable	Smaller
	19%	51	29
Water quality	Better	Remained stable	Worse
	7%	85	8
Crowding from other anglers	More crowded	Remained stable	Less crowded
	21%	47	32
Overall management of the river	Better	Remained stable	Worse
	18%	70	12

9. In general, would you say that fishing the White River has improved or worsened in the years you've been fishing? **(check one)**

04-05 Percent	14-15 Percent	
2%	4	Definitely improved
15	11	Probably improved
33	33	Remained about the same
33	31	Probably worsened
16	22	Definitely worsened

10. Your answer to the previous question may have been influenced by various factors. **If you checked worsened in question 9, please check 2 boxes in the Worsened column, if you checked improved in question 9, please check 2 boxes in the Improved column.**

2004-2005

Worsened Percent		Improved Percent	
17%	Too much fishing pressure	3%	Reduced fishing pressure
14	Other anglers keeping too many fish	8	More catch and release being practiced
12	Ineffective or detrimental regulations	5	Improved fishing regulations
9	Loss of trout habitat	2	Improved trout habitat
2	Water quality becoming worse	0	Improved water quality
14	Lower trout population levels	2	Higher trout populations
2	Higher water temperatures	0	Cooler water temperatures
4	Fewer large brown trout	1	More large brown trout
5	Too many northern pike	4	Fewer northern pike
0	Poor fish management (excluding regs)	6	Improved fish management (excl. regs)
0	Increase in other predators (such as otter and herons)	1	Decrease in other predators (such as otter and herons)

2014-2015

Worsened Percent		Improved Percent	
8%	Too much fishing pressure	15%	Reduced fishing pressure
2	Other anglers keeping too many fish	15	More catch and release being practiced
3	Ineffective or detrimental regulations	3	Improved fishing regulations
5	Loss of trout habitat	12	Improved trout habitat
5	Water quality becoming worse	0	Improved water quality
40	Lower trout population levels	9	Higher trout populations
9	Higher water temperatures	6	Cooler water temperatures
15	Fewer large brown trout	18	More large brown trout
6	Too many northern pike	12	Fewer northern pike
1	Poor fish management (excluding regs)	6	Improved fish management (excl. regs)
5	Increase in other predators (such as otter and herons)	3	Decrease in other predators (such as otter and herons)

SECTION III: REGULATIONS AND THE FISH YOU CATCH

1. How many inches long was the largest brown trout that you caught from 2006 to 2015 from the White River? (Previous creel did not specify a ten year period)

Inches	04-05 Percent	06-15 Percent
0	3%	4
< 11	3	4
11 – 17.9	24	18
18 – 19.9	24	20
20 – 21.9	16	17
22 – 23.9	18	18
24 or longer	12	20
Ave.	19	19
Max	28	32

2. How many inches long would a brown trout from the White River need to be for you to consider it a "trophy" fish?

Inches	04-05 Percent	14-15 Percent
12	0%	3
14 – 17	11	10
18 – 19	17	10
20	34	38
21 – 22	14	11
23 or longer	24	28
Ave.	20	25
Max	28	36

3. Think about the legal sized trout you caught from the White River. Would you say that you released all legal trout, released some and kept others, or kept all legal trout from the White River? **(check one)**

04-05 Percent	14-15 Percent	
3%	12	I did not catch a legal-sized trout
28	30	Released all legal trout
62	52	Released some legal trout and kept others
7	6	Kept all legal trout

4. In the years that you've been fishing the White River, would you say that your catch-and-release fishing of legal sized trout has… **(check one)**

04-05 Percent	14-15 Percent	
30%	22	Definitely increased
16	16	Probably increased
43	52	Remained about the same
9	7	Probably decreased
3	3	Definitely decreased

5. Starting in 2016, the White River will have a regulation with an 18-inch minimum length and a bag limit of one trout. This is a change from regulations implemented in 1990 which allowed a bag limit of three trout with a 9-inch minimum length with one trout of 15-inches or greater allowed. Do you feel this change in the trout regulations will have a positive or negative impact on the White River fishery? **(check one)**

Percent	
32%	Definitely positive
29	Probably positive
14	Neither positive nor negative
8	Probably negative
17	Definitely negative

6. Do you favor or oppose trout regulations with an 18-inch minimum length limit and a bag limit of 1 trout, that will go into effect in 2016? **(check one)**

Percent	
33%	Definitely favor
10	Probably favor
7	Probably oppose
40	Definitely oppose
9	I'm not sure

These last two questions will help us compare your answers to those of other White River anglers.

7. Are you:

04-05 Percent	14-15 Percent	
94%	93	Male
6	7	Female

8. How old are you?_____years old

Age	04-05 Percent	14-15 Percent
Less than 20	5%	7
20 – 29	12	3
30 – 39	14	12
40 – 49	21	10
50 – 59	21	31
60 and older	27	37
Ave. age	48	53
Max	98	85

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE RETURN IT IN THE POSTAGE-PAID ENVELOPE AT YOUR EARLIEST CONVENIENCE.

Federal Aid Project
funded by your purchase of hunting and fishing equipment and motor boat fuels

WISCONSIN DEPT. OF NATURAL RESOURCES

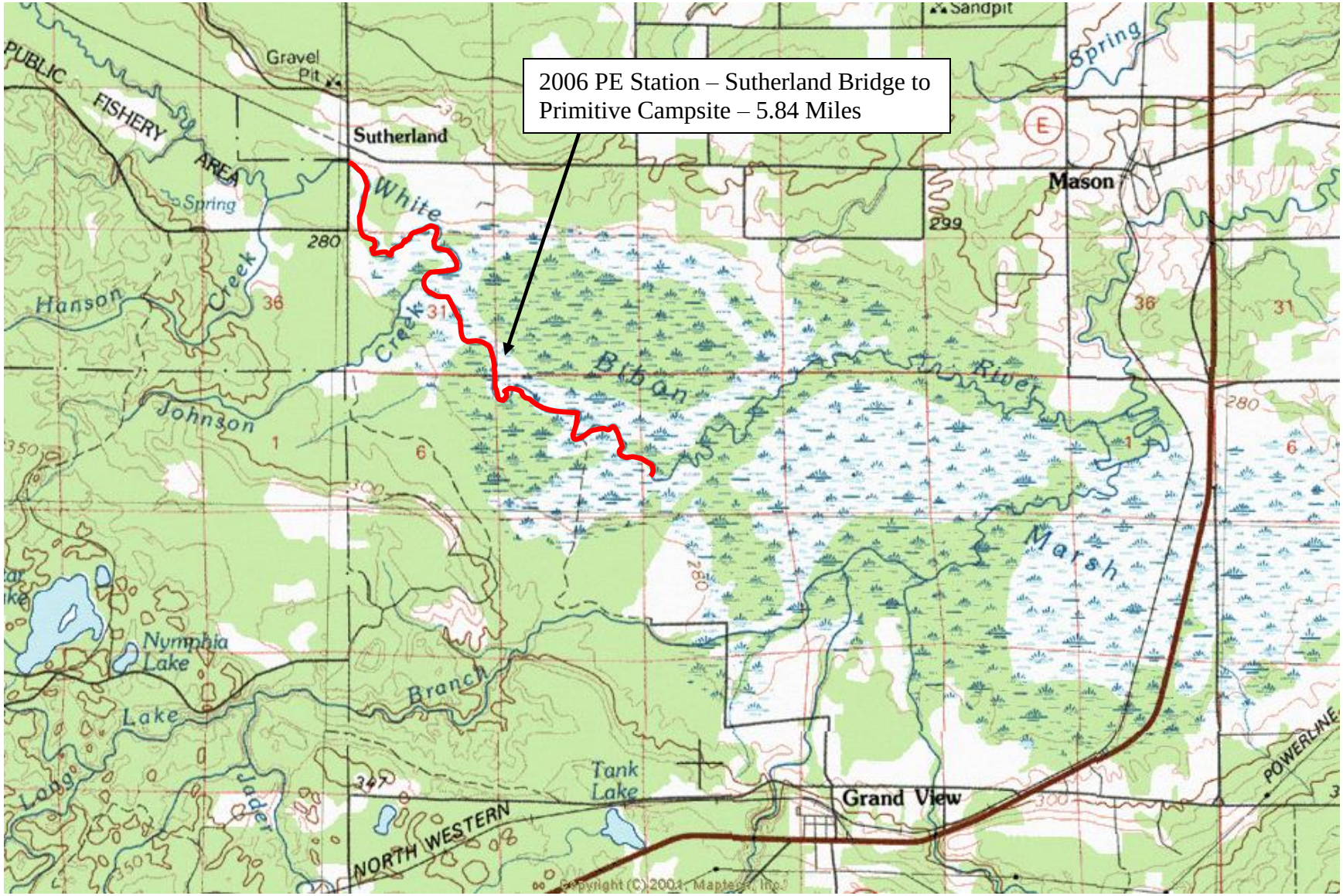
Bureau of Integrated Science Services
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921

Printed on Recycled Paper

This study was funded in part through Sport Fish and Wildlife Restoration dollars.

PUB-SS-1025-2006

WDNR COMMENT



WDNR COMMENT

Waterbody	Survey Type	Date	Common species name	Scientific species name	Count of individuals		
WHITE RIVER	Mini-boom electrofishing	05/17/06	BROOK TROUT	Salvelinus fontinalis	12		
WHITE RIVER	Mini-boom electrofishing	04/17/07	BROOK TROUT	Salvelinus fontinalis	1		
WHITE RIVER	Mini-boom electrofishing	05/09/08	BROOK TROUT	Salvelinus fontinalis	2		
WHITE RIVER	Mini-boom electrofishing	04/13/09	BROOK TROUT	Salvelinus fontinalis	1		
WHITE RIVER	Mini-boom electrofishing	03/30/11	BROOK TROUT	Salvelinus fontinalis	5		
WHITE RIVER	Mini-boom electrofishing	04/12/12	BROOK TROUT	Salvelinus fontinalis	4		
WHITE RIVER	Mini-boom electrofishing	03/28/17	BROOK TROUT	Salvelinus fontinalis	5		
WHITE RIVER	Mini-boom electrofishing	04/04/19	BROOK TROUT	Salvelinus fontinalis	1	31	0.70%
WHITE RIVER	Mini-boom electrofishing	05/17/06	BROWN TROUT	Salmo trutta	974		
WHITE RIVER	Mini-boom electrofishing	04/17/07	BROWN TROUT	Salmo trutta	541		
WHITE RIVER	Mini-boom electrofishing	05/09/08	BROWN TROUT	Salmo trutta	381		
WHITE RIVER	Mini-boom electrofishing	04/13/09	BROWN TROUT	Salmo trutta	325		
WHITE RIVER	Mini-boom electrofishing	03/28/10	BROWN TROUT	Salmo trutta	385		
WHITE RIVER	Mini-boom electrofishing	03/30/11	BROWN TROUT	Salmo trutta	374		
WHITE RIVER	Mini-boom electrofishing	04/12/12	BROWN TROUT	Salmo trutta	622		
WHITE RIVER	Mini-boom electrofishing	03/28/17	BROWN TROUT	Salmo trutta	227		
WHITE RIVER	Mini-boom electrofishing	04/04/19	BROWN TROUT	Salmo trutta	202	4031	93.20%
WHITE RIVER	Mini-boom electrofishing	04/12/12	CREEK CHUB	Semotilus atromaculatus	1	1	0.02%
WHITE RIVER	Mini-boom electrofishing	05/17/06	NORTHERN PIKE	Esox lucious	2		
WHITE RIVER	Mini-boom electrofishing	04/17/07	NORTHERN PIKE	Esox lucious	1	3	0.07%
WHITE RIVER	Mini-boom electrofishing	03/30/11	TIGER TROUT	Salmo trutta × Salvelinus fontinali	1		
WHITE RIVER	Mini-boom electrofishing	04/12/12	TIGER TROUT	Salmo trutta × Salvelinus fontinali	1	2	0.05%
WHITE RIVER	Mini-boom electrofishing	04/17/07	WHITE SUCKER	Semotilus atromaculatus	44		
WHITE RIVER	Mini-boom electrofishing	05/09/08	WHITE SUCKER	Semotilus atromaculatus	38		
WHITE RIVER	Mini-boom electrofishing	04/13/09	WHITE SUCKER	Semotilus atromaculatus	43		
WHITE RIVER	Mini-boom electrofishing	03/28/10	WHITE SUCKER	Semotilus atromaculatus	1		
WHITE RIVER	Mini-boom electrofishing	03/30/11	WHITE SUCKER	Semotilus atromaculatus	3		
WHITE RIVER	Mini-boom electrofishing	04/12/12	WHITE SUCKER	Semotilus atromaculatus	91		
WHITE RIVER	Mini-boom electrofishing	03/28/17	WHITE SUCKER	Semotilus atromaculatus	26		
WHITE RIVER	Mini-boom electrofishing	04/04/19	WHITE SUCKER	Semotilus atromaculatus	9	255	5.90%
						4323	

WDNR COMMENT

State of Wisconsin
Department of Natural Resources

GAME FISH LENGTH FREQUENCY

FORM 3600-65 REV. 3-80

INCHES

COUNTY	WATER	DATE	GEAR
Ashland COUNTY CODE — —	White River Flowage WATER CODE — — — —	April 13-16, 1990	Fyke Nets

SIZE RANGE — INCHES	SPECIES				SIZE RANGE — INCHES	SPECIES		
	Northern pike	White sucker	Shorthead redhorse	LM bass		Northern pike		
<3.0					27.0-27.4	4		
3.0- 3.4					27.5-27.9	3		
3.5- 3.9					28.0-28.4	3		
4.0- 4.4					28.5-28.9	3		
4.5- 4.9					29.0-29.4	3		
5.0- 5.4					29.5-29.9	2		
5.5- 5.9					30.0-30.4	1		
6.0- 6.4					30.5-30.9			
6.5- 6.9					31.0-31.4	1		
7.0- 7.4					31.5-31.9	5		
7.5- 7.9					32.0-32.4	1		
8.0- 8.4					32.5-32.9	1		
8.5- 8.9					33.0-33.4	2		
9.0- 9.4		1			33.5-33.9			
9.5- 9.9					34.0-34.4			
10.0-10.4		2			34.5-34.9			
10.5-10.9					35.0-35.4			
11.0-11.4		1			35.5-35.9			
11.5-11.9					36.0-36.4			
12.0-12.4		2	9		36.5-36.9	1		
12.5-12.9		3	22		37.0-37.4			
13.0-13.4		3	23		37.5-37.9			
13.5-13.9	2	4	12		38.0-38.4			
14.0-14.4		5	9		38.5-38.9			
14.5-14.9	1	4	4	1	39.0-39.4			
15.0-15.4	4	4	3		39.5-39.9			
15.5-15.9		8			40.0-40.9			
16.0-16.4	3	9	4		41.0-41.9			
16.5-16.9	1	5	1		42.0-42.9			
17.0-17.4	7	2	1		43.0-43.9			
17.5-17.9	10	1	2		44.0-44.9			
18.0-18.4	8	3	2		45.0-45.9			
18.5-18.9	15	3			46.0-46.9			
19.0-19.4	20	1	2		47.0-47.9			
19.5-19.9	13		1		48.0-48.9			
20.0-20.4	13				49.0-49.9			
20.5-20.9	16				50.0-50.9			
21.0-21.4	11				51.0-51.9			
21.5-21.9	16				52.0-52.9			
22.0-22.4	17				53.0-53.9			
22.5-22.9	9				54.0-54.9			
23.0-23.4	13				55.0-55.9			
23.5-23.9	20				56.0-56.9			
24.0-24.4	14				57.0-57.9			
24.5-24.9	7				58.0-58.9			
25.0-25.4	2				59.0-59.9			
25.5-25.9	5				60.0+			
26.0-26.4	4							
26.5-26.9	5							
TOTAL	266	61	95	1	TOTAL			

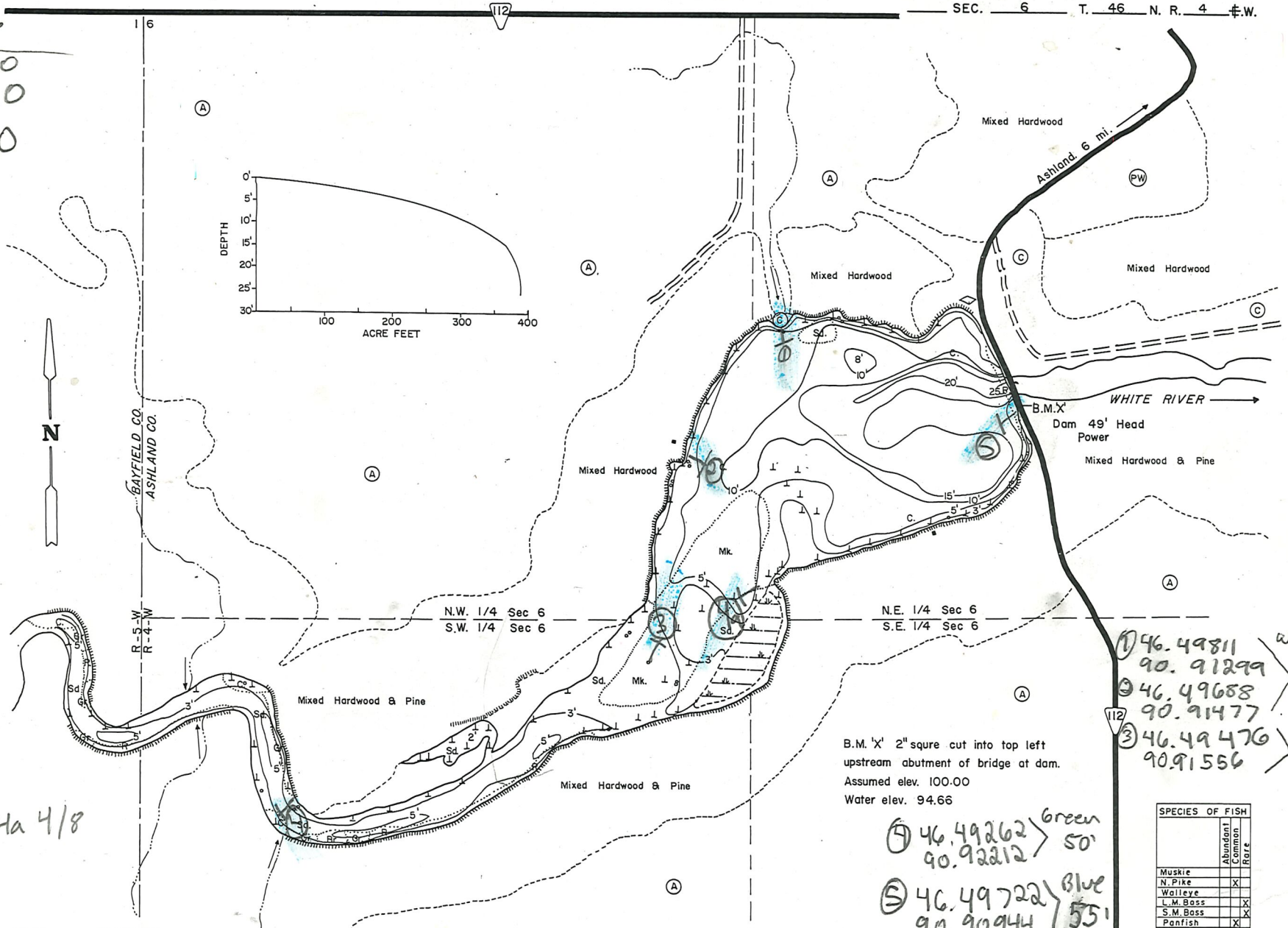
WISCONSIN CONSERVATION DEPARTMENT

LAKE SURVEY MAP

WHITE RIVER LAKE — ASHLAND COUNTY

SEC. 6 T. 46 N. R. 4 E.W.

T°
4/7 | 40.0
4/8 | 39.0
4/10 | 43.0



Set 4/7
moved 4 → 4a 4/8

① 46.49811 / 90.91299 } white 50'
② 46.49688 / 90.91477
③ 46.49476 / 90.91556 } Blue 75'

④ 46.49262 / 90.92212 } Green 50'

⑤ 46.49722 / 90.90944 } Blue 55'

④a 46.49838 / 90.91014

SPECIES OF FISH	Abundant	Common	Rare
Muskie			
N. Pike		X	
Walleye			
L.M. Bass			X
S.M. Bass			X
Panfish		X	
Trout			

EQUIPMENT RECORDING SONAR MAPPED SEPT MO. 1966 YR.

WATER ELEV. 94.66

TOPOGRAPHIC SYMBOLS

- (B) Brush
- (PW) Partially wooded
- (W) Wooded
- (C) Cleared
- (P) Pastured
- (A) Agricultural
- B.M. Bench Mark
- Dwelling
- Resort
- Steep slope
- Indefinite shoreline
- Marsh
- Spring
- Intermittent stream
- Permanent inlet
- Permanent outlet
- Dam

LAKE BOTTOM SYMBOLS

- P. Peat
- Mk. Muck
- C. Clay
- M. Marl
- Sd. Sand
- St. Silt
- Gr. Gravel
- R. Rubble
- Br. Bedrock
- T Submergent vegetation
- ⊥ Emergent vegetation
- Floating vegetation
- Stumps & Snags

◇ Access ◆ Access with Parking ◆ Boat Livery

Field work by C. Busch, L. Sather, N. Porkorny Drawn by: C. Holt

AREA 56.1 ACRES
UNDER 3FT. 28.2 %
OVER 20FT. 1.4 %
VOLUME 390.7 ACRE FT.
TOTAL ALK. 99 P.P.M.
SHORELINE 2.7 MILES
MAX. DEPTH 26 FEET

WDNR COMMENT

SW1

WDNR COMMENT

Sheet ____ of ____ Survey ID = 515077684 Station ID = 123718

WALLEYE NETTING DATA COLLECTION SHEET (3600-186-W/N) **WALLEYE** Wisconsin Department of Natural Resources

Waterbody Name: White River Flowage
MWB Code/WBIC:
Waterbody Type:
County:
Date (MM/DD/YY): 4/7/15 - 4/10/15
Station:
Start Time:
End Time:
Collectors: Folsted, Lawson, Hulin

Target Fish: ~~Walleye~~ Walleye Pike
Mark Given:
Survey Type: Population Estimate
Gear Type: Fyke Net
Weather: Cloudy
Adverse Conditions:
Water Temperature: 39.0°
Water Level: [HI] [NORM] [LOW]
Water Clarity:

Number of Nets: 5
Number of Nights: 3
Net Frame Height:
Net Frame Width:
Lead Length:
Largest Bar Mesh Size:
Smallest Bar Mesh Size:
Mesh Color:
Mesh Material:

15 net nights

4/8 4/10

inches	NP MALE Unclipped	Clipped	inches	NP FEMALE Unclipped	Clipped	inches	NP UNKNOWN Unclipped	Clipped
<3.0			<3.0			<3.0		
3.0-3.4			3.0-3.4			3.0-3.4		
3.5-3.9			3.5-3.9			3.5-3.9		
4.0-4.4			4.0-4.4			4.0-4.4		
4.5-4.9			4.5-4.9			4.5-4.9		
5.0-5.4			5.0-5.4			5.0-5.4		
5.5-5.9			5.5-5.9			5.5-5.9		
6.0-6.4			6.0-6.4			6.0-6.4		
6.5-6.9			6.5-6.9			6.5-6.9		
7.0-7.4			7.0-7.4			7.0-7.4		
7.5-7.9			7.5-7.9			7.5-7.9		
8.0-8.4			8.0-8.4			8.0-8.4		
8.5-8.9			8.5-8.9			8.5-8.9		
9.0-9.4			9.0-9.4			9.0-9.4		
9.5-9.9			9.5-9.9			9.5-9.9		
10.0-10.4			10.0-10.4			10.0-10.4		
10.5-10.9			10.5-10.9			10.5-10.9		
11.0-11.4			11.0-11.4			11.0-11.4		
11.5-11.9			11.5-11.9			11.5-11.9		
12.0-12.4			12.0-12.4			12.0-12.4		
12.5-12.9			12.5-12.9			12.5-12.9		
13.0-13.4			13.0-13.4			13.0-13.4		
13.5-13.9			13.5-13.9			13.5-13.9		
14.0-14.4			14.0-14.4			14.0-14.4		
14.5-14.9			14.5-14.9			14.5-14.9		
15.0-15.4			15.0-15.4			15.0-15.4		
15.5-15.9			15.5-15.9			15.5-15.9		
16.0-16.4			16.0-16.4			16.0-16.4		
16.5-16.9			16.5-16.9			16.5-16.9		
17.0-17.4			17.0-17.4			17.0-17.4		
17.5-17.9			17.5-17.9			17.5-17.9		
18.0-18.4			18.0-18.4			18.0-18.4		
18.5-18.9			18.5-18.9			18.5-18.9		
19.0-19.4			19.0-19.4			19.0-19.4		
19.5-19.9			19.5-19.9			19.5-19.9		
20.0-20.4			20.0-20.4			20.0-20.4		
20.5-20.9			20.5-20.9			20.5-20.9		
21.0-21.4			21.0-21.4			21.0-21.4		
21.5-21.9			21.5-21.9			21.5-21.9		
22.0-22.4			22.0-22.4			22.0-22.4		
22.5-22.9			22.5-22.9			22.5-22.9		
23.0-23.4			23.0-23.4			23.0-23.4		
23.5-23.9			23.5-23.9			23.5-23.9		
24.0-24.4			24.0-24.4			24.0-24.4		
24.5-24.9			24.5-24.9			24.5-24.9		
25.0-25.4			25.0-25.4			25.0-25.4		
25.5-25.9			25.5-25.9			25.5-25.9		
26.0-26.4			26.0-26.4			26.0-26.4		
26.5-26.9			26.5-26.9			26.5-26.9		
27.0-27.4			27.0-27.4			27.0-27.4		
27.5-27.9			27.5-27.9			27.5-27.9		
28.0-28.4			28.0-28.4			28.0-28.4		
28.5-28.9			28.5-28.9			28.5-28.9		
29.0-29.4			29.0-29.4			29.0-29.4		
29.5-29.9			29.5-29.9			29.5-29.9		
30.0 +			30.0 +			30.0 +		
TOTALS:			TOTALS:			TOTALS:		

4/8 4/10 — 4/8 4/10 — 4/8 4/10

NO CLIP

1- Pad

14 — 5 — 2 5 — .21 total

WALLEYE / NETTING

Wisconsin
Department of Natural Resources

WDNR COMMENT

NETTING DATA COLLECTION SHEET (4.0 in. - 40+ in.)
Form 3600-188 Rev. 4-94

Lake LRF MWB Code: _____ Date: 4/8/15 County: _____ Collector: _____

Target Fish: _____ Survey Type: _____ Mark Given: _____ H_2O Temp: _____ Time _____ : _____

Adverse Conditions: _____ Station: _____

Net Type: _____ Length/Frame: _____ Bar Mesh: _____

Color: _____ Mesh Type: _____ Net Nights: _____

Inches	BLG	BKC	LSD	BRT	Inches			NET 1		
4.0 - 4.4	6.8	6.7	4.5	8.6	30.0 - 30.4			Species		
4.5 - 4.9	6.3	5.9			30.5 - 30.9			Count		
5.0 - 5.4	6.3	8.0			31.0 - 31.4					
5.5 - 5.9	7.2	6.0		BRT	31.5 - 31.9			Species		
6.0 - 6.4	7.3			21.8	32.0 - 32.4			Count		
6.5 - 6.9	6.8	5.7	5.5		32.5 - 32.9					
7.0 - 7.9	6.6		5.4		33.0 - 33.4			Species		
7.5 - 7.9	6.2		5.3		33.5 - 33.9			Count		
8.0 - 8.4	5.6		4.7		34.0 - 34.4					
8.5 - 8.9	6.7		4.9		34.5 - 34.9			NET 2		
9.0 - 9.4	6.3				35.0 - 35.4			Species		
9.5 - 9.9	6.5				35.5 - 35.9			Count		
10.0-10.4	6.5				36.0 - 36.4					
10.5-10.9					36.5 - 36.9			Species		
11.0-11.4	7.6				37.0 - 37.4			Count		
11.5-11.9	4.9				37.5 - 37.9					
12.0-12.4	6.3				38.0 - 38.4			Species		
12.5-12.9	7.3				38.5 - 39.9			Count		
13.0-13.4	6.9				39.0 - 39.4					
13.5-13.9	7.5				39.5 - 39.9			NET 3		
14.0-14.4	7.3				40 +			Species		
14.5-14.9	6.2							Count		
15.0-15.4	6.3									
15.5-15.9	6.7							Species		
16.0-16.4								Count		
16.5-16.9										
17.0-17.4								Species		
17.5-17.9								Count		
18.0-18.4										
18.5-18.9								NET 4		
19.0-19.4								Species		
19.5-19.9								Count		
20.0-20.4										
20.5-20.9								Species		
21.0-21.4								Count		
21.5-21.9										
22.0-22.4								Species		
22.5-22.9								Count		
23.0-23.4										
23.5-23.9								NET 5		
24.0-24.4								Species		
24.5-24.9								Count		
25.0-25.4										
25.5-25.9								Species		
26.0-26.4								Count		
26.5-26.9										
27.0-27.4								Species		
27.5-27.9								Count		
28.0-28.4										
28.5-28.9										
29.0-29.4										
29.5-29.9										

Sheet____of____ **WDNR COMMENT**

NETTING CPE DATA COLLECTION SHEET (3600-186-CPE/N) CPE

Wisconsin Department of Natural Resources

Waterbody Name: White River Flowage
MWB Code/WBIC: _____
Waterbody Type: _____
County: _____
Date (MM/DD/YY): 4/8/15
Station: _____
Start Time: _____
End Time: _____
Collectors: Folstad, Lauser, Hulin

Target Fish: Pike
Mark Given: _____
Survey Type: Population Estimate
Gear Type: Fyke Net
Weather: _____
Adverse Conditions: _____
Water Temperature: 39
Water Level: [HI] [NORM] [LOW]
Water Clarity: _____

Number of Nets: 5
Number of Nights: 1 (5 net nights)
Net Frame Height: _____
Net Frame Width: _____
Lead Length: _____
Largest Bar Mesh Size: _____
Smallest Bar Mesh Size: _____
Mesh Color: _____
Mesh Material: _____

SPECIES	Net # 1	Net # 2	Net # 3	Net # 4	Net # 5	Net #	Net #	Net #	Net #	Net #	Net #	Net #	TOTALS
WP	3	3	3	–	1								10
Redhorse	20	–	–	6	20								46
White Sucker	10	6	10	–	5								31
Black Crappie	1	2	–	–	1								4
Bluegill	2	5	4	–	2								13
Brown Bullhead	3	1	–	–	3								7
PKSD	–	1	–	–	–								1

WDNR COMMENT

Sheet____of____

NETTING CPE DATA COLLECTION SHEET (3600-186-CPE/N)

CPE

Wisconsin Department of Natural Resources

Waterbody Name: White River Flowage
MWB Code/WBIC:
Waterbody Type:
County:
Date (MM/DD/YY): 4/10/15
Station:
Start Time:
End Time:
Collectors: Folstad, Lawson, Hallo

Target Fish:
Mark Given:
Survey Type: Population Estimate
Gear Type: Fyke Net
Weather: Sunny, 52°
Adverse Conditions:
Water Temperature: 43
Water Level: [HI] [NORM] [LOW]
Water Clarity:

Number of Nets: 5
Number of Nights: 2 (10 net nights)
Net Frame Height:
Net Frame Width:
Lead Length:
Largest Bar Mesh Size:
Smallest Bar Mesh Size:
Mesh Color:
Mesh Material:

SPECIES	Net # 1	Net # 2	Net # 3	Net # 4a	Net # 5	Net # 6	Net #	Net #	Net #	Net #	Net #	Net #	TOTALS
NP	2	2	5	—	2	1							11
BLG	3	3	1	—	3								10
BC	—	1	—	—	—								1
Redhorse	37	3	6	14	17								77
White Sucker	19	4	8	13	5								49
PMSD	1	1	—	—	3								5
Brown bull	—	3	3	—	—								6
BRT	—	—	—	—	1								1
BKT	—	—	1	—	—								1

WDNR COMMENT

SUMMARY FISHING RECORD
FORM 3600-63

DEPARTMENT OF NATURAL RESOURCES

COUNTY: Ashland	WATERS: White River Flowage
SAMPLING OBJECTIVE: Basic Inventory	NUMBER AND LOCATION OF STATIONS (HABITAT): 5 nets set at various locations run for 2 days totaling 10 lifts
PERIOD FISHED (DATES): 5/19-20/83	

GEAR

BOOM SHOCKER (HOURS)	TIME: _____ NIGHT _____ DAY

VISUAL HOURS	TIME OF DAY	HAUL SEINE (LENGTH)	MESH	AREA COVERED
ANGLING (HOURS)	TIME OF DAY	TRAP NET (NO. OF NET LIFTS): 8 2	MESH: 1.0 in bar .5 in bar	DEPTH: 4'-5'-1 4'-5'-1
MINNOW SEINE (NO. HAULS)	AREA COVERED	GILL NET (NO. OF FEET X NO. OF LIFTS)	MESH SIZE	DEPTH

OTHER (HOURS OR LIFTS)	CHARACTERISTICS

FISHING RESULTS

SPECIES	NO.	MODAL SIZE(S)	SIZE RANGE	CATCH/UNIT
Northern Pike	51		13.5 - 39.9	5.1/net day
Largemouth Bass	1		13.5	.1/net day
Northern Redhorse	22		10.5 - 14.9	2.2/net day
White Sucker	7		15.5 - 16.9	.7/net day
Black Crappie	54		5.2 - 13.0	5.4/net day
Bluegill	24		5.2 - 7.4	2.4/net day
Rumpkinseed	13		5.0 - 6.3	1.3/net day
Black Bullhead	5-06		5.8 - 11.4	50.6/net day
Yellow Bullhead				

OBSERVATIONS: Golden shiner, 2.5", present

SIGNED (COMPILER)	DATE
T. Cawest	9/30/83

REV. 10-70

WDNR COMMENT

State of Wisconsin
Department of Natural Resources

GAME FISH LENGTH FREQUENCY

FORM 3600-65 REV. 3-80

INCHES

COUNTY	WATER	DATE	GEAR
ASHLAND COUNTY CODE ___ ___	WHITE RIVER FLOWAGE WATER CODE ___ ___ ___ ___	5/19-20/83	5 FYKE NETS

SIZE RANGE — INCHES	SPECIES				SIZE RANGE — INCHES	SPECIES		
	NORTHERN PIKE	LARGEMOUTH BASS	NORTHERN REDHORSE	WHITE SUCKER		N. PIKE		
<3.0					27.0-27.4			
3.0- 3.4					27.5-27.9	𝍸 I		
3.5- 3.9					28.0-28.4	𝍸		
4.0- 4.4					28.5-28.9	III		
4.5- 4.9					29.0-29.4	I		
5.0- 5.4					29.5-29.9	IIII		
5.5- 5.9					30.0-30.4	I		
6.0- 6.4					30.5-30.9			
6.5- 6.9					31.0-31.4	II		
7.0- 7.4					31.5-31.9	I		
7.5- 7.9					32.0-32.4	I		
8.0- 8.4					32.5-32.9	II		
8.5- 8.9					33.0-33.4	I		
9.0- 9.4					33.5-33.9			
9.5- 9.9					34.0-34.4	I		
10.0-10.4					34.5-34.9	II		
10.5-10.9			I		35.0-35.4	II		
11.0-11.4			I		35.5-35.9			
11.5-11.9			I		36.0-36.4			
12.0-12.4			II		36.5-36.9	I		
12.5-12.9					37.0-37.4	II		
13.0-13.4			II		37.5-37.9			
13.5-13.9	I	I	II		38.0-38.4			
14.0-14.4					38.5-38.9	I		
14.5-14.9			II		39.0-39.4	I		
15.0-15.4	II				39.5-39.9			
15.5-15.9			+11 COUNT	I	40.0-40.9			
16.0-16.4				II	41.0-41.9			
16.5-16.9	I			I	42.0-42.9			
17.0-17.4				+3 COUNT	43.0-43.9			
17.5-17.9					44.0-44.9			
18.0-18.4					45.0-45.9			
18.5-18.9					46.0-46.9			
19.0-19.4					47.0-47.9			
19.5-19.9					48.0-48.9			
20.0-20.4					49.0-49.9			
20.5-20.9					50.0-50.9			
21.0-21.4	I				51.0-51.9			
21.5-21.9					52.0-52.9			
22.0-22.4					53.0-53.9			
22.5-22.9					54.0-54.9			
23.0-23.4	II				55.0-55.9			
23.5-23.9					56.0-56.9			
24.0-24.4					57.0-57.9			
24.5-24.9	II				58.0-58.9			
25.0-25.4					59.0-59.9			
25.5-25.9	I				60.0+			
26.0-26.4	II							
26.5-26.9	II							
TOTAL		1	22	7	TOTAL	51		

WDNR COMMENT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PANFISH LENGTH FREQUENCY
FORM 3600-64 REV. 3-81

INCHES

COUNTY ASHLAND (COUNTY CODE __) | WATER WHITE R. FLOWAGE (WATER CODE ____) | DATE 5/19-20/83 | GEAR 5 FYKE NETS

SIZE RANGE INCHES	SPECIES: BLACK CRAPPIE	BLUEGILL	PUMPKINSEED	BLACK BULLHEAD
1.0-1.4				
1.5-2.0				
2.1				
2.2				
2.3				
2.4				
2.5				
2.6				
2.7				
2.8				
2.9				
3.0				
3.1				
3.2				
3.3				
3.4				
3.5				
3.6				
3.7				
3.8				
3.9				
4.0				
4.1				
4.2				
4.3				
4.4				
4.5				
4.6				
4.7				
4.8				
4.9				
5.0			|	
5.1				
5.2	||	|		
5.3			|	
5.4				
5.5	|			
5.6	||		|	
5.7	|||	||	|||	
5.8	|		|	|
5.9	||		|	||
6.0		|	|	||
6.1		|	||	|||
6.2		|	|	|||
6.3		|	|	|
6.4				|||
6.5		||		|
6.6		||		|||
6.7		|||		||
6.8				
6.9		||		
TOTALS				

SIZE RANGE INCHES	SPECIES: CRAPPIE	BLUEGILL	BLACK BULLHEAD	YELLOW BULLHEAD
7.0				
7.1		||||		
7.2		|	|	
7.3			|	
7.4	|	|		
7.5				
7.6				|
7.7				
7.8			|	
7.9				
8.0				
8.1	||		|	
8.2	||			
8.3				
8.4	|			
8.5	||			
8.6	||		|	
8.7	||||			
8.8	|			
8.9	||||			
9.0	||			
9.1	|||			
9.2				
9.3				
9.4				
9.5				
9.6	|		||	
9.7	|		|	
9.8	|		|	
9.9				
10.0	|			
10.2	||			|
10.4	||		|	
10.6	||||		||	|
10.8	|||			
11.0				
11.2				
11.4			|	
11.6				
11.8				
12.0				
12.2				
12.4				
12.6				
12.8				
13.0	||			
13.2				
13.4				
13.6				
13.8				
14.0+				
TOTALS				

GOLDEN SHINER 3.3 + 471 COUNT BLACK AND YELLOW BULLHEADS

WDNR COMMENT

WISCONSIN CONSERVATION DEPARTMENT
Madison, Wisconsin 53701

Fi-323

SUMMARY FISHING RECORD

County Ashland Waters White River Flowage

Sampling Objective General Survey

Period Fished (dates) Boom shocker 7-28-66, Fyke net 6-21, 23-66

Number and Location of Stations (habitat) 10 stations, scattered along entire shoreline

Gear:

Boom Shocker (hours) 3 Time: Night ..... Day X

Visual Hours ..... Time of Day ..... Haul Seine (length) ..... Mesh ..... Area Covered .....

Angling (hours) ..... Time of Day ..... Trap Net (no. of net lifts) 9 Mesh 1" Depth 5'

Minnow Seine (no. hauls) ..... Area Covered ..... Gill Net (no. of feet x no. of lifts) ..... Mesh Size ..... Depth .....

Other (hours or lifts) ..... Characteristics .....

Fishing Results:

Species	No.	Modal Size(s)	Size Range	Catch/Unit
Northern Pike	17	23.3	12.2 - 32.2	
L.M. Bass	1	12.7	12.7	
S.M. Bass	1	8.2	8.2	
Black Crappie	25	9.5	5.6 - 14.1	
Bluegill	33	5.9	5.0 - 7.5	
Rockbass	16	6.1	3.8 - 8.8	
Yellow Perch	3	8.2	6.9 - 10.5	
Black bullhead	369	7.8	5.0 - 10.8	
Brown bullhead	10	8.3	5.2 - 10.8	
Common sucker	96	8.8	1.8 - 19.9	
Pumpkinseed	3	5.7	4.8 - 6.3	
Northern Redhorse	18	12.2	4.8 - 19.3	

Observations: No recommended management program, survey data was mixed, making it impossible to analyze catch per unit.

ed Randolph Steuck (Compiler) Date January 11, 1967

WDNR COMMENT

Wisconsin Conservation Department

INTRA-DEPARTMENT

MEMORANDUM

Park Falls
Station

Date February 16, 1967

TO: Clarence A. Wistrom

FROM: Randolph Steuck

SUBJECT: White River Flowage, Ashland County

The White River Flowage is formed by a high dam controlled by the Lake Superior Power Company. This dam has been in existence since 1907 and its purpose is to create electric power. This dam has blocked fish migration from Lake Superior since its creation. With the absence of natural barriers, the excellent upstream water quality and flow, the White River without the dam could conceivably be another Brule River.

About eighty percent of the year, the flowage water is turbid. This turbidity is caused by tributary drainage over red clay soil in the upstream watershed. Because of the turbid water condition, it was difficult to collect a good fish sample with electrofishing gear. The greater percent of the fish survey sample was collected with fyke nets. A fair population of northern pike and a good panfish population exists here. Black bullheads are the dominent fish species. An occasional brown and brook trout is caught, however, no trout were captured or observed during the survey. No active management program is recommended at this time. No fish have been stocked in this flowage area since 1953.

The public access is located on State Highway 112 right of way and partially on power company land. This access has two car parking and is adequate for the light fishing pressure on this water. The Lake Superior Power Company agreed to enlarge this access if the need arises. The power company does not object to portages across their property to downstream water.

Apparently the turbid water condition does not affect the feeding habits of the fish. The four species crappies, rockbass, northern pike and bluegills have normal growth rates.

Randolph Steuck
Randolph Steuck

RS/cb
NOTED:

_____ _____
Date

WDNR COMMENT

WISCONSIN CONSERVATION DEPARTMENT
Madison, Wisconsin 53701

Fi-320

LIMNOLOGY

County Ashland 1 2 Waters White River Flowage 3 4 5 6

Location: Section 6 Township 46 Range 4W 7

Area (acres): 47.4 8 9 10 11 12 13

Type of Water: Lake ..... Stream ..... Impoundment X 14

Dimensions: Length (miles and tenths) 0.6 15 16 17 18 Width 0.2 19 20 21 22

Depth: Mean 14 feet Maximum (feet) 26 23 24 25
> 20 feet (percent) 5 26 27
< 3 feet (percent) 18 28 29

Shore Length (miles and tenths): 1.8 30 31 32

Littoral Bottom Types (percent): Sand 10% Clay 90% 33 34
Gravel ..... Hardpan 35 36
Bedrock ..... Boulder 37 38
Silt ..... Marl ..... Rubble ..... Detritus 39 40

Direct Drainage Area (square miles): 0.2 41 42 43 44

Watershed Land Cover (percent): Agriculture 45 46
Wetland ..... Wild 100 47 48

Watershed: Area (square miles) 172.0 49 50 51 52

Inlets: Number 1 Width (feet) 80 Navigability yes Volume 53

Outlet: Width (feet) 80 Navigability yes Volume 54

Landlocked: 55

Water Control Structure:
Owner Lake Superior Power Co. Height (feet) 49' Type Tainter Gate Purpose Power plant 56 57

Water Source: Drainage X Seepage ..... Spring ..... Drained 58

Flow of Outlet (cfs): 213 CFS (estimated) 59 60 61

Water Chemistry:
Date 9-12-66 MPA Alkalinity (ppm) 76 62 63 64

pH: 7.5 65 66

Phosphates: Total ..... Dissolved 67 68 69

Conductance: C_t ..... C_{177} 144 70 71 72

Watercolor: Lt. Brown ..... Med. Brown ..... Drk. Brown ..... Clear ..... Turbid X 73

Secchi Disk (depth in feet): 2' 74 75

Conditions Turbid (clay in solution) 75% of the year

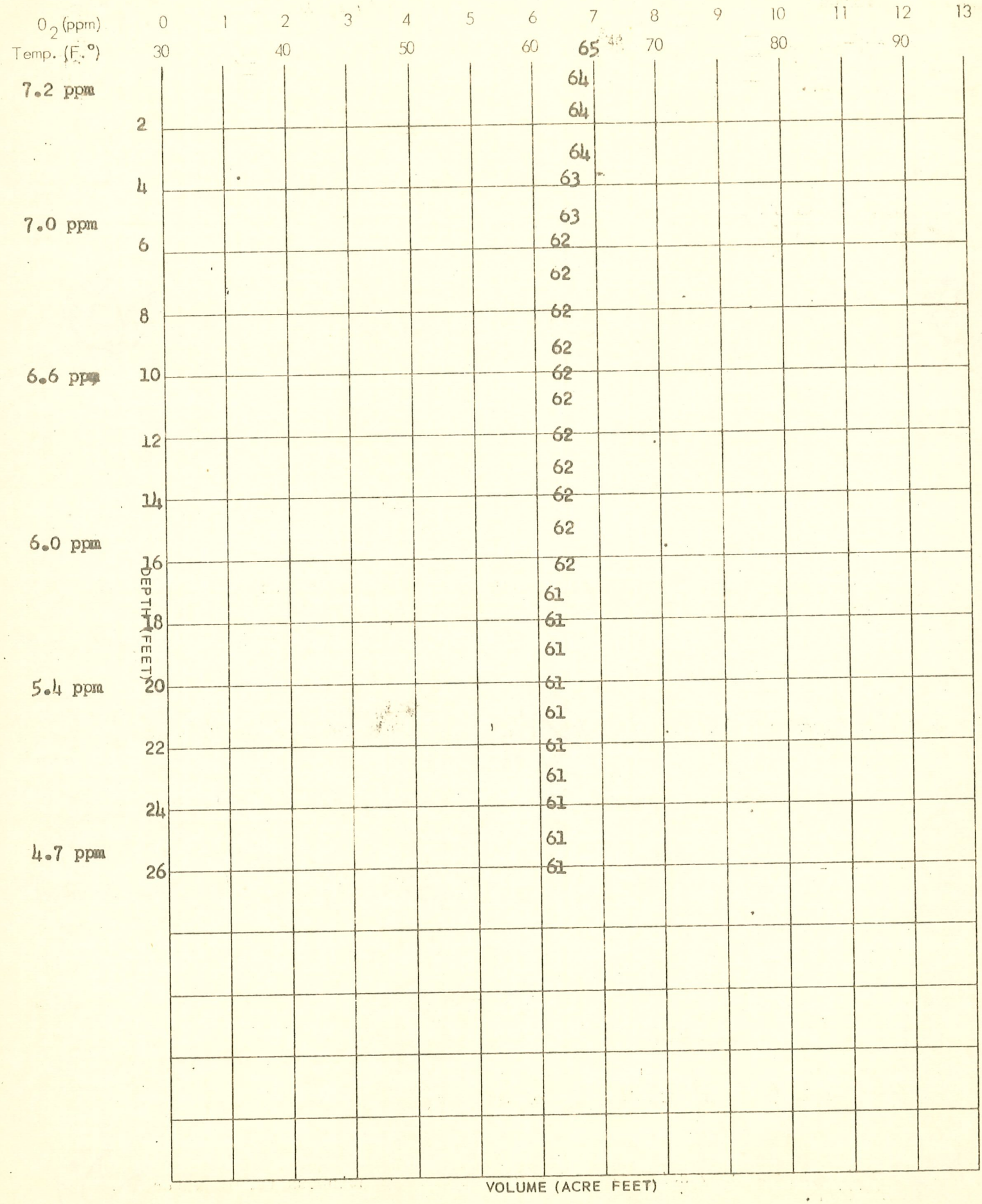
Upper Thermocline Depth (feet): 0 76 77 Chloride (ppm) 78 79

Comments: Drainage from clay soils tend to cause almost a continuous turbid water condition.

Leo Stecker (Compiler) Date 9-12-66

WDNR COMMENT

OXYGEN, TEMPERATURE, VOLUME PROFILE



Date of Collection Sept 12 1966

WDNR COMMENT

WISCONSIN CONSERVATION DEPARTMENT
Madison, Wisconsin 53701

Fi-325

GAME FISH LENGTH FREQUENCY

COUNTY	WATERS	DATE	GEAR
Ashland	White River Flowage	6-21-66	Fyke net (4) 230 V-A.C. Shocker

Size Range	SPECIES				
	Northern Pike				
3.0- 3.4					
3.5- 3.9					
4.0- 4.4					
4.5- 4.9					
5.0- 5.4					
5.5- 5.9					
6.0- 6.4					
6.5- 6.9					
7.0- 7.4					
7.5- 7.9					
8.0- 8.4					
8.5- 8.9					
9.0- 9.4					
9.5- 9.9					
10.0-10.4					
10.5-10.9					
11.0-11.4					
11.5-11.9					
12.0-12.4	1				
12.5-12.9					
13.0-13.4					
13.5-13.9	1				
14.0-14.4					
14.5-14.9					
15.0-15.4					
15.5-15.9					
16.0-16.4					
16.5-16.9					
17.0-17.4					
17.5-17.9					
18.0-18.4					
18.5-18.9					
19.0-19.4	2				
19.5-19.9	2				
20.0-20.4					
20.5-20.9	1				
21.0-21.4					
21.5-21.9					
22.0-22.4	1				
22.5-22.9					
23.0-23.4					
23.5-23.9	1				
24.0-24.4	1				
24.5-24.9					
25.0-25.4					
25.5-25.9					
26.0-26.4					
26.5-26.9	1				
Total					

Size Range	SPECIES	
27.0-27.4		
27.5-27.9		
28.0-28.4	2	
28.5-28.9	1	
29.0-29.4	1	
29.5-29.9	1	
30.0-30.4		
30.5-30.9		
31.0-31.4		
31.5-31.9		
32.0-32.4	1	
32.5-32.9		
33.0-33.4		
33.5-33.9		
34.0-34.4		
34.5-34.9		
35.0-35.4		
35.5-35.9		
36.0-36.4		
36.5-36.9		
37.0-37.4		
37.5-37.9		
38.0-38.4		
38.5-38.9		
39.0-39.4		
39.5-39.9		
40.0-40.4		
40.5- 40.9		
41.0-41.4		
41.5-41.9		
42.0-42.4		
42.5-42.9		
43.0-43.4		
43.5-43.9		
44.0-44.4		
44.5-44.9		
45.0-45.4		
45.5-45.9		
46.0-46.4		
46.5-46.9		
47.0-47.4		
47.5-47.9		
48.0-48.4		
48.5-48.9		
49.0-49.4		
49.5-49.9		

17

WDNR COMMENT

WISCONSIN CONSERVATION DEPARTMENT
Madison, Wisconsin 53701

Fi-324

PANFISH LENGTH FREQUENCY

COUNTY	WATERS	DATE	GEAR
Ashland	White River Flowage	6-21-66	Fyke net (4) 230 V-A.C. shocker

Size Range	SPECIES			Size Range	SPECIES		
	Bluegill	Crappie	Rockbass		Bluegill	Crappie	Rockbass
<1				7.0			3
1-1.4				7.1			
1.5-1.9				7.2			
2.0				7.3	1		
2.1				7.4			
2.2				7.5	2		
2.3				7.6			1
2.4				7.7			
2.5				7.8			
2.6				7.9			
2.7				8.0			
2.8				8.1			
2.9				8.2			
3.0				8.3			
3.1				8.4			
3.2				8.5			1
3.3				8.6			
3.4				8.7			
3.5				8.8			1
3.6				8.9			
3.7				9.0			
3.8			2	9.1		12.3 2	
3.9				9.2		12.4 1	
4.0				9.3		12.6 1	
4.1				9.4		12.8 1	
4.2				9.5		12.9 1	
4.3				9.6		13.1 1	
4.4				9.7		13.2 1	
4.5				9.8		13.4 1	
4.6				9.9		13.6 1	
4.7				10.0		13.8 1	
4.8			1	10.1		14.1 1	
4.9			1	10.2			
5.0	1			10.3			
5.1				10.4			
5.2				10.5			
5.3	1		2	10.6			
5.4	3			10.7			
5.5	4			10.8			
5.6	4	1	1	10.9			
5.7	4	1		11.0			
5.8		1		11.1			
5.9	2	2	1	11.2			
6.0				11.3		1	
6.1	3			11.4			
6.2		3	1	11.5			
6.3	1	1		11.6			
6.4	1	1		11.7			
6.5	1	1	1	11.8		1	
6.6	3			11.9			
6.7	1			>12			
6.8							
6.9	1			Total	32	25	16

4-66

WDNR COMMENT

Park Falls

April 16, 1964

TO: John Klingbiel

FROM: Randolph Steuck

SUBJECT: Application for a Federal Power Commission license for the White River Dam, Ashland County.

A field inspection was made of the White River Dam flowage area to determine public use, public access, and conservation interest.

The only possible boat access to the flowage is from the county highway which crosses on the control structure for the flowage. The Lake Superior District Power Company and the Ashland County Highway Department have provided a boat launching ramp with parking for two cars. Boat launching is difficult because of shallow water at the end of ramp.

Future consideration should be given to improving the launching ramp and enlarging the parking area for five cars. This would provide adequate access to the flowage and also provide a take out point for canoes.

Fishing pressure is light on the impoundment, however, the White River is used as a water trail by girl scouts from camps located upstream. It is necessary to portage canoes one fourth mile from the dam site to lower river. Portaging can only be accomplished by crossing power company property. Future consideration should be given to a public portage route to the lower river.

This power dam has been in operation for fifty years, and during this period no major problems have been encountered. No recommendations are being offered at this time to modify operating procedures. The portion of the White River from the White River Dam downstream, is included in the special trout season for migratory trout, but seems to be only marginal trout water with little fishing pressure.

Recommendations for future consideration would include improvement of the existing launching ramp and a portage route around the dam.

The District Game Manager, Clifford Wiita, stated that wildlife values on the flowage area are insignificant. The local warden, Robert Markle concurred in the above recommendations.

Randolph Steuck

RS/eb

WDNR COMMENT

Gary E Johnson
Cumberland, WI
54829

40 acres.

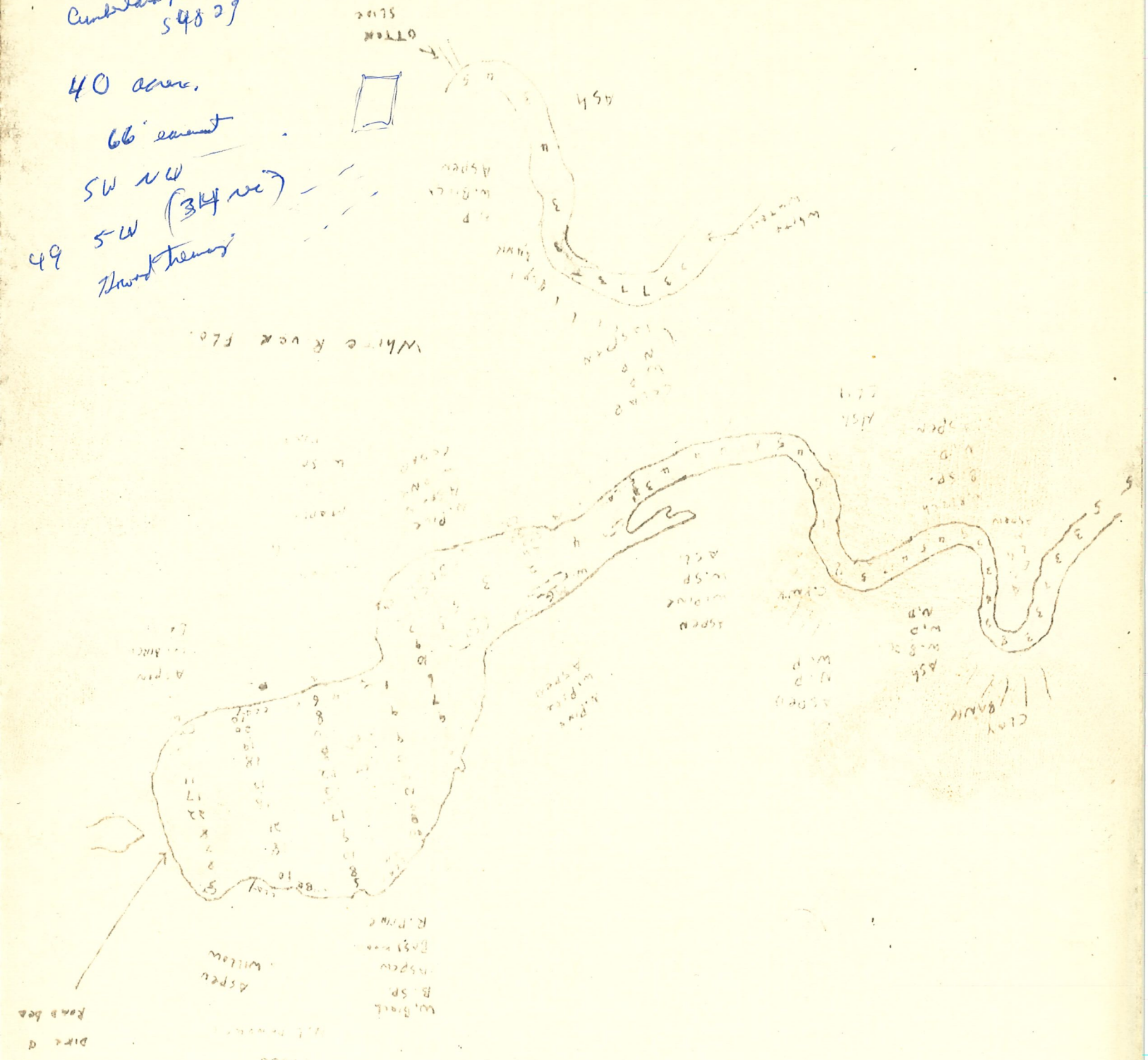
66' easement

SW NW

SW (34 ac)

49 SW

Thank you!



WDNR COMMENT

WISCONSIN CONSERVATION DEPARTMENT
Madison 1, Wisconsin

Fi-278

WHITE RIVER FLOWAGE ASHLAND CO.
4 fyke nets 6-21-66

Sucker		Blk Bullhead	Black Bullhead	Red-Horse ✓		Brown Bullhead			Stoneroller
12.2		8.3	6.1	14.6		9.6			4.9
14.2		6.5	6.5	15.5		8.3			
15.7		6.5	6.9	19.3		9.3			
14.6		8.7	6.3	13.3		9.0			
13.5		9.0	6.6	14.4		9.3			
17.5		6.9	9.4	11.7		8.7			
9.8		6.6	5.6	10.0		7.3			
18.1		10.1	8.6	11.7		6.8			
14.7		11.3	6.8			5.2			
16.1		5.7	9.8			10.8			
14.7		5.9	6.2						
14.8		5.6	6.5						
11.1		5.1	6.9						
10.8		7.0	5.7						
10.6		7.0	10.0						
13.5		8.3	7.7						
17.8		9.8	10.7						
10.4		9.3	9.8						
13.5		10.3	10.2						
11.1		6.5	9.8						
12.7		7.1	9.8						
10.6		9.2	10.6						
19.9		7.2	9.2						
18.6		5.6 ✓	9.5						
13.2		6.9	7.4						
15.7		6.4	9.0						
16.4		8.5	9.2						
9.9		7.0	5.0						
17.3		9.1	7.5						
9.4		8.7	19						
11.7		6.9							
16.9		7.4	count						
16.4		6.3	98						
13.7		8.5	24						
19.4		8.6	32 ✓						
18.4		9.4	7						
19.4		9.8	5						
15.1		6.8	42						
		6.5	27 ✓						
		9.4	34						
		6.3	12						
		9.7	13						
		9.7							
		9.2							
		9.8							
		8.7							
		10.8							
		10.2							
		6.7							
		9.5							
38		X	X						

REV. 2/60

WDNR COMMENT

WISCONSIN CONSERVATION DEPARTMENT
Madison 1, Wisconsin

Fi-278

Shocker

Red Horse	Sucker	Common Shiner	Trout Perch	Bull Head						
18.1	15.5 4.7	2.7	2.9	7.3						
12.0	9.3 13.7	2.7	2.9							
11.5	14.9 8.4	2.8	3.1							
10.4	13.6 5.4	2.1	2.4							
15.4	9.6 5.1	2.1	2.7							
13.7	11.2 5.6	3.2	1.2							
10.7	7.8 3.6	1.3	2.5							
7.5	10.2 5.4		3.2							
4.8+	5.3		2.7							
6.1	4.8		2.6							
	14.7		2.7							
	6.5		3.3							
	7.8		2.8							
	9.6		1.8							
	9.1		1.7							
	9.4		2.7							
	5.4		3.1							
	6.5									
	11.5									
	7.9									
	9.2									
	10.9									
	3.3+									
	3.4									
	7.5									
	7.6									
	4.8									
	8.8									
	3.5									
	6.5									
	8.7									
	3.8									
	4.1									
	11.6									
	13.1									
	11.3									
	7.3									
	5.2									
	6.6									
	6.9									
	6.4									
	7.4									
	5.4									
	4.5									
	1.8+									
	8.8									
	3.1									
	12.3									
	5.1									
	3.2									
	59									

REV. 2/60

WDNR COMMENT

Growth Data

White River Flowage - Ashland County

June, 1966

Year Class	No.	Size Range	Mean Size
Northern Pike			
II	2	12.2 - 13.8	13.0
III	7	19.2 - 23.7	21.4
IV	3	24.2 - 28.0	26.1
V	3	28.2 - 29.1	28.6
VI	1	29.6	29.6
VII	1	32.2	32.2
Rock Bass			
III	2	3.8	3.8
IV	9	4.8 - 7.0	5.9
V	2	7.0	7.0
VI	2	7.6 - 8.5	8.0
VII	1	8.8	8.8
Bluegill			
IV	1	5.0	5.0
V	6	5.3 - 5.5	5.4
VI	22	5.5 - 7.5	7.0
VII	3	6.7 - 7.5	7.1
Crappie			
III	11	5.6 - 6.5	6.0
V	2	11.3 - 11.8	11.5
VI	1	12.3	12.3
VII	10	12.4 - 14.1	13.2
VIII	1	13.8	13.8

WDNR COMMENT

White River
Sea Lamprey Weir Catch
April 10, 1960 to August 1, 1960

	43° April	56° May	68° June	72° July	August
Sea Lamprey		39	189	1	
Silver Lamprey					
Brook Lamprey			6		
Rainbow Trout	1				
Brook Trout					
Brown Trout		3	2		
W. Sucker	5	89	72	10	
L.N. Sucker		5			
Red Horse		48	20	1	
Walleye					
N. Pike		1	1	1	
S.M. Bass		1	1		
Yellow Perch					
Trout Perch		23	16		
Log Perch		1	5		
Com. Shiner		52	69	27	
Chub		8	12	14	
Bullhead		219	94	7	
Rock Bass		8	5		
Pumpkinseed		1	5		
Crappie		7	2		
L.N. Dace		1			
Ammocetes			1		
Smelt				1	

April 3 to August 14, 1959

	44° April	60° May	76° June	70° July	73° August
Sea Lamprey	25	495	95	17	
Rainbow Trout	1	2	1		
Sucker	123	320	118	137	3
L.N. Sucker		33			
Red Horse		10	36		22
Native Lamprey	1	3			
Brook Trout					
Br. Trout	2	6	2		
Walleye	1				
N. Pike		2		2	
S.M. Bass		1			
Yell. Perch	15	12	2	4	
Trout Perch	75	108	2	1	
Log Perch			1		
Bullhead		1030	941	150	35
Co. Shiner	103	316	181	74	26
Chub	18	125	48	21	3
Smelt	3588				
Rock Bass		5	15	11	
Bluegill					
Crappie		2	5		
L.N. Dace	1			3	

WDNR COMMENT

Burbot	1		1		
Brook Lamprey		15			
Pumpkinseed		18		1	
Mud Minnow				3	
Ammocetes					6

April - August 25, 1958

	47° April	56° May	58° June	70° July	74° August
Sea Lamprey	55	136	47	1	1
Rainbow Trout	1	1			
Sucker	485	131	211	655	84
L.N. Sucker	14	5	7		
Red Horse	7	4	207	236	169
Native Lamprey	8	24	7		
Brook Trout					
Br. Trout					2
Walleye		5			2
N. Pike	1				
S.M. Bass		1			1
Yell. Perch	19	25		15	
Trout Perch	226	483	63	24	17
Log Perch	2		17	9	8
Bullhead	19	179	107	429	145
Co. Shiner	453	410	257	415	51
Chub		49	33	56	26
Smelt	22167	411			
Rock Bass		1	2	12	5
Bluegill				26	5
Crappie			3		
L.N. Dace		8	1		
Burbot			3	1	14
Brook Lamprey		1			
Sauger				1	
Mud Minnow				1	

April 5, 1957 - August 5, 1957

	45° April	54° May	63° June	68° July	72° August
Sea Lamprey	87	253	46	8	
Rainbow Trout	1	3	1	1	
W. Sucker	938	407	132	164	8
L.N. Sucker	253	59		4	5
Redhorse	6	79	472	311	12
Native Lamprey		14			
Brook Trout	1	3			
Brown Trout	1	5		2	
Walleye	9	6	11	14	
N. Pike	1	1	1	4	
S.M. Bass		1	1	1	
Y. Perch		3	9	10	
Trout Perch	333	301	61	5	
Log Perch	2	4	1		
Bullhead	172	736	480	328	1
Co. Shiner	53	445	142	33	5
Ck. Chub	142	90	37	17	

WDNR COMMENT

Smelt	111	1			
Rock Bass		13	7	5	
Pumpkinseed				10	2
Bluegill					
Crappie				5	
L.N. Dace	1	8		4	
Silver Lamprey	8	2			
Burbot	2	1	1	3	

April 7 - July 4, 1956

	39° April	53° May	66° June	68° July	August
Sea Lamprey	4	191	21	3	
Rainbow Trout		1			
W. Sucker	272	2949	43	6	
L.N. Sucker	21	1306	2		
Redhorese	3	141	79	18	
Native Lamprey	1	2	8		
Brook Trout					
Brown Trout		1	2		
Walleye	1	34	28	4	
N. Pike		4	1		
S.M. Bass		2	9		
Y. Perch					
Trout Perch		133	9		
Log Perch		16			
Bullhead		250	192	4	
Co. Shiner		70	42		
Ck. Chub		19	52		
Smelt	8680	5130			
Rock Bass		16	7		
Pumpkinseed			8		
Bluegill		5			
Crappie		7	1		
L.N. Dace		18	2		
Silver Lamprey		61			
Burbot			1		