



UPPER MANISTEE RIVER NATURAL RIVER PLAN

Michigan Department of Natural Resources

Fisheries Division

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The Upper Manistee Citizens Advisory Group spent nearly three years in monthly meetings helping the DNR develop this draft Natural River Plan for the Upper Manistee River system. DNR would like to thank all the group members for the time and effort they put into this planning process. Following is a list of citizens who were active members of an Upper Manistee River Citizens Advisory Group at some time during the planning process (**bold type** indicates an active member at the time of the most recent Advisory Group meeting). It should be noted that not all Advisory Group members agreed with all of the recommendations in this plan.

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Tom Rozich of Michigan Department of Natural Resources' Fisheries Division was the primary author of Fisheries Division's Manistee River Assessment. Much of the background watershed information in this document was gathered from that document.

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INTRODUCTION

The Upper Manistee River system is a resource of national significance. The river and its adjoining lands are highly valued for the abundant and diverse fishery, scenic beauty, many miles of boatable waters, excellent game and non-game wildlife populations, camping, hiking and other recreational opportunities, historical significance and outstanding opportunities for private residential development. Because of these characteristics, the river system is experiencing increasing pressure from recreational users and development interests that threaten to forever alter the natural character of the river.

Under provisions of Natural Rivers Part 305 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, the Michigan Department of Natural Resources (DNR) is authorized to establish a system of designated "Natural Rivers" to provide for the protection and reasonable use of our finest river systems. To help protect the values of the Upper Manistee River system, it is recommended that the Upper Manistee River and many of its tributaries be designated as Natural Rivers under provisions of Part 305. All stream segments are recommended for designation in the "Wild-Scenic" classification. A "Wild-Scenic" River is defined as having a wild character with wild or forested borders, in close proximity to human development. The wild aspect may be relatively broad or confined to a narrow corridor.

The Department of Natural Resources has developed this management plan for the Upper Manistee River system as part of the designation process. This report provides a description of the physical characteristics of the river and its adjoining lands, cultural features of the river system and factors affecting its future nature and use.

The report also outlines a plan for the protection of the Upper Manistee River system. Through implementation of local and State zoning ordinances and rules based on the plan, along with proper management of public lands and programs, the Upper Manistee River Natural River Plan will serve as a basis for preserving and enhancing the river's values for water conservation, its free-flowing condition and its fish, wildlife, boating, scenic, aesthetic, historic and recreational values and uses.

I. UPPER MANISTEE RIVER WATERSHED

A. THE WATERSHED

The Upper Manistee River watershed is located in the northwestern portion of Michigan's Lower Peninsula. It has a drainage area of 590 square miles. The watershed includes parts of five counties: Antrim, Otsego, Crawford, Kalkaska and Missaukee. The mainstream is approximately 78 miles long and originates in southeast Antrim County (approximately six miles from the village of Alba), at an elevation of 1,250 feet. From this point the river meanders southerly until it reaches a point about six miles west of Grayling, in Crawford County. Here, the river turns and meanders southwesterly until it reaches the planning area boundary of the Wexford/Missaukee County Line. The Manistee continues flowing southwesterly until it ultimately discharges to Manistee Lake and then Lake Michigan at the City of Manistee. Along the way, the river is fed by large tributaries such as the North Branch as well as many other smaller tributaries. The river has a total drop in elevation from the headwaters to the planning area boundary of 315 feet, an average of four feet per mile.

B. CLIMATE

The watershed offers a climate typical of Michigan's "north country" that is strongly affected by Lake Michigan. The warm days and cool nights offer a pleasant summer haven for residents and tourists. Winter's abundant snowfall provides excellent conditions for skiing, snowmobiling, and other winter sports.

Weather data for the Manistee basin indicates a record high of 107 degrees F and low of -45 degrees F, both recorded in the Grayling-Fife Lake Area. Mean January and July temperatures are 17.4 and 58.7 degrees F, respectively. The average low temperature for January is 10.4 degrees F, while the average high temperature for July is 80.2 degrees F. The average length of growing season is 121 days.

The summer season yields 34 percent of the annual precipitation, with another 30 percent occurring during the fall. The low occurs in February with an average monthly yield of 1.44 inches. Annual precipitation averages 32.04 inches.

C. TRANSPORTATION AND AREA GOVERNMENT

One major US highway, US 131, currently crosses the western end of the Upper Manistee watershed. This is a limited-access highway from southwest Michigan to just south of Cadillac. From Cadillac, it becomes a two-lane highway that crosses the Manistee River mainstream north of Manton, downstream of the planning area. A new limited-access highway is proposed to replace this section of US-131 in the future.

Two State highways traverse the river or tributaries in the watershed, including M-72 in Kalkaska County and M-66 in Kalkaska and Missaukee counties. In addition, many paved and unpaved year-round county roads, as well as seasonal roads and two-tracks, are present in all counties.

Commercial airline service is available at Traverse City, west of the watershed. Although there are rail lines in the watershed, no passenger rail service is available.

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The watershed includes portions of five counties and 20 townships, although only 17 townships have any appreciable stream mileage. There are no incorporated municipalities in the Upper Manistee River watershed.

D. GEOLOGICAL HISTORY

The predominating historical influence on the Manistee River is, of course, its geologic background. The unique conditions left by the Pleistocene glaciers that advanced and retreated from this portion of Michigan's Lower Peninsula provided the ecological framework for the plant and animal communities in the watershed. Many of the characteristics that make this river system worthy of consideration for Natural River designation are directly attributable to the porous nature of the glacial outwash deposited between the Lake Border and Port Huron Moraine.

Meltwaters pouring off the Port Huron ice sheet carved out two large discharge channels running east and west. The present-day Manistee River "under-fits" the westerly channel, resulting in the appearance of a large river valley and delta formed by a relatively small river. The Au Sable River occupies the easterly channel, discharging to Lake Huron at Oscoda.

E. HISTORICAL HUMAN INFLUENCES

Earliest archaeological evidence of human inhabitants dates to the Paleo-Native American period, over 10,000 years ago. These were nomadic people who followed herds of game animals. By 500 BC, there was a change to a more sedentary lifestyle as people established camps for a season or more and agricultural practices were developed.

Forty-three archeological sites are listed in the watershed (Table 1). Actual scholarly study of the Manistee River archaeology has been limited. Numerous burial mounds associated with the Late Woodland Period are located along the riverbanks. The majority of sites excavated to date are relatively small seasonal villages used during the harvest of fish, game and plants.

Numerous sites were discovered during a 1965 archaeological investigation of the area between Sharon (Kalkaska County) and Sherman (Wexford County). These included Native American burials, village locations and transient campgrounds. Most were dated between 8,000 BC and 500 AD.

Prior to European exploration in the first half of the 1600's, Native American tribes including the Ottawas, Potawatomis and Chippewas used the Manistee River watershed and its resources. The Native American "Manistee River" name has several documented meanings, including "river at whose mouth are islands," "river with white bushes along the banks," "crooked river," and "spirit of the woods."

Many area tribes intentionally burned certain areas in the watershed to manage habitat and vegetation types. This activity likely stopped near the time of the first European exploration when French explorers came to the region, primarily motivated by the fur trade (Jean Nicolet, in 1634, is thought to be the first white man to visit northern Michigan). The tribes built no large permanent settlements, but traveled to stations throughout the Manistee River watershed to hunt, fish and gather the region's rich plant resources. They continued these activities throughout the French and British regimes in Michigan, spanning the years roughly between 1634 and 1812.

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In 1760, the English took control of northern Michigan from the French. The newly formed United States of America laid claim to the former French and British colonial territories in the Great Lakes region in 1776. A January 1805 Act of Congress provided for the organization of the Territory of Michigan. Ottawas, Chippewas and Potawatomis joined with Tecumseh and the British in an unsuccessful effort to repel the U.S. during the War of 1812. On October 13, 1813 General Lewis Cass was appointed Civil Governor of Michigan Territory. He created the first county, Michilimackinac, bounded on the east by the Cheboygan River, the south by the Manistee River, the west by the Manistique River, and by Canada on the north.

In 1821 and again in 1836, Ottawa bands living along the Manistee ceded title to their lands to the United States. By 1830, the Government Land Office survey of Michigan had begun, creating the township, range, and section system we now have. Prior to this time, the Manistee River watershed was still relatively undeveloped by non-natives. In 1837 came statehood for Michigan and in 1840, the creation of counties as we know them today.

Non-natives were late in developing the watershed. The interior portion of the watershed was not logged until after 1870, as the river was choked with logjams. The Manistee River contained so much wood that it was rare to find a long stretch of open water. Prior to construction of the Manistee Bridge (now the M-37 bridge north of Sherman, downstream of the planning area), the only river crossing was via a log jam so solid horses and livestock could cross. Logging company crews clearing the river for log drives did not reach Sherman until 1870.

A review of H.R. Page's 1885 "History of Manistee County" gives a glimpse of the characteristics of the river in pre-European settlement days. In 1869, an exploration of the Manistee River was made under the direction of the ironically named River Improvement Company. A.S. Wordsworth, leader of the survey party, wrote an account of that survey, an excerpt of which follows:

"September 18th, in two canoes, so light we could carry them upon our shoulders, we commenced descent of the Manistee, from Section 18, T28N, R4W [near Deward in the upper reaches of the planning area]. The spring sources of this stream are in hardwood timber land, but changing to pine land near the south boundary of T29N; thence for sixty miles on either bank is good pine land, or pine plains, some cork pine, but mostly Norway pine; ...the Manistee decidedly floatable for saw logs from Section 18, T28N, R4W: stream fifty feet wide, well defined banks; extreme freshet rise two feet.... Soon after crossing the western boundary of Range 6 west [Sharon area], we encountered the first flood jam worthy of notice upon the river. This jam is 20 rods [330 feet] up and down the stream: estimated expense of removal, \$40 per lineal foot or \$800.

"These jams date back in buried centuries. As evidence, we find deep-worn trails around them, where Indians have dragged their canoes; also soil accumulations from fallen leaves and freshet of the stream, with forest growth. Cutting to the heart of a cedar twenty inches in diameter, growing over the center [of the log jam], I counted 160 years growth.

"The eleven flood jams of the Manistee [that the party encountered] have a lineal extent, by the thread of the river, of 263 rods [4,340 feet]. Expense of working a channel through them, thirty feet wide; in round numbers, \$10,000; wing jams and snags, etc., etc., say \$5,000; in all, \$15,000. One mile below the last named flood jam, commence lumbermen's rollways; thence downstream they become noticeable features of the river.

"Two miles down the stream, we encountered a jam of floating sawlogs of one and one-half mile extent, over or around which we were compelled to drag or carry our canoes, and pack our camp

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'fixens,' and rock, clay, sand, gravel and soil specimens. At the foot we found a force of nine men at work breaking the jam.

"We here see the last of the 'Grayling,' a fish allied to the speckled trout, and called by the residents, the 'Manistee' fish. They are in great abundance near bend waters; they feed, at this season, upon a small, white miller, and readily take a fly-hook, often darting above the surface to secure their prey. Their average length is ten inches, weighing from six to twelve ounces. Hundreds can be taken with a single hook, in a day. They are the "grayling" of English and Scotch waters.

"The Manistee River has been long known as one of the most remarkable streams in the Northwest in this, that it never floods, seldom freezes, and is never affected by droughts. The secret of these singular features of the river is found in the fact that it is fed with springs which flow into the stream from its banks every few rods, so that it is safe to say there are more than a thousand spring streams that bubble up and empty their pure waters into the river within fifty miles of Manistee. These streams vary in size from a small rill to a good mill stream. Everywhere along the banks of this beautiful river they boil out and bubble up in their crystal beauty, affording water as pure and sweet as any in the world; and this probably accounts for the great abundance of the grayling fish, which is sweeter meated and every way as gamey as the brook trout."

The onset of the logging era began what may have been the greatest human influence on the river system. Large-scale removal of logs changed fisheries and wildlife habitat and the very character of the area. The loggers not only removed numerous logjams and large woody debris from the stream channel, they rolled logs down the banks (the "rollways") and drove them to market in the spring. Without trees to stabilize the exceptionally sandy soils in the area, huge amounts of sediment entered the river. Although erosion and sediment transport are natural functions in a stream environment, such a massive artificial influx of additional sediment often overwhelms natural stream processes. Once in the stream, the increased sediment load begins to affect the aquatic environment. The deposition of sand and sediment along the stream bottom causes the stream to overflow its banks. As this occurs, sediment begins to flow laterally and cover the edges of the stream. As the sediment builds up, the stream channel begins to braid, forming several channels in a wider, flatter area. Stream temperatures rise, and fish lose valuable habitat for feeding, resting, and spawning.

These effects can be observed on the Manistee River. The upper stretches in the Deward Tract are beginning to recover from the logging era. However, just downstream from Cameron Bridge, the river begins to widen, has a lower gradient and becomes braided. This sandy braided condition is at least partially the result of sedimentation following the de-vegetation of the uplands surrounding the river.

From the early 1840's to 1940, the lifestyles of the Native American people, and thus their influence on the river, underwent several changes due in part to the increased presence of non-natives. After the 1855 Treaty of Detroit, Ottawas formed new permanent agricultural settlements south of the watershed. By the late 1870s, many Ottawas had sold or lost title to their lands, and migrated to the outskirts of newly formed towns or more isolated areas, still primarily relying on the natural resources of the area to earn a living.

In 1900, the Manistee River was proclaimed Michigan's last great "un-harnessed" river, capable of producing 40,000 horsepower of electricity. Stronach Dam on the Pine River, the major tributary to the lower Manistee, was the first hydroelectric dam on the system, being completed in 1912. Stronach Dam originally supplied power to the City of Manistee. The Michigan Railway Company

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acquired the project around 1915, with the intention of supplying power to a proposed electric railway. Consumers Power Company acquired the project in 1917 after the electric railway plans were abandoned and operated the plant until July 8, 1953.

Downstream of the planning area, Tippy Dam was completed and began producing power in 1918 and Hodenpyl Dam in 1925. Tippy Dam was then called Junction Dam, being at the confluence of the mainstream and South Branch Manistee, as the Pine River was formerly called. Fortunately, the Upper Manistee escaped the immediate effects of large hydropower facilities.

The construction of these and other smaller dams had a great influence on the river system. Dams have a variety of effects on river ecosystems. They influence flow patterns and alter channel cross-sections. They fragment the river system, blocking drift and migration by fish and other aquatic organisms. They change river temperatures (making some areas unsuitable for native fish to survive), increase evaporation and reduce stream flow, disrupt sediment and woody debris transport and modify water quality. They can also cause significant direct fish mortalities. Impoundments also result in a loss of riverine habitat and the subsequent changes in fish and aquatic invertebrate populations. The Manistee River shows all of these effects.

The onset of the "modern age" saw a restructuring of the economic and social order in many communities, native and non-native, and with it new influences of the watershed. With lesser reliance on the natural resources of the area for subsistence, increased agricultural, urban and residential uses began to have a greater impact.

From 1933 to 1942, enrollees in the many Civilian Conservation Corps (CCC) camps in the Upper Manistee River watershed had a significant impact on the river system. Reforestation efforts by the corps helped hasten recovery from the devastating logging activities of the recent past. Many erosion control and habitat structures were constructed during this time. The CCC also planted millions of fish in area streams, fought forest fires and built many area campgrounds.

Oil and gas exploration also began in the watershed in the 1930's. The majority of early development occurred in Osceola, Lake, Crawford, Kalkaska and Missaukee counties during the 1940's through early 1960's. The Niagaran Reef oil development began in the late 1960's, with the majority of the activity occurring between 1969 and 1986. Several thousand wells were drilled throughout the watershed. Deep gas exploration occurred sporadically in the watershed beginning in the 1980's. Shallower Antrim gas development began in 1987, and has been widespread in the years since. The potential for additional widespread Antrim development continues to exist throughout the watershed. The Manistee River watershed has produced more oil and gas than any other watershed in the State.

Such development has come with a price. Fragmentation of the surrounding landscape by drilling pads and access roads is widespread. Pipeline corridors also fragment habitat, and have the potential to damage streams at pipeline/stream crossings. The potential for groundwater, surface water and air pollution at drilling sites is of constant concern.

Agricultural land uses can also have dramatic affects on aquatic environments, particularly where there is no vegetative buffer between agricultural areas and a stream. Although this use is limited in the Upper Manistee River system, the affects of agriculture can be seen in some areas. Tillage of soil increases erosion and sediment inputs to streams. These sediments bury gravel and cobbles critical to reproduction and survival of many fish species. Riparian vegetation is often removed, resulting in loss of habitat, warming of water temperatures and reduced filtering of contaminants.

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Wetlands, important as spawning and living areas for many species and important to the water quality of the system, were frequently drained to increase land available for tillage. Water withdrawal for irrigation can reduce summer base flows and negatively impact the river.

Land development for residential and other "urban" uses also has dramatic impacts on the aquatic environment. These impacts are increasing with the recent trends of increased development of northern Michigan waterfront properties. Sediment from construction activities, removal of streamside vegetation, filling of wetland and floodplain areas, increase in impervious land area adjacent to streams resulting in warmer temperatures, increased pollutant loads and less stable flows, and discharge of pollutants from wastewater treatment plants and individual wastewater systems such as septic tank/drain fields are all examples of the documented or potential effects of urbanization on the Upper Manistee River system.

Part of the Upper Manistee's value is evident in the way it has influenced people's lifestyles since early times. Native Americans depended on the river for transportation, food, and water. Early settlers depended on it in much the same way, as it later became the sole means of transporting logs to the sawmills and thereby was very important to early residents' way of life. Today the river and its adjoining lands fill different purposes, but they are still important to everyday life. The river and lands are a recreational and commercial resource for many people. Current local culture has partly been determined by the need to meet the demands of users of the river and the surrounding resources. These demands continue to have an influence on the river corridor.

F. BIOLOGICAL COMMUNITIES

1. ORIGINAL FISH COMMUNITIES

An accurate, comprehensive description of the fish community at the time of European settlement is not available. Michigan grayling were abundant in the Upper Manistee River prior to European settlement. Suckers, shiners, northern pike, and whitefish are the only other fish mentioned by early observers as associated with grayling in Michigan streams. Other species present, but not easily observed, would have been blacknose & longnose dace, sculpin, and chestnut and brook lamprey. Potamodromous species (fish that spawn in fresh water rivers but spend their adult lives in fresh water lakes) including lake sturgeon, lake trout, lake and round whitefish, burbot, walleye, and troutperch inhabited the river seasonally.

The Boardman River was thought to be the most southerly stream that native brook trout inhabited. However, brook trout may have been native to the Manistee River watershed. A newspaper article in the Manistee Times dated Sept. 11, 1869 by George C. Depres cited that a Mr. Ruggles and other gentlemen took a large "mess" of "speckled brook trout" from Pine Creek (a Manistee River tributary downstream of the planning area). The change of the Manistee River from grayling to a trout river was attributed to competition, over-harvest, and habitat destruction during the logging era.

The first accurate fish surveys in the Manistee River were not conducted until 1958. These were done in conjunction with a lamprey study in the upper river. Thirty species of fish, including three lamprey species, were collected from 30 sampling stations in the mainstream and tributaries. Most of the sampling stations were in the Upper Manistee River, above the Smithville area on the mainstream, and tributaries. By the time the survey was conducted, the grayling, which is now extinct statewide, had been extirpated from the watershed.

2. PRESENT FISH COMMUNITIES

European settlement caused dramatic changes in the Manistee River and its watershed, many of which changed the river's fish communities. Logging, dams, agricultural and urban land use, point-source discharges, lake-level controls and introduction of exotic species, both intentional and unintentional, have all had an impact on the river system and therefore on its fish communities.

The watershed is now thought to contain 80 fish species (Table 2). Species distributions vary from one small inland lake to watershed-wide. One species has been extirpated and some are rare or threatened, while most native species are still present. Two species, the lake sturgeon and pugnose shiner, are considered "threatened" by the State of Michigan. Thirteen non-native fish species have been introduced into the watershed (Table 3). These include unintentional and intentional introductions and migrations. Many, such as sea lamprey, coho and chinook salmon in the lower river, and rainbow and brown trout, have had a profound impact on the biological and social aspects on the river and its use.

A brief description of the existing fish populations by river segment follows:

Headwaters to M-72

The best trout populations in the mainstream exist in this stretch, including good self-sustaining populations of brook and brown trout, with the former predominating. Fish habitat has partially recovered from the turn of century logging disturbances, in part due to efforts by the Upper Manistee River Restoration Committee, a partnership of public and private interests. Trout population estimates continue to show annual increases in recent years, including a nearly 21% increase in trout per acre from 1992 to 1993. This segment is classified as a "Blue Ribbon" trout stream.

M-72 to Smithville

This reach has fair to good populations of large brown trout, large numbers of young-of-the-year brook trout and a few rainbow trout in riffle areas. These populations are sustained with hatchery fish. There are also the beginnings of a coolwater community of walleye, smallmouth bass, redhorse, and white suckers downstream of Smithville. MDNR Fisheries Division, Manistee River Association, Upper Manistee River Association, and other private parties stock part of this stretch and downstream. Chestnut lamprey are abundant in this segment.

North Branch Manistee

This stream has good self-sustaining brook trout populations, with some brown trout present. Chestnut lamprey are abundant in the lower third of the segment. An occasional "tiger trout", which is a natural cross of a brook and brown trout, is reported by anglers. The area from Mecum Road to the mouth is classified as a "Blue Ribbon" trout stream.

Tributaries

Almost all tributaries are designated trout streams. Some tributaries are good fisheries, including Goose Creek (brook trout), Big Cannon Creek (brook and brown trout), Little Cannon Creek (brook trout), and Hopkins Creek (brook and brown trout). These are all naturally produced and self-sustaining fisheries.

3. MAMMALS

Beaver, mink, muskrat, raccoon, otter, cottontail rabbits, snowshoe hare and fox and red squirrels are some of the mammal species associated with the Upper Manistee River watershed. All of these species are present in moderate to very abundant populations. White-tailed deer are abundant, and are seasonally dependent upon the mainstream and tributary corridors and headwater areas in the watershed. Deer use these sites for yarding purposes when severe winters force them to abandon the uplands. Black bear, bobcat, fox and coyotes can also be found in areas of the watershed, but are seldom observed.

Two species of mammals that frequent the watershed are listed in the Michigan Natural Features Inventory (Table 4). The pine marten is considered "threatened" by the State of Michigan, while the woodland vole is a species of "special concern."

4. BIRDS

A large variety of waterfowl nest in the watershed. The watershed is within the Mississippi Flyway used by migrating ducks and geese.

A review of the Michigan Natural Features Inventory identified eight species of birds listed as endangered, threatened or of special concern that may frequent the area. They include the bald eagle (threatened), common loon (threatened), king rail (endangered), Kirtland's warbler (endangered), loggerhead shrike (endangered), northern harrier (special concern), osprey (threatened), and red shouldered hawk (threatened). The bald eagle, loon, king rail, osprey, and red shouldered hawk are intrinsically associated with the watershed, either for habitat or feeding areas. Significant great blue heron rookeries exist within the watershed. One other scarce bird species present in the area is the pileated woodpecker, a species that thrives in mature forests.

5. AMPHIBIANS AND REPTILES

Thirty-eight species of amphibians and reptiles have been documented in the Manistee River system or its associated wetlands (Table 5). Three species are currently listed as of "special concern" in the Michigan Natural Features Inventory. They are the Massasauga rattlesnake, spotted turtle, and wood turtle. The wood turtle is of special interest in that its nesting sites are sandy stream banks and it lives in river corridors. Breeding areas are of prime importance since nesting habitat may be reduced by river rehabilitation projects that stabilize and re-vegetate eroding stream banks. Studies on the Au Sable River (Lower Peninsula) and Indian River (Upper Peninsula) on the nesting requirements of the wood turtle indicate the wood turtle is fairly selective in choosing a nesting site, preferring gentle sloping south and west facing banks. Studies in Minnesota and Wisconsin have identified commercial and casual collection as the major cause of wood turtle decline. This is partly due to the turtles' apparent lack of fear of humans, allowing canoeists and others to easily approach and capture individuals.* On-going studies also indicate that nest predation by raccoons may have a major effect on population levels.

6. AQUATIC INVERTEBRATES

There are at least two areas that have unusual aquatic insect communities, in addition to the abundant invertebrate populations in the headwaters. These are areas that have significant hatches of the "Michigan caddis", which is actually a mayfly (Genus *Hexagenia*) and not a caddis fly

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(Genus *Tricoptera*). Excellent hatches of *Hexagenia l.* are found around Cameron Bridge and below Rainbow Jim's landing. In addition, they are found in lesser numbers throughout the area from Cameron Bridge to the Hodenpyl Dam backwaters, downstream of the planning area.

No comprehensive invertebrate studies have been done in the Manistee River watershed. Invertebrates often are sensitive indicators of habitat problems that are affecting fish and other aquatic life. Three macroinvertebrate studies have been conducted in the watershed, by Michigan Department of Environmental Quality (DEQ). In 1985, DEQ Surface Water Quality Division (SWQD) sampled macroinvertebrates above and below Flowing Well Trout Farm on the North Branch of the Manistee River. They found similar benthic communities above and below this private fish hatchery.

No species of mussels are currently listed for this area in the Michigan Natural Features Inventory (Table 4). However, no definitive studies have been conducted in the watershed and a complete inventory of the mussel species present would be beneficial.

7. PEST SPECIES

Pest species are defined here as those species that have been introduced, either accidentally or intentionally, or are exceptionally damaging to economic values, and that pose a significant threat to native species or their habitat. Most species do not pose any threat unless they are present in high densities.

The only fish pest species that is abundant in the Upper Manistee River, its impoundments, tributaries, or natural lakes is the chestnut lamprey. This parasite is abundant in the mainstream from Co. Road 612 to Sharon Bridge and is very abundant in the mainstream downstream of Sharon Bridge. While chestnut lamprey do cause mortalities to trout, the mortality is not significant.

A pest species of mollusk, the zebra mussel, has invaded the Tippy Dam pond and river downstream.

Rusty crayfish are in the Manistee River system. The "Rusty" is an exotic species, probably introduced by bait dealers and anglers. It is an extremely aggressive crayfish, even known to attack swimmers' toes, and has often replaced native species where introduced.

There are two known pest plant species in the Manistee River system, purple loosestrife and Eurasian milfoil. Eurasian milfoil is present in several of the lakes in the watershed.

Several terrestrial pest species are present, among them gypsy moth, forest tent caterpillar, spruce budworm, and jackpine budworm. None are present in high enough densities to be a problem except the gypsy moth, which can cause severe tree mortality in forested areas. The gypsy moth itself does not kill the tree, but lowers its resistance to other diseases and parasites, especially in oaks on poorer sites.

Other natural features, animals and plants that occur in the Manistee River area are listed in Table 4.

G. HYDROLOGY AND CHANNEL MORPHOLOGY

1. ANNUAL STREAM FLOWS

Draining an area of 590 square miles, the Upper Manistee River has average discharge rates at the following United States Geological Survey (USGS) Manistee gauge stations: Mancelona Bridge (Otsego County)-18 cfs; County Road 612 (Crawford County)-116 cfs; CCC Bridge (Kalkaska County)-256 cfs; Sharon (Kalkaska County)-336 cfs; and Sherman (Wexford County)-838 cfs.

2. FLOW STABILITY

Seasonal flow stability can be critical to support balanced and diverse fish communities. It is also a determining factor in ecological and evolutionary processes in streams and has been positively correlated to fish abundance, growth, survival, and reproduction.

The Manistee River mainstream and the Au Sable River are said to have the most stable seasonal flows of any streams in the country. The extreme stability of the mainstream of the Manistee River is a reflection of the geology and soils in the watershed.

River systems such as the Upper Manistee also have very stable daily flows due to the soil types and buffering wetlands present in the watershed. Human-induced factors such as dam operations and some lake-level control structure operations can cause significant daily flow fluctuations. These daily fluctuations can destabilize banks, create abnormally large moving sediment bedloads, disrupt habitat, strand organisms, and interfere with recreational uses of the river. Aquatic production and diversity are profoundly reduced by such daily fluctuations.

One active lake level control structure in the watershed is located on Lake Margrethe. This structure is operated seasonally by the Crawford County Road Commission. When water in the lake is above the target level, flows are rapidly increased to bring the lake level down and when the lake water level is below the target level, flows are reduced.

3. CHANNEL GRADIENT

River gradient is one of the main controlling influences on the river channel. Steeper gradients allow faster water flows with accompanying changes in depth, width, channel meandering, and sediment transport.

The average gradient of the Upper Manistee River mainstream is four feet per mile. Naturally, some portions of the river are steeper than average while others are more gradual. These different gradient areas create different types of channel, and hence different kinds of habitat for fish and other aquatic life. Typical channel patterns in relation to gradient are listed below. In these descriptions, hydraulic diversity refers to the variety of water velocities and depths found in the river. The best river habitat offers such variety to support various life functions of various species.

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<u>Gradient Class</u>	<u>Channel Characteristics</u>
0.0 - 2.9 feet/mile	Mostly run habitat with low hydraulic diversity
3.0 - 4.9 feet/mile	Some riffles with modest hydraulic diversity
5.0 - 9.9 feet/mile	Riffle-pool sequences with good hydraulic diversity
10.0 - 69.9 feet/mile	Well established, regular riffle-pool sequences with excellent hydraulic diversity
70.0 - 149.9 feet/mile	Chute and pool habitats with fair hydraulic diversity
> 150 feet/mile	Falls and rapids with poor hydraulic diversity.

4. STREAM CHARACTERISTICS BY SEGMENT

Discharge rates, gradient and other characteristics of various segments of the river channel are as follows:

Headwaters to M-72

From its source to the confluence of Frenchman's Creek, the Manistee River follows a shallow, winding, woody-cover filled course. River discharge at Mancelona Bridge is 17.6 cfs and the gradient is 5.9 ft/mi. This section is characterized by areas of shallow water and a channel with abundant vegetation and woody debris.

From Frenchman's Creek to the M-72 Bridge, the flow and depth increase and the channel has less woody debris. River discharge at County Road 612 is 116 cfs and gradient is 2.1 ft/mi.

M-72 to Wexford/Missaukee County Line

Between the M-72 Bridge and Sharon the channel widens and in most areas is practically lacking the large woody debris that provides trout cover and insect habitat. River discharge at CCC Bridge is 256 cfs. Gradient ranges from 2.2 to 9.8 ft/mi. in this stretch. This section has many short, relatively shallow, fast riffles.

The North Branch of the Manistee River enters the mainstream at Sharon, resulting in a larger, deeper channel. River discharge at Sharon is 336 cfs.

North Branch of the Manistee River

The North Branch follows a slow, winding course through open marshlands, with beaver dams, dense overhanging vegetation, and partly submerged woody debris. The North Branch has a discharge rate of 26.4 cfs.

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H. VEGETATION, SOILS AND LAND USE PATTERNS

The historical vegetative cover of the watershed was predominantly pine forest and hardwood forest, with wetlands intermixed. The current landscape is predominantly coniferous, deciduous, or wetland forest (54 percent), agricultural land (39.03 percent) and a few urban areas (3.29 percent). Common tree species in areas with loamy soils include northern white cedar, balsam fir, red maple, and basswood. In the higher, sandy areas, red pine, jack pine and oak dominate.

Current land use patterns in the watershed are approximately as follows:

Urban and suburban	3.29%
Agricultural	39.03%
Range land	1.71%
Coniferous forest	12.18%
Deciduous forest	29.28%
Wetlands (forested & non-forested)	12.83%
Lakes and streams	1.68%

While thirty-nine percent of the area is listed as agricultural land, little of this is tilled cropland. The majority is pasture, fruit orchards, or Christmas tree plantations.

The majority of the soils in the watershed, especially along the mainstream, are deep sands of the Kalkaska-Rubicon-Grayling series, which are very well drained, rapidly permeable soils.

Soils of the watershed include the following (percentages are approximate):

Clayey	7.9%
Loamy/organic/sand/gravel/sandy	41.4%
Sandy	19.4%
Wet/clayey/loamy/sandy/organic	29.6%
Inland lakes and streams	1.7%

I. LAND OWNERSHIP

The State of Michigan MDNR has extensive land ownership in the Upper Manistee River corridor. Table 6 reflects the land ownership by county within 400 feet on either side of the mainstream and tributaries. A total of 52.2 percent of the corridor lands are in public ownership. In 1994, a significant transfer of riparian and other lands from Consumers Energy to the MDNR resulted from a settlement between the two parties related to the operations of the Consumers Energy Ludington Pumped Storage Facility. Consumers Energy land ownership is now primarily project lands associated with Tippy and Hodenpyl Dams downstream of the planning area.

A major land use in the Upper Manistee watershed is the Hanson Military Reserve, a training area for National Guard Units nationwide. This area on the east side of the mainstream extends from M-72 downstream to CCC Bridge. Little military land actually abuts the Manistee River mainstream, but most of the Portage Creek stream frontage is within the reserve.

J. RECREATIONAL USES

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Fishing and canoeing are two of the most popular recreational uses on the Upper Manistee River system. These two activities also generate user conflicts in some areas at certain times of the year.

1. CANOEING

Most of the Upper Manistee River mainstream is canoeable. Headwater segments and tributaries are not generally suitable for canoeing due to brush, logjams, and beaver dams.

Although the Manistee River near Deward is large enough for canoeing, canoeing is most popular from Cameron Bridge to Sharon. An additional area of high canoe use is from Smithville to U.S. 131 Bridge downstream of the planning area. Several canoe liveries are located in the Upper Manistee River area.

Canoe trip lengths and conditions for various segments of the system are as follows (much of this information is taken from "Canoeing Michigan Rivers" by Jerry Dennis and Craig Date, 1986 Friede Publications):

MANISTEE RIVER

Deward to M-72 - 14.5 miles, approximately 5 ½ to 7 hours

The river averages 30-50 feet wide and one to three feet deep in this section, with occasional deadfalls present, and with "spreads" areas of braided channels located between Cameron Bridge and County Road 612 and between County Road 612 and M-72. Access is at unmarked trails in the Deward area, Cameron Bridge, County Road 612, the Upper Manistee River State Forest Campground and the State Forest Campground at M-72. The upper sections can be challenging to novice canoeists due to deadfalls, sweepers and a moderate current. Most of the residential development in this area is downstream of County Road 612.

M-72 to CCC Bridge – 14 miles, approximately 4-5 hours

The river averages 40-80 feet wide and one to four feet deep with occasional deeper holes. Access is limited in this stretch due to the great amount of private land and no road/stream crossings. Denser development in the form of cottages is seen near the upper and lower sections of this stretch. Current is slow to moderate in this area, with an occasional "sweeper" to keep paddlers alert.

CCC Bridge to Lower Sharon Bridge – 9.5 miles, approximately 2 ½ to 3 ½ hours

The upper and lower thirds of this section provide an excellent float, with less development and a swifter current in this section than in the previous section. The river still averages 40-80 feet, but with more volume and therefore deeper holes. Again, easy access is limited to the start and end points of this section. The swifter current, high forested banks in some areas and less noticeable development make this one of the nicer sections of the river for canoeing.

Lower Sharon Bridge to M-66 – 9.5 miles, approximately 2 ½ to 3 ½ hours

Below Sharon the river increases in size due to the influence of the North Branch of the Manistee, and slows and widens somewhat, averaging 60-90 feet with some pools up to 10 feet deep. Much of the river corridor consists of floodplain/wetland areas.

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M-66 to Old US -131 State Forest Campground (downstream of the planning area), 25 miles, approximately 6-8 hours

A very scenic stretch of river, this section has a fairly swift current and a few riffle areas in the first few miles. However, the current soon slows and the river becomes deeper and slower, and more turbid after a rain due to the heavier clay content of the surrounding soils. The latter part of this trip also features high, forested banks with relatively little development, lending a feeling of remoteness to the section. There are a few intermediate access points on this stretch at county road crossings.

2. FISHING

Trout fishing is extremely popular throughout the river system, including the smallest of tributaries (also see “**Present Fish Communities**”). At this writing, the section from M-72 to C.C.C. Bridge on the Upper Manistee River mainstream is subject to special regulations that specify “flies-only” fishing with a year-round fishing season, except that the brook and brown trout possession season runs from the last Saturday in April through October 31st. The fishing season for the remainder of the mainstream is from the last Saturday in April until September 30, with all tackle allowed. Tributary seasons are also from April to September, with slightly smaller minimum size limits for most trout. See the current Michigan DNR Inland Trout and Salmon Guide for details.

Upper portions of the Upper Manistee River mainstream and major tributaries, and all of the lesser tributaries, are wadeable. Most contain brook and brown trout.

3. OTHER RECREATIONAL ACTIVITIES

Hunting for a variety of game is popular in the watershed. Game mammals such as white-tailed deer, squirrels, snowshoe hares and cottontail rabbits are abundant in many areas. Game birds present include ruffed grouse, woodcock, a large wild turkey population and many varieties of waterfowl.

Other popular recreational activities include camping, picnicking, trapping, ORV trail riding, cross country skiing, hiking, horseback riding, bird watching and simply observing the river and its associated flora and fauna. Segments of the North Country National Scenic Trail are located in the watershed, some coinciding with the existing Shore to Shore Trail. Numerous snowmobile trails exist in the watershed.

There are numerous campgrounds and public access points throughout the river system. These are listed in Table 7.

K. DAMS AND BARRIERS

There are currently 13 known dams in the Upper Manistee River watershed, regulated under authority of Michigan's Dam Safety Part 315 of 1994 PA 451 (Table 8). Ninety percent of these have a head of five feet or less. None have a head greater than 20 feet. The storage capacity of most of these dams is very small, in the 0-10 acre-feet range.

Three relatively small dams four to six feet high were constructed by the MDNR Wildlife Division to create floodings for wildlife habitat. All of these, including Goose Creek Impoundment, Cannon Creek Flooding No. 1, and Cannon Creek Flooding No. 2 are on designated trout streams.

L. MINERAL EXTRACTION

The watershed has experienced a great deal of oil and gas activity since the 1930's. Earlier exploration and extraction activities focused on recovering oil from formations in the eastern and southern areas of the watershed. The Niagaran Reef that is present throughout the northern portion of the watershed was first developed in the late 1960's. Since 1987, there has been increased activity related to Antrim gas development, tapping relatively shallow gas reserves throughout the watershed. The potential for widespread continued Antrim gas development exists in all areas of the watershed. Gravel extraction activities are also present in the watershed.

M. WATER QUALITY

Overall surface water quality in the Upper Manistee River basin is excellent. Water quality parameters under normal conditions meet the criteria for total body contact recreation, and aquatic life. This is due in large part to the deep permeable soils of the watershed which allow precipitation to rapidly be absorbed. This leads to groundwater flows being the dominant contributor to river flow. Limited development has also helped preserve water quality.

One National Pollution Discharge Elimination System (NPDES) permit for surface water discharge of effluent (the Flowing Well Trout Farm) exists for the basin.

The Michigan Environmental Response Act, Act 307 of 1982, as amended, provides for identification, risk assessment and evaluation of sites of environmental contamination. Twenty-four such sites have been identified in the Upper Manistee River Basin (Table 9).

With good water quality in the watershed, fish populations in the river system have not been subject to any specific fish consumption advisories. All of the waters of the Upper Manistee watershed are classed as designated trout streams.

N. SPECIAL JURISDICTIONS

Numerous Federal and State laws and county, township and municipal ordinances affect the river and riparian zones. Some Federal laws and many State statutes affecting the river and its adjoining lands are administrated by the Michigan Department of Environmental Quality (MDEQ), Land and Water Management Division (LWMD) (Table 10).

1. NAVIGABILITY

Navigable Waters as Public Waters

The definition of legal navigability of Michigan streams (i.e. "public waters") is part of an ongoing controversy. Public and private rights related to water have historically been determined by the courts. A navigable water has been defined as any water which in its natural state is capable of and has been used for the purposes of commerce, travel and trade by the customary and ordinary modes of navigation. The floating of logs during the lumbering era was held to be an act of commerce. Consequently, any lake or stream used for this purpose would be considered navigable. Thus, the "log floatation test" has largely become the method of determining the "navigability" of a stream in Michigan, and therefore whether that stream is a public water.

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On a navigable stream, the public has the right to float the stream, wade on the submerged soil and to fish in the stream. This right does not extend to trespass upon the private lands of abutting landowners, except that a wading angler may enter upon the upland to avoid a hazard or other impediment obstructing passage within the stream. The public should also feel secure in making a portage around any dam or other obstruction. The banks of a public stream are subject to the public easement only so far as they are necessary to exercise the right of passage and navigation. There have been periodic legislative efforts in Michigan to refine the definition of a navigable water.

Whether a stream is determined to be navigable has no bearing on whether it may be designated a Natural River. Also, designation of a stream as a Natural River has no bearing on its status as a navigable water.

None of the Upper Manistee River system has been declared non-navigable by the courts.

2. COUNTY DRAINS

County Drain Commissioners have authority to establish designated drain systems under the Michigan Drain Code (PA 40, 1956). This allows for construction or maintenance of drains, creeks, rivers, and watercourses and their branches for flood control and water management. A designated drain may be cleaned out, straightened, widened, deepened, extended, consolidated, relocated, tiled, and connected to improve flow of water. Designated drains constructed prior to January 1, 1973 are exempt from the provisions of the Inland Lakes and Streams Part and the Wetlands Protection Part of 1994 PA 451.

The only known designated county drain in the watershed, the Ham Creek Drain, is located in Bloomfield Township, Missaukee County. The relatively few drains in the Manistee River system indicate little development, limited agricultural areas, and mostly sandy soils.

Drain Commissioners are also responsible for the maintenance and operation of lake-level control structures, including the structure on Lake Margrethe in Crawford County, the headwaters of Portage Creek.

3. FEDERAL WILD AND SCENIC RIVERS

The U.S. Forest Service has studied the entire Manistee River system for possible inclusion in the Federal Wild and Scenic Rivers Act. At this time, no portions of the Upper Manistee river have been designated as Federal wild and Scenic rivers. Portions of the Lower Manistee River and Bear Creek in Manistee County and the Pine River in Wexford and Manistee counties were designated as Federal Wild and Scenic rivers under provisions of the Federal Michigan Scenic Rivers Act of 1991 (PL 102-249).

O. CITIZEN INVOLVEMENT

Many citizens groups take an active role in protecting and managing the Upper Manistee River watershed. Such groups often act in partnership with MDNR, USFS and other government agencies to work toward the improvement of the river system. Such groups include the Michigan Council of Trout Unlimited, Michigan River Guides Association, Upper Manistee River Association, Manistee River Association, George Mason Chapter of TU and the Michigan Chapter

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of Fly Fishing Federation. The non-profit Huron Pines Resource Conservation and Development Council have been instrumental in forming partnerships with many of these groups in the form of restoration committees dedicated to stabilizing eroding streambanks and improving inadequate road/stream crossings.

Many citizens took an active role in helping MDNR develop this Natural River management plan as part of the Upper Manistee River Citizens Advisory Group. Group members represented a wide range of interests such as property owners, local government, local and State-wide citizen and sporting groups, local business and interested citizens from the local area and outside the area. The knowledge and commitment of group members over a three-year planning process was invaluable in the development of recommendations for stream segments to be designated and use and development standards for both public and private lands along those segments.

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II. PROPOSED UPPER MANISTEE RIVER NATURAL RIVER PLAN

A. GOALS AND OBJECTIVES

1. GOAL OF DESIGNATION

The goal of Natural River designation of the Upper Manistee River system is to protect, preserve and enhance the integrity and natural values of the Upper Manistee River system for present and future generations, while ensuring proper management of public and private lands and preserving the rights and privileges of owning and developing private property using sound conservation practices.

2. OBJECTIVES OF DESIGNATION

The objectives of Natural River designation of the Upper Manistee River system include:

- a. To maintain water quality consistent with the designated classification of the river and adhere to the concept of non-degradation of water quality.
- b. To prohibit development or activity that may damage the ecologic, aesthetic or historic values of the river and adjacent lands.
- c. To ensure that development that occurs has a minimal impact on the natural and cultural values and aesthetic qualities of the river system.
- d. To ensure that a varied and quality recreational experience that is harmonious with the natural values and aesthetic qualities of the stream is maintained.

B. RIVER SEGMENTS PROPOSED FOR DESIGNATION

To qualify for designation as a Natural River, river segments must possess one or more natural or outstanding values such as a free-flowing condition or fisheries, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic and recreational values. If a river meets this broad criteria, it may then be classified in one of three Natural River categories; Wilderness, Wild-Scenic or Country-Scenic. Criteria for classification include the natural character of the river corridor, degree of river corridor development, number of paralleling roads and road crossings, type and density of streamside vegetation, water quality, aesthetic qualities of the corridor, and others.

Wild-Scenic rivers should have mostly wild or forested borders exhibiting light development, with high water quality, but near development and relatively accessible. The wild aspect may be relatively broad or confined to a narrow corridor. Any impoundments should have outstanding aesthetic and recreational characteristics to offset the interference with the free-flowing condition of the stream. Roads may occasionally lead to or cross the river. The rivers may include small communities and/or concentrations of development limited to relatively short reaches of the total designated area.

The following portions of the Upper Manistee River system are recommended for designation as "Wild-Scenic Rivers" under authority of Natural Rivers Part 305, 1994 PA 451 (some identified stream names are local in origin, particularly for streams not named on USGS topographic maps). Unless otherwise noted, all lakes, ponds, impoundments or other surface water bodies not traditionally considered rivers, streams or creeks are included in the following designated areas if they are a contiguous part of the stream system, i.e. if the stream flows into and out of the water body.

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Upper Manistee River area

Manistee River mainstream from its sources in Sections 1 and 12 of Mancelona Township, T29N, R5W to the Wexford/Missaukee county line (78 miles).

Frenchman's Creek from the Lake Elizabeth Dam in section 30 of Hayes Twp., T29N, R4W to its confluence with the Manistee River (3.3 miles).

Lost Lake Outlet from the outfall of Lost Lake in Section 6 of Frederic Township, T28N, R4W to its confluence with the Manistee River (0.4 miles).

Unnamed stream from its source in Section 13 of Blue Lake Township, T28N, R5W to its confluence with the Manistee River (3.4 miles).

Goose Creek from Cameron Bridge Road in section 27 of Blue Lake Twp., T28N, R5W to its confluence with the Manistee River (7.6 miles).

Portage Creek from the control structure near the outfall of Lake Margrethe, section 8 of Grayling Twp., T26N, R4W to its confluence with the Manistee River, including all braided channels (6.6 miles).

All perennial tributaries to Portage Creek from their sources to their confluence with Portage Creek (approximately 3.3 miles).

Clear Creek from its source at Boiling Springs in section 28 of Bear Lake Twp., T26N, R5W to its confluence with the Manistee River (0.7 miles).

Black Creek from the outfall of South Black Lake in section 21 of Bear Lake Twp., T27N, R5W to its confluence with the Manistee River, including all braided channels (8.3 miles).

All perennial tributaries to Black Creek from their sources to their confluence with Black Creek.

Dempsey Creek from its source in section 19 of Bear Lake Twp., T26N, R5W to its confluence with the Manistee River (2.4 miles).

Big Devil Creek from its source in Section 18 of Garfield Township, T25N, R5W to its confluence with the Manistee River (5.1 miles).

Big Cannon Creek from its source in section 5 of Norwich Twp., T24N, R5W to its confluence with the Manistee River (14.4 miles).

North Branch of the Manistee River from County Road 612 in section 3 of Excelsior Twp., T27N, R6W to its confluence with the Manistee River (19.6 miles).

Unnamed stream from Tower Road in section 25 of Coldsprings Twp., T28N, R6W to its confluence with the North Branch of the Manistee River (5.6 miles).

Morrison Creek from its source in section 28 of Excelsior Township, T27N, R6W to its confluence with the North Branch of the Manistee River (2.8 miles).

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Collar Creek from its source in section 33 of Excelsior Township, T27N, R6W to its confluence with Morrison Creek (0.6 miles).

Unnamed stream from its sources in section 26 of Excelsior Township, T27N, R6W to its confluence with Morrison Creek (3.5 miles).

All other perennial tributaries to the North Branch of the Manistee River from their sources to their confluence with the North Branch of the Manistee River (approximately 4 miles).

Willow Creek from its source in section 14 of Orange Twp., T26N, R7W to its confluence with the Manistee River (6.1 miles).

Pierson Creek from its source in section 12 of Orange Township, T26N, R7W to its confluence with Willow Creek (4.8 miles).

Maple Creek from its source in section 22 of Orange Twp., T26N, R7W to its confluence with the Manistee River (4.2 miles).

Little Cannon Creek from multiple sources in sections 29, 31 and 32 of Garfield Twp., T25N, R6W to its confluence with the Manistee River (12.1 miles).

Silver Creek from its source in section 1 of Pioneer Twp, T24N, R7W to its confluence with Little Cannon Creek (1.6 miles).

Waterhole Creek and all tributaries from their multiple sources in Garfield Township, T25N, R7W to the confluence with the Manistee River (3.9 miles).

Babcock Creek from its sources in section 33 of Garfield Township, T25N, R 7W to its confluence with the Manistee River (0.5 miles).

Filer Creek from its source in Section 4 of Pioneer Township, T24N, R7W to its confluence with the Manistee River (1.9 miles).

Nelson Creek from its sources in Section 30 of Garfield Township, T25N, R7W to its confluence with the Manistee River (0.9 miles).

Spring Creek from its sources in section 22 of Springfield Twp., T25N, R8W to its confluence with the Manistee River (2 miles).

Bourne Creek from its sources in section 29 of Springfield Twp., T25N, R8W to its confluence with the Manistee River (1.7 miles).

Ham Creek from its source in Section 24 of Bloomfield Twp., T24N, R8W to its confluence with the Manistee River, **including two tributaries** with sources in Sections 3 and 9 (7.5 miles).

Gravy Creek from its source in section 5 of Bloomfield Twp., T24N, R8W to its confluence with the Manistee River (0.5 miles).

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Haynes Creek from its source in section 31 of Springfield Twp., T25N, R8W to its confluence with the Manistee River (0.5 miles).

Hopkins Creek from its source in Section 17 of Forest Twp., T23N, R7W to its confluence with the Manistee River (13.7 miles).

Fisher Creek (“Hopkins Creek” on the USGS topographic map) from its source in section 31 of Springfield Twp., T25N, R8W to its confluence with the Manistee River (1.8 miles).

Total designated Upper Manistee River Wild-Scenic mileage – 234 miles (78 mainstream, 156 tributaries).

C. **NATURAL RIVER DISTRICT**

The Upper Manistee River Natural River District includes the stream channel of all designated mainstream and tributary segments and all lands within 400 feet of the ordinary high water mark (river's edge) on each side of all designated streams. This district defines the area within which various use and development standards will apply. **This does not establish a 400-foot building setback or non-development zone. Establishment of this district in no way implies a “taking” of these lands by the state, nor does it open private lands for public use. Private lands remain subject to the rights of private property ownership.**

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(Map)

D. PRIVATE LAND DEVELOPMENT STANDARDS

The following standards apply to all portions of any lot or parcel within 400 feet of the river's edge or any lot or parcel completely within 400 feet of the river's edge on each side of all designated rivers. Mainstream standards apply to the mainstream of the Manistee River from its sources in Antrim County to the Wexford/Missaukee County Line. Tributary standards apply to all designated tributaries.

1. PERMITTED USES

The type of land use adjacent to a river has a major impact on the natural values of the river system. Uses that result in high human and vehicle traffic, dense development, large non-residential structures with impermeable parking areas, use or storage of chemicals or other activities that are not compatible with the river environment will not be permitted in the Natural Rivers District. Three categories of uses are permitted in the Natural River District, as follows:

Exempt uses in the Natural River District are uses that are allowed by right and DO NOT require a Natural River zoning permit. They include the following:

- a. Private, noncommercial recreation such as camping, boating, fishing, hunting and other similar activities that do not require permanent structures;
- b. Reforestation and other accepted forest management practices landward of the native vegetation buffer that do not require permanent structures;
- c. Agricultural activities, such as plowing, disking and planting of crops, including general and specialized farming such as Christmas tree farms, provided that all new activities occur landward of the native vegetation buffer. Construction of residential and farm-related structures and appurtenances are classified as principal uses (see below) and are subject to zoning permit requirements. New aquaculture facilities, expansion of existing aquaculture facilities, and concentrated animal feeding operations are not permitted within the Natural River district.
- d. Operation of licensed motor vehicles on public or private roads that are designed to provide access to a permitted use;
- e. Off-road operation of emergency and public utility vehicles;
- f. Cutting of vegetation in the native vegetation buffer to create a private footpath leading from outside the native vegetation buffer to a single point on the river's edge or to trim or prune vegetation for a filtered view of the river.

Principal uses in the Natural River District are uses allowed by right but that require a Natural River zoning permit. They include the following, subject to all permit requirements and development standards outlined in this plan:

- a. Single family residential and detached rental dwellings (other than short-term rental cabins), farm and other accessory buildings and appurtenances such as fences, decks, patios, pedestrian bridges (tributaries only), satellite dishes, low-profile boardwalks and river access stairways;
- b. Private docks;
- c. Private utility service lines;
- d. Individual on-site wastewater treatment systems and water supply wells;
- e. Mineral exploration and extraction activities;
- f. Land divisions;
- g. Home occupations;
- h. Limited land alteration;

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- i. Forest management activities in the native vegetation buffer.

Special uses in the Natural River District (uses allowed upon approval by the Upper Manistee River State Zoning Review Board or appropriate local zoning authority) include the following, subject to all permit requirements and development standards outlined in this plan:

- a. Detached rental cabins
- b. Campgrounds
- c. Vehicle bridges (tributaries only)

SUMMARY OF STANDARDS – Following is a summary of selected private land development standards for the Upper Manistee River system.

Native Vegetation Buffer All Segments	Building Setback Mainstream	Building Setback Tributaries	Bluff Setback Mainstream	Bluff Setback Tributaries	Minimum Lot Area All Segments	Minimum Lot Width All Segments
75 feet	100 feet	100 feet	50 feet	25 feet	80,000 square feet	200 feet

- All setbacks and native vegetation buffer widths are measured horizontally from the Ordinary High Water Mark (OHWM), a.k.a. the river's edge.

2. NATIVE VEGETATION BUFFER

A restricted vegetative cutting area encompassing the river, tributaries and all lands within 75 feet of all mainstream and tributary segments is required.

The presence of native vegetation adjacent to the river is a critical element in maintaining the natural characteristics of the river corridor. A buffer that includes native shrubs, trees and grasses filters runoff, provides wildlife habitat in critical migration corridors, provides the large woody debris and leaf litter in the stream channel important for fish and invertebrate habitat, shades the river to maintain cool water temperatures and screens development from the river user. Manicured, maintained lawns perform none of these functions.

Natural Rivers Part 305 limits the establishment of a vegetative buffer standard on private land subject to State zoning rules to a maximum width of 100 feet from the river's edge. Most research concludes that a 75-100 foot-wide vegetative buffer is necessary to minimally provide for the functions mentioned above. Research also indicates that wider buffers better provide for many of those functions. If a local unit of government feels that a larger vegetative buffer is appropriate for their area of jurisdiction, that unit of government is encouraged to incorporate a larger buffer zone standard in their local zoning ordinance.

Within the native vegetation buffer, trees and shrubs may be pruned over no more than a 50-foot width for a filtered view of the river, but clear-cutting in this native vegetation buffer is prohibited. The native vegetation buffer is also subject to the following provisions:

- a. Unsafe trees and noxious plants and shrubs such as poison ivy and poison sumac may be removed.
- b. The selected removal or trimming of trees for forest management practices or disease and insect control, and clearing of vegetation to the minimum width required for public utility

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- primary electric distribution lines and service lines for permitted uses is permitted upon approval of the zoning administrator in consultation with the local Soil Conservation District Resource Professional, if the activity is in keeping with the goals and objectives of the Natural River Plan.
- c. Camping other than low-impact tent camping is not permitted in the native vegetation buffer.
- d. Mowing is prohibited in the native vegetation buffer except in areas that had been maintained in a mowed condition prior to adoption of rules or ordinances implementing this plan, or to establish a footpath to the river not to exceed four feet wide.
- e. In the Manistee River mainstream vegetation may be selectively pruned to allow for safe navigation and to alleviate flooding that threatens a dwelling. This may include pruning of a maximum eight-foot wide section of vegetation. Portions of trees, logs and other natural material imbedded in the stream channel may not be disturbed.
- f. A boardwalk constructed in conjunction with the footpath described in d. above is permitted upon approval of the zoning administrator if it is placed only in areas that are generally too wet to be traversed without significant disturbance of the soils, the boardwalk and supports are constructed of wood, the boardwalk is no more than three feet wide and does not include railings, and the top of the boardwalk lies no more than twelve inches above grade.
- g. All islands in all stream segments are subject to the native vegetation buffer standards.
- h. A wider native vegetation buffer may be required for certain commercial uses.

These recommended standards are the minimum required to provide some meaningful protection for the river. Local units of government are encouraged to retain or incorporate more restrictive standards if it is determined that the recommended standards may not adequately protect the unique features of the river within that unit of government. Also, although not required it is highly recommended that property owners re-establish native vegetation in areas in which streamside vegetation has been removed and lawns have been established.

3. BUILDING/STRUCTURE SETBACKS

A "Structure" is defined as anything that is constructed, erected or moved to a property and that is located on, above or below the ground, including temporary recreational facilities such as travel trailers, fifth wheels and tents that are on site for more than 30 days per year. Keeping structures a reasonable distance from the river's edge helps keep the river corridor in as natural state as possible while still allowing construction of new residences and associated structures. Structural setbacks help to:

- a. Lessen the impacts of construction, reducing the possibility of sedimentation of the stream.
- b. Keep impervious surfaces such as driveways, sidewalks and rooftops away from the river. This helps ensure that precipitation filters through the soil, enters the groundwater and then enters the stream instead of running overland to the stream. (Water entering the stream through the groundwater contains fewer contaminants and is cooler, preserving water quality and benefiting the stream's fishery. Water entering the stream through the groundwater also enters at a slower rate, resulting in more stable year-round flows).
- c. Keep yard areas that are compacted by construction equipment and everyday activity further from the stream, resulting in the same benefits as in b. above.
- d. Lessen the visual impacts of new structures for the river user.
- e. Reduce fragmentation of critical wildlife migration corridors adjacent to the stream.

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To accomplish the above goals, minimum structural setbacks for new construction and the above-mentioned temporary facilities are required as follows:

- NOTE:**
- i. *Structures in existence at the time of adoption of rules or ordinances implementing this plan, but that do not meet these standards, do not need to be moved;*
 - ii. *For the purposes of this plan, on private land a "bluff" is defined as a bank rising at a slope of 33degrees or greater from within 10 feet of the river's edge. The "crest" of a bluff is the first river-ward facing area at least 100 feet long (approximately parallel to the river) that breaks to a slope of less than 18degrees for a distance away from the river of at least 25 feet.*

Mainstream - 100 feet from the ordinary high water mark and 50 feet from the crest of a bluff.

Tributaries - 100 feet from the ordinary high water mark and 25 feet from the crest of bluff.

All areas

Structures may not be placed or erected on lands that are within the 100-year floodplain (the area with a 1% chance of flooding within any given year), or in any wetland area.

Structures in areas of concentrated development

Some areas of the watershed contain groups of small, nonconforming lots or parcels, most of which contain structures that do not meet the new building setbacks. In these areas, the following building setback standard will apply in State-zoned areas of the watershed and in areas in which local zoning ordinances contain this provision:

- IF:**
- a. A vacant legal nonconforming lot or parcel is between and adjacent to two lots or parcels that contain legal single family dwelling that do not meet the building setbacks above, and,
 - b. The adjacent non-conforming single family dwelling are within 300 feet of each other,

THEN: The minimum building setback for new single family dwellings on the vacant lot or parcel is equal to the distance from the river of the adjacent single family dwelling that is farthest from the river's edge, **or** the minimum required width of the native vegetation buffer, whichever is greater. However, single family dwellings may not be placed or erected on lands that are within the 100-year floodplain or in any wetland area.

The above recommended standards are the minimum required to provide some meaningful protection for the river. Local units of government are encouraged to retain or incorporate more restrictive standards if it is determined that the recommended standards may fall short in protecting the unique features of the river within that unit of government.

4. MINIMUM LOT OR PARCEL SIZES

Controlling the density of structures has many of the same benefits as structural setbacks from the river's edge. Impervious surfaces are separated, allowing better infiltration of precipitation. Septic

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systems serving individual structures are isolated, lessening the impact of effluent on the stream. More native vegetation within and landward of the native vegetation buffer tends to be preserved. The visual impact of structures for the river user is also minimized.

For these reasons, all newly established separate lots or parcels created in the Natural River District are subject to the standards listed below. All of the standards listed below must, for each lot or parcel created, exist on at least one side of the stream that is accessible by a public road or legal easement. No new lot or parcel will be created that would require reaching the only buildable area by constructing a road/stream crossing.

Each new lot or parcel in the Natural River District must:

- a. Have at least 200 feet of river frontage (unless a riverfront "common area" subject to a conservation easement is established, or the parent lot or parcel does not have river frontage, in which case this dimension will be measured at the point of the lot or parcel closest to the river) and be at least 200 feet wide at the minimum building setback line, and;
- b. Contain at least 1/2 acre of existing contiguous upland buildable area (non-wetland, non-floodplain) landward of the minimum building setback line, and;
- c. Contain at least 80,000 square feet of area within the Natural River District (any "common area" created or any bottomlands will not be used in any calculations related to minimum lot or parcel area), and;
- d. Have sufficient depth to accommodate the required building setbacks.

***NOTE:** For all stream segments, if the parent parcel or lot does not have river frontage, and the front (riverward) line of any newly created lot or parcel is greater than 150 feet from the river's edge at all points, then section c. does not apply, and the minimum lot or parcel width will be measured at the front lot or parcel line.*

A zoning permit, special use permit or variance will not be granted for any activity on a lot or parcel that is created after the effective date of rules or ordinances implementing this plan if the new lot or parcel does not meet all of the above standards.

A method of development that has gained favor in recent years is "clustering." Clustering involves concentrating new structures in a small area while preserving larger areas in open space. The relatively small area encompassed by the Natural River District limits the use of clustering techniques. However, clustering of structures is allowed if the provisions outlined in section II.D.6., **NUMBER OF RESIDENTIAL STRUCTURES PER LOT OR PARCEL**, are followed.

5. IMPERVIOUS SURFACES

Stormwater runoff from impervious surfaces, such as rooftops, driveways, patios and other surfaces that do not allow rapid infiltration of water into the soil, can have a significant impact on the health of the stream due to its effect on flow stability, stream temperatures, erosion and sedimentation and other impacts. Therefore, the maximum percentage of impervious surface permitted on a lot or parcel will be as follows:

- a. For lots or parcels with less than 10,000 square feet of area, no more than 35% of the land surface may be covered by impervious surfaces.
- b. For lots or parcels with between 10,000 square feet and 40,000 square feet of area, no more than 25% of the land surface may be covered by impervious surfaces.

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- c. For lots or parcels with more than 40,000 square feet of area, no more than 20% of the land surface may be covered by impervious surfaces.

6. NUMBER OF RESIDENTIAL STRUCTURES PER LOT OR PARCEL

In general, one single-family, permanent or seasonal residence, along with appurtenances, such as garages, storage sheds, decks, etc., per lot or parcel are permitted. However, to discourage fragmentation of large properties into smaller ones, more than one single-family residence and appurtenances per lot or parcel may be permitted if the parent lot or parcel contains sufficient square footage, width and buildable area to meet the requirements for two or more individual lots or parcels, and;

- a. The property owner develops a site plan for the parent lot or parcel showing theoretical property lines for individual lots or parcels based on Natural River development standards, and locates any additional residences and appurtenances as if the property were divided into those separate lots or parcels, **or**;
- b. For each single-family residence placed so that the requirements in a. are not met, i.e. in a cluster-type setting, a portion of the parent lot or parcel containing square footage, width, depth and buildable area equal to a newly created separate legal lot or parcel is made subject to a permanent conservation easement or deed restriction that prohibits construction of any structures on that portion of the lot or parcel, **or**;
- c. For each single-family residence placed so that the requirements in a. are not met, i.e. in a cluster-type setting, the development rights to a portion of the parent lot or parcel containing square footage, width, depth and buildable area equal to a newly created separate legal lot or parcel are sold, donated or otherwise conveyed in perpetuity to a land conservancy, local unit of government or the State. The agency acquiring the development rights will agree in writing to refrain from development of the land in perpetuity.

7. ON-SITE WASTE TREATMENT SYSTEMS

All individual on-site waste treatment systems require a permit from the appropriate local health department. Local health departments in the watershed have established septic system setbacks from surface water bodies of 50 to 100 feet, depending on the county in which the system is constructed. It is acknowledged that these setbacks are adequate to effectively treat septic system effluent for bacteria-related human health concerns. However, the effectiveness of a 50-foot setback in preventing nutrient movement to the stream is not as clear. It is possible that additional phosphorus removal may be achieved in saturated soils as effluent moves a greater distance towards the river, particularly in areas with soils such as clay loams or sand with high iron or other metal content. A setback greater than 50 feet may also result in lower concentrations of nutrients reaching the river simply by the additional dilution factor.

For the above reasons, all new and replacement septic systems must be constructed so that:

- a. No part of the drain field is less than 100 feet from the river's edge or any surface or subsurface drain, and;
- b. The drain field and septic tank are not located within the 100-year floodplain, a wetland area or the native vegetation buffer, and;
- c. The bottom of the drain field is at least 4 feet above the seasonal high groundwater table.

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If it is feasible to construct an on-site system with innovative treatment technology that will result in a higher level of waste treatment than from a conventional system, the setback from the river's edge may be reduced to 75 feet (the landward edge of the native vegetation buffer) provided no part of the system is located in the 100-year floodplain or a wetland.

Drywells (seepage pits) or earth privies are prohibited unless they are permitted by the local health department and site conditions do not allow proper installation of a septic tank/soil adsorption system. If a drywell or privy is installed, it must be a minimum of 100 feet from the river's edge. The bottom of the pit must be at least four feet above the seasonal high groundwater level. If this is not feasible, a water-tight vault to receive waste will be installed.

8. OTHER WASTE DISPOSAL

No unsightly or offensive material, including trash, junk cars, junk appliances, garbage, tires or other refuse shall be dumped, disposed of or stored in the Natural River District. Landfills and disposal of any solid or liquid waste, other than subsurface disposal of effluent from individual waste treatment systems related to normal operation of the systems, are prohibited in the Natural River District. Disposal of sludge from wastewater treatment facilities or individual on-site waste disposal systems is prohibited in the Natural River District.

9. DOCKS

Construction of docks along streams in the Upper Manistee River system is strongly discouraged, especially on streams not large enough to require watercraft access, due to the visual impact, potential for debris collection, likelihood of damage and downstream movement of the structure due to high water or ice and potential hazards presented to anglers and watercraft users. However, if necessary to provide safe and ecologically sound access for the riparian landowner, docks may be constructed not to exceed 48 square feet in size with no more than 4 feet of the dock extending over the water. Docks require a permit from the Department of Environmental Quality. The use of natural materials and camouflage is encouraged. Property owners are encouraged to build "log-sod covered" docks if conditions allow (see Appendix D).

10. HEIGHT OF STRUCTURES

The height of a structure can have a significant visual impact, both for the river user and surrounding property owners. Therefore, new structures must be no more than 2 1/2 stories and/or 35 feet high, whichever is less. Walkout or other basements are not included in the minimum story/height requirements.

11. LAND ALTERATION

Alteration of sensitive areas such as wetlands and floodplains can severely alter the natural character of the river corridor, drastically change the flood storage capacity of the area, reduce the pollutant filtering capability of the river corridor and destroy valuable wildlife and fisheries habitat. Therefore, dredging, filling or other land alteration activities within the 100-year floodplain or in wetlands within the Natural River District is prohibited. Draining wetlands in the Natural River District is also prohibited.

Ponds may be constructed within the Natural River District if:

- a. The pond is not constructed in a wetland or the 100-year floodplain.

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- b. The pond meets the building setback established for the area.
- c. Spoils are placed in a non-wetland, non-floodplain area landward of the native vegetation buffer.
- d. The pond is not connected to the river by any surface or subsurface drainage system.

Alteration of bluffs can have a negative visual impact and in some cases can result in increased potential for erosion of a previously undisturbed bluff. Therefore, alteration of the natural contour of the face of a bluff or the land from the crest of the bluff to the minimum bluff setback line is prohibited, except for minor landscaping activities between the crest of the bluff and the minimum bluff setback line. In some cases, reduction of the slope of an eroding bluff for erosion control purposes may be necessary and is permitted upon approval of the appropriate zoning authority.

12. STAIRWAYS

Stairways to provide access to the river on a steep slope where no other access is feasible can help prevent creation of an erosion problem. Therefore, stairways for river access are permitted upon approval of the zoning administrator, if:

- a. There is no other safe, feasible access to the river; and;
- b. Stairways are low-profile, no more than four feet wide and constructed without cutting into the streambank, slope or bluff, unless site and soil conditions dictate that a recessed stairway better meets the goals and objectives of Natural River designation, and;
- c. There are no landings associated with the stairway.

A single handrail may be permitted if necessary to provide safe access for the property owner. Only one river access stairway per lot or parcel will be permitted. Other stairways that meet the minimum building setback requirement are permitted

13. SIGNS

Signs for identification, direction, resource information, regulation of use and those related to permitted uses are allowed. Signs for the sale of products or services are prohibited, unless related to a permitted use, located on the site of the permitted use, not located in the native vegetation buffer and not visible from the river. Illuminated signs are prohibited. Signs may be no more than 2 square feet in area. Exceptions include one real estate sign no more than 4 square feet outside the native vegetation buffer, and public agencies' signs no larger than 10 square feet, of rustic design and not attached to vegetation. Some public agency signs may need to be larger to warn of impending danger or for interpretative or historic reasons.

14. DAMS

Construction of new dams on designated river segments is prohibited. Dams are in direct conflict with many of the goals of Natural River designation. They drastically alter the free-flowing condition of the stream and can severely impact fish populations by blocking fish migration, warming water temperatures over preferred levels and blocking downstream movement of woody debris.

Failure of an existing dam can have devastating effects on habitat and species for miles downstream of the failure. However, since dams existing at the time of designation are considered legal non-conforming structures, reconstruction of dams destroyed by a catastrophic event such as a major

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flood event may be permitted. However, reconstruction of a dam that fails due to lack of maintenance or other negligence by the operator or owner of the dam is prohibited. Such owner/operators have demonstrated themselves to be poor stewards of the resource, and should not be given the opportunity to construct another dam that may fail again due to poor maintenance.

Reconstruction of a dam that failed due to a catastrophic event must comply with construction standards in effect at the time of application for replacement. Application for reconstruction must be received within one year of destruction. A reconstructed dam must be rebuilt with a height no greater than the original dam height. A bottom discharge and fish passage facilities must be provided where appropriate. A request for replacement of a dam will be handled as a request for reconstruction of a destroyed, non-conforming structure. Reconstruction of a dam also requires a permit from the Department of Environmental Quality.

15. BRIDGES

For the purposes of this plan, a bridge is defined as a structure of any span length designed to provide a pedestrian or vehicle stream crossing.

Bridges have beneficial as well as negative impacts. They provide access to a property owner's land that might not otherwise be accessible, and can prevent streambank erosion at sites where crossing the stream might be accomplished by wading or driving a vehicle through it in the absence of a bridge. Conversely, even properly constructed bridges are a major visual intrusion on the natural character of a river corridor, require removal of a portion of the native vegetation buffer to access the bridge, can result in wetland and floodplain fill and can result in sedimentation of the stream during construction. If not properly designed and installed, bridges can create long-term erosion problems, block fish passage, cause flooding problems, collect debris, and severely alter the integrity of the streambed and the free-flowing condition of the stream.

Therefore, the following standards apply when constructing new or replacement bridges:

All Designated Segments

- a. **All new or replacement bridges** must meet all provisions of 1994 PA 451, Inland Lakes and Streams Part 301, Wetlands Protection Part 303, Floodplain Regulatory Authority Part 31 and Soil Erosion and Sedimentation Control Part 91.
- b. **All existing bridges that are destroyed** by any means, whether on a tributary or mainstream segment, may be replaced. On mainstream segments, destroyed pedestrian bridges may not be replaced with vehicle bridges. Destroyed bridges must be replaced within 18 months of destruction or the replacement bridge will be subject to new bridge standards.
- c. **New bridges are not permitted on any lot or parcel that is created after the effective date of rules or ordinances implementing this plan.**

Mainstream

- a. **New bridges are not permitted on mainstream segments.**
- b. All replacement bridges on mainstream segments must span the base flow channel, have a minimum clearance of 5 feet between the ordinary high water mark and "low steel" (the bottom of the bridge deck and/or deck supports other than abutments), and be a structure with a natural bottom, i.e. no pipe, box or arch culverts.

Tributaries

- a. **New pedestrian bridges are permitted on all tributaries**, upon receipt of a permit from the appropriate zoning authority, provided the lands connected by a new bridge were, at the time of adoption of the rules or ordinances that will implement this plan, and continue to be, collectively owned by a single party (or parties in the case of joint ownership of the entire land area on both sides of the river).
- b. **New permanent vehicle bridges on tributaries may be allowed by special use permit**, if:
 - i. No legal access to the land by public road or legal easement exists within one mile of the portion of the lot or parcel that is currently accessible by road or legal easement, and;
 - ii. The lands connected by the new bridge were, at the time of adoption of the rules or ordinances that will implement this plan, and continue to be, collectively owned by a single party (or parties in the case of joint ownership of the entire land area on both sides of the river - see c. below for exceptions), and;
 - iii. The purpose of the bridge is to gain access for timber management, agricultural activities, house construction when no other buildable site exists, or other activity where the need can be demonstrated and applicable development standards can be met, and;
 - iv. A suitable crossing site exists where sediment delivery to the stream and wetland fill can be minimized.

NOTE: Temporary vehicle bridges on tributaries for the purpose of access for timber harvest may be permitted without a special use permit upon approval of the appropriate zoning authority, provided they are constructed in a manner that minimizes disruption of the stream and are removed immediately after harvesting activities. Disturbed areas in the native vegetation buffer must be re-vegetated, any fill placed must be removed and the land must be returned to its original grade as soon as possible after removal of the bridge. Proper erosion/sedimentation control methods must be used during placement and use of the bridge.
- c. New bridges linking properties in separate ownership will not be permitted except in areas where construction of such a bridge to access a permitted building site will result in less resource damage than construction of another type of permitted access. The exception will only apply to lots or parcels that were created before the effective date of rules or ordinances implementing this plan.
- d. Only one bridge is permitted to access a portion of land that is otherwise inaccessible from the owner's contiguous property.
- e. Permanent new bridges on tributaries must:
 - i. Span the base flow channel and be a structure with a natural bottom, i.e. no pipe, box or arch culverts, and;
 - ii. In the case of pedestrian bridges, be constructed such that use by any motorized vehicles, including dirt bikes, ATVs, etc., is excluded.
- f. Permanent bridges replacing bridges that have natural bottoms on tributaries must:
 - i. Span the base flow channel and be a structure with a natural bottom, i.e. no pipe, box or arch culverts, and;
 - ii. In the case of pedestrian bridges, be constructed such that use by any motorized vehicles, including dirt bikes, ATVs, etc., is excluded.
- g. Permanent bridges replacing bridges without natural bottoms on tributaries must:
 - i. Span the base flow channel, and;

- ii. In the case of pedestrian bridges, be constructed such that use by any motorized vehicles, including dirt bikes, ATVs, etc., is excluded.

16. NEW COMMERCIAL USES IN THE NATURAL RIVER DISTRICT

Commercial uses such as gas stations, motels, retail stores, etc., often result in very intense use and include large areas of impermeable surface such as rooftops and parking lots that channel stormwater runoff to the stream. These type uses are not generally compatible with a Natural River setting. To maintain the natural character of the river corridor, development in the Natural River District will generally be restricted to residential uses. However, **certain commercial uses that are compatible with the natural setting desired in the river corridor may be permitted upon receipt of a special use permit.** Commercial uses that are permitted must not conflict with the goals and objectives of Natural River designation. A commercial use may only be permitted if the property owner demonstrates that there is a compelling reason to locate the use within the Natural River District if contiguous property under the same ownership is available outside the District. **Commercial uses that may be allowed within the Natural River District include:**

a. Rental cabins

Rental cabins may be permitted in the Natural River District, subject to the following development standards:

1. The number of cabins permitted shall be based on the rate of 1 cabin per 200 feet of frontage. Clustering of rental cabins is permitted and encouraged, however the ratio of 1 cabin per 200 feet of river frontage will not be exceeded. For each cabin placed in a cluster-type setting, a portion of the parent lot or parcel containing square footage, width, depth and buildable area equal to a newly created separate legal lot or parcel as described in the "**MINIMUM LOT OR PARCEL SIZES**" section of this plan will be made subject to a permanent conservation easement or deed restriction that prohibits construction of any structures within that portion of the lot or parcel, or the development rights to a portion of the parent lot or parcel containing square footage, width, depth and buildable area equal to a newly created separate legal lot or parcel as described in the "**MINIMUM LOT OR PARCEL SIZES**" section of this plan will be sold, donated or otherwise conveyed in perpetuity to a land conservancy, local unit of government or the State. The agency acquiring the development rights will agree in writing to refrain from development of the land in perpetuity.
2. The size of each cabin shall not exceed 900 square feet and one story in height. The cabin shall not contain sleeping accommodations for more than eight people.
3. Each cabin shall be set back a minimum of 200 feet from the ordinary high watermark. All associated buildings and structures shall be located outside of the Natural River District.
4. Temporary recreational facilities, including tents, camper trailers and recreational vehicles shall be located outside of the Natural River District.
5. Each cabin shall be a minimum of 75 feet from the property line of adjacent riverfront properties.
6. Establishment of vegetative buffers along side or back lot or parcel lines may be required for rental cabins that are adjacent to existing residential uses. Buffers shall consist of plant material that is indigenous to the area in a strip at least 20 feet wide composed of deciduous trees interspersed with coniferous trees to be spaced not more than 10 feet apart. Deciduous trees shall be a minimum of 8 feet in height and coniferous trees a minimum of 5 feet in height at the time of planting. The buffer shall also include dense

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- shrubs placed not less than 5 feet apart having a minimum of 3 feet in height when planted. The entire buffer shall be maintained in at least as healthy a condition as when planted.
7. Docks may be constructed for the private use of occupants of the rental cabins. Permanent and seasonal docks shall comply with the general standards for docks and all of the following provisions:
- i. Docks shall be no larger than 4 feet X 12 feet, with no more than 4 feet of the dock extending into the water.
 - ii. Docks may be constructed at the rate of 1 dock per 1000 feet of frontage. If the property in question contains less than 1000 feet of frontage, one dock will be permitted.
 - iii. Docks will be constructed of natural materials that blend with the natural surroundings.
 - iv. Access to a dock or docks will be along a single designated footpath no more than 4 feet wide to minimize disruption of the native vegetation buffer.
 - v. Any steps or stairs necessary on the streambank to access the dock shall be constructed without cutting into the streambank, unless site and soil conditions indicate that a recessed stairway will better meet the goals and objectives of designation.

b. Campgrounds

In order to direct use to specific locations in the river corridor, thereby alleviating the litter and erosion problems associated with uncontrolled dispersed camping, new campgrounds may be permitted in the 400-foot Natural River District, provided a special use permit is obtained. New campgrounds will comply all of the following standards:

1. Commercial buildings associated with the campground are prohibited in the District.
2. All non-commercial permanent structures shall be at least 200 feet from the river's edge.
3. Campsites are permitted at a density of no more than 4 sites per acre of land that is located in the District and landward of the native vegetation buffer.
4. A 100 foot-wide native vegetation buffer along the river will be maintained.
5. Campsites that accommodate wheeled motor vehicles will be at least 200 feet from the river's edge.
6. Walk-in campsites will be landward of the native vegetation buffer.
7. Docks may be constructed at the rate of one 48 square foot dock for each 200 feet of river frontage, accessed by a single footpath no more than four feet wide.
8. No motorized vehicle access to the river is permitted.

Launching or retrieval of commercial watercraft, other than by registered campers on-site, is prohibited at any newly developed campground.

c. Agriculture

Agricultural activities, if located in close proximity to the river without adequate buffers, can result in degradation of water quality, removal of critical streamside vegetation and sedimentation of the stream. However, with proper location of these activities relative to the river's edge, most such concerns can be addressed. Therefore, agriculture, including general and specialized farming, is permitted in the Natural River District. New aquaculture facilities, expansion of existing aquaculture facilities, and concentrated animal feeding operations are not permitted within the

Natural River district. New agricultural activities, including growing crops, grazing cattle and others, are not permitted within the native vegetation buffer. Such agricultural activities do not require a zoning permit. However, construction of any structure does require a permit. Structures, including residences, outbuildings, fences and other structures, must meet the minimum building setback standard described in “**BUILDING SETBACKS.**”

It is common agricultural practice to rotate the use of fields. Some previously used fields may be located within the native vegetation buffer. Therefore, the resumption of prior agricultural uses in the native vegetation buffer is permitted, provided the cessation of use was:

1. Within 10 years of resumption of use, or;
2. Due to implementation of a management plan written prior to adoption of rules or ordinances implementing this plan, or;
3. The result of written agreements with a governmental agency or agencies entered into prior to adoption of rules or ordinances implementing this plan, or;
4. The result of written agreements with a governmental agency or agencies entered into after adoption of rules or ordinances implementing this plan, where the term of cessation of use specified in the agreement is for 10 years or less, or;
5. Required or imposed by a governmental agency or agencies.

d. Home occupations

Home occupations, such as beauty shops, real estate offices, insurance businesses, etc., are permitted, subject to the following provisions:

1. The use of the dwelling unit, or related structure, for the home occupation must be clearly incidental and subordinate to its use for residential purposes.
2. Equipment, supplies or a process will not be used in a home occupation if it creates noise, vibration, fumes, odors or electrical interference that is detectable off the premises.

Businesses that are considered “home-based occupations,” i.e. the actual business is conducted off-site but some equipment such as logging trucks or a water well drilling rig is stored at the home site, are permitted. However, activities that would result in effects such as listed in 2. above, are not permitted on-site.

e. Mineral extraction

Extraction of minerals is necessary for human existence. However, activities associated with mineral extraction can have significant negative impacts on a river environment, including habitat destruction, ground and surface water contamination, fragmentation of forests, stream sedimentation and others. Therefore, new development, exploration or production of oil, gas, brine, sand and gravel or other minerals that requires disturbance of the surface is not permitted within 300 feet of any designated river segment (this is the maximum private land setback for this activity authorized by Natural Rivers Part 305). Companies involved in such activities are encouraged to coordinate exploration and extraction activities and location of access roads to minimize habitat disruption.

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f. Forest management

New commercial forest management activities are allowed without a permit landward of the native vegetation buffer. Any permanent structures related to forest management activities and all structures placed on-site for more than 30 days must meet building setbacks. Forest management activities within the native vegetation buffer require a permit from the appropriate zoning authority and are subject to the standards outlined in the "NATIVE VEGETATION BUFFER" section of this plan.

g. Prohibited new commercial uses

New golf courses, or expansion of existing golf courses, are prohibited within the Natural River District.

New watercraft liveries, expansion of existing liveries, or expansion of commercial launching or retrieval of watercraft in the designated portions of the river system is prohibited.

New or expanded diversions of water from a designated river for commercial purposes is prohibited if it is determined that such a diversion will negatively impact aquatic life or other riparian owners.

All other new commercial uses are prohibited in the Natural River District.

17. NEW INDUSTRIAL USES IN THE NATURAL RIVER DISTRICT

New industrial uses are prohibited in the Natural River District.

18. LEGAL NONCONFORMING LOTS, STRUCTURES AND USES

NOTE: In this section, the term "lot" means lot or parcel.

Legal nonconforming lots, structures and uses are those that were legal before designation of the Upper Manistee River system as a Michigan Natural River, and that will become or remain nonconforming upon adoption of local zoning ordinances or State zoning rules based on the use and development standards in this plan. They are commonly known as "grandfathered" lots, structures and uses. It is the long-term goal of any zoning ordinance to reduce the number of or mitigate the impact of these structures, lots and uses, thus better realizing the goals of establishing the zoning district. All local zoning ordinances should have provisions in effect for addressing these nonconforming situations. Accordingly, the following provisions will be in effect in Natural River District areas subject to State Zoning Rules.

a. Nonconforming lots

Legal nonconforming lots are those that were legally established before the adoption of ordinances or rules implementing this plan, and that now do not meet one or more dimensional standards such as minimum lot width or minimum lot area. These lots are subject to all of the following:

1. When the combination of 2 or more contiguous nonconforming lots owned by the same person results in greater conformance with the dimensional requirements in the Natural River zoning ordinance or rule, the lots must be combined prior to erection of a structure on those lots by that property owner. This provision does not apply to lots in a plat established prior to adoption of rules or ordinances implementing this plan if more than 50% of the lots

- in the plat contain a single-family residence. A property owner may sell any legally established nonconforming lot that has not been combined with another lot.
2. Establishment of a principal use such as a single-family residence on a legal nonconforming lot will be permitted without the need for a variance, if:
 - i. The principal use meets all development standards except the minimum lot width and/or minimum lot gross square footage requirements, and;
 - ii. The owner of the nonconforming lot does not own other contiguous properties that, if combined with the nonconforming lot, would result in increasing the conformity of the lot, as described in 1. above.
 3. Establishment of a principal use will not be permitted on a nonconforming lot that does not comply with the provisions of 2. above without a variance from the appropriate zoning authority.

b. Nonconforming uses

Legal nonconforming uses are types of use, such as industrial or intense commercial use, that were legally established before adoption of ordinances or rules implementing this plan, but that are currently not permitted in the Natural River District. Legal nonconforming uses may be continued, subject to all of the following:

1. The nonconforming use may not be enlarged, increased, or extended to occupy a greater area of land than was occupied on the effective date of the applicable zoning ordinance or rule without a land use variance. This does not apply to uses allowed by special use permit. Uses allowed by special use permit may be expanded upon receipt of a special use permit if the increased use is in compliance with the standards for special uses in this plan.
2. Structures associated with a legal nonconforming use may not be moved to any other portion of the lot that is occupied by the use unless the move would result in greater conformity with the applicable development standards.
3. If the legal nonconforming use of land ceases for any reason for a period of 12 months, any subsequent use of the land must conform to the development standards for that land in the appropriate zoning ordinance or rule.
4. A previously established lawn in an area subject to native vegetation buffer standards is considered a nonconforming use, and is subject to standards applying to nonconforming uses.

c. Nonconforming structures

A legal nonconforming structure is one that was legally built prior to adoption of ordinances or rules implementing this plan, but that now does not meet one or more dimensional standards. Legal non-conforming structures are subject to all of the following:

1. A legal nonconforming dwelling may not be enlarged or altered in a way that increases its nonconformity, such as expanding toward the river's edge or increasing the height above the maximum height standard. However, the ground floor area of any legal nonconforming dwelling may be increased by up to 50% (or 75% for a minor variance) of the existing enclosed ground floor living area cumulative from the date of nonconformance, or to the minimum extent necessary to comply with local standards for minimum legal floor area for dwellings, whichever is greater, through alterations, repairs, and additions, if the increase does not increase the nonconformity of the dwelling. An addition of a second story requires a variance. Any enlargement of a legal nonconforming dwelling must, to the extent possible, be in compliance with all setback and other building requirements.

2. **Expansion of a nonconforming dwelling may be permitted by the zoning administrator, without the need for a variance, if:**
 - i. When any part of the expansion is located within the native vegetation buffer, expansion of the dwelling is to the landward side of the existing dwelling and is less than a 50% increase in enclosed ground floor living area, and the height of the expansion is no greater than the height of the original dwelling, and is not located within the 100 year floodplain or a wetland area or;
 - ii. When the expansion is located completely outside the native vegetation buffer, expansion of the dwelling is no closer to the river than the closest point of the existing dwelling and is less than a 50% increase in enclosed ground floor living area, and the height of the expansion is no greater than the height of the original dwelling, and is not located within the 100 year floodplain or a wetland area.
3. All other expansions of a legal non-conforming structure that do not meet the criteria in 2. above shall be treated as a variance.
4. **If any nonconforming structure is destroyed** by any means, other than by willful destruction by the property owner, to an extent that is more than 50% of its replacement cost, restoration of the structure may be approved by the zoning administrator without the need for a variance if the follow standards are met:
 - i. The building or structure is not located on land subject to flooding (the 100-year floodplain), and;
 - ii. The presence of the nonconforming structure will not lead to accelerated bank erosion or other material degradation of the river resource, and;
 - iii. The reconstructed structure occupies the same building area, i.e. "footprint," and contains the same square footage as the original structure, and;
 - v. Application for permission to restore a damaged structure is made within 12 months of the time of damage. An extension may be granted if the property is held in probate, an insurance settlement related to the damage is in dispute or a criminal investigation related to the damage is in progress.

If the above standards cannot be met, restoration will require a variance.
5. If a structure is willfully destroyed by the property owner to an extent that is more than 50% of its replacement cost, and the property contains sufficient depth to accommodate a similar structure significantly farther from the river than the location of the destroyed structure, paragraph 4. above does not apply. The property owner shall be required to meet the building setback requirement to the greatest extent possible when constructing any new or replacement structure.
6. A nonconforming structure may not be moved, in whole or in part, to any other portion of the lot or parcel that is occupied by the structure unless the move would result in greater conformity with the applicable zoning standards. Moving a nonconforming structure requires a zoning permit and may require a variance.

E. PUBLIC LANDS/PROGRAMS AND UTILITY MANAGEMENT

The following use and development standards apply to public lands adjoining the designated segments of the river system, the river channel bordered by those public lands and to utilities and publicly provided facilities. In many cases, the Rules for Utilities and Publicly Provided Facilities adopted under provisions of section 30514 of Natural Rivers Part 305 of 1994 PA 451 also apply (see Appendix B).

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1. NATIVE VEGETATION BUFFER

Maintenance of native vegetation on public lands along streams is a critical tool in protecting water quality, preventing soil erosion and sedimentation, cooling stream temperatures, protecting and enhancing fisheries habitat, supplying energy for the river system, providing wildlife migration corridors and habitat, particularly for many sensitive species, and screening development from the river users' view. Therefore on publicly owned land along designated streams in the Upper Manistee River system, a restricted vegetative cutting zone ("native vegetation buffer") will be maintained.

The native vegetation buffer on public lands on Manistee mainstream segments and the North Branch of the Manistee River includes:

- a. All lands within 175 feet of the river's edge, and;
- b. The entire face of a bluff where the toe of the bluff is within 175 feet of the river's edge, and;
- c. The lands within 50 feet of the crest of a bluff.

NOTE: b. and c. above may result in a native vegetation buffer that extends more than 175 feet from the river's edge.

The native vegetation buffer on public lands on all other tributaries includes:

Slope of land adjacent to stream Minimum native vegetation buffer width

0-10%	100 feet
11-20%	115 feet
21-32%	135 feet
33+%	155 feet, plus the entire face of any bluff where the toe of the bluff is within 155 feet, plus the land within 50 feet of the crest of a bluff.

All distances are measured horizontally from the ordinary high water mark (river's edge).

For the purposes of this plan, on public land a bluff is considered to be any slope that rises at a slope of 33 degrees or greater to a height of at least 25 feet above the toe of the bluff. The crest of a bluff is considered to be the first riverward facing slope (roughly paralleling the river for at least 100 feet) that breaks to a slope of less than 18 degrees for a distance of at least 25 feet away from the river.

Cutting in the native vegetation buffer is prohibited, unless permitted for the following reasons, subject to review by the MDNR Northern Michigan Rivers Administrator in consultation with Management Unit staff for MDNR Forest, Minerals and Fire Management Division, Wildlife Division and Fisheries Division and/or US Forest Service staff. Cutting of vegetation in response to unique, unforeseen situations other than the following, or for wildlife habitat restoration and management activities on state-owned lands, may be permitted upon approval of the MDNR Director:

For all designated areas:

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- a. Harvest of "row trees," such as those in pine plantations, in order to harvest available timber and accelerate conversion of the stand to a more natural state. Such harvest should be done in several stages, leaving enough trees after each cut to avoid windthrow of the remaining trees, and leaving a minimum number of properly-spaced, healthy trees after the final cut. Native species should be planted in the harvested areas to accelerate conversion to a more natural state.
- b. Disease and insect control.
- c. Fire suppression (for obvious reasons, no prior approval is necessary for fire suppression activities).
- d. Maintenance of existing trails, campgrounds and public access sites (minor vegetation cutting to maintain existing trails, campgrounds and access sites does not require prior approval).
- e. Establishment of any new non-motorized foot trail (see "Roads and Trails" section);
- f. Providing footpath access to the river for a new, walk-in access site, campground or cabin.
- g. Establishment of low-impact walk-in campsites associated with a campground.
- h. Maintenance of existing public road and utility corridors according to provisions of the Natural River Rules for Utilities and Publicly Provided Facilities. These rules allow mechanical cutting of tall-growing vegetation within the native vegetation buffer in utility corridors, but do not allow clear-cutting or removal of lower growing species.

For Big Cannon Creek and Hopkins Creek:

In addition to the above standards, selective cutting for wildlife habitat or timber management may be performed no closer than 100 feet from the river's edge, subject to seasonal, wetland and topographic restrictions.

For Goose Creek:

In addition to the above standards, selective cutting for wildlife habitat or timber management may be performed no closer than 75 feet from the river's edge, subject to seasonal, wetland and topographic restrictions.

For all other tributaries:

In addition to the above standards, selective cutting for wildlife habitat or timber management may be performed no closer than 50 feet from the river's edge, subject to seasonal, wetland and topographic restrictions

For all areas:

The use of wheeled, tracked or other heavy equipment is prohibited in the native vegetation buffer.

Wetlands contain some of the most diverse, productive and important habitats within river corridors. Many of the functions and values of wetlands are determined by the vegetation present in the wetlands. Therefore, although not required, it is recommended that vegetation located in a wetland that is contiguous to the required native vegetation buffer be left in its natural state.

Vernal pools (small, ephemeral ponds that result from spring rains and snowmelt but "disappear" as the season progresses) have been shown to be of great value to a wide variety of species at a critical time of the year. Particular attention should be paid to leaving vegetation within these areas and in a vegetated buffer of up to 100 feet wide around these ponds. For ponds that are located entirely outside the required native vegetation buffer, a connecting corridor of natural vegetation at

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least 100 feet wide should be left between the pond and the native vegetation buffer whenever possible.

2. VEGETATION IN THE STREAM CHANNEL

Vegetation in the stream channel, particularly large woody debris, provides critical fish habitat, maintains complex stream channel morphology, creates a diversity of water velocities and provides substrate for aquatic invertebrates. For these reasons, it is important to leave as much vegetation in the stream channel as possible. However, larger stream segments are multiple use areas, with watercraft use being an important recreational component of some areas. Therefore, subject to review by the MDNR Northern Lower Michigan Rivers Administrator in consultation with MDNR Fisheries Division and Forest, Minerals and Fire Management division staff, and/or USFS staff, the following standards for removal of vegetation in the stream channel will apply:

- a. On the mainstream of the Manistee River, vegetation in the stream channel may be selectively pruned to allow clearance of a passage generally no more than 8 feet wide for safe navigation and to the extent necessary to alleviate flooding that threatens buildings. It is recommended that a portion of vegetation no more than 4 feet wide be removed, if necessary for the above reasons, in the braided channel areas of the mainstream of the Manistee River between County Road 612 and Cameron Bridge Road.
- b. Portions of trees, logs and other natural material imbedded in the stream channel will not be disturbed.

3. CAMPGROUNDS

Well-designed, properly located and constructed campgrounds in proximity to the river can provide the recreating public a rewarding camping experience and serve to foster appreciation of the river environment. They can also function to concentrate use in controlled areas, thereby helping to prevent resource damage associated with dispersed camping by large groups. However, campgrounds along the river can generate intense use over short periods of time. Such use can result in many of the same impacts as residential use, such as streambank erosion, vegetation removal and increased runoff to the stream.

Therefore, the following standards will apply for new public campgrounds in the Natural River District:

- a. New public campgrounds will be primitive in nature and designed for low intensity use.
- b. Campsites that accommodate wheeled motor vehicles will be placed landward of the native vegetation buffer.
- c. Walk-in campsites may be placed within 100 feet of the river's edge when it is possible to establish these sites with a minimum of woody vegetation disturbance.
- d. Campsites will be at a density of no more than 4 sites per acre of land located between 100 feet and 400 feet from the river's edge.
- e. A single footpath, no more than four feet wide, from the campground to the river is permitted.
- f. Docks may be permitted for new campgrounds on the mainstream of the Manistee River downstream of Cameron Bridge Road. If a dock is necessary to provide safe access to the river or to prevent resource damage, the single permitted footpath mentioned above will lead to the dock. The dock will be no more than four feet wide and twelve feet long with

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- no more than four feet of the dock extending into the river. Docks will be located where they do not require a stairway leading to the river's edge.
- g. On all designated streams, camping is permitted only at designated campgrounds, or on State lands landward of the native vegetation buffer. However, walk-in or canoe-in low impact tent camping is permitted no closer than 75 feet from the water's edge on State lands.

The Department of Natural Resources will again solicit interest from the appropriate local units of government regarding re-opening of State Forest campgrounds at M-66 (Smithville). If there is sufficient interest from the units of government to re-open and manage the campground, the DNR will enter into cooperative agreements with them to re-open those campgrounds and maintain them in a satisfactory condition. The option of re-opening these campgrounds under contract with private interests may also be explored. If re-opened, modifications to reduce erosion, sedimentation and visual impacts of the campgrounds will be implemented if necessary.

4. PUBLIC ACCESS SITES

Adequate access to the river is critical to providing the public with an enjoyable river experience. However, erosion at some access sites is a leading contributor of sediment to the stream system.

The Upper Manistee River Access Site Committee has done an inventory of all existing formal and informal access sites on the mainstream from Mancelona Road to M-66 to determine the condition of the sites and form a basis for determining necessary site modifications or, in some cases, closure of sites or development of new sites, in order to protect the river's values and public safety. In conjunction with that inventory, Michigan State University conducted a user survey to determine the level and type of use of those access sites. Results of the inventory/survey will be available as an appendix to this plan.

Site modifications may include planting of additional native vegetation, repair of deteriorated and unsafe stairs and boat access areas and other measures. The Department of Natural Resources shall pursue cooperative agreements with area Soil Conservation Districts, river restoration committees and other groups to assist in implementing the necessary modifications to sites.

If it is determined that new fishing/canoeing access sites are necessary in the future, sites will be "walk-in" only. All parking areas will be unpaved and, along with associated structures, be located landward of the native vegetation buffer. The parking areas should be designed to direct runoff away from the river. A single trail leading to a small streamside access area may be constructed to allow access by foot, and by persons with disabilities if site conditions allow, but no access to the river for motorized vehicles, except motorized wheelchairs or similar mobility aids for persons with disabilities, will be permitted.

If in the future it is determined that, because of increased intensity of use, a new vehicle-accessible boat access is needed, it shall be constructed so as to minimize erosion and sedimentation to the river, be limited in size and placed so as to be as unobtrusive as possible. All associated structures and parking areas shall be placed landward of the native vegetation buffer.

Camping will not be permitted at any State administered public access site in the watershed unless there are a limited number of primitive, designated campsites clearly identified at the site. Establishment of campsites at these access sites will be subject to the development standards in the public "Campgrounds" section of this plan. Camping other than at designated sites will not be permitted within ¼ mile of any access site.

5. PUBLIC RENTAL CABINS

Publicly-owned cabins can result in resource impacts similar to residential construction. However, proper design and construction can alleviate many of those potential impacts and provide the river user with a different type of “camping” experience.

No construction of public rental cabins in the Upper Manistee River corridor is planned at this writing. However, future public cabins available by reservation only may be constructed under the following conditions:

- a. Cabins will be landward of the native vegetation buffer (see “**NATIVE VEGETATION BUFFER**” section).
- b. Cabins will be placed a minimum of 300 feet apart.
- c. Each cabin will be no more than one story in height and shall have no more than 900 square feet of floor area.
- d. Access roads, if necessary, will be developed landward of the cabins.
- e. Additional vegetative buffers may be required for cabin sites located near residential uses.

6. ROADS AND TRAILS

Construction of roads in the river corridor often results in introduction of impervious surfaces and increased runoff, vegetation removal, wetland and floodplain fill and habitat disturbance. Trails can provide an enjoyable recreational experience, but improperly located trails can also result in excessive erosion and vegetation removal.

Therefore the following standards will apply to construction of new roads and trails.

- a. Public roads that are an integral part of subdivisions, site condominium developments, planned unit developments or other concentrations of residential structures may be constructed provided they meet the minimum private land building setback requirement, with no reduction in setback based on bank height. All other new public roads, including all classes of county roads, State and interstate highways, forest roads and all other roads constructed and maintained by a public agency or utility, must be constructed outside the 400-foot Natural River District.
- b. New public road/stream crossings are prohibited
- c. To the maximum extent feasible, all replacement road/stream crossing structures must span the base-flow channel of the stream. Structures with natural bottoms are strongly recommended, particularly on mainstream segments. All public road/stream crossings must also comply with the provisions of the Natural River Rules for Utilities and Publicly Provided Facilities. All road/stream crossing projects will be reviewed by the appropriate Department of Environmental Quality and Department of Natural Resources staff before, during and after construction to ensure compliance with permit conditions. Public road agencies are strongly encouraged to improve road/stream crossings that are contributing sediment to the stream system.
- d. New ORV/ATV trails are prohibited in the Natural River District (within 400 feet of the river’s edge). Existing ORV/ATV trails within the Natural River District will be evaluated,

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- an inventory of areas showing resource damage within the Natural River District performed, and measures to correct those problems implemented. Rehabilitation of damaged areas of such trails within the Natural River District will receive high priority for funding. If relocation of an existing trail is appropriate and feasible, the trail will be relocated outside the Natural River District.
- e. New equestrian trails, snowmobile trails or mountain bike trails are prohibited within the native vegetation buffer. The equestrian trail stream crossing at the Hopkins Creek Trail Camp will be modified to reduce erosion and sedimentation of the stream.
 - f. New, unpaved (except for occasional low-profile boardwalks to prevent damage to wetland areas), non-motorized trails designed for foot or cross-country ski traffic are permitted. They must be primarily located a minimum of 100 feet from the river's edge, but may include occasional loops to the river's edge, with generally no more than 50 feet of the side loop located within 10 feet of the stream. Such loops may be located as topography dictates, but will not be located more than one for every 1/4 mile of main trail. Loops near the river's edge will not be constructed in wetland areas. No docks or other structures will be constructed or placed in association with the loops. New trails may not cross a designated mainstream segment. Crossings of designated tributaries will be kept to a minimum, span the base-flow channel of the stream, have a natural bottom, be located in primarily upland areas and be constructed of timber.

7. MOTOR VEHICLES IN THE NATURAL RIVER DISTRICT

Uncontrolled access to the river's edge by motor vehicles can result in significant streambank erosion, compaction of soil, littering, trash dumping on public lands and vegetation removal. Therefore, use of any motor vehicle on State land within 400 feet of the river's edge is prohibited unless on a designated public road, access road to a designated campground, public access site or trail-head, or other road or trail posted "Open." Emergency vehicle use and vehicle use for official work duties by public employees is permitted within the District on roads other than those described above. Department of Natural Resources staff will consult with citizens to determine what traditional access roads should remain open and which should be closed.

8. MINERAL EXTRACTION

Extraction of minerals is a necessary part of human existence. Minerals provide fuel and other materials to allow people to conduct daily activities. However, mineral extraction activities can also be disruptive to surface and subsurface resources. Erosion and sedimentation, vegetation removal, surface and groundwater contamination and increased runoff are all potential impacts of some types of mineral extraction.

Therefore, the following standards will apply to new mineral extraction activities on public land:

- a. New mineral extraction activities, including gravel mining, oil and gas drilling and any other mineral extraction activity, are prohibited within 1/4 mile of the river's edge on public land, subject to variance procedures for activities on leases granted prior to adoption of this management plan.
- b. New State-owned mineral right leases for any parcel of land on which any portion of that parcel is within 1/4 mile of the river's edge will be granted as "non-development" leases only, prohibiting disturbance of the surface.
- c. No surface use permits will be granted for any mineral extraction activity within 1/4 mile of the river.

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- d. No new drilling permits will be granted on new leases for extraction of State or Federally owned minerals within 1/4 mile of the river's edge if such extraction would result in disturbance of the surface within 1/4 mile of the river's edge.
- e. Relatively non-disruptive exploration activities, such as seismic testing, will be allowed landward of the native vegetation buffer if there is a reasonable expectation that minerals discovered through this activity may be extracted using methods that will not disturb the surface within 1/4 mile of the river, i.e. directional drilling.

MDNR will pursue development of a Memorandum of Understanding with MDEQ Geological Survey Division to implement these standards.

9. PIPELINE AND OTHER UTILITY STREAM CROSSINGS

If properly performed, pipeline, electric or communication line and other similar underground stream crossings can be non-disruptive activities. Improper crossings, however, can be a major source of habitat disruption, erosion and stream sedimentation.

Therefore, pipeline, electric or communication line, or other similar crossings are subject to the following:

- a. **On public land**, all pipeline, electric or communication line or other similar crossings will be accomplished by boring under the streambed. The entry and exit point for the pipe or line shall be landward of the native vegetation buffer and not located in a wetland (the entry and exit points for the pipe or line may be closer than the landward edge of the native vegetation buffer if located in a road right-of-way and not resulting in significant disturbance of vegetation or wetlands, subject to approval by the MDNR Northern Michigan Rivers Administrator).
- b. **On private land**, with the exception of electric transmission lines referenced in the Rules for Utilities and Publicly Provided Facilities and electric service lines to permitted uses on tributaries, all pipeline, communication line, primary electric distribution line or other similar stream crossings will be accomplished by boring under the streambed. The entry and exit point for the pipe or line shall be landward of the native vegetation buffer and not located in a wetland (the entry and exit points for the pipe or line may be closer than the landward edge of the native vegetation buffer if located in a road right-of-way and not resulting in significant disturbance of vegetation or wetlands, subject to approval by the MDNR Northern Michigan Rivers Administrator).
- c. **On private land along tributaries**, overhead electric service line stream crossings are permitted upon approval of the appropriate zoning authority. In the native vegetation buffer beneath these lines, tall-growing tree species may selectively removed. Shrubs, low-growing tree species with a mature height of less than 20 feet and other native vegetation may not be removed.
- d. If an **alternative method of constructing a crossing** can be shown to be less disruptive to the resource than the method described in a. and b. above, it may be permitted by the Northern Michigan Rivers Administrator.
- e. Activities must comply with all applicable provisions of the Rules for Utilities and Publicly Provided Facilities developed under section 30514 of Part 305 of 1994 PA 451 for erosion and sedimentation control, blocking of damaging ORV access, cutting in the native vegetation buffer and others. Note: for the purposes of this plan and the above-referenced rules, the terms "native vegetation buffer" and "natural vegetation strip" are interchangeable.

10. LAND ALTERATION

Wetland and floodplain areas in the river corridor provide critical wildlife and fisheries habitat, maintain flood storage capacity, filter runoff, provide groundwater recharge areas and perform many other valuable functions. Protection of these areas is critical to maintaining the health, diversity and natural character of the river.

Therefore, land alteration on public lands is subject to the following:

- a. Excavation, draining or filling of wetlands and excavation or filling of 100-year floodplain areas within 400 feet of the river's edge is prohibited.
- b. Land alteration of any area within the native vegetation buffer is prohibited except for minor alterations associated with permitted activities such as establishing foot trails, minor alterations related to maintenance of existing facilities or bank stabilization activities.
- c. Land alteration of wetland/floodplain areas greater than 400 feet from the river's edge for wildlife habitat management or other purposes is permitted upon receipt of proper permits from the Department of Environmental Quality, but such activity is discouraged within 1/4 mile of the river's edge.

11. RIVER RESTORATION/BANK STABILIZATION

Stabilization of eroding streambanks on designated Natural Rivers is a controversial practice. Over time, rivers naturally erode banks, change course and transport sediment. However, this process has been greatly accelerated by human activities over the past 150 years. These activities include catastrophic events such as dam failures and the logging boom of the last half of the 19th century, and more subtle activities such as unrestricted access by canoeists, anglers and other recreational users. Erosion has also been accelerated by removal of streamside vegetation during construction and maintenance of residences and businesses. This activity can also, over time, result in less stable flows in the river, leading to greater erosive velocities during high water periods. It is clear, therefore, that not all eroding streambanks are the result of naturally-occurring events.

Sedimentation as a result of excessive erosion leads to degraded fisheries habitat in the form of buried spawning beds and insect habitat, streams becoming wider and shallower and thus more susceptible to the sun's warming rays, and in rare cases, direct mortality of fish from excessive sediment. Eroding banks can also threaten buildings which, having been built too close to the river bank, are in danger of falling into the river.

In order to restore some of the historic fisheries habitat in the Manistee River system, and to protect structures on public and private property, stabilization of streambanks is permitted. However, certain restrictions must apply.

It is strongly encouraged that vegetative stabilization methods be used on all sites that are appropriate. The use of "soft armor" manufactured materials such as biodegradable erosion control blankets, pre-vegetated mats, rolled fiber logs and others should be evaluated where feasible. If riprap must be used to stabilize the toe of the slope, only natural fieldstone, i.e. glacial cobble, may be used. The minimum amount of riprap to stabilize the bank will be used, with vegetative methods

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used to stabilize the upper portions of the bank whenever possible. The top line of riprap should be varied in height to minimize the visual perception of a "lined channel."

The Upper Manistee River Restoration Committee was formed in part to facilitate stabilization of large numbers of streambanks on the Upper Manistee River. Also, individual landowners with a significant amount of stream frontage occasionally desire to stabilize a great number of erosion sites on their property. Most of the erosion sites have historically been stabilized using rock riprap, sometimes in conjunction with other methods. In order to more naturally stabilize these areas, some sites should be stabilized by strictly vegetative methods, such as brush bundles, live staking, live fascines or "soft armor" materials described above in areas where site conditions are suitable for such techniques. Sites should be prioritized with respect to the amount of sediment delivered to the stream, with sites treated on a "worst first" basis.

When choosing erosion sites to be stabilized, groups or individuals should consider the potential negative effects of gaining access to the sites. If access to a critical erosion site is not possible without cutting a temporary access road through the native vegetation buffer, alternate methods of transporting equipment and riprap to the river's edge should be used if at all possible. Any roads or trails that are created as a result of bank stabilization activity will be obliterated and restored with native vegetation immediately upon completion of the project.

Any bank stabilization project should also consider the impacts of this activity on non-fisheries species such as wood turtles or other species that may depend on eroded banks for nesting or habitation. If it is determined that the negative impacts of stabilization of a bank or banks on these species outweighs the positive impact on the fishery, the banks should not be stabilized. Particular attention should be paid to the effects of bank stabilization work on species listed as Threatened or Endangered.

12. STREAM ALTERATION

Maintaining and enhancing the free-flowing condition of the river is one of the goals of Natural Rivers Part 305. Alteration of the streambed and channel can result in loss of fisheries and wildlife habitat, increased erosion and sedimentation and increased flooding. Therefore, diversion of the stream from its existing natural channel is prohibited, except for minor alteration of the stream channel in conjunction with improving an existing road/stream crossing.

All work below the ordinary high water mark of the stream requires approval from the Northern Michigan Rivers Administrator and a permit from MDEQ under provisions of the Inland Lakes and Streams Part 301 of 1994 PA 451.

Minor streambed alteration for placement of small docks and necessary erosion control measures is permitted. Sediment traps designed to capture excessive sand bedload as part of a stream restoration effort are permitted. The width of the sediment trap may not exceed the natural stream width at that location. Spoils must be placed on an upland site landward of the native vegetation buffer. Dredge pads will be seeded and mulched immediately after construction of the trap and after clean-outs. When the trap is no longer in service, the access road, dredge pad and other disturbed sites will be restored and stabilized with native vegetation.

Extensive alteration of the streambed to create stream characteristics that were not historically present in the stream is not permitted. Fisheries habitat structures are permitted, provided they do not interfere with navigation, are constructed primarily of natural materials, do not pose a hazard to

wading anglers and are unobtrusive and generally unrecognizable as artificial structures. Habitat structures will be maintained in a safe, functioning, non-erosive condition or be removed.

13 COMMERCIAL USE OF STATE LANDS

The Department of Natural Resources is committed to addressing the many issues related to commercial use of State lands, including use of public access sites by commercial watercraft liveries. The DNR will develop a strategy to address the issue on a State-wide basis.

Commercial use of public access sites on the Upper Manistee River system is an important issue for area residents and river users. Commercial watercraft liveries and drift boat operations are an important part of the local economy. They provide an opportunity to experience a river environment to people who would not normally have the option to do so. However, overcrowding of the river and access sites, and resource damage caused by large groups of watercraft users who exit the river at uncontrolled sites, can be a problem at times.

When a state-wide policy addressing commercial use of access sites is developed, it is recommended that it include provisions for requiring permits for use of public access sites by commercial watercraft liveries, fishing guides and other commercial users. The DNR should determine a maximum number of special use permits to be allocated per day to commercial users of the access sites. If fees are to be charged for these special use permits they should be earmarked for activities in the watershed where the fees were generated, such as maintenance and improvement of existing access sites, signing and other educational efforts, re-establishment of native vegetation buffers on public lands and cost sharing with county road commissions for improved road/stream crossing replacements.

14. DAMS

Dams have a generally negative impact on a river environment, including blocking migration of fish, warming of water temperatures, blocking movement of large woody debris and fragmenting habitats. Therefore, new dams are not permitted on any designated stream segment. Also, in order to enhance the free-flowing condition of the river system, a long-term goal of Natural River designation is removal of existing dams that are no longer economically viable, have negative impacts on the streams' fishery that are not outweighed by other factors or that are structurally unsound.

There are several dams owned by MDNR Wildlife Division that impound areas for waterfowl and other wildlife habitat. Some of these impoundments may now or in the future be creating marginal wildlife habitat while interfering with the streams' free-flowing condition and negatively affecting the streams' fisheries by warming water temperatures and blocking fish passage. MDNR Wildlife Division periodically reviews the costs and benefits of its dams in conjunction with required dam safety inspections. If, during the course of this analysis, it is determined that a dam is not providing sufficient wildlife habitat or other benefits, the dam will be considered for removal, returning the stream to its free-flowing condition. Dams providing wildlife benefits that outweigh the negative impacts on other Natural River values will be maintained. Those dams may be modified to enhance those other values by construction of fish passage structures, bottom draw discharges and other management methods as feasible and appropriate.

Fish barriers such as weirs will not be constructed unless necessary to block sea lamprey or other harmful exotic species from migrating into a stream, and only if constructed so as to have the

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minimum impact on the free-flowing condition of the stream. Low-head dams and other similar barrier structures are not permitted. Electric or similar type weirs will be allowed only if demonstrated to be effective and necessary, and to have negligible impact on the free-flowing condition of the stream.

The FERC re-licensing agreement with Consumers Energy addresses the provision of fish passage around hydropower projects such as Tippy and Hodenpyl Dams. This could have a major impact on the resident fishery of the Upper Manistee River. Fish passage facilities will not be constructed unless it is identified in a river management plan developed with public input to be appropriate in those locations. The plan must be approved by the Natural Resources Commission and must not be opposed by the US Forest Service, the US Fish and Wildlife Service and the Federal Energy Regulatory Commission. The DNR Fisheries Division is developing a procedure to evaluate the appropriateness of fish passage at individual dam sites. The evaluation will take into account social, economic and resource impacts. This procedure will be used to evaluate the appropriateness of constructing fish passage facilities at Tippy and Hodenpyl Dams. Such facilities will not be constructed unless all the above conditions are satisfied.

15. LAND ACQUISITION AND DISPOSAL

The State may purchase private lands in the Natural River District only with the consent of the landowner. **Natural Rivers Part 305 does not authorize condemnation of private lands in the Natural River District.** Condemnation of land is not a management tool associated with the Natural Rivers Program.

In order to provide the best possible recreational experience for Michigan residents, and to protect the State's finest river resources, acquisition of waterfront land is a high priority for the MDNR. Streamfront lands in the Upper Manistee River system acquired by MDNR will not be developed except for possible campgrounds and public access sites subject to development standards discussed above. If lands are acquired, every effort will be made to acquire all rights associated with the land, including mineral rights. All buildings within the 400-foot-wide Natural River District that are acquired with those lands will be removed or destroyed. Lands within the native vegetation buffer will be allowed to revert to their natural state. Planting of native vegetation in previously disturbed areas is encouraged.

It is recommended that no public streamfront lands be transferred to private parties. However, if such lands are sold, traded or otherwise conveyed to a private party, the State will retain the development and mineral rights to the portion of land within 1/4 mile of the river's edge, and the right of public access along the river bank.

16. SIGNS

Education of the public regarding the purposes and benefits of designation is key to a successful protection program. A DNR sign plan will be developed for the Upper Manistee River system. Signs will be designed to identify the river system as a designated Natural River, explain the purposes of designation, emphasize that private lands along designated rivers remain private, advise the public of any watercraft controls in effect and periodically indicate approximate float times to the next public access site to discourage trespass.

17. WATER QUALITY

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MDNR will work with MDEQ to develop a Memorandum of Understanding regarding implementation of a water quality sampling program to determine the baseline water quality on the Upper Manistee river system at the time of designation, and to periodically monitor changes in water quality.

Designation as a Natural River results in no special protection related to State of Michigan water quality standards unless the designation is in the "Wilderness" classification. However, since most of the streams in this system are designated trout streams, they are afforded greater protection than minimum statewide surface water quality standards would provide. All surface waters of the state are protected for, at a minimum, agriculture, navigation, industrial and public water supply, warmwater fisheries, other indigenous aquatic life and wildlife, partial body contact recreation between November 1 and April 30 and total body contact recreation between May 1 and October 31. Designated trout streams are protected for coldwater fisheries in addition to the minimum standard listed above. This results in higher standards for temperature and dissolved oxygen levels.

18. WATERCRAFT CONTROLS

High speed operation of motorized watercraft can result in resource damage due to erosion cause by wakes and property damage to docks and other stream-side structures, and can be a safety hazard for riverfront property owners, wading anglers and operators of other watercraft. Therefore, watercraft control ordinances implementing a "no-wake" zone on all segments of the Upper Manistee River system should be developed.

Local units of government that believe that special local "no-wake" ordinances authorized by the Marine Safety Act are needed on waters subject to their jurisdiction should inform MDNR Law Enforcement Division and request assistance. All such requests must be in the form of a resolution approved by the governing body of the local unit of government.

19. MILITARY USES

The Michigan Department of Military Affairs (MDMA) uses land in the Upper Manistee River watershed for troop training, artillery and small arms ranges and other activities. MDMA owns property in the Lake Margrethe, Portage Creek, Clear Creek and Manistee River mainstream areas generally between M-72 and the CCC Bridge, and leases land from DNR in southern Kalkaska County in the vicinity of Big Cannon Creek through a 20-year lease signed in 1984 that authorizes limited use of the land. The Department of Natural Resources has responsibility for managing for natural resource goals on much of the land owned by MDMA.

Due to the potential impact of such uses on vegetation, habitat and surface waters, as well as potential conflict of use with recreational users, military use of land within the Natural River District (within 400 feet of any designated stream), is generally in conflict with the goals and objectives of the Natural River Act. Therefore, all military use of lands owned or leased by MDMA within the Natural River District other than on existing trails or roads is prohibited. No refueling operations will take place within 400 feet of any stream, lake or wetland. These and other standards are outlined in Camp Grayling Regulation 200-1, "Environmental Protection and Enhancement." Also, MDMA will annually provide DNR with a map outlining anticipated military activities in the area.

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Camp Grayling currently collects sewage from its facilities for treatment at a permitted wastewater treatment facility that discharges treated effluent to the groundwater. No effluent is discharged to surface waters of the Upper Manistee River watershed.

20. FISHERIES DIVISION MANISTEE RIVER ASSESSMENT

MDNR Fisheries Division completed a Manistee River Assessment in June 1998. The assessment provides:

- a. An organized approach to identifying opportunities and solving problems.
- b. A mechanism for public involvement in fishery management decisions.
- c. An organized reference for Fisheries Division personnel, other agencies and citizens.

In addition to being a separate document for fisheries management purposes, the assessment will be considered a companion document to the Natural River Plan. The assessment contains much detailed information regarding fisheries populations, past and present management activities and background information on the watershed. Much of the watershed background information in this plan was taken from the assessment.

The assessment also contains many options related to fisheries management in the watershed. Most of the options meet the goals and objectives of Natural River designation. However, if an option is selected that is in conflict with the goals of Natural Rivers Part 305 and this Natural River Plan, that option shall not be implemented without the approval of the DNR Director.

F. ADMINISTRATION AND IMPLEMENTATION

1. DESIGNATION

Designation of a Natural River involves several steps, including:

- a. Development of a draft Natural River Management Plan
- b. Presentation of the draft plan at public hearings
- c. Revision of the draft plan based on public comments, as appropriate
- d. Approval of a final Natural River Plan by the Director of the Department of Natural Resources

The Department of Natural Resources, with the help of the Upper Manistee River Citizens Advisory Group, developed this draft plan for the Upper Manistee River area. The draft plan will be presented at public hearings in each of the five counties potentially affected by the designation. Upon completion of those hearings, and incorporation of appropriate public comments in the plan, a final plan will be presented to the DNR Director for approval. Upon approval by the Director, the river is officially a designated Natural River.

2. PLAN IMPLEMENTATION FOR PUBLIC LAND AND UTILITIES

Upon adoption of this plan by the DNR Director, **State lands must be managed in accordance with the plan and State management of fisheries, streams, waters, wildlife and boating must take cognizance of the plan.** Also, utilities and publicly provided facilities such as roads, water projects and others, except those within the boundaries of an incorporated municipality, must be constructed and managed in accordance with the Rules for Utilities and Publicly Provided Facilities promulgated under provisions of section 30514 of Natural Rivers Part 305 of 1994 PA 451 (see appendix B).

3. PLAN IMPLEMENTATION FOR PRIVATE LAND

a. Zoning ordinances and rules

Local units of government that have designated natural rivers within their boundaries may choose to adopt new zoning ordinances or amend existing zoning ordinances to incorporate the private land development standards included in this plan. They are not required to do so. If, after one year from the date of Natural River Plan adoption, all affected townships and/or counties do not have a Natural River zoning ordinance in effect, the State may adopt State Natural River Zoning Rules. These rules will only apply in areas where a township or county has not adopted a zoning ordinance that incorporates the standards in the plan. The State rules will have the effect of creating a partial zoning ordinance in units of government that do not currently have an ordinance, or an overlay zoning district in units of government that currently have zoning. Natural Rivers Part 305 prohibits the application of State zoning rules within incorporated municipalities, such as villages and cities.

A local unit of government may adopt a Natural River zoning ordinance at any time, whether or not State zoning rules have been adopted. If an acceptable local zoning ordinance is adopted, State zoning rules will not apply in that unit of government. Local units of government may also adopt zoning standards that are more restrictive than those recommended in this plan.

b. Variances/appeals

A property owner may request a variance to a zoning standard in a locally zoned Natural River District from the local unit of government's zoning board of appeals.

A property owner may request a minor variance to a dimensional standard in a State-zoned area from the State Natural Rivers Zoning Administrator for the Upper Manistee River. Other dimensional variances and land use variances may be requested from the Upper Manistee River State Natural River Zoning Review Board. This Board will consist of local citizens representing local government and citizens groups, with one local DNR staff person serving on the board. The board will act on all major variance requests and special use permit applications *in State-zoned areas of the watershed*. The State Zoning Administrator and State Zoning Review Board do not act on variance requests from within local units of government that have adopted a local Natural River zoning ordinance.

If a property owner is not satisfied with the decision of the Upper Manistee River State Zoning Review Board, he/she may file a Petition for Contested Case Hearing under provisions of the Administrative Procedures Act, 1969 PA 306, as amended.

4. COORDINATION WITH OTHER PUBLIC AGENCIES

Many decisions affecting resource management in the Upper Manistee River area are made by agencies other than MDNR and local government. The Michigan Department of Transportation (MDOT), Michigan Department of Environmental Quality (MDEQ), Michigan Department of Military Affairs (MDMA) and US Fish and Wildlife Service (USFWS) all play an active role in determining how resources will be managed or affected in the watershed. Although all are subject to the provisions of the Rules for Utilities and Publicly Provided Facilities (see 2. above), these rules frequently lack details regarding coordination between agencies and other aspects of plan administration. Accordingly, MDNR will pursue development of Memoranda of Understanding (MOU) with the following agencies for the following purposes:

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MDNR/MDOT: An MOU to provide a mechanism for the earliest possible review of transportation projects planned for construction in the watershed, ensuring that the unique characteristics of the river system will be considered during the transportation planning process.

MDNR/MDEQ: An MOU to provide for consideration of the use and development standards in the Upper Manistee River Natural River Plan during the review process for various land/water interface permits, surface and ground water quality issues and mineral exploration and development issues addressed by MDEQ Divisions.

MDNR/USFWS: An MOU to ensure that management of State and Federal lands and programs is in compliance with the provisions of this Plan and Federal statutes including the Endangered Species Act and the Federal Aid in Wildlife Restoration Act and any associated management plans.

5. PLAN REVIEW

This Management Plan will be reviewed and updated every 10 years or earlier if needed. The MDNR Director and Natural Resource Commission shall be informed of any changes made to this Management Plan.

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Table 1. -Archaeological sites in the Upper Manistee River watershed, listed by township.
Information provided by Barbara Mead, Michigan Department of State, Archaeological Section.

County	Township	Number of sites
Crawford	Frederick	1
	Beaver Creek	1
Kalkaska	Excelsior	1
	Garfield	23
	Springfield	4
Missaukee	Norwich	3
	Pioneer	1
	Bloomfield	9
Total		47

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Table 2.—List of fishes in the Upper Manistee River Watershed. Compiled by G.R. Smith, University of Michigan and Tom Rozich, Michigan Department of Natural Resources, Fisheries Division.

Origin: N = Native; C= Colonized, O = Extirpated, I = Introduced Status: P = Recent Observation, U = Historic Record, Current Status Unknown

Common name	Scientific name	Origin	Manistee status
Lampreys			
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>	N	P
Northern brook lamprey	<i>Ichthyomyzon fossor</i>	N	P
American brook lamprey	<i>Lampetra appendix</i>	N	P
Sea lamprey	<i>Petromyzon marinus</i>	C	P
Sturgeon			
Lake sturgeon	<i>Acipenser fulvescens</i>	N	P
Gars			
Longnose gar	<i>Lepisosteus osseus</i>	N	P
Bowfin			
Bowfin	<i>Amia calva</i>	N	P
Herrings			
Alewife	<i>Alosa pseudoharengus</i>	C	P
Gizzard shad	<i>Dorosoma cepedianum</i>	N	P
Minnows			
Central stoneroller	<i>Campostoma anomalum</i>	I	P
Lake chub	<i>Couesius plumbeus</i> (rare)	N	P
Spotfin shiner	<i>Cyprinella spiloter</i>	N	P
Common carp	<i>Cyprinus carpio</i>	I	P
Brassy minnow	<i>Hybognathus hankinsoni</i>	N	P
Common shiner	<i>Luxilus cornutus</i>	N	P
Pearl dace	<i>Margariscus margarita</i>	N	P
Hornyhead chub	<i>Nocomis biguttatus</i>	N	P
River chub	<i>Nocomis micropogon</i>	N	P
Golden shiner	<i>Notemigonus crysoleucas</i>	N	P
Pugnose shiner	<i>Notropis anogenus</i> (rare)	N	U
Emerald shiner	<i>Notropis atherinoides</i>	N	P
Blacknose shiner	<i>Notropis heterolepis</i>	N	P
Blackchin shiner	<i>Notropis heterodon</i>	N	P
Spottail shiner	<i>Notropis hudsonius</i>	N	P
Rosyface shiner	<i>Notropis rubellus</i>	N	P
Sand shiner	<i>Notropis stramineus</i>	N	P
Mimic shiner	<i>Notropis volucellus</i>	N	P
Northern redbelly dace	<i>Phoxinus eos</i>	N	P
Finescale dace	<i>Phoxinus neogaeus</i>	N	P

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Bluntnose minnow	<i>Pimephales notatus</i>	N	P
Table 2. —Continued.			
Common name	Scientific name	Origin	Manistee status
Minnows continued			
Fathead minnow	<i>Pimephales promelas</i>	N	P
Blacknose dace	<i>Rhinichthys atratulus</i>	N	P
Longnose dace	<i>Rhinichthys cataractae</i>	N	P
Creek chub	<i>Semotilus atromaculatus</i>	N	P
Suckers			
Quillback carpsucker	<i>Carpionodes cyprinus</i>	N	P
Longnose sucker	<i>Catostomus catostomus</i>	N	P
White sucker	<i>Catostomus commersoni</i>	N	P
Northern hogsucker	<i>Hypentelium nigricans</i>	N	P
Silver redhorse	<i>Moxostoma anisurum</i>	N	P
Golden redhorse	<i>Moxostoma erythrurum</i>	N	P
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	N	P
Greater redhorse	<i>Moxostoma valenciennesi</i>	N	P
Catfishes			
Black bullhead	<i>Ameiurus melas</i>	N	P
Yellow bullhead	<i>Ameiurus natalis</i>	N	P
Brown bullhead	<i>Ameiurus nebulosus</i>	N	P
Channel catfish	<i>Ictalurus punctatus</i>	N	P
Tadpole madtom	<i>Noturus gyrinus</i> (rare)	N	U
Pikes			
Northern pike	<i>Esox lucius</i>	N	P
Great Lakes muskellunge	<i>Esox masquinongy</i>	N	P
Northern muskellunge	<i>Esox masquinongy</i>	I	P
Tiger muskie	<i>Esox masquinongy</i> X <i>Esox lucius</i>	I	P
Mudminnows			
Central mudminnow	<i>Umbra limi</i>	N	P
Smelt			
rainbow smelt	<i>Osmerus mordax</i>	I	P
Salmons			
Lake herring (cisco)	<i>Coregonus artedii</i>	N	P
Lake whitefish	<i>Coregonus clupeaformis</i>	N	P
Pink salmon	<i>Oncorhynchus gorbuscha</i>	C	P
Coho salmon	<i>Oncorhynchus kisutch</i>	I	P
Rainbow trout (steelhead)	<i>Oncorhynchus mykiss</i>	I	P
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	I	P

Table 2–Continued.

Common name	Scientific name	Origin	Manistee status
Salmons continued			
Round whitefish	<i>Prosopium cylindraceum</i>	N	P
Brown trout	<i>Salmo trutta</i>	I	P
Brook trout	<i>Salvelinus fontinalis</i>	N/C	P
Lake trout	<i>Salvelinus namaycush</i>	N	P
Splake	<i>Salvelinus fontinalis</i> X <i>Salvelinus namaycush</i>	I	P
Grayling	<i>Thymallus tricolor</i>	O	
Trout-perches			
Trout perch	<i>Percopsis omiscomaycus</i>	N	P
Cod			
Burbot	<i>Lota lota</i>	N	P
Killifishes			
Banded killifish	<i>Fundulus diaphanus</i>	N	P
Silverside			
Brook silverside	<i>Labidesthes sicculus</i>	N	P
Sticklebacks			
Brook stickleback	<i>Culaea inconstans</i>	N	P
Ninespine stickleback	<i>Pungitius pungitius</i>	N	P
Sculpins			
Mottled sculpin	<i>Cottus bairdi</i>	N	P
Slimy sculpin	<i>Cottus cognatus</i>	N	P
Temperate basses			
White bass	<i>Morone chrysops</i>	N	U
Sunfishes			
Rock bass	<i>Ambloplites rupestris</i>	N	P
Green sunfish	<i>Lepomis cyanellus</i>	N	P
Pumpkinseed sunfish	<i>Lepomis gibbosus</i>	N	P
Bluegill	<i>Lepomis macrochirus</i>	N	P
Longear sunfish	<i>Lepomis megalotis</i>	N	P
Smallmouth bass	<i>Micropterus dolomieu</i>	N	P
Largemouth bass	<i>Micropterus salmoides</i>	N	P
Black crappie	<i>Pomoxis nigromaculatus</i>	N	P

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Table 2.—Continued.

Common name	Scientific name	Origin	Manistee status
Perches			
Rainbow darter	<i>Etheostoma caeruleum</i>	N	P
Iowa darter	<i>Etheostoma exile</i>	N	P
Johnny darter	<i>Etheostoma nigrum</i>	N	P
Yellow perch	<i>Perca flavescens</i>	N	P
Logperch	<i>Percina caprodes</i>	N	P
Blackside darter	<i>Percina maculata</i>	N	P
Walleye	<i>Stizostedion vitreum</i>	N	P
Drums			
Freshwater drum (sheepshead)	<i>Aplodinotus grunniens</i>	N	P

Table 3.—Non-indigenous fish species in the Upper Manistee River Watershed.
Michigan Department of Natural Resources, Fisheries Division.

Common name	Scientific name
Sea lamprey	<i>Petromyzon marinus</i>
Alewife	<i>Alosa pseudoharengus</i>
Common carp	<i>Cyprinus carpio</i>
Northern muskellunge	<i>Esox masquinongy</i>
Tiger muskie	<i>Esox masquinongy</i> X <i>Esox lucius</i>
Rainbow smelt	<i>Osmerus mordax</i>
Chinook salmon	<i>Oncorhynchus tshawytscha</i>
Coho salmon	<i>Oncorhynchus kitsutch</i>
Pink salmon	<i>Oncorhynchus gorbuscha</i>
Rainbow trout	<i>Oncorhynchus mykiss</i>
Brown trout	<i>Salmo trutta</i>
Splake	<i>Salvelinus fontinalis</i> X <i>Salvelinus namaycush</i>
Central stoneroller	<i>Campostoma anomalum</i>

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Table 4.—Natural features of the Upper Manistee River Watershed (MDNR, Wildlife Division, Natural Features Inventory, 1999). Type: A = Vertebrate Animal; C = Natural Community; G = Geographic Feature; I = Invertebrate Animal; O = Other; P = Plant. State Status: E = Endangered; T = Threatened; SC = Special Concern; Federal Status: LE = Listed endangered; LT = Listed threatened; LELT = Partly listed endangered and partly listed threatened; PDL = Proposed delist; E(S/A) = Endangered based on similarities/appearance; PS = Partial status (Federally listed in only part of its range).

Otsego County

TYPE	SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
P	<i>Agoseris glauca</i>	Prairie or pale agoseris		T
I	<i>Appalachia arcana</i>	Secretive locust		SC
I	<i>Atrytonopsis hianna</i>	Dusted skipper		T
P	<i>Botrychium mormo</i>	Goblin moonwort		SC
I	<i>Brachionycha borealis</i>	Boreal brachionyncha		SC
A	<i>Buteo lineatus</i>	Red-shouldered hawk		T
A	<i>Cervus elaphus</i>	Wapiti or elk		
P	<i>Cirsium hillii</i>	Hill's thistle		SC
A	<i>Clemmys guttata</i>	Spotted turtle		T
A	<i>Clemmys insculpta</i>	Wood turtle		SC
P	<i>Cypripedium arietinum</i>	Ram's head lady's-slipper		SC
P	<i>Festuca scabrella</i>	Rough fescue		T
A	<i>Gavia immer</i>	Common loon		T
A	<i>Haliaeetus leucocephalus</i>	Bald eagle	(PS)	T
G	Karst	Geographical feature		
A	<i>Martes americana</i>	American marten		SC
I	<i>Merolonche dolli</i>	Doll's merolonche		SC
I	<i>Mesodon sayanus</i>	Spike-lip crater		SC
P	<i>Mimulus glabratus</i> var <i>jamesii</i>	James' monkey-flower		
G	Moraine	Geographical feature		
C	Northern shrub thicket	Wet scrubland, upper midwest type		
A	<i>Notropis anogenus</i>	Pugnose shiner		SC
I	<i>Pachypolia atricornis</i>	Three-horned moth		SC
I	<i>Papaipema beeriana</i>	Blazing star borer		SC
C	Pine barrens	Barrens, upper midwest type		
P	<i>Potamogeton hillii</i>	Hill's pondweed		T
P	<i>Prunus alleghaniensis</i> var <i>davisii</i>	Alleghany or sloe plum		SC
I	<i>Pyrgus wyandot</i>	Grizzled skipper		SC

Missaukee County

TYPE	SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
I	<i>Appalachia arcana</i>	Secretive locust		SC
A	<i>Clemmys insculpta</i>	Wood turtle		SC
A	<i>Gavia immer</i>	Common loon		T
O	Great blue heron rookery	Great blue heron rookery		
A	<i>Haliaeetus leucocephalus</i>	Bald eagle	(PS)	T
A	<i>Lanius ludovicianus migrans</i>	Migrant loggerhead shrike		E
A	<i>Martes americana</i>	American marten		SC
A	<i>Moxostoma carinatum</i>	River redhorse		T
A	<i>Pandion haliaetus</i>	Osprey		T
I	<i>Planogyra asteriscus</i>	Eastern flat-whorl		SC
P	<i>Potamogeton hillii</i>	Hill's pondweed		T
A	<i>Sistrurus catenatus catenatus</i>	Eastern massasauga		SC

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Table 4 (cont.)

Antrim County

TYPE	SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
A	<i>Accipiter gentilis</i>	Northern Goshawk		SC
A	<i>Buteo lineatus</i>	Red-Shouldered hawk		T
P	<i>Calypso bulbosa</i>	Calypso or fairy-slipper		T
O	Champion tree	White ash (<i>fraxinus americana</i>)		
P	<i>Cirsium pitcheri</i>	Pitcher's thistle	LT	T
P	<i>Cypripedium arietinum</i>	Ram's head lady's-slipper		SC
P	<i>Dalibarda repens</i>	False-violet		T
G	Devonian earth history	Geographical feature		
G	Drumlin	Geographical feature		
A	<i>Gavia immer</i>	Common loon		T
C	Great lakes marsh			
A	<i>Haliaeetus leucocephalus</i>	Bald eagle	(PS)	T
C	Open dunes	Beach/shoredunes, great lakes type		
P	<i>Panax quinquefolius</i>	Ginseng		T
I	<i>Planogyra asteriscus</i>	Eastern flat-whorl		SC
P	<i>Pterospora andromedea</i>	Pine-drops		T
A	<i>Sistrurus catenatus catenatus</i>	Eastern massasauga		SC
P	<i>Tanacetum huronense</i>	Lake huron tansy		T
I	<i>Trimerotropis huroniana</i>	Lake huron locust		T

Kalkaska County

TYPE	SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
P	<i>Aster longifolius</i>	Long-leaved aster		
P	<i>Cirsium hillii</i>	Hill's thistle		SC
A	<i>Clemmys guttata</i>	Spotted turtle		T
A	<i>Clemmys insculpta</i>	Wood turtle		SC
A	<i>Dendroica kirtlandii</i>	Kirtland's warbler	LE	E
A	<i>Emydoidea blandingii</i>	Blanding's turtle		SC
A	<i>Gavia immer</i>	Common loon		T
O	Great blue heron rookery	Great blue heron rookery		
A	<i>Haliaeetus leucocephalus</i>	Bald eagle	(PS)	T
P	<i>Isotria verticillata</i>	Whorled pogonia		T
P	<i>Mimulus glabratus</i> var <i>jamesii</i>	James' monkey-flower		
C	Northern wet meadow	Wet meadow, upper midwest type		
C	Oak-pine barrens			
P	<i>Oryzopsis canadensis</i>	Canada rice-grass		T
A	<i>Pandion haliaetus</i>	Osprey		T
I	<i>Planogyra asteriscus</i>	Eastern flat-whorl		SC
P	<i>Potamogeton hillii</i>	Hill's pondweed		T
I	<i>Prosapia ignipectus</i>	Red-legged spittlebug		SC
C	Rich conifer swamp			
A	<i>Sistrurus catenatus catenatus</i>	Eastern massasauga		SC
P	<i>Solidago houghtonii</i>	Houghton's goldenrod	LT	T
P	<i>Sporobolus heterolepis</i>	Prairie dropseed		T

As approved September 12, 2003

Table 4 (cont.)

Crawford County				
TYPE	SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
A	<i>Accipiter gentilis</i>	Northern goshawk		SC
P	<i>Agoseris glauca</i>	Prairie or pale agoseris		T
I	<i>Appalachia arcana</i>	Secretive locust		SC
P	<i>Aster longifolius</i>	Long-leaved aster		
I	<i>Atrytonopsis hianna</i>	Dusted skipper		T
C	Bog			
I	<i>Brachionycha borealis</i>	Boreal brachionyncha		SC
P	<i>Calypso bulbosa</i>	Calypso or fairy-slipper		T
P	<i>Cirsium hillii</i>	Hill's thistle		SC
A	<i>Clemmys insculpta</i>	Wood turtle		SC
P	<i>Dalibarda repens</i>	False-violet		T
A	<i>Dendroica kirtlandii</i>	Kirtland's warbler	LE	E
C	Dry northern forest	Dry woodland, upper midwest type		
C	Dry sand prairie	Dry sand prairie, midwest type		
C	Dry-mesic northern forest			
P	<i>Festuca scabrella</i>	Rough fescue		T
A	<i>Gavia immer</i>	Common loon		T
O	Great blue heron rookery	Great blue heron rookery		
A	<i>Haliaeetus leucocephalus</i>	Bald eagle	(PS)	T
C	Intermittent wetland	Infertile pond/marsh, great lakes type		
P	<i>Juncus vaseyi</i>	Vasey's rush		T
P	<i>Lycopodium appressum</i>			T
A	<i>Martes americana</i>	American marten		SC
C	Mesic sand prairie	Moist sand prairie, midwest type		
A	<i>Microtus pinetorum</i>	Woodland vole		SC
P	<i>Mimulus glabratus</i> var <i>jamesii</i>	James' monkey-flower		
C	Northern fen	Alkaline shrub/herb fen, upper midwest type		
C	Northern shrub thicket	Wet scrubland, upper midwest type		
A	<i>Pandion haliaetus</i>	Osprey		T
C	Pine barrens	Barrens, upper midwest type		
C	Poor conifer swamp			
C	Poor fen	Poor shrub/herb fen, upper midwest type		
I	<i>Prosapia ignipectus</i>	Red-legged spittlebug		SC
P	<i>Prunus alleghaniensis</i> var <i>davisii</i>	Alleghany or sloe plum		SC
I	<i>Pyrgus wyandot</i>	Grizzled skipper		SC
C	Rich conifer swamp			
P	<i>Scirpus clintonii</i>	Clinton's bulrush		SC
A	<i>Sistrurus catenatus catenatus</i>	Eastern massasauga		SC
P	<i>Solidago houghtonii</i>	Houghton's goldenrod	LT	T
P	<i>Stellaria crassifolia</i>	Fleshy stitchwort		T
P	<i>Viola novae-angliae</i>	New england violet		T

Table 5.—List of amphibians and reptiles in the Upper Manistee River watershed, that require the aquatic environment information provided by Greg Schneider, University of Michigan.

Common name	Scientific name
Salamanders	
spotted salamander	<i>Ambystoma maculatum</i>
blue-spotted hybrid	<i>Ambystoma laterale</i>
tiger salamander	<i>Ambystoma tigrinum</i>
four-toed salamander	<i>Hemidactylium scutatum</i>
mudpuppy	<i>Necturus maculosus</i>
red-spotted newt	<i>Notophthalmus viridescens</i>
red-backed newt	<i>Plethodon cinereus</i>
Lizards	
five-lined skink	<i>Eumeces fasciatus</i>
Frogs	
American toad	<i>Bufo americanus</i>
Fowler's toad	<i>Bufo woodhousii</i>
spring peeper	<i>Hyla crucifer</i>
gray tree frog	<i>Hyla chrysoscelis</i>
chorus frog	<i>Pseudacris triseriata</i>
bullfrog	<i>Rana catesbeiana</i>
green frog	<i>Rana clamitans</i>
pickeral frog	<i>Rana palustris</i>
leopard frog	<i>Rana pipiens</i>
wood frog	<i>Rana sylvatica</i>
Turtles	
softshell	<i>Apalone spinifera</i>
snapping turtle	<i>Chelydra serpentina</i>
painted turtle	<i>Chrysemys picta</i>
spotted turtle	<i>Clemmys guttata</i>
wood turtle	<i>Clemmys insculpta</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
map turtle	<i>Graptemys geographica</i>
eastern box turtle	<i>Terrapene carolina</i>
Snakes	
northern black racer	<i>Coluber constrictor</i>
ringneck snake	<i>Diadophis punctatus</i>
hognose snake	<i>Heterodon platyrhinos</i>
milk snake	<i>Lampropeltis triangulum</i>
water snake	<i>Nerodia sipedon</i>
smooth green snake	<i>Opheodrys vernalis</i>
queen snake	<i>Regina septemvittata</i>
massasauga	<i>Sistrurus catenatus</i>
brown snake	<i>Storeria dekayi</i>
red-bellied snake	<i>Storeria occipitomaculata</i>
ribbon snake	<i>Thamnophis sauritus</i>
garter snake	<i>Thamnophis sirtalis</i>

As approved September 12, 2003

Table 6.—Land ownership within the Upper Manistee River corridor by county, in acres based on an 800 foot-wide Natural River District (MDNR SIRC data, 2002)

Segment	Private acres	Public acres	Total
Antrim Co	311	30	281
Otsego Co	312	537	849
Crawford Co	1,366	1,249	2,615
Missaukee Co	2,193	1,097	3,290
Kalkaska Co.	8,021	9,982	18,003
Total	11,995	13,075	25,070
(%)	(47.8%)	(52.2%)	

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Table 7.—Upper Manistee River mainstream - existing campground & access facilities (U.S. Forest Service Manistee River Wild & Scenic Study Report).

Location Sites	Road R-O-W	Developed Site	County	Private	State	US FS	Number of Campsites
Mancelona Bridge	X				X		
Cameron Bridge	X				X		
612 Bridge	X				X		
Manistee River Forest Camp 1 & 2		X			X		26
Manistee River Camp - 72		X			X		24
T26N, R5W, Sec. 30	X				X		
CCC Camp		X			X		25
T25N, R6W, Sec. 3	X				X		
N. Sharon Rd.	X				X		
W. Sharon Rd.		X			X		
T25N, R7W, Sec. 22	X				X		
M-66 Campground				X			15
Smithville		X			X		19
M-66 Bridge	X				X		
Rainbow Jim		X			X		
Missaukee Bridge		X	X				

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Table 8.—Dam inventory, Upper Manistee River system. Data from Land and Water Management Division, Michigan Department of Environmental Quality.

Dam Name	County	Section	Town	Range	River	Head
Lake Margrethe	Crawford	8	26N	4W	Portage Creek	3
Lutz Dam	Kalkaska	12	25N	7W	Trib. Maple Ck.	
Gray Dam	Kalkaska	16	25N	7W	Waterhole Ck.	2
Goulait Dam	Kalkaska	27	25N	7W	Little Silver Ck	20
Simmons Dam	Kalkaska	22	25N	8W	Trib. Manistee R.	8
Gould Dam	Kalkaska	30	25N	8W	Spring fed trib. to Gould Ck	2
Vantol Dam	Kalkaska	32	25N	8W	Bourne Creek	3
Williams Dam	Kalkaska	31	25N	8W	Trib. Manistee R.	3
Condon Dam	Kalkaska	31	25N	8W	Trib. Manistee R.	
Ash Dam	Kalkaska	18	25N	8W	Fife Lake outlet	2
Skinner Dam	Kalkaska	17	25N	8W	Inlet Ck.	
Goose Creek Imp. Dam	Kalkaska	1	27N	5W	Goose Ck.	
Cotton Dam	Kalkaska	28	27N	6W	Collar Ck.	2
Ham Creek Dam	Missaukee	10	24N	8W	Trib. Ham Ck.	3

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Table 9.—Sites of environmental contamination in the Upper Manistee River watershed by county (1998) (Michigan Department of Environmental Quality, Environmental Response Division and Storage Tank Division).

County	Oil & gas related	Storage tanks	Industry	Other	Unknown	Total
Crawford	--	2	4	2	--	8
Kalkaska	3	1	--	4	1	9
Missaukee	--	1	2	1	1	5
Antrim	1	--	--	--	--	1
Otsego	--	--	--	1	--	1
Totals	4	4	6	8	2	24

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Table 10.—Statutes administered by Michigan Department of Environmental Quality, Land and Water Management Division, that affect the aquatic resource.

State of Michigan Acts: Public Health Code (1978 PA 386 - Aquatic Nuisance Control)
Inland Lake Levels (Part 307, 1994 PA 451)
Floodplain Regulatory Authority (Part 13, 1994 PA 451)
Wetland Protection (Part 303, 1994 PA 451)
Irrigation Districts (Part 341, 1994 PA 451)
Shorelands Protection & Management (Part 323, 1994 PA 451)
Great Lakes Submerged Lands (Part 325, 1994 PA 451)
Dam Safety (Part 315, 1994 PA 451)
Inland Lake Improvements (Part 309, 1994 PA 451)
Inland Lakes and Streams (Part 301, 1994 PA 451)
Soil Erosion & Sedimentation Control (Part 91, 1994 PA 451)

Federal Acts: Federal Water Pollution Control Act, Section 314 (PL 92-55)
Coastal Zone Management Act (PL 92-583, 1972)
Clean Water Act, Section 404 (PL 95-217)
River and Harbor Act, Section 10 (1899)
Coastal Energy Impact Program (PL 92-538)

APPENDIX A

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT (EXCERPT)

Act 451 of 1994

PART 305

NATURAL RIVERS

324.30501 Definitions. [M.S.A. 13a.30501]

Sec. 30501. As used in this part: (a) "Free flowing" means existing or flowing in natural condition without impoundment, diversion, straightening, riprapping, or other modification.

(b) "Natural river" means a river that has been designated by the department for inclusion in the wild, scenic, and recreational rivers system.

(c) "River" means a flowing body of water or a portion or tributary of a flowing body of water, including streams, creeks, or impoundments and small lakes thereon.

(d) "System" means all of those rivers or portions of rivers designated under this part.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30502 Natural river; designation; purpose; long-range plans; publicity; cooperation. [M.S.A. 13a.30502]

Sec. 30502. The department, in the interest of the people of the state and future generations, may designate a river or portion of a river as a natural river area for the purpose of preserving and enhancing its values for water conservation, its free flowing condition, and its fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic, and recreational values and uses. The area shall include adjoining or related lands as appropriate to the purposes of the designation. The department shall prepare and adopt a long-range comprehensive plan for a designated natural river area that sets forth the purposes of the designation, proposed uses of lands and waters, and management measures designed to accomplish the purposes. State land within the designated area shall be administered and managed in accordance with the plan, and state management of fisheries, streams, waters, wildlife, and boating shall take cognizance of the plan. The department shall publicize and inform private and public landowners or agencies as to the plan and its purposes, so as to encourage their cooperation in the management and use of their land in a manner consistent with the plan and the purposes of the designation. The department shall cooperate with federal agencies administering any federal program concerning natural river areas, and with any watershed council established under part 311, when such cooperation furthers the interest of the state.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

As approved September 12, 2003

324.30503 Qualifications for designation; categories of rivers. [M.S.A. 13a.30503]

Sec. 30503. A river qualifying for designation as a natural river area shall possess 1 or more of the natural or outstanding existing values cited in section 30502 and shall be permanently managed for the preservation or enhancement of such values. Categories of natural rivers shall be defined and established by the department, based on the characteristics of the waters and the adjoining lands and their uses, both as existing and as proposed, including such categories as wild, scenic, and recreational. The categories shall be specified in the designation and the long-range comprehensive plan.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30504 Land acquisition; purpose; interest acquired; consent. [M.S.A. 13a.30504]

Sec. 30504. The department may acquire lands or interests in lands adjacent to a designated natural river for the purpose of maintaining or improving the river and its environment in conformance with the purposes of the designation and the plan. Interests that may be acquired include, but are not limited to, easements designed to provide for preservation and to limit development, without providing public access and use. Lands or interests in lands shall be acquired under this part only with the consent of the owner.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30505 Federal financial assistance programs; leases; expenditures; purposes. [M.S.A. 13a.30505]

Sec. 30505. (1) The department may administer federal financial assistance programs for natural river areas.

(2) The department may enter into a lease or agreement with any person or political subdivision to administer all or part of their lands in a natural river area.

(3) The department may expend funds for works designed to preserve and enhance the values and uses of a natural river area and for construction, management, maintenance, and administration of facilities in a natural river area conforming to the purposes of the designation, if the funds are appropriated by the legislature.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30506 Public hearings; notice. [M.S.A. 13a.30506]

Sec. 30506. Before designating a river as a natural river area, the department shall conduct public hearings in the county seat of any county in which a portion of the designated natural river area is located. Notices of the hearings shall be advertised at least twice, not less than 30 days before the hearing, in a newspaper having general circulation in each such county and in at least 1

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newspaper having general circulation in the state and 1 newspaper published in the Upper Peninsula.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30507 Land uses; zoning; local ordinances; state rule. [M.S.A. 13a.30507]

Sec. 30507. After designation of a river or portion of a river as a natural river area and following the preparation of the long-range comprehensive plan, the department may determine that the uses of land along the river, except within the limits of an incorporated municipality, shall be controlled by zoning contributing to accomplishment of the purposes of this part and the natural river plan. County and township governments are encouraged to establish these zoning controls and additional controls as may be appropriate, including, but not limited to, building and subdivision controls. The department may provide advisory, planning, and cooperative assistance in the drafting of ordinances to establish these controls. If the local unit does not, within 1 year after notice from the department, have in full force and effect a zoning ordinance or interim zoning ordinance established under authority of the acts cited in section 30510, the department, on its own motion, may promulgate a zoning rule in accordance with section 30512. A zoning rule may also be promulgated if the department finds that an adopted or existing zoning ordinance fails to meet adequately guidelines consistent with this part as provided by the department and transmitted to the local units concerned, does not take full cognizance of the purposes and objectives of this part, or is not in accord with the purposes of designation of the river as established by the department.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30508 Zoning ordinance or rule; purpose. [M.S.A. 13a.30508]

Sec. 30508. A zoning ordinance adopted by a local unit of government or a zoning rule promulgated by the department shall provide for the protection of the river and its related land resources consistent with the preservation and enhancement of their values and the objectives set forth in section 30502. The ordinance or rule shall protect the interest of the people of the state as a whole. It shall take cognizance of the characteristics of the land and water concerned, surrounding development, and existing uses and provide for conservation of soil, water, stream bed and banks, floodplains, and adjoining uplands.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30509 Zoning ordinance or rule; establishment of districts; powers; distance. [M.S.A. 13a.30509]

Sec. 30509. The ordinance or rule shall establish zoning districts within which such uses of land as for agriculture, forestry, recreation, residence, industry, commerce, and additional uses may be encouraged, regulated, or prohibited. It may limit or prohibit the placement of structures of any class or designate their location with relation to the water's edge, to property or subdivision lines, and to flood flows and may limit the subdivision of lands for platting purposes. It may control the

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location and design of highways and roads and of public utility transmission and distribution lines, except on lands or other interests in real property owned by the utility on January 1, 1971. It may prohibit or limit the cutting of trees or other vegetation, but such limits shall not apply for a distance of more than 100 feet from the river's edge. It may specifically prohibit or limit mining and drilling for oil and gas, but such limits shall not apply for a distance of more than 300 feet from the river's edge. It may contain other provisions necessary to accomplish the objectives of this part. A zoning rule promulgated by the department shall not control lands more than 400 feet from the river's edge.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30510 Local zoning ordinance; conformance with applicable law; construction.

Sec. 30510. A local unit of government, in establishing a zoning ordinance, in addition to the authority and requirements of this part, shall conform to the township zoning act, 1943 PA 184, MCL 125.271 to 125.310, or the county zoning act, 1943 PA 183, MCL 125.201 to 125.240, including, but not limited to, the variance provisions of those acts. Any conflict shall be resolved in favor of the provisions of this part. The powers granted under this part shall be liberally construed in favor of the local unit or the department exercising them, in such manner as to promote the orderly preservation or enhancement of the values of the rivers and related land resources and their use in accordance with a long-range comprehensive general plan to ensure the greatest benefit to the state as a whole.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 ;--Am. 2000, Act 17, Imd. Eff. Mar. 8, 2000

Popular Name: Act 451

324.30511 Districts; valuation for tax purposes. [M.S.A. 13a.30511]

Sec. 30511. Upon adoption of a zoning ordinance or rule, certified copies of the maps showing districts shall be filed with the local tax assessing officer and the state tax commission. In establishing true cash value of property within the districts zoned, the assessing officer shall take cognizance of the effect of limits on use established by the ordinance or rule.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30512 Rules; enforcement; promulgation; variance; existing use.

Sec. 30512. (1) The department shall prescribe administrative procedures and rules and provide personnel as it considers necessary for the enforcement of a zoning ordinance or rule enacted in accordance with this part. A circuit court, upon petition and a showing by the department that there exists a violation of a rule properly promulgated under this part, shall issue any necessary order to the defendant to correct the violation or to restrain the defendant from further violation of the rule.

(2) The department shall promulgate a zoning rule to implement this part. The rule shall include procedures for receiving and acting upon applications from local units of government or landowners for change of boundaries or change in permitted uses in accordance with chapter 4 of

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the administrative procedures act of 1969, 1969 PA 306, MCL 24.271 to 24.287. An aggrieved party may seek judicial review under chapter 6 of the administrative procedures act of 1969, 1969 PA 306, MCL 24.301 to 24.306.

(3) A variance from a zoning rule promulgated by the department to implement this part may be applied for and granted pursuant to section 4 of the uniform condemnation procedures act, 1980 PA 87, MCL 213.54, and the variance provisions of the zoning rule.

(4) The lawful use of any building or structure and of any land or premise as existing and lawful at the time of enactment of a zoning ordinance or rule or of an amendment of a zoning ordinance or rule may be continued although the use does not conform with the ordinance, rule, or amendment. The ordinance or rule shall provide for the completion, restoration, reconstruction, extension, or substitution of nonconforming uses upon reasonable terms as set forth in the zoning ordinance or rule.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 ;--Am. 2000, Act 17, Imd. Eff. Mar. 8, 2000

Popular Name: Act 451

324.30513 National wild and scenic river system; administration. [M.S.A. 13a.30513]

Sec. 30513. This part does not preclude a component of the system from becoming a part of the national wild and scenic river system under the wild and scenic rivers act, Public Law 90-542, 16 U.S.C. 1271 to 1287. The department may enter into written cooperative agreements for joint federal-state administration of rivers that may be designated under the wild and scenic rivers act.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30514 Area plans; approval; rules. [M.S.A. 13a.30514]

Sec. 30514. The department shall approve preliminary and final plans for site or route location, construction, or enlargement of utility transmission lines, publicly provided recreation facilities, access sites, highways, roads, bridges, or other structures and for publicly developed water management projects, within a designated natural river area, except within the limits of a city or incorporated village. The department may require any measure necessary to control damaging erosion or flow alteration during or in consequence of construction. The department shall promulgate rules concerning the approvals and requirements provided for in this section.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

324.30515 Construction of part. [M.S.A. 13a.30515]

Sec. 30515. This part does not prohibit a reasonable and lawful use of any other natural resource that benefits the general welfare of the people of this state and that is not inconsistent with the purpose of this part.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995 .

Popular Name: Act 451

APPENDIX B

NATURAL RESOURCES COMMISSION POLICY

2703 - NATURAL RIVERS

Issued March 9, 1978

NATURAL RIVERS

Preamble

Michigan's rivers and streams, and their adjoining lands represent some of the State's most important natural resources. These areas are important for their recreational, scenic, historic, cultural, economic, scientific and environmental values. However, the beauty and quality of rivers is fragile and the existence of unspoiled, free-flowing stretches is diminishing. A program for identification, designation and protection of these free-flowing natural rivers is in the public interest. The responsibility for developing Michigan's state-wide system of designated natural rivers has been delegated to the Department of Natural Resources under authority of the Natural Rivers Act (Act 231, Public, Acts of 1970). This task involves two entities often in conflict: private ownership of river frontage and protection of publicly-owned natural resources. Because of the impact on private land rights, the program must maintain high visibility in the minds of the public, private river front landowners, and local governmental officials.

General Policy

Selection of free-flowing rivers or river segments for inclusion in Michigan's natural river system will be based upon the specific qualities outlined in Section 3 of the Natural Rivers Act--water conservation, free-flowing condition, and fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic and recreational values and uses. Priorities for study and designation will be based upon the quality of the resource, the impending and anticipated threats to those qualities, and local initiative and support.

Prior to designation as a natural river, the Department will develop a long-range plan for the river and adjoining lands. The plan's objective will be the strong protection and enhancement of natural river values for the use and enjoyment of present and future generations. The plan will recognize the right and the need of the public to use and enjoy designated rivers, and if necessary, will contain a program for protection of the resource from overuse, including efforts to relieve public pressures on private lands. Zoning controls will be the chief means of controlling development and use on adjacent or affected lands. These zoning controls must be reasonable, yet sufficient to ensure a high level of protection to the natural and aesthetic qualities of the designated public resource and adjoining lands. Development of natural river plans shall include a high level of citizen and local government involvement. Local governmental officials, river front property owners and other citizens will be approached at an early stage in an earnest effort to enlist their knowledge and opinion on the river resource and its protection.

In administration of designated natural rivers, great emphasis will be placed on local control of protective zoning ordinances. Local governmental units will be strongly encouraged to adopt and enforce appropriate zoning controls. Every effort shall be made to re-enforce the idea that this is a program to protect a resource of great value to the citizens of the State, not a program to merely prevent development.

Specific Policies

1. State land within the designated area shall be administered and managed in accordance with the plan, and State management of fisheries, streams, waters, wildlife and boating shall take cognizance of the plan. Emphasis will be placed on Department programs which affect designated rivers, in line with the adopted river management plans, including: design, development, relocation or screening of Departmental facilities; acquisition of critical lands to provide recreational facilities, disperse use or relieve trespass on private lands; and implementation of other land, water and resource management programs which serve to protect and enhance the qualities of the natural river area.
2. Where a proposed Departmental use or facility on a designated natural river appears to contravene the purposes and objectives of the natural river designation, the project will be modified to conform to the objectives of the designation and the Natural Rivers Act or will be canceled. If a project is essential to the operation of other programs, but does not conform to the river management plan of a designated river, it must be submitted to the Natural Resources Commission for approval.
3. The Department shall provide technical assistance in drafting, processing and enforcement of local zoning for natural rivers protection.
4. The Department shall, upon request, provide technical advice to local river front property owners as to location and design of structures, management of private lands, planting and management of vegetation, river clean-up, and property tax benefits available under Act 116, Public Acts of 1974, as amended, or other relevant State statutes.
5. Recommended planting materials will be supplied at cost to property owners by the Department on designated natural rivers when available.
6. The Department shall conduct an on-going public information program to explain the values and importance of a natural rivers system, describe the pressures which pose a threat to rivers and to outline steps which river front property owners, local governments, State agencies and others may take to protect this State's outstanding river environments.

Reference

Supported by Commission Action March 9, 1978.

Procedure No. 2703-3.

Appendix C

Log-Sod Covered Docks

LOG-SOD COVER

The log-sod covers must abut the dock to avoid holes. Remember the basic dock frame is built several inches above the normal water level, while the frame of the cover is placed just below the water level. By layering the logs on the frame, the level of each should be about the same.

The log-sod cover is anchored to the bottom by jettling several posts into the stream bottom along the edges of the structure. Whaler logs are fastened to the posts just below the normal water level using 8" to 10" spikes. Green (freshly cut) logs and poles about 6" to 8" in diameter are spiked to the whalers with the bottom row partially submerged into the water so the logs will remain water soaked to prevent decay. A larger log is added to the outer edge and the structure is tapered up the bank by making the cover thicker next to the bank. All logs should be firmly spiked in place. The top of the log-sod cover is then sodded.



