

ICE AGE NATIONAL SCENIC TRAIL CORRIDOR PLAN AND ENVIRONMENTAL
ASSESSMENT FOR KEWAUNEE, MANITOWOC, AND SHEBOYGAN COUNTIES,
WISCONSIN



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December, 2006

PUB-PR-811 06

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Executive Summary – Ice Age National Scenic Trail Corridor Plan For Kewaunee, Manitowoc, and Sheboygan Counties, Wisconsin

The Ice Age National Scenic Trail was conceived as a footpath to showcase the State of Wisconsin's unique glacial landscapes. For this reason, the Lake Michigan Ice Age Trail (LMIAT) will follow the general route covered by Wisconsin's most recent glaciation period, passing through Kewaunee, Manitowoc, and Sheboygan counties. The goals of this Corridor Planning Process are:

- Trail developed in a visually pleasing corridor that includes scenic vistas.
- Trail will highlight glacial features.
- Trail will traverse a variety of glacial features.
- When feasible and appropriate, the trail route will run segments alongside or close to the Lake Michigan shoreline.
- Trail will act as a link to the Wisconsin Maritime Trails System.
- Trail will link to significant resource areas.
- Trail will traverse a variety of ecological landscapes.
- Trail will provide links to local communities.

The landscape within the trail corridor may be generally classified as gently rolling hills advancing towards the bluffs and sandy beaches of the Lake Michigan shoreline. Land cover along the trail is a mixture of croplands, woodlands, meadowlands, wetlands, and coastal areas. Most portions of the trail are rural, though a number of small suburban and urban regions are located along the route. Several unique glacial features such as eskers, drumlins, moraines, and kettle lakes may also be found near the trail route, the largest of which is Lake Michigan. In addition, the trail will traverse numerous riverbed, inland lake, and Lake Michigan shoreline areas, providing trail users with a variety of scenic bluff, waterfall, and shoreline vistas. Development activities along the trail are expected to be minimal and will be limited to the establishment of a trail tread and construction of stream crossings. Because of the narrow width of the trail, these activities are expected to have little environmental impact.

This planning process is a collaborative effort between the Wisconsin Department of Natural Resources (WDNR), the National Park Service (NPS), the Bay Lake Regional Planning Commission, and the Ice Age Park and Trail Foundation (IAPTF). Together, these partners have worked to develop a trail corridor that will pass through state wildlife areas, a state natural area, fishery lands, a state forest, 8 cities, 21 villages, and 23 townships. In addition, the Kewaunee River section of the Ahnapee Trail will be used as part of this corridor. Other partners in the trail development process have included numerous smaller park areas adjacent to the Ice Age Trail. These areas provide amenities such as playgrounds, picnic areas, shelters, toilet facilities, drinking fountains, and camping areas available to users of the Ice Age Trail. County parks along the trail corridor will offer trail users additional recreational resources and access to a broad range of environments and outdoor opportunities. There are 5.3 miles of existing Ice Age Trail in

the trail corridor. This plan recommends establishing up to an additional 125 miles of trail. Major highlights within the trail corridor are presented below by county:

Sheboygan County

The trail corridor within Sheboygan County will be about 9.5 miles in length. This corridor includes the Village of Elkhart Lake and the unincorporated community of Crystal Lake and passes through a variety of habitats such as woodlands and meadows. Outstanding geological features in the area include the Sheboygan Marsh and a series of drumlins, eskers, and moraines. This plan recommends using 822 acres of state-owned lands within the corridor as part of the trail.

Manitowoc County

The corridor within Manitowoc County is approximately 65 miles in length and includes the cities of Manitowoc and Two Rivers, as well as the villages of St. Nazianz and Valders.

The establishment of the trail within the City of Manitowoc will include connections to the Wisconsin Maritime Museum, which contains the World War II submarine USS COBIA. The plan also recommends that the Mariners Trail, a 12-mile path along Lake Michigan, be incorporated into the Lake Michigan Ice Age Trail. Mariners Trail connects to the City of Two Rivers, which houses the Hamilton Wood Type and Printing Museum, the Two Rivers History Museum, the Historic Washington House, and the Rogers Street Fishing Village.

County parks in Manitowoc County include Walla Hi County Park, which offers a scenic kettle moraine landscape and a variety of facilities such as picnic areas, grills, and toilets. Lower Cato Falls Park in the Town of Cato provides a range of amenities for parking, picnicking, and fishing, as well as several natural amenities such as a scenic gorge, wooded hills, rock outcroppings, and a waterfall.

Several state-owned areas also provide recreational opportunities within Manitowoc County. Vanderbloemen Bog State Natural Area offers an undisturbed bog transitioning to a hardwood swamp as well as a quaking bog without open water. Plant species in the area include characteristic bog species such as pitcher plants, sundews, moccasin flowers, and cranberries. Woodland Dunes State Natural Area features a landscape of marshland, swamps, sandy fields, meadows, wooded ridges, and lake dunes. Located in a "tension zone" between two distinct areas of natural growth, the site features both northern and southern species of plants and birds and serves as a haven for many wildlife species. Point Beach State Forest features an interpretive center as well as six miles of Lake Michigan shoreline with dunes, a lighthouse, camping, and several hiking, biking, skiing, nature, and snowmobile trails. Wilderness Ridge, a designated State Natural Area located within the larger Point Beach State Forest, is a T-shaped area that

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features a cross section of Glacial Lake Nipissing-aged beach ridges. In total, 2793 acres of state-owned lands may be utilized within the trail corridor in Manitowoc County.

Kewaunee County

The corridor within Kewaunee County is about 47.5 miles in length and includes the cities of Kewaunee and Algoma.

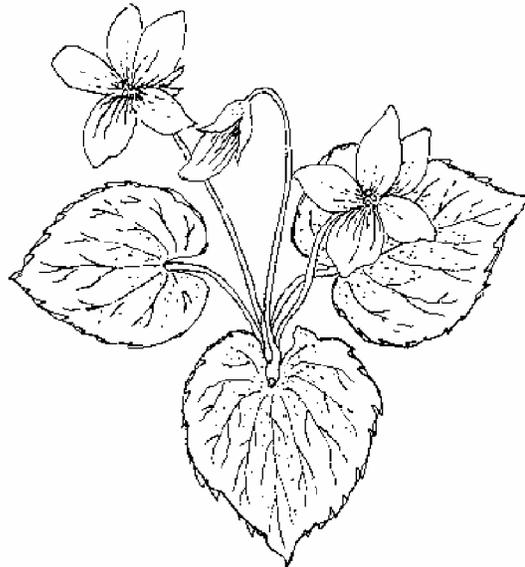
This Master Plan recommends incorporating the Kewaunee River section of the Ahnapee State Trail to connect with Bruemmer County Park, a 76-acre recreation site located about one mile west of the City of Kewaunee. This park offers a variety of amenities such as picnic areas, playground equipment, trails, and a small zoo. Nearby Winter Park Ski Area contains a tubing hill, mountain bike trails, and a ski chalet. In the City of Kewaunee, Harbor Park is a popular location for shore fishing, harbor viewing, picnicking, and walking along the Kewaunee River. Selner Park, also in Kewaunee, offers picnicking areas, a playground, and a pathway to a Lake Michigan beach. In addition, 2,206 acres of state-owned lands may be utilized within the trail corridor in Kewaunee County.

Trail connections to the City of Algoma will be made through a combination of private and public lands. Once in Algoma, the trail will connect to a portion of the Ahnapee Trail that connects to the City of Sturgeon Bay.

Partnerships in Trail Development

Estimated costs for acquisition and development within the three counties of the trail corridor are estimated at just under \$5.4 million. In actuality, these costs may be less depending upon the amount of easements, gifts, and donations that may be gathered during the trail construction process.

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Chapter One – Purpose, Significance, and Need for Action for the Ice Age National Scenic Trail through Kewaunee, Manitowoc, and Sheboygan Counties

The mission of the National Park Service, Wisconsin Department of Natural Resources, and the Ice Age Park and Trail Foundation is to acquire, develop, operate, maintain, and protect, through public and private partnerships, the Ice Age National Scenic Trail. This trail runs approximately 1,200 miles from Potawatomi State Park in Door County to Interstate State Park in Polk County, and generally follows the terminal moraine and other significant glacial landscape features (see Map 1-1 Statewide Ice Age National Scenic Trail). As a component of the National Trails System, the trail will provide enjoyment to citizens of the nation for generations to come and will also protect valuable landscapes.

Purpose Statement

The purpose of the Ice Age National Scenic Trail is:

- To establish a trail within scenic areas of the nation that will provide increased outdoor recreation opportunities and promote the preservation of, public access to, travel within, and enjoyment and appreciation of the nation’s scenic and historic resources.
- To provide for maximum outdoor recreation potential while conserving the nationally significant scenic, historic, natural, and cultural resources through which the trail passes.
- To provide a superlative hiking facility and experience while preserving the landscape through which the trail passes.
- To encourage and assist volunteer citizen involvement in the planning, development, maintenance, and management of the trail wherever appropriate.

Significance Statement

The Ice Age National Scenic Trail preserves and protects outstanding landscapes and landscape features resulting from continental glaciation. Nowhere are the features of glaciation upon the land more impressive than in Wisconsin. The state’s role in the history of continental glaciation is so prominent that the most recent series of glacial advances and retreats (about 100,000 – 10,000 years ago) is called the Wisconsin Glaciation. The Wisconsin landscape that exhibits the marks of the glacier’s furthest advance is a showplace of moraines, kames, drumlins, erratics, kettle lakes, potholes, eskers, marshes, meltwater channels, gorges, ice-walled lake plains, outwash plains, and glacial lake beds. Another important feature is the windblown silt called

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loess. Loess, which forms the topsoil across much of Wisconsin, is the foundation for the rich agricultural soils found throughout much of the state and the Midwest.

The Ice Age National Scenic Trail links together six of the nine units of the Ice Age National Scientific Reserve. These reserve units contain outstanding examples of glacial landforms and serve as major sites for interpretation of the state's glacial history. The Ice Age NST also connects different recreational management units into a seamless recreation experience and provides for the continuous protection of ecological landscapes.

The Ice Age National Scenic Trail provides an opportunity to explore the glacial landscape from a walker's perspective. The trail's secluded, yet easily accessible location will provide users with an escape from the hectic routine of everyday life, offering a space for recreation, education, inspiration, solitude, and relaxation. It will provide opportunities for both the casual walker and the more experienced hiker looking to travel its entire length.

Need Statement

When Congress amended the National Trails System Act in 1980, it authorized the establishment of the Ice Age Trail as a National Scenic Trail (NST), but designated only a general route for the trail. As stated in this amendment:

“Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the National Trails System Act (82 Stat. 919; 16 U.S.C. 1241), as amended, is further amended as follows: (a)Section 5 (a) is amended by adding the following new paragraph at the end thereof:

(10) The Ice Age National Scenic Trail, a trail of approximately one thousand miles, extending from Door County, Wisconsin, to Interstate Park in Saint Croix County [should have read “Polk County”], Wisconsin, generally following the route described in ‘On the Trail of the Ice Age – A Hiker’s and Biker’s Guide to Wisconsin’s Ice Age National Scientific Reserve and Trail,’ by Henry S. Reuss, Member of Congress, dated 1980.”

This general route for the trail was then incorporated into the 1983 “Comprehensive Plan for Management and Use of the Ice Age National Scenic Trail” (the Comprehensive Plan). The maps in the plan frequently identify roads as “connecting road segment to NST” where there was no actual “trail” in existence and no specific idea where an off-road trail could be established in the future. These alignments were also displayed on planning maps even though it was known that the road routes depicted could not serve as the route for the Ice Age NST over the long-term. The 1983 Comprehensive Plan states that the Ice Age NST “should be a continuous overland (off-road) trail.” Planning work to identify future trail alignment was identified as a priority action on page 50 of the Comprehensive Plan:

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“Detailed planning for the location and construction of new trail segments needed to make the Ice Age NST a continuous off-road trail as identified in this plan should begin as soon as possible as a cooperative effort between the Ice Age Trail Council, Wisconsin Department of Natural Resources, and the National Park Service.”

Efforts to establish the Trail within this planning corridor have been sporadic because of the lack of clearly defined geologic features and other barriers such as changing land uses, development pressures, and the lack of coordinated efforts between governmental units and nonprofit groups. Because of these issues, there is a need for a professional analysis to produce a route specifically adapted to modern barriers.

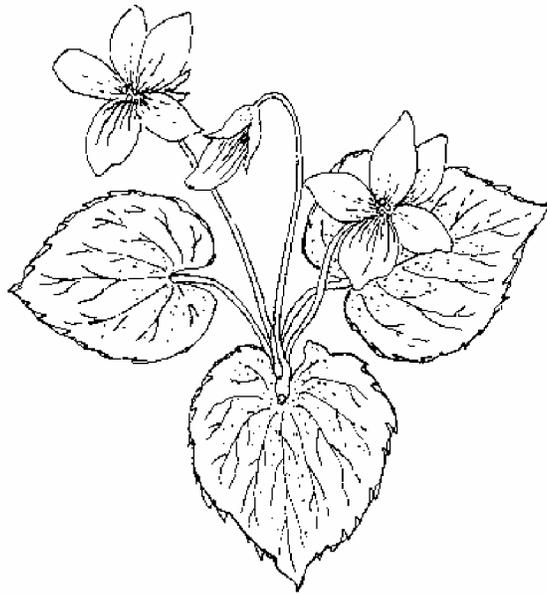
In light of this recommendation, this Master Plan for the development of the Ice Age NST will evaluate potential corridors for the development of an overland route through Sheboygan, Manitowoc, and Kewaunee counties. A desirable location for the trail will meet the following objectives:

- Traverse a variety of glacial features that are located in a visually pleasing corridor.
- Provide for a diverse user experience by incorporating a variety of plant communities, terrain, and open and enclosed spaces (forests, savannas, prairies, etc.).
- Provide vistas to broader landscapes for scenic and interpretive purposes.
- Link and protect significant geologic, biologic, and archeological sites.
- Link to other significant natural resource areas.
- Connect or provide linkages to communities for user support purposes.
- If possible, use publicly owned land for trail development and support facilities.

In addition, the Lake Michigan Ice Age Trail Core Team added several goals:

- Trail will be developed in visually pleasing corridor that includes scenic vistas.
- Trail will provide access to the Lake Michigan shoreline where possible.
- Trail will offer links to the Wisconsin Maritime Trails System.
- Trail will link significant resource areas.

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Chapter Two – Background and History of Ice Age Trail Corridor Planning in Kewaunee, Manitowoc, and Sheboygan Counties

During the 1970s, the Ice Age Trail Council formed a series of local chapters along the length of the projected route of the Ice Age Trail. Chapter members worked closely with local landowners, receiving permission to mark, construct, and maintain trail across private lands. Though diligent, these early efforts to establish the Ice Age Trail (then called the Glacial Trail) beyond the Northern Unit of the Kettle Moraine State Forest led to limited trail construction. Trail development that did occur followed the moraines of the most recent Wisconsin Glaciation in an attempt to implement what was understood to be Ray Zillmer's (founder of the Ice Age Park and Trail Foundation) concept for the trail location.

In Sheboygan County, trail development occurred within the Northern Unit of the Kettle Moraine State Forest from the 1970s through the late 1980s. Walt Adam, Kettle Moraine's superintendent at the time, and Norm Huth, a park volunteer, oversaw trail building efforts from Greenbush to Glenbeulah. Trail construction and maintenance was accomplished primarily by the Kettle Moraine Youth Group, a CCC-styled work crew. In the early 1990s, Sheboygan-based volunteer groups were reorganized into the current system of county-based volunteer chapters. These chapters continued to develop and maintain trail segments and began to promote trail and hiking events, encouraging other local citizens to become involved in the development and maintenance of the trail. More recently, Sheboygan's volunteer chapter has participated in trail enhancement projects along the trail's route through the Northern Unit of the Kettle Moraine State Forest. While state forest personnel continue to handle trail maintenance, the chapter has taken over responsibility for trail signage, trail interpretation on informational kiosks, and trailhead displays.

Following the multi-county volunteer chapter approach of the 1970s, a local chapter of volunteers in Manitowoc County began to foster landowner relations and develop and maintain segments of trail. In particular, the group designed a road route between Elkhart Lake and Mishicot and initiated off-road trail efforts between Mishicot and Tisch Mills. Although the trail fell into disrepair in the late 1990s, a new set of officers and volunteers have reestablished trail in the Mishicot area on Princl Road to Rockledge Road and west of Tisch Mills on the IAPTF-owned Weber's Woods property.

Prior to 1980, segments of the Ice Age NST in Kewaunee County were designed to follow existing snowmobile trails. Because much of the trail crossed wet or marshy areas, this alignment led to unusable trail in summer months. Trail development has been slow in this county, a reflection of the region's difficult terrain, trail design issues, and a shortage of continued volunteer help.

There is no distinct ridge traversing all three counties of the Lake Michigan Ice Age Trail corridor. Lacking this guiding landscape element, trail segments constructed prior to the development of this Master Plan meandered across the landscape with no set alignment. Several areas of public land, including the LaBudde Creek Wildlife Area, Point Beach State Forest,

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Besadny Wildlife Area, the Ahnapee State Trail, Mariners Trail, and several segments providing connections to Lake Michigan shoreline, have served and will continue to serve as anchor points for construction of the Ice Age NST. The eventual trail route established between these public land holdings will depend on the cooperation of many landowners. Several residents have hosted the Ice Age Trail across their land continuously since the early 1970s, a testament to their public-spiritedness, the gentle persuasion of local trail chapters, and the power of an intriguing idea.

In 2000, the WDNR released the 2000-2005 Wisconsin Statewide Outdoor Recreation Plan (SCORP). The plan identified participation rates for a broad range of available outdoor recreation activities. It found that 6 of the highest 11 levels of participation were for activities compatible or typically associated with trails. These included walking for pleasure, wildlife viewing, picnicking, hiking, nature study or bird watching, and nature photography. These findings underscore earlier SCORPs, which have indicated that hiking trails were a high priority need in the WDNR's Lake Michigan (now Northeast) District, which includes Kewaunee, Manitowoc, and Sheboygan counties. The Ice Age National Scenic Trail will make a significant contribution to fulfilling this recreational need in the Northeast Region.

Chapter Three – Description of Corridor Planning Alternatives and Preferred Action

The purpose of preparing this Corridor Plan and Environmental Assessment is to carry out the Secretary's responsibility in section 7(a)(2) of the National Trails System Act [16 U.S.C. 1246(a)(2)] to "select the rights of way for [the Ice Age] National Scenic [Trail] ..." The act goes on to specify that:

"In selecting the rights of way full consideration shall be given to minimizing the adverse effects upon the adjacent landowner or user and his operation. Development and management of each segment of the National Trails System shall be designed to harmonize with and complement any established multiple-use plans for the specific area in order to ensure continued maximum benefits from the land... In selecting rights-of-way for trail purposes, the Secretary shall obtain the advice and assistance of the states, local governments, private organizations, and landowners and land users concerned."

The Corridor Planning Process for the LMIAT began in the fall of 2002 with a meeting of representatives from the National Park Service, the Wisconsin Department of Natural Resources, the Bay-Lake Regional Planning Commission, and staff from the Ice Age Park and Trail Foundation. This group, better known as the "Core Team" was formed to oversee the planning process. Their task was to provide input to the NPS on conceptual ideas for a corridor and possible route options for the Ice Age Trail, then shepherd these ideas through a public review process. The Core Team hosted 12 public open houses to gather input on possible trail corridors and collect landowner comments.

The "Comprehensive Plan for Management and Use of the Ice Age National Scenic Trail," completed in 1983, provides general guidance on where to locate the trail, stating that the trail shall follow the terminal moraine or glacial features left by the last glacial advance. To determine a more specific location for the trail, three important elements are identified. These elements are: the "Corridor of Opportunity," "Trailway," and "Trail." (Also see *Corridor of Opportunity*, *Trailway* and *Trail* in Definition of Terms at the end of this document.)

The "Corridor of Opportunity" is the largest of these elements. It is defined by locating clusters of outstanding, interpretable glacial and biological features, public lands, and areas of continuous scenic beauty. Once mapped, the arrangements of these features typically reveal a general, natural alignment for the trail. The width of the corridor is usually on a landscape scale of three to five miles, although in the case of large or significant features it may be wider. The corridor includes areas of visual beauty and historic importance, as well as areas to be preserved for environmental protection. The large width of the corridor allows flexibility in working with landowners, a necessity given that participation in the project is voluntary.

The Corridor of Opportunity is the area within which the WDNR may acquire lands for the "Trailway" and provide stewardship grants to others to acquire lands for the "Trail." The corridor also defines the area within which federal involvement in land protection and

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acquisition for the Ice Age NST may occur, should Congress provide such authority in the future. Lastly, the corridor provides focus and direction to the trail's land protection program and partnerships.

Two other elements, the "Trailway" and "Trail," are smaller units located within the corridor. The "Trailway" is the width or area of land that is managed for the purpose of the Ice Age NST. It includes the "Trail" and surrounding lands that are owned, leased, or managed as part of the Ice Age NST. These management purposes may include, but are not limited to: creating a buffer to separate the trail from adjoining land ownerships and uses, and protecting scenic or significant geologic features or plant communities.

The "Trail" is the actual usable tread and surrounding space that is maintained for the purpose of passage along the trail route. Trail width may vary from 24 – 72 inches, depending on each segment's Recreation Opportunity Spectrum (ROS) classification (urban, rural/roaded natural, or semi-primitive). A majority of the Ice Age NST to be located in the LMIAT is located in either a rural/roaded natural or an urban setting and will average 24 – 30 inches in width. Like the Corridor of Opportunity, the location of the Trailway and Trail are dependent on the participation of willing landowners.

The primary purpose of the Corridor Planning Process is to identify a wide corridor within which the trail will be located. The objectives of the process are to: define a boundary within which federal and state monies may be used to acquire lands for the trail; to design possible route locations for the trail within those boundaries; and to fulfill federal and state environmental requirements by moving the proposed plan through a public review and complying with the Endangered Species Act and Historic Preservation Act. Of the 30 Wisconsin counties the Ice Age NST passes through, Kewaunee, Manitowoc, and Sheboygan counties are the 8th, 9th and 10th counties to undergo this planning process.

Descriptions of alternative strategies for establishing the Ice Age NST are presented below. Alternative Two, the "Preferred" alternative, describes a corridor that will connect existing Ice Age Trail sections in the Northern Unit of the Kettle Moraine State Forest to the Ice Age Trail/Ahnapee State Trail in Algoma. A "No-Action" alternative is also evaluated. Several other alternatives were also considered, but rejected.

The design of the Ice Age NST Corridor of Opportunity is based on a number of factors. These factors are: general adherence to glacial features left by the Wisconsin advance, linkage to public lands for support facilities and interpretive opportunities, provision of a varied and scenic hiking experience, preservation of significant natural features, and reasonable directness of route. Trail establishment will be best accomplished by federal, state, and private partners working in specifically delineated, authorized areas of trail development.

Alternative One: “No-Action” Alternative

Under the “No-Action” alternative, no Corridor of Opportunity would be developed to more specifically identify the route of the Ice Age NST. The Secretary of the Interior’s responsibility under the National Trails System Act to select a specific route for the trail would not be carried out. The various federal, state, local, and private partners working to establish the trail would continue to be guided only by the “general route” referenced in the National Trails System Act.

Under this alternative, any activities to acquire lands for the trail would be done without a professional analysis of the best route for the trail or the environmental impacts of trail construction. Because governmental involvement in the project requires environmental analysis, the No-Action alternative would restrict the involvement of governmental partners. This alternative would also prohibit the participation of local units of government and private citizens in determining the best route for the trail, thereby preventing Ice Age NST trail planning from being incorporated into local planning documents. Trail development, management, and operation would continue as in the past. The WDNR would continue to provide trail segments on lands that it manages. Trail built on private land would continue to be vulnerable to loss by development pressures. Trail development would be slow and haphazard, the lack of oversight resulting in a trail with an unclear and precarious future.

Alternatives Considered but Eliminated

When the Corridor Planning Process was first initiated for the LMIAT in Kewaunee, Manitowoc, and Sheboygan counties, the Core Team evaluated several areas for potential corridor locations. These possible Corridors of Opportunity, discussed below, were later dropped from consideration.

- A connection to the City of Sheboygan along the Plank Road Trail paralleling State Highway 23. This possible Corridor of Opportunity was dropped from consideration due to the lack of diversity of the landscape along the trail and the challenges posed by trying to establish a connection to the trail in Manitowoc County
- A possible Corridor of Opportunity following roads through Manitowoc County. This corridor was dropped because the Ice Age NST is an off-road footpath
- A possible Corridor of Opportunity along Lake Michigan from Point Beach State Forest to the City of Kewaunee. This possible corridor was dropped due to security concerns with developing a trail that would bypass two nuclear power plants. Though this corridor included Two Creek Buried Forest, the Core Team felt that development of the site would need to include information explaining the presence of the power plants.

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- A Corridor of Opportunity from Valders north to Maribel and Mishicot. Development of a trail along this corridor would preclude a connection to Lake Michigan and Point Beach State Forest.
- A Corridor of Opportunity from Mishicot to Maribel Caves was not felt to be viable because of the difficulty in identifying public lands that connected to the caves. This corridor was also far removed from a trail connection to Kewaunee County.
- A Corridor of Opportunity in Kewaunee County along Lake Michigan to the City of Kewaunee was dropped due to a lack of diversity in the landscape and a lack of public lands available for trail development.
- A Corridor of Opportunity along the Ahnapee Trail from Casco Junction east to Algoma in Kewaunee County was dropped due to a lack of diversity in the landscape along the trail and the need to create a connection from the City of Kewaunee to Casco Junction.

Alternative Two: “Preferred” Alternative

The NPS and the WDNR will establish a planned and mapped Corridor of Opportunity within which lands for the Lake Michigan Ice Age Trail may be acquired, developed, managed, and protected for the Kewaunee, Manitowoc, and Sheboygan County portions of the Ice Age NST.

This is the “Preferred” alternative. This alternative fulfills the purpose and need of the Ice Age NST, and is based on an evaluation of the geological and biological features of Kewaunee, Manitowoc, and Sheboygan counties, as well as the field work of representatives of the Core Team. Under this proposal, a Corridor of Opportunity approximately three to five miles in width will extend from the existing Ice Age Trail sections in the Northern Unit of the Kettle Moraine State Forest in northwestern Sheboygan County and continue northeasterly through Manitowoc County to the Ice Age Trail/Ahnapee State Trail in the City of Algoma in Kewaunee County. This alignment has been identified as a viable route for the Ice Age NST and has been approved from both state and federal authorities. Within this corridor, a trailway of approximately 200-1000 feet or more in width will be acquired for Ice Age NST purposes. In certain areas, a larger trailway may be accommodated to incorporate locally significant features.

The established corridor will define areas for land purchase using private, state, or federal funds, and will serve as advisory information for town and county land use planning.

Location and Description of Lake Michigan Ice Age Trail Corridor in Kewaunee, Manitowoc, and Sheboygan Counties

The Lake Michigan Ice Age Trail's corridor ranges in width from three to five miles and is located in the eastern part of the state in Kewaunee, Manitowoc, and Sheboygan counties (see Map 3-1 Corridor for the Ice Age National Scenic Trail – Kewaunee, Manitowoc, and Sheboygan counties). The trail corridor extends from the Kettle Moraine area of northwestern Sheboygan County to the Ahnapee Trail in northeastern Kewaunee County.

The overall landscape of Kewaunee and Manitowoc counties is defined by the Ahnapee River, Kewaunee River, Manitowoc River, East Twin River, and West Twin River. Valleys formed by glacial meltwater run generally west/northwest to east across these counties and offer striking views of the landscape. Most glacial features in the region are found in wooded, western portions, areas that also contain most of the region's lakes and rivers.

Landcover in the corridor is primarily farmland interspersed with woodlands and scattered residential development. Corn, soybeans, and grain are primary crops in these areas.

Although the trail corridor is largely rural, the cities of Manitowoc, Two Rivers, Kewaunee, and Algoma are areas of concentrated development. Manitowoc, the county seat of Manitowoc County, is the largest community along the corridor with a population of 34,727. The cities of Two Rivers (population 12,585), Algoma (population 3,363), and Kewaunee (population 2,901), and the villages of Elkhart Lake (population 1,073), St. Nazianz (population 742), Valders (population 993), and Mishicot (population 1,450) are also located within the corridor. Many area residents commute to urban centers in Brown, Manitowoc, and Sheboygan counties for employment.

The following is a general description of the corridor beginning at its south end in the Town of Plymouth in Sheboygan County. The possible trail route options discussed in this section were created within a corridor of potential railway and do not necessarily represent the location of the final trail. Trail may be developed anywhere within the Corridor of Opportunity designated in this document. Corridor boundaries tend to follow roads, section lines, and property lines.

Towns of Plymouth and Rhine, Village of Elkhart Lake, Sheboygan County

The trail corridor begins in northern Sheboygan County in the Town of Plymouth. This location is 0.5 miles east of the Village of Glenbeulah at the point where the existing Ice Age Trail ends (County Highway P at the northern end of the Northern Unit of the Kettle Moraine State Forest). The corridor continues north to the Town of Plymouth, the Village of Elkhart Lake, and the Town of Rhine to the Sheboygan/Manitowoc County line.

An existing trailhead at the northern end of the Northern Unit of the Kettle Moraine State Forest offers parking for trail users adjacent to County Highway P. The corridor follows a series of drumlins, eskers, and moraines trending to the northeast from the trailhead just east of the

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Village of Glenbeulah. Glacial deposits in the area are predominantly sandy, loamy till and outwash sand and gravel. The Camp Evelyn Girl Scout facility is approximately 1.5 miles east of Glenbeulah near the intersection of Camp Evelyn Road and County Highway C. This facility is located on 240 acres along the Mullet River and offers camping and other facilities.

Located to the north and east of Glenbeulah, Road America is a four-mile, permanent road racing course on 626 acres of land south of the Village of Elkhart Lake and adjacent to State Highway 67. The track was listed on the National Register of Historic Places on February 17, 2006 and offers both an opportunity and a challenge for users of the Ice Age NST. The site generates a significant amount of traffic during the road-racing season and as such may detract from the experience of trail users. The course, however, also offers several amenities and a unique cultural experience to users of the trail.

Heading north, the corridor passes between Elkhart and Crystal Lakes into the Village of Elkhart Lake. Public access to the lake is provided by a trail circling a majority of the lake. The Village of Elkhart Lake is a year-round tourist community with a wide variety of restaurants and lodging facilities. Traveling east from the village, State Highway 67 is a major north-south highway that bisects the village, slowing traffic and offering one of the best opportunities for the trail to cross the highway.

Traveling east from the village, the corridor will enter the LaBudde Creek Wildlife Area and head northeast through the area. The trail corridor will then continue west of the unincorporated community of Rhine Center, then north to the Sheboygan/Manitowoc County line and a crossing of the Sheboygan River. The Sheboygan River parallels the corridor to the east and north, posing a major challenge to trail development.

Broughton Sheboygan Marsh Park is approximately one mile north and west of the Village of Elkhart Lake and offers side trail opportunities for Ice Age Trail users to make use of developed facilities including campsites, showers, a playground, picnic areas, canoe and boat rentals, a launch ramp, and fishing piers.

Map 3-2 illustrates the Corridor of Opportunity through the towns of Plymouth and Rhine and the Village of Elkhart Lake

More than 1,900 landowners live in this section of the Corridor of Opportunity, including those located in Elkhart Lake. Landowners in the area have expressed generally positive attitudes toward trail development. The owners of the Quit-Qui-Oc Golf course and the Village of Elkhart Lake have also expressed interest in hosting portions of the Ice Age NST.

Towns of Meeme and Schleswig, Manitowoc County

This portion of the Corridor of Opportunity covers an area from the Sheboygan/Manitowoc County line north and east through the towns of Schleswig and Meeme in southwestern Manitowoc County. The trail corridor skirts the eastern edge of the Valders Lobe in the

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southwestern portion of Manitowoc County. The area is covered with Gray Woodfordian Drift, which has been also described as Valderan Drift, and is highlighted by end moraines.

The corridor will follow Rhine Road out of Sheboygan County, paralleling Lax Chapel Road in Manitowoc County. The corridor will then cross the Sheboygan River on the State Highway 32/57 bridge where it intersects with Lax Chapel Road just west of the unincorporated community of Millhome. At this point, the trail corridor will proceed to Cedar Lake, continue northeast to Horseshoe Lake, then north to School Hill. The corridor will then head north around School Hill to Point Creek Road and travel north past Spring Lake to County Highway F, which delineates the northern border of the Town of Meeme.

The trail corridor will travel through Walla Hi County Park, a 160-acre county park in the Town of Schleswig, about four miles east of the City of Kiel. The park offers a scenic kettle moraine landscape and a variety of different habitats within its boundaries. A small spring-fed pond, several small streams, and an abandoned fish hatchery provide ample opportunities for fishing. Grassland and forest habitats throughout the park make hiking, cross-country skiing, and picnicking popular activities. Though camping and campfires are prohibited, the park does provide a number of facilities including excellent family picnic areas, grills, picnic tables, playground equipment, and toilet facilities.

The trail will also pass Cedar Lake. Access to the lake was developed by Manitowoc County in the early 1980s. Because of the steep slope to the water's edge, the access road and launching area were blacktopped shortly after development. A one-acre parking lot has been developed southwest of the access point on land provided by the Kiel Fish and Game Association across Rockville Road. This access point also offers a picnic area near the parking lot, a port-a-pier for easier access to the lake, and a toilet building. Cub Scout World, Camp Rokilio, a 213-acre facility located on the north side of Cedar Lake, may offer camping facilities for Ice Age NST users.

The trail corridor will then travel east from Cedar Lake to Horseshoe Lake Park, an 8.5-acre park maintained by Manitowoc County. The park boasts an attractive picnic area with grills, tables, and playground equipment on the hillside northwest of the parking lot. A picnic area with a grill, small shelter, and toilet are located near the parking lot on the lower level. Lake access is provided by a pier, which is used for both launching and fishing. From Horseshoe Lake, the trail will pass around a large wetland complex and travel to Spring Lake in the Town of Meeme just north of Point Creek Road on County Highway M.

Map 3-3 illustrates the Corridor of Opportunity through the towns of Meeme and Schleswig.

There are approximately 681 landowners in Schleswig and 631 in Meeme who live within the Corridor of Opportunity. Landowner attitudes have generally been positive towards trail development. From public responses received via mailed letters, e-mail, and participation in public open houses, five landowners have indicated an interest in trail development, five were not sure, and one was not interested. A system of trails is being developed just to the west in the City of Kiel, offering a possible trail connection to the Ice Age NST.

Town of Liberty, Villages of St. Nazianz and Valders, Manitowoc County

This section of the trail corridor covers an area in Manitowoc County through the Town of Liberty and the villages of Valders and St. Nazianz. The trail corridor skirts the eastern edge of the Valders Lobe through Liberty. This portion of Manitowoc County is covered with Valderan Drift composed of clayey till and sandy loamy till. Glacial features in the area are predominantly ground and end moraines that have historically been used for gravel mining.

Pigeon Lake offers two potential facilities for Ice Age NST users. Camp Sinawa Nature and Recreational Area is located on Sinawa Road adjacent to Pigeon Lake and offers toilets and campsites. Public facilities at Pigeon Lake include a toilet building, parking space for ten car/trailer units, a concrete boat ramp, and outdoor lighting.

The Village of St. Nazianz offers commercial support facilities and recreational opportunities at Oschwald Park. This park features a softball field, tennis court, volleyball courts, restrooms, playground equipment, two shelters, and several grills.

The Village of Valders offers a number of commercial facilities and is one of the best spots for crossing US Highway 151 in Manitowoc County. The village also has two parks. Valders Memorial Park has shelters, softball diamonds, tennis courts, playground, and picnic facilities. Melody Lane Mini Park has playground and picnic facilities. Other facilities in the village include the Valders Community Center, Valders School Library located within the Valders High School, and the Valders Swimming Pool also located within the high school. All of these facilities are open to the public.

Vanderbloemen Bog State Natural Area is located just east and south of St. Nazianz along Marken Road. The bog lies within the end moraine of the Valders stage of the Wisconsin Glaciation and contains an undisturbed open bog with successional patterns to hardwood swamp and a quaking bog without open water. Typical bog species found here include pitcher plants, sundews, moccasin flowers, and cranberries. Surrounding the open bog is a fringe of tamarack, black spruce, and white pine. The outer edge of the area is wooded with white birch, red maple, and black ash. Several smaller areas with different vegetational patterns give the site a heterogeneous aspect. Nesting birds found here include wood thrush, veery, crested flycatcher, ovenbird, northern oriole, and goldfinch. Vanderbloemen Bog is owned by Silver Lake College and was designated a State Natural Area in 1966.

Map 3-4 illustrates the Corridor of Opportunity through the Town of Liberty, and the villages of Valders and St. Nazianz.

More than 1,555 landowners in the Town of Liberty live within the Corridor of Opportunity. There are no private landowners in the villages of St. Nazianz or Valders who live within the corridor. Landowners in the area have generally expressed positive support for trail development. From public responses received via mailed letters, e-mail, and participation in public open

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houses, six landowners have indicated an interest in trail development, one was not sure, and one was not interested.

Town of Cato, Manitowoc County

This section of the trail corridor covers an area in Manitowoc County from the Village of Valders north and east through the Town of Cato. The trail corridor follows an area of glacial outwash sand and gravel. Glacial features in the area are predominantly ground and end moraines of clayey till.

Lower Cato Falls is a major county park centrally located within Manitowoc County, approximately eight miles west of the City of Manitowoc on County Trunk Highway JJ. The park offers a possible trailhead with a full range of facilities for parking, picnicking, fishing, and restrooms. The park covers 84 acres and is divided into two distinct landscape areas: an upland area on which most of the development has occurred, and a lower area along the river, which will generally remain in its natural state. The park is very scenic with wooded hills, rock outcroppings, and a wide variety of trees and vegetative cover. The Manitowoc River, which forms the northern boundary of the park, flows through a narrow gorge with unique rock formations and a waterfall area. Park visitors have an impressive panoramic view of the river from various scenic overlooks located within the park.

Facilities in Lower Cato Falls Park include grills, picnic tables, toilets, and playground equipment. Two wooden staircases leading from the top of the bluff to the river were constructed to provide greater ease in negotiating the steep slopes of the river bank. The recent removal of the dam at Manitowoc Rapids has facilitated the management of Manitowoc River as a rainbow trout fishery. Lower Cato Falls offers approximately 2,040 feet of river frontage

The main stem of the Manitowoc River in the Town of Cato is formed by the confluence of the north and south branches of the Manitowoc River as it flows east to Lake Michigan. The river is one of several in the Lake Michigan Ice Age Trail project area that was formed by glacial meltwater.

Map 3-5 illustrates the Corridor of Opportunity through the Town of Cato.

There are 734 landowners in the Town of Cato who live within the Corridor of Opportunity. From public responses received via mailed letters, e-mail, and participation in public open houses, four landowners have indicated an interest in trail development, six were not interested, and one was not sure.

Town of Manitowoc Rapids, City of Manitowoc, Manitowoc County

This segment of the Corridor of Opportunity covers an area of central Manitowoc County through the Town of Manitowoc Rapids and into the City of Manitowoc. The trail corridor follows an area of glacial outwash sand and gravel. Glacial features in the area are predominantly

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ground moraines of clayey till. The main stem of the Manitowoc River flows east through the town and into the City of Manitowoc before entering Lake Michigan.

Pinecrest Historical Village, a 60-acre outdoor interpretive museum of local history featuring 25 historic buildings with period furnishings, offers many opportunities to users of the Ice Age NST. A self-guided nature trail on the site winds past native trees and shrubs, while interpretive signs provide information on the area's glacial origins, vegetation, and early settlement.

Camp Vits in the City of Manitowoc contains 82 acres of undeveloped land along the Manitowoc River. Bluffs, ravines, and wildlife areas are all found within the park's boundaries. The park hosts many nature-based activities such as tree and plant identification, water science, and other passive pursuits.

Map 3-6 illustrates the Corridor of Opportunity through the Town of Manitowoc Rapids and the City of Manitowoc.

Over 970 landowners in the Town of Manitowoc Rapids are located within the Corridor of Opportunity. Although landowner attitudes have been somewhat mixed, Pinecrest Historical Village has expressed interest in a potential trail linkage.

Cities of Manitowoc and Two Rivers, Manitowoc County

This segment of the trail corridor is urban and runs through the cities of Manitowoc and Two Rivers. The corridor begins at the western edge of the City of Manitowoc and runs east along the Manitowoc River to Lake Michigan. The corridor then heads north along the lake into the City of Two Rivers and ends at the southern end of Point Beach State Forest. Predominant glacial features in the area are the Manitowoc River valley and Lake Michigan. The Manitowoc River, East Twin River, and West Twin River all flow east through the cities of Manitowoc and Two Rivers before entering Lake Michigan. These rivers were formed by glacial meltwater from Glacial Lake Oshkosh.

In consultation with the cities of Manitowoc and Two Rivers, The trail corridor will travel through the City of Manitowoc and will follow the north side of the Manitowoc River, crossing the river at a bridge from Manitou Park to Henry Schuette Park. The trail will then follow the south bank of the Manitowoc River to the 18th Street bridge and proceed to follow 18th Street north to Michigan Avenue, east to Water Street, and south to Maritime Drive. The trail corridor will then follow Maritime Drive past the Wisconsin Maritime Museum to Lake Michigan, where it will intersect with the Mariners Trail. The Mariners Trail/Ice Age Trail will then follow the lake into the City of Two Rivers. After entering Two Rivers, the trail corridor will cross State Highway 42/Maritime Drive at Taylor Street and head north into Woodland Dunes Nature Center. The trail will then continue east along trails through Woodland Dunes, exit into the City of Two Rivers on Columbus Street, and turn east to run along 13th Street to Washington Street where it will rejoin the Mariners Trail and cross the West Twin River. The trail will then cross the East Twin River using the 17th Street Bridge and continue east and north along the Mariners

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Trail to Neshotah Beach. From here, the trail corridor will travel north on Park Road into Point Beach State Forest. The total length of this segment is between 11.5 and 12.1 miles.

Parks along the future trail alignment in the City of Manitowoc include Camp Vits, Henry Schuette Park, Manitou Park and Conservancy, and the Mariners Trail. The Mariners Trail is a joint project of the cities of Manitowoc and Two Rivers. The 12-mile paved trail hugs the shoreline of Lake Michigan between Manitowoc and Two Rivers, and is considered to be the longest continuous scenic view of Lake Michigan in the State of Wisconsin. The trail provides access between Two Rivers and Point Beach State Forest.

In the City of Two Rivers, the Ice Age Trail will travel through Woodland Dunes Nature Center and Neshotah Beach Park. Woodland Dunes is an oasis of marshland, swamps, sandy fields and meadows, and wooded ridges between the cities of Manitowoc and Two Rivers. This floodplain, wetland, and dune-ridge area forms a green island of shrubs, grassy glades, and trees, which serve as a haven for wildlife. Located in a "tension zone" between two distinct areas of natural growth, the site features both northern and southern species of plants and birds. Woodland Dunes offers over 7.5 miles of trail on seven trails for year-round use.

Manitowoc and Two Rivers also offer many cultural experiences for Ice Age Trail users. These include the Wisconsin Maritime Museum, which contains the World War II submarine USS COBIA; the Hamilton Wood Type and Printing Museum; the Two Rivers History Museum; the Historic Washington House; and the Rogers Street Fishing Village in Two Rivers.

Map 3-7 illustrates the Corridor of Opportunity through the cities of Manitowoc and Two Rivers.

There are two to three landowners within this segment of the Corridor of Opportunity. The remainder of the corridor is located on existing public right-of-way. Landowner attitudes have been very positive in support of the trail and both the City of Manitowoc and the City of Two Rivers have passed resolutions supporting trail development (See Appendix E – Resolutions).

Towns of Two Rivers and Mishicot, Village of Mishicot, Manitowoc County

This segment of the trail corridor begins at the southern end of Point Beach State Forest, just north of the City of Two Rivers. The corridor travels north through the forest, then heads west through the towns of Two Rivers and Mishicot to the Village of Mishicot. From the Village of Mishicot, the corridor heads north into the Town of Mishicot.

This section of the trail corridor follows an area of lake deposits composed of silt and clay. Glacial features in the area are predominantly ground and end moraines of clayey till. Beach ridges in Point Beach State Forest developed as former shorelines of Glacial Lake Nipissing. The East Twin River was formed in a channel along the ice margin of the most recent glaciation.

Point Beach State Forest has an interpretive center, indoor group camps, and six miles of Lake Michigan shoreline with dunes, a lighthouse, camping, and hiking, biking, skiing, nature, and snowmobile trails. Wilderness Ridge is a T-shaped area featuring a cross section of Glacial Lake

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Nippissing-aged beach ridges within the larger Point Beach State Forest. The north-south sand ridges found here were formed under water during the late post-glacial stages of Lake Nippissing. Wilderness Ridge is owned by the WDNR and was designated a State Natural Area in 1953.

The Village of Mishicot offers a number of facilities for trail users. The Village Park is centrally located on the shores of the East Twin River where East Main Street and Park Street intersect. The park offers a view across the river to the village's covered bridge and waterfall. Park facilities include two baseball diamonds, restrooms, picnic areas, and two playground areas. The village has indicated an interest in connecting the Ice Age Trail with Mishicot's own Riverwalk Trail and Park.

Map 3-8 illustrates the Corridor of Opportunity through the towns of Two Rivers and Mishicot, and the Village of Mishicot.

There are 658 landowners in the Town of Two Rivers, and 72 in the Town of Mishicot who live within the Corridor of Opportunity. Many of these landowners have expressed support for the trail. The Village of Mishicot has passed a resolution supporting trail development through the village (see Appendix E – Resolutions). Point Beach State Forest has also indicated strong support for the trail. From public responses received via mailed letters, e-mail, and participation in public open houses, one private landowner has expressed support for the trail, and one did not support the trail.

Towns of Gibson and Mishicot, Manitowoc County

This segment of the trail corridor heads north from the Village of Mishicot through the towns of Gibson and Mishicot to the Manitowoc/Kewaunee County line. The trail corridor follows an area of glacial outwash sand and gravel bounded by ground and end moraines composed of clayey till.

Notable features in this trail corridor include Camp TaPaWingo, which is owned by the Manitowoc County 4-H Leaders Association. The camp includes a lodge (including dormitory space and kitchen facilities) and cabins that are available for booking by family groups, churches, schools, and other organizations. Several existing Ice Age Trail segments are located in the area, notably at Weber's Woods.

Map 3-9 illustrates the Corridor of Opportunity through the towns of Gibson and Mishicot.

There are 679 landowners in the Town of Mishicot and 494 in the Town of Gibson who live within the Corridor of Opportunity. Landowner attitudes have been generally positive in support of the trail.

Towns of Carlton and Franklin, Kewaunee County

This segment of the trail corridor begins in the Town of Carlton at the Manitowoc/Kewaunee County line at Tisch Mills on County Highway BB. The corridor heads north through Carlton, then curves west into the Town of Franklin to follow north through Franklin.

From Tisch Mills, the corridor will travel north along an existing segment of the Ice Age Trail adjacent to the East Twin River, then head west across County Highway B to the communities of Bolt and Heidmann Lake. From Heidmann Lake the trail corridor will head north past Engledinger Lake to Shea Lake, then continue north through the “Little Kettle Moraine” area of Kewaunee County. The trail corridor covers a large area to the east and west of an area of wetlands associated with Black Creek.

The trail corridor passes through an area of Kewaunee County glaciated by both the Cary and the Valders substages of the Wisconsin glacial period. The earlier Cary substage caused this area of Kewaunee County (known as the Little Kettle Moraine) to become extremely hilly with numerous wet depressions. The area is associated with nearly level to sloping outwash plains. Soils from the Cary drift are brown or yellowish-brown sand and gravel. Much of the rough topography associated with the older end moraine of central and eastern Kewaunee County has been overlain by ground moraine from the Valders substage.

An existing segment of the Ice Age Trail that is approximately 1.2 miles long is found at Tisch Mills. Four small kettle lakes in the Town of Franklin offer several facilities for potential use by Ice Age Trail users. These include the Heidmann Lake County Park, located near the crossroad community of Bolt, which offers parking, bathrooms, picnic tables, grills, and a dock. Shea’s Lake County Park is two acres in size, has picnic tables, grills, toilets, a limited parking area, boat access, and a dock.

Map 3-10 illustrates the Corridor of Opportunity through the towns of Carlton and Franklin.

There are 206 landowners in the Town of Carlton and 766 in the Town of Franklin who live within the Corridor of Opportunity. While some Ice Age Trail segments exist in the area of Tisch Mills, there has not been much support for trail development in the Town of Franklin. From public responses received via mailed letters, e-mail, and participation in public open houses, four landowners have indicated that they do not support trail development, while two have expressed interest in the trail.

Towns of Montpelier and Luxemburg, Kewaunee County

This segment of the trail corridor begins at the southern line of the Town of Montpelier, continues through town, and exits at the northeast corner to proceed into the Town of Luxemburg.

From Luxemburg, the trail corridor continues to an area of the Little Kettle Moraine known as the Montpelier Hills. This region has rolling hills to the west, wetland lowlands to the east, and

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includes wetlands associated with the headwaters of the East Twin River, Black Creek (which flows to the southeast), and Scarboro Creek (which flows northeast into the Kewaunee River).

Map 3-11 illustrates the Corridor of Opportunity through the towns of Montpelier and Luxemburg.

There are 758 landowners in the Town of Montpelier who live within the Corridor of Opportunity. From public responses received via mailed letters, e-mail, and participation in public open houses, six landowners have indicated they do not support trail development, while one has expressed an interest in the trail.

Towns of Casco and West Kewaunee, City of Kewaunee, Kewaunee County

This segment of the trail corridor makes extensive use of public lands. The corridor begins at the southwestern corner of the Town of Casco, then connects to a “Rails to Trails” corridor along the Kewaunee River. The corridor follows this rail corridor east into the Town of West Kewaunee, and through the City of Kewaunee before heading north along Lake Michigan.

The Kewaunee River segment of the Ahnapee Trail has an existing lease in place with Kewaunee County. The segment of Ahnapee Trail from Casco Junction to Algoma that is currently used as a temporary connector for the Ice Age Trail will be removed from Ice Age Trail use once the Casco Junction to Kewaunee segment has been developed. A segment of the Ice Age Trail from the Kewaunee River south to County Highway F will also be removed.

The trail corridor will enter the Town of Casco at the southwest corner and cross one private parcel before entering the Besadny Fish and Wildlife Area. The corridor will then cross the Kewaunee River to connect with the “Rails to Trails” corridor running between Casco Junction and Kewaunee. The corridor will then follow the Kewaunee River east into the City of Kewaunee, passing through the C.D. "Buzz" Besadny Fish and Wildlife Area and Anadromous Fish Facility and Winter Park. From Kewaunee, the corridor will continue north along the Lake Michigan shoreline. The total length of this trail segment is between 13.1 and 14.2 miles. Part of the corridor follows the Kewaunee River valley, which was formed by glacial meltwater.

This segment of the trail corridor includes numerous opportunities for trail users to recreate. Facilities in the area include Bruemmer County Park, a 76-acre recreation site located about one mile west of the City of Kewaunee. The park functions primarily as a passive recreation area, though it does include picnic areas, playground equipment, trails, and a small zoo. Winter Park Ski Area is located across County Highway F from Bruemmer Park. The park contains a tubing hill and mountain bike trails as well as a ski chalet. The C.D. Buzz Besadny Anadromous Fisheries Facility is located immediately north of the park on Ransom Moore Lane.

Within the corridor there is a 2.1-mile segment of existing Ice Age Trail that traverses Winter Park and the Besadny Anadromous Fisheries Facility. This segment could offer a possible trail corridor from the railroad grade. A second corridor is the Kewaunee Nature Walk, a 1,500-foot boardwalk path over marshlands located one-quarter mile north of the City of Kewaunee. The

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walkway meanders through wetland habitat along the Kewaunee River, ending in an observation deck with a panoramic view of the river.

The trail corridor offers users the opportunity to make use of numerous facilities in the City of Kewaunee. These facilities include Harbor Park, a scenic 0.75-acre public park that is a popular location for shore fishing, harbor viewing, picnicking, and walking. The park area offers picnic facilities, a boardwalk, and a stone pathway along the Kewaunee River.

Selner Park is located at the corners of Main and Vliet Streets in Kewaunee. The 1.38-acre park has a walkway down to a paved parking area leading to a Lake Michigan beach. The park offers picnicking areas, a drinking fountain, a playground, and a sand beach.

Map 3-12 illustrates the Corridor of Opportunity through the towns of Casco and West Kewaunee.

There are 421 landowners in the Town of Casco and 407 in the Town of West Kewaunee who live within the Corridor of Opportunity. Support for the trail has been mixed in this area. From public responses received via mailed letters, e-mail, and participation in public open houses, two landowners have expressed support for the trail, two have expressed no interest, and one was not sure.

Towns of Pierce and Ahnapee, City of Algoma, Kewaunee County

This segment of the trail corridor covers an area north of the Besadny Fish and Wildlife Area to Lake Michigan shoreline. The eastern edge of the corridor parallels State Highway 42 and Lake Michigan north from the City of Kewaunee to the City of Algoma, while the western portion of the corridor goes through the community of Alaska past East and West Alaska Lakes before heading east to Algoma.

Upon entering the City of Algoma, the Lake Michigan portion of the Ice Age NST will reconnect with the Ahnapee State Trail. This multi-use trail covers about 30 miles between Casco, Algoma, and Sturgeon Bay.

The trail corridor in this region follows an area of glacial outwash sand and gravel along Lake Michigan and offers scenic views of the lake and sand beaches in Kewaunee and Algoma. The corridor also offers access to lakes and rivers in the area including Lake Michigan, West Alaska Lake, Krohn's Lake, and the Kewaunee and Ahnapee Rivers.

Map 3-13 illustrates the Corridor of Opportunity through the towns of Pierce and Ahnapee, and the City of Algoma.

There are 798 landowners in the Town of Pierce who live within the Corridor of Opportunity. From public responses received via mailed letters, e-mail, and participation in public open houses, one landowner has expressed support for the trail, and one was not sure.

Environmentally Preferred Alternative

The Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508) and the DO-12 require the NPS to identify the alternative that best promotes the goals of Section 101 of the NEPA. The environmentally preferred alternative is defined by the CEQ as:

“...the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ 1981)

The environmentally preferred alternative for a Corridor of Opportunity for the Ice Age NST in Kewaunee, Manitowoc, and Sheboygan counties is the Preferred alternative.

This alternative will permanently protect some of the geological, biological, and archeological resources the corridor from development and will create a protected, undeveloped trailway of diverse habitats (both uplands and wetlands) that will promote an increase in biodiversity. The Preferred alternative will increase public recreational opportunities and connect existing recreational resources. Securing a trailway in public ownership will help maintain the existing wildlife and in some cases, will benefit threatened and endangered species by permanently protecting their environment. It will also provide opportunities for local landowners and visitors to access the glacial features along the trail as well as enhance public awareness of Wisconsin's glacial landscape through interpretation of glacial features.

The No-Action alternative amounts to abandoning any coordinated, collaborative effort to attain these goals. Through the No-Action alternative, trail may be built in a less than optimal location or have more water crossings than necessary. Without a coordinated effort, the No-Action alternative may also not recognize opportunities to enhance existing natural resource efforts such as prairie plantings or join efforts with others groups to protect significant natural or cultural resources.

Chapter Four – The Corridor’s Affected Environment

A. Corridor’s Physical Resources

Geology

Beginning about two million years ago, the earth’s climate began to periodically cool and warm. During the colder periods, each of which averaged 100,000 years, ice sheets as tall as three miles at their centers formed in the Hudson Bay region of Arctic Canada. These glaciers spread outward across northern North America, covering much of the Upper Midwest, including Wisconsin. During warmer periods, each of which averaged 10,000 years, most of the ice melted away. This cyclical process of freezing and thawing occurred as many as two dozen times during the two million years of the Pleistocene epoch. It is likely that portions of Wisconsin were blanketed multiple times by these ice sheets, but evidence of previous glaciation has been largely buried in sediment from the most recent period of glaciation.

The multiple glacial advances of the late Pleistocene and the last part of the Wisconsin Glaciation shaped a glacial landscape in Kewaunee, Manitowoc, and Sheboygan counties that is largely defined by features such as moraines, drumlins, waterlain sediments, kames, kettle depressions, and drainage and tunnel channels.

One of the primary glacial features in Sheboygan, Manitowoc, and Kewaunee counties is the Kettle Interlobate Moraine. This moraine was formed between the Green Bay and Lake Michigan glacial lobes during the Woodfordian ice advance. The resulting irregular ridge trends north-northeast from Walworth County to Brown County.¹ The Sheboygan River drains part of the northern Kettle Interlobate Moraine, as does the Manitowoc River. The southwestern portion of Manitowoc County is covered with Gray Woodfordian Drift, also described as Valderan Drift. The eastern edge of the three counties (from Sheboygan County to just north of Two Rivers) is primarily composed of Ancestral Lake Michigan deposits. From Two Rivers north and encompassing most of Kewaunee County, the landscape is covered by Valderan Drift.

The Preferred trail alternative selected by the Core Team is generally located along a course that extends from northwestern Sheboygan County, northeasterly through Manitowoc County, northwesterly to Kewaunee County, and finally east and north to Lake Michigan. The trail corridor has been located here because the topographic characteristics found within this region exemplify features formed in front of, at the edge of, and underneath the furthestmost advance of the most recent glacial ice sheet (during the Wisconsin Glaciation). In addition to the distinct character of the kettle moraine landscape, there are several outstanding examples of meltwater valleys within the corridor. With its combination of undulating topography, open areas, and numerous scenic views of local rivers and Lake Michigan, the route of the LMIAT will provide users with an ever-changing viewscape of distant panoramas and nearby landmarks.

¹ Roadside Geology of Wisconsin, Robert H. Dott, Jr. and John W. Attig. Publisher: Missoula, Mont.: Mountain Press Pub., 2004. Description: xiii, 345 p. : ill., maps ; 23 cm

Soils

Soils within the corridor are diverse and range from sandy loam to loam and shallow silt loam. Different areas of the corridor range from poorly drained to well drained. In some areas, lacustrine sands overlying clays or bedrock are found only a few feet from the surface. Poorly drained sands are common in the region's lake plain areas and in the depressions between dunes and beach ridges. Important soils in the study area include clays, loams, sands, and gravels.

Water Resources

The study area's groundwater reserves are being held in two principal aquifers: the Eastern Dolomite Aquifer and the Sandstone and Dolomite Aquifer.

The Eastern Dolomite Aquifer runs from Door County to the Wisconsin/Illinois border and consists of Niagara dolomite underlain by Maquoketa shale. In areas where fractured dolomite bedrock occurs at or near the land surface, shallow groundwater can easily become contaminated. In Kewaunee and Manitowoc counties, there is little soil to filter pollutants carried or leached by precipitation. In areas of these counties where there are large fractures in the dolomite, runoff enters groundwater directly. This has resulted in many groundwater quality problems within certain areas of the corridor.

The Sandstone and Dolomite Aquifer consists of layers of sandstone and dolomite bedrock that vary greatly in their water-yielding properties. In eastern Wisconsin, this aquifer lies below the Eastern Dolomite Aquifer and the Maquoketa shale layer. These rock types dip slightly away from north-central Wisconsin to the east, south, and west, becoming much thicker and extending to greater depths below the land surface in the southern part of the state. In eastern Wisconsin, most groundwater users rely on this deep aquifer to supply their water needs.

Visual Resources

When determining a corridor for the Ice Age NST, geologic features were considered along with the aesthetic values of the corridor—foreground scenery, distant views, and natural environment. Because the Ice Age Trail is primarily a National Scenic Trail, the corridor contains elements that create a visually diverse hiking experience. The primary objective within the corridor is to provide visitors with access to a variety of resources including unique geologic and cultural features. These collective viewscapes form the heart of the Ice Age NST, telling the story of how glaciers have shaped Wisconsin's landscape, diverse biological ecosystems, and water resources. Visual resources also act as landmarks for hikers who often use them as guides along the trail route.

Viewscapes considered as part of the planning process included Lake Michigan, The Sheboygan Marsh, Lower Cato Falls, and Point Beach Ridges and State Forest. Other large landscape features include the Interlobate Moraine, best viewed the near Valders and surrounding areas; the Valderan Drift boundary, best viewed along the East Twin River and surrounding Montpelier; and the outlets of Glacial Lake Oshkosh which include the Manitowoc River, West Twin River, and Kewaunee River, as well as the Kewaunee Lobe, Manitowoc Lobe, and Valders Lobe. In addition, cultural features such as Road America, Pinecrest Historic Village, the City of Two Rivers historic district, the Rawley Point Lighthouse, and the USS Cobia located at the Wisconsin Maritime Museum were also considered as part of the planning process.

B. Corridor's Biological Resources

Ecosystem

The WDNR has mapped Wisconsin into units known as Ecological Landscapes. This classification is based on aggregations of subsections from the National Hierarchical Framework of Ecological Units (NHFEU) (Avers et al. 1994). The NHFEU and the Ecological Landscape systems delineate landscapes of similar ecological pattern and potential across the state. The resulting classifications are used by resource administrators, planners, and managers.

The study area of the Ice Age NST falls into two of these Ecological Landscapes or Eco-Study areas. These include:

Central Lake Michigan Coastal

The Central Lake Michigan Coastal Ecological Landscape stretches from southern Door County, west across Green Bay to the Wolf River drainage, and south in a narrowing strip along the Lake Michigan shore to central Milwaukee County. Owing to the influence of Lake Michigan, summers here are cooler and winters warmer than elsewhere in the state. Similarly, precipitation levels are higher here than at locations farther inland. Dolomites and shales underlie the glacial deposits that blanket virtually all of the Central Lake Michigan Coastal Ecological Landscape. The dolomite Niagara Escarpment is the major bedrock feature running northeast to southwest across the entire landscape. A series of dolomite cliffs provide critical habitat for rare terrestrial snails, bats, and specialized plants. The primary glacial landforms in the Central Lake Michigan Coastal Ecological Landscape are ground moraines, outwash, and lakeplains. The topography is generally rolling where the surface is underlain by ground moraine, variable over areas of outwash, and nearly level where lacustrine deposits are present. Important soils include clays, loams, sands, and gravels. Certain landforms such as sand spits, clay bluffs, beach and dune complexes, and ridge and swale systems, are associated only with the shorelines of Lake Michigan and Green Bay. Today, approximately 84% of this Ecological Landscape is non-forested. The remaining forest consists mainly of mesic maple-basswood, maple-beech types, or lowland hardwoods composed of soft maples, ashes, and elms.

Southeast Glacial Plains

The Southeast Glacial Plains Ecological Landscape makes up the bulk of the non-coastal area in southeast Wisconsin. This landscape is composed of glacial till plains and moraines formed by glacial materials deposited during the Wisconsin Glaciation. Agricultural and residential uses have significantly altered the historic vegetation of the region. Most rare, natural communities in the area are associated with the Niagara Escarpment or large moraines. Remaining land within the region is predominantly urban or agricultural with forested areas occupying only about 10% of the landscape.

Wildlife

Wildlife is abundant in the study area. The mixture of woodlands, croplands, and wetlands provide excellent habitat, cover, and food sources for many species. Wildlife inhabiting Sheboygan, Manitowoc, and Kewaunee counties include white tail deer, grey squirrel, fox squirrel, cottontail rabbit, coyote, fox, weasel, lowland furbearers, ruffed grouse, woodcock, pheasant, wild turkey, native and migratory song birds, raptors, waterfowl, and numerous reptilian and amphibian species.

Fisheries

The waters of the study area contain a variety of cold- and warm-water fish species. Warm-water species such as northern pike, bass, panfish, and carp are found in the lakes, ponds, and slow moving streams of the area. Winterkill is a common problem with smaller, shallow lakes, as it is in many of the kettle ponds. Cold-water species such as brook trout, brown trout, and rainbow trout are generally found in the deep spring-fed lakes and faster flowing streams, which maintain an average temperature of less than 75° F.

Lake Michigan also has an abundant and diverse fishery that includes Michigan alewife, bloater, bowfin, brook trout, brown trout, burbot, carp, chinook salmon, coho salmon, freshwater drum, lake herring, lake sturgeon, lake trout, lake whitefish, longnose sucker, muskellunge, northern pike, pumpkinseed, rainbow smelt, rainbow trout, rock bass, round goby, round whitefish, sea lamprey, smallmouth bass, walleye, white bass, white perch, white sucker, and yellow perch.

Threatened and Endangered Species

The NPS began informal consultation with the U.S. Fish and Wildlife Service in March, 2005. According to the U.S. Fish and Wildlife Service, federally listed endangered species known to exist in Kewaunee, Manitowoc, and Sheboygan counties are the Hine's emerald dragonfly, bald eagle, piping plover, pitcher's thistle, and eastern prairie fringed orchid.

The following tables list species and natural communities recognized as rare by the State of Wisconsin. Species are listed according to the county in which they were observed.

Table 4-1: Kewaunee County Corridor State Listed Rare Species and Natural Communities

Scientific Name	Common Name
<i>Alder Thicket</i>	Alder Thicket
<i>Ammodramus savannarum</i>	Grasshopper Sparrow
<i>Cakile edentula</i>	American Sea-Rocket
<i>Calamagrotis stricta</i>	Slim-Stem Small-Reedgrass
<i>Calamovilfa longifolia</i> var. <i>magna</i>	Sand Reed-Grass
<i>Cardamine pratensis</i>	Cuckooflower
<i>Circus cyaneus</i>	Northern Harrier
<i>Clinostomus elongatus</i>	Redside Dace
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-Slipper
<i>Emergent Marsh</i>	Emergent Marsh
<i>Euphorbia polygonifolia</i>	Seaside Spurge
<i>Euphyes bimacula</i>	Two-Spotted Skipper
<i>Fundulus diaphanus</i>	Banded Killfish
<i>Hendersonia occulta</i>	Cherrystone Drop
<i>Lake – Deep; Hard; Seepage</i>	Lake – Deep; Hard; Seepage
<i>Lepomis megalotis</i>	Langear Sunfish
<i>Moxostoma valenciennesi</i>	Greater Redhorse
<i>Northern Mesic Forest</i>	Northern Mesic Forest
<i>Northern Sedge Meadow</i>	Northern Sedge Meadow
<i>Northern Wet Forest</i>	Northern Wet Forest
<i>Northern Wet-Mesic Forest</i>	Northern Wet-Mesic Forest
<i>Notropis angogenus</i>	Pugnose Shiner
<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron
<i>Open Bog</i>	Open Bog
<i>Paravitrea multidentata</i>	Dentate Supercoil
<i>Polystichum acrostichoides</i>	Christmas Fern
<i>Strobilops affinis</i>	Eightfold Pinecone
<i>Viola rostrata</i>	Long-Spur Violet
<i>Vitrina angelicae</i>	Transparent Vitrine Snail

Source: WDNR, BER, 2003.

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Table 4-2: Manitowoc County Corridor State Listed Rare Species and Natural Communities

Scientific Name	Common Name
<i>Acris crepitans blanchardi</i>	Blanchard's Cricket Frog
<i>Adlumia fungosa</i>	Climbing Furmatory
<i>Alasmidonta marginata</i>	Elktoe
<i>Alasmidonta viridis</i>	Slippershell Mussel
<i>Ammodramus henslowii</i>	Henslow's Sparrow
<i>Ammodramus savanarum</i>	Grasshopper Sparrow
<i>Ardea herodias</i>	Great Blue Heron
<i>Arethusa bulbosa</i>	Swamp-Pink
<i>Artemisia dracunculus</i>	Dragon Wormwood
<i>Bartramia longicauda</i>	Upland Sandpiper
<i>Buteo lineatus</i>	Red-Shouldered Hawk
<i>Cakile edentula</i>	American Sea-Rocket
<i>Calamagrostis stricta</i>	Slim-Stem Small-Reedgrass
<i>Calamovilfa longifolia var. magna</i>	Sand Reed-Grass
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex lenticularis</i>	Shore Sedge
<i>Carex syncocephala</i>	Many-Headed Sedge
<i>Circus cyaneus</i>	Northern Harrier
<i>Cirsium pitcheri</i>	Dune Thistle
<i>Clinistomus elongatus</i>	Redside Dace
<i>Cragonyx gracilis</i>	A Side-Swimmer
<i>Cragonyx richmondensis</i>	A Side-Swimmer
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-Slipper
<i>Cypripedium reginae</i>	Showy Lady's-Slipper
<i>Dendroica caerulescens</i>	Black-Throated Blue Warbler
<i>Dendroica cerulea</i>	Cerulean Warbler
<i>Diadophis iadophis punctatus edwardsii</i>	Northern Ringneck Snake
<i>Elymus lanceolatus ssp. psammophilus</i>	Thickspike
<i>Emergent Marsh</i>	Emergent Marsh
<i>Empidonax flaviventris</i>	Yellow-Bellied Flycatcher
<i>Empidonax virescens</i>	Acadian Flycatcher
<i>Emydoidea blandingii</i>	Blanding's Turtle
<i>Equisetum variegatum</i>	Variiegated Horestail
<i>Erimyzon sucetta</i>	Lake Chubsucker
<i>Euphorbia polygonifolia</i>	Seaside Spurge
<i>Forested Ridge and Swale</i>	Forested Ridge and Swale
<i>Fundulus Diaphanus</i>	Banded Killfish
<i>Grammia phyllira</i>	Phyllira Tiger Moth
<i>Great Lakes Beach</i>	Great Lake Beach
<i>Great Lakes Dune</i>	Great Lakes Dune
<i>Hardwood Swamp</i>	Hardwood Swamp
<i>Hemidactylum scutatum</i>	Four-Toed Salamander
<i>Hendersonia occulta</i>	Cherrystone Drop
<i>Interdunal Wetland</i>	Interdunal Wetland
<i>Jeffersonia diphylla</i>	Twinleaf
<i>Lake – Deep; Hard; Seepage</i>	Lake – Deep; Hard; Seepage

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<i>Lake – Hard Bog</i>	Lake – Hard Bog
<i>Lake – Soft Bog</i>	Lake – Soft Bog
<i>Lithospermium latifolium</i>	American Gromwell
<i>Malaxis brachypoda</i>	White Adder's-Mouth
<i>Medeola virginiana</i>	Indian Cucumber-Root
<i>Melanerpes erythrocephalus</i>	Red-Headed Woodpecker
<i>Moist Cliff</i>	Moist Cliff
<i>Moxostoma valenciennesi</i>	Greater Redhorse
<i>Northern Dry-Mesic Forest</i>	Northern Dry-Mesic Forest
<i>Northern Mesic Forest</i>	Northern Mesic Forest
<i>Northern Sedge Meadow</i>	Southern Sedge Meadow
<i>Northern Wet Forest</i>	Northern Wet Forest
<i>Northern Wet-Mesic Forest</i>	Northern Wet-Mesic Forest
<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron
<i>Open Bog</i>	Open Bog
<i>Orobanche fasciculata</i>	Clustered Broomrape
<i>Phalaropus tricolor</i>	Wilson's Phalarope
<i>Primula mistassinica</i>	Bird's-Eye Primrose
<i>Ranunculus cymbalaria</i>	Seaside Crowfoot
<i>Salix cordata</i>	Sand Dune Willow
<i>Sorex hoyi</i>	Pigmy Shrew
<i>Southern Dry-Mesic Forest</i>	Southern Dry-Mesic Forest
<i>Southern Sedge Meadow</i>	Southern Sedge Meadow
<i>Spiza americana</i>	Dickcissel
<i>Striatura ferrea</i>	Black Striate
<i>Sturnella neglecta</i>	Western Meadowlark
<i>Tofieldia glutinosa</i>	Sticky False-Asphodel
<i>Triglochin maritima</i>	Common Bog Arrow-Grass
<i>Trillium nivale</i>	Snow Trillium
<i>Tyto alba</i>	Barn Owl
<i>Venustaconcha ellipsiformis</i>	Ellipse
<i>Viola rostrata</i>	Long-Spur Violet
<i>Vitrina angelicae</i>	Transparent Vitrine Snail
<i>Wilsonia citrina</i>	Hooded Warbler

Source: WDNR, BER, 2003.

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Table 4-3: Sheboygan County Corridor Rare State Listed Species and Natural Communities

Scientific Name	Common Name
<i>Alasmidonta viridis</i>	Slippershell Mussel
<i>Anemone multifida</i> var. <i>hudsonia</i>	Early Anemone
<i>Arethusa bulbosa</i>	Swamp-Pink
<i>Artemisia dracuncululus</i>	Dragon Wormwood
<i>Bog Relict</i>	Bog Relict
<i>Buteo lineatus</i>	Red-Shouldered Hawk
<i>Calyophus serrulatus</i>	Yellow Evening Primrose
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex richardsonii</i>	Richardson Sedge
<i>Carex synchocephala</i>	Many-Headed Sedge
<i>Coregonus artedi</i>	Lake Herring
<i>Cypripedium arietinum</i>	Ram's-Head Lady's-Slipper
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-Slipper
<i>Cypripedium reginae</i>	Showy Lady's-Slipper
<i>Emergent Marsh</i>	Emergent Marsh
<i>Emydoidea blandingii</i>	Blanding's Turtle
<i>Etheostoma microperca</i>	Least Darter
<i>Floodplain Forest</i>	Floodplain Forest
<i>Gentiana alba</i>	Yellow Gentian
<i>Lake – Soft Bog</i>	Lake – Soft Bog
<i>Lithospermum latifolium</i>	American Gromwell
<i>Luxilus chrysocephalus</i>	Striped Shiner
<i>Malaxis brachypoda</i>	White Adder's-Mouth
<i>Northern Mesic Forest</i>	Northern Mesic Forest
<i>Northern Sedge Meadow</i>	Northern Sedge Meadow
<i>Northern Wet Forest</i>	Northern Wet Forest
<i>Orconectes propinquus</i>	Northern Clearwater Crayfish
<i>Platanthera dilatata</i>	Leafy White Orchis
<i>Platanthera hookeri</i>	Hooker Orchis
<i>Platanthera orbiculata</i>	Large Roundleaf Orchid
<i>Regina septemvittata</i>	Queen Snake
<i>Shrub-Carr</i>	Shrub-Carr
<i>Southern Dry-Mesic Forest</i>	Southern Dry-Mesic Forest
<i>Southern Mesic Forest</i>	Southern Mesic Forest
<i>Southern Sedge Meadow</i>	Southern Sedge Meadow
<i>Spring Pond</i>	Spring Pond
<i>Springs and Spring Runs; Hard</i>	Springs and Spring Runs; Hard
<i>Springs and Spring Runds; Soft</i>	Springs and Spring Runs; Soft
<i>Stream – Fast; Hard; Cold</i>	Stream – Fast; Hard; Cold
<i>Thalictrum revolutum</i>	Waxleaf Meadowrue
<i>Thamnophis sauritus</i>	Northern Ribbon Snake
<i>Triglochin maritima</i>	Common Bog Arrow-Grass
<i>Triglochin palustris</i>	Slender Bog Arrow-Grass
<i>Trillium nivale</i>	Snow Trillium
<i>Trisetum melicoides</i>	Purple False Oats

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<i>Valeriana sitchensis ssp. uliginosa</i>	Marsh Valerian
<i>Venustaconcha ellipsiformis</i>	Ellipse
Source: WDNR, BER, 2003.	

C. Corridor's Cultural Resources

Historic/Cultural and Archeological Resources

Historical Sites

The area occupied by the corridor of the Lake Michigan Ice Age Trail has a long history of European and American settlement. Not surprisingly, there are many areas of historical importance located along the trail. For the purpose of this plan, only historic districts on the State and/or National Register of Historic Places have been listed. Land developers trying to obtain state permits from the WDNR or any development involving federal monies, are required to comply with Section 106 of the National Historic Preservation Act and 36 CFR Part 800: Protection of Historic Properties.

Kewaunee County

Marquette Historic District was listed on the State and National Register on November 4, 1993. It is situated on 200 acres and consists of over 40 buildings in Italianate, Queen Anne, and Colonial Revivals from the period 1870-1938.

St. Lawrence Catholic Church was listed on the National Register on February 21, 1989. It is situated on 40 acres and consists of two buildings in Pueblo and other styles from the period 1892-1930.

Manitowoc County

Central Park Historic District was listed on the State and National Register on December 1, 2000. It is situated on 100 acres and consists of 20 buildings in Italianate, late 19th and 20th century Revivals, and Art Deco styles from the period 1850-1948.

Eighth Street Historic District was listed on the State and National Register on March 17, 1988. It is situated on 323 acres and consists of over 70 buildings in late Victorian, Classical Revival, and Beaux Arts styles from the period 1857-1937.

Frenchside Fishing Village was listed on the State and National Register on January 6, 1987. It is situated on 94 acres and consists of over 30 domestic and agricultural buildings from the period 1855-1920.

Sheboygan County

Elkhart Lake Historic Race Circuits are the two race circuits used during the years 1950-1952. These circuits were the last of the great open road sports car racing circuits in America and brought national and international racing prominence to the State of Wisconsin, Sheboygan

County, and Elkhart Lake. The 3.35-mile 1950 circuit followed a closed loop immediately north of Elkhart Lake beginning on County Highway P (CTH P), midway between County Highway JP (CTH JP) and County Highway J (CTH J), and proceeding north to the corner of County Highways P and J. The route then turned right and proceeded southeasterly on CTH J to CTH JP, turned right onto CTH JP, and proceeded west to CTH J where it turned north on CTH P to the finish line. The 6.5-mile 1951/1952 circuit began on Gottfried St. across from the feed mill in Elkhart Lake and proceeded to Lake St. From here the route continued to CTH J and County Highway A (CTH A), then south to the corner of CTH A and west to CTH P. It then turned onto CTH P and proceeded north to CTH J, turned southeasterly on CTH J and returned to the finish line at the feed mill.

Archeological Sites

In addition to its history of American and European settlement, the corridor of the Ice Age Trail also has a long history of earlier Indian settlement. There are a variety of archeological resources located along the trail corridor. The Wisconsin State Historical Society maintains a database of archeological sites across the state. From this database an inventory of sites were generated for each township located along the trail corridor. Total numbers of sites within each township are listed in Table 4-4. Sites listed in these inventories include historic Indian and American campsites, villages, burial grounds, cemeteries, log cabins, hearths, artifacts, foundations, gardens, effigy mounds, and earthworks, among others. The State of Wisconsin requires any findings of human bones to be reported (*Wisconsin Statutes* s. 157.70) so that the State Historical Society may complete an investigation. Listings, therefore, also include sites where human remains have been found. These archeological sites span many different historical periods including Archaic, Prehistoric, Old Copper, Historic Euro-American, Paleo-Indian, and Woodland periods.

From these listings it is clear that certain areas are rich in archeological resources. These include the townships of Rhine, Russell, Manitowoc, Manitowoc Rapids, and Two Rivers.

Table 4-4: Archeological Sites by Township

Sheboygan County

Greenbush	32
Plymouth	17
Rhine	60
Russell	99

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Manitowoc County

Cato	33
Eaton	18
Gibson	28
Liberty	32
Manitowoc (T19R24)	42
Manitowoc (T19R25)	4
Manitowoc Rapids	64
Meeme	17
Mishicot	34
Schleswig	21
Two Rivers (T20R24)	62
Two Rivers (T20R25)	42

Kewaunee County

Ahnapee	19
Carlton (T22R24)	14
Carlton (T22R25)	0
Casco	7
Luxemburg	7
Pierce	8
West Kewaunee (T23R24)	14
West Kewaunee (T23R25)	9

Source: Wisconsin State Historic Society, 2006

D. Corridor's Socio-Economic Resources

The Lake Michigan Ice Age Trail corridor is located in a picturesque rural region containing a number of small lakes and rivers as well as scattered tracts of public hunting and fishing lands. Economic and population growth in the three counties has generally occurred at a slower rate than other areas of the state. Like many other rural areas, the lack of employment opportunities in the region has historically resulted in the outmigration of many young adults. In recent years, however, an improved transportation network has shortened travel times to larger nearby employment centers, stemming outmigration by allowing more permanent residents to live in the area and commute to work. New residents arriving in the area from larger urban centers are often happy to trade a longer work commute for easy access to the area's scenic attributes and year-round recreational opportunities.

Communities and Businesses

The cities of Manitowoc, Two Rivers, Kewaunee, and Algoma are areas of concentrated development located along the trail corridor. Manitowoc, the county seat of Manitowoc County, is the largest community along the corridor with a population of 34,727. The cities of Two Rivers (population 12,585), Algoma (population 3,363), and Kewaunee (population 2,901), and the villages of Elkhart Lake (population 1,073), St. Nazianz (population 742), Valders (population 993), and Mishicot (population 1,450) are all located within the corridor. Most of these communities are projected to experience population growth during the next two decades, particularly in lakeshore areas.

The 17 unincorporated towns within the corridor boundary are lightly populated and generally have densities of 50-150 residents per square mile. These communities are collectively projected to grow by more than 3,400 residents between 2000 and 2025. In conjunction with the increase in population, a continuing trend will be a decline in the number of farm residences and farm households. This decline will be offset by an increase in new rural residential development built to house residents working outside of the rural communities they live in. This pattern of growth is consistent with a national trend of new residential development occurring predominantly in outlying rural areas. This trend is created by two factors: families moving to the countryside in search of a better quality of life, and empty nesters relocating to rural areas in search of a desirable place to retire. In fact, between 2000-2030, the elderly population of Manitowoc, Sheboygan, and Kewaunee counties is expected to increase by 70-85%. As development continues, land values and development costs within the corridor are expected to increase. This development will also create a greater need for protected areas and open spaces for recreation.

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The cities of Manitowoc and Sheboygan serve as a major service centers for the three counties in the trail corridor. A number of smaller communities also have commercial developments. In recent years recreation- and tourism-based businesses have become an increasingly important part of local economies in regions surrounding the trail corridor. This is particularly true in Algoma, Elkhart Lake, and Manitowoc, areas that feature specialized dining, antique and handcraft markets, and well-established systems of traditional hospitality and other highway-oriented businesses. Manitowoc and Algoma have developed tourism industries associated with their maritime location and history. Communities located along the Lake Michigan Ice Age Trail corridor may benefit economically from trail users by providing support facilities such as grocery stores, restaurants, campgrounds, and bed and breakfasts.

Land Use and Land Ownership

Land within the Lake Michigan Ice Age Trail corridor contains both urbanized and agricultural areas. A majority of the trail corridor is agricultural with urban areas found around the major cities in each county. Sheboygan County is the most developed region, with large urban areas surrounding the cities of Sheboygan, Sheboygan Falls, and Plymouth. Much of the area between Interstate 43 and Lake Michigan is developing with residential and commercial uses while the corridor of State Highway 23 provides a growth corridor from Fond du Lac to Sheboygan. In Manitowoc County, I-43 forms a boundary between the urbanizing area and more rural portions of the county. The cities of Manitowoc and Two Rivers are located on the eastern edge of Manitowoc County along Lake Michigan and are the primary commercial and industrial centers of the county. Much of the rest of the county is composed of rural farms and small residential areas. Kewaunee County is the most rural of the three counties in the study area and is predominantly agricultural. The cities of Kewaunee and Algoma are small communities with little new development.

Rural residential development pressures are continuing to mount, increasing raw land costs and decreasing the number of large, contiguous parcels of land. As rural areas become more heavily developed, the cost of providing basic municipal services increases, as does the potential for land use conflicts. Over 6,000 landowners live within the largely rural corridor of the Sheboygan, Manitowoc, and Kewaunee portions of the Ice Age Trail.

All towns in the corridor are currently under either local or county zoning with most land zoned for agriculture. Stand-alone single family residences or minor subdivisions are a permitted use in this zoning district, making housing development in these areas relatively easy. Future subdivision development is expected to be minimal in the corridor, except in areas close to the Lake Michigan shoreline.

The Ice Age NST is a permitted use in all zoning classification (ss. 236.292 Wis. stats.).

Recreation Resources

The Ice Age NST corridor contains about 5,800 acres of state lands. These holdings include state parks, trails, and wildlife areas.

In addition, the corridor boasts a number of state and local trail facilities including the Ahnapee Trail and the Mariners Trail. A portion of the Ice Age National Scenic Trail heads north from the City of Algoma. The following inventory provides a description of the major recreation areas within the corridor.

Kewaunee County

State Lands and Trails:

Besadny Wildlife Area

The Besadny Wildlife Area is a 2,276-acre tract of state-owned property located on stream, forest, and farmland. The property is managed by the Manitowoc DNR and provides habitat for wildlife such as deer, pheasants, ruffed grouse, and rabbits. The “Buzz” Besadny Anadromous Fisheries Facility on the site serves as a fishery and egg collection site for salmon and trout as they migrate up the Kewaunee River. From this collection, the fishery provides an annual 4.7 million trout and salmon to be stocked into Lake Michigan tributary streams. These fish support Wisconsin’s popular Lake Michigan sport fishery program.

The Besadny facility encourages public participation with frequent tours, opportunities for wildlife viewing, and numerous educational experiences.

Kewaunee River Section of the Ahnapee State Trail

The Ahnapee State Trail is a multi-use trail spanning about 30 miles between Casco, Algoma, and Sturgeon Bay. The 8-10 foot wide trail surface is firm to allow for hiking, trail bikes, and horseback riding. During the winter the trail is used primarily by snowmobilers—though cross-country skiing is also permitted—and interconnects with 95 miles of snowmobile trails in Kewaunee County.

County Lands:

Bruemmer County Park

This 76-acre recreation site is located about one mile west of the City of Kewaunee and is Kewaunee County’s largest park. The site primarily functions as a passive recreation area. Its most popular features include picnic areas, playground equipment, trails, and a small zoo.

Krohn’s Lake

Krohn's Lake is located southwest of the City of Algoma just off of County Highway K. This park contains a grill, boat ramp, restroom facilities, docks, and plenty of off-street parking. Boat motors are not allowed on Krohn’s Lake.

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Winter Park Ski Area

The Winter Park Ski Area is located just west of the City of Kewaunee along the Kewaunee River. The park contains a tubing hill, mountain bike trails, and a ski chalet. The C.D. Buzz Besadny Anadromous Fisheries Facility is located immediately north of the park on Ransom Moore Lane.

Kewaunee Nature Walk

This 1,500-foot boardwalk path is located one-quarter mile north of the City of Kewaunee. The walkway meanders through wetland habitat along the Kewaunee River, ending in an observation deck with a panoramic view of the river.

Other Resources:

Ice Age Trail

Within the corridor, 3.6 miles of Ice Age Trail is part of the Besadny Wildlife Area.

Manitowoc County

State Lands and Trails:

Point Beach State Forest

Point Beach State Forest is located along Lake Michigan just north of the City of Two Rivers in Manitowoc County. The point juts seven miles into Lake Michigan, where pieces of 19th century ships that sank here occasionally wash ashore. The forest offers six miles of Lake Michigan shoreline with dunes, a lighthouse, camping, and trails for hiking, biking, skiing, nature, and snowmobile use. In 2003, the forest received 366,500 visits.

County Lands and Trails:

Manitowoc County has three large parks and one trail with developed facilities. In addition, there are 16 smaller parks and lake access sites throughout the county.

Mariners Trail

The Mariners Trail is a joint project of the cities of Manitowoc and Two Rivers. The 12-mile paved trail hugs the shoreline of Lake Michigan between Manitowoc and Two Rivers and is considered to be the longest continuous scenic view of Lake Michigan in Wisconsin.

Walla Hi Park

This 160-acre county park is located in southwestern Manitowoc County in the Town of Schleswig, about four miles east of the City of Kiel. The park has varying environmental characteristics located within its boundaries. The scenic kettle moraine landscape of the park ranges from wooded areas to open grassy spaces. In addition, small springs and streams flow throughout the park. Popular activities include fishing, hiking, cross-country skiing, and picnicking. An abandoned fish hatchery and pond fed by natural springs are two interesting attractions found at the site. Camping and campfires are prohibited within the park.

Lower Cato Falls Park

This county park is located in the Town of Cato, about one mile east of the community of Clarks Mills, between CTH JJ and the Manitowoc River. This 84-acre park has two principal landscape features: the developed upland area and the natural lowland wooded area located along the Manitowoc River. The lower section of the park includes unique rock formations and a waterfall along the river. Two wooden stairways are provided for access from the upper portion of the park to the lower portion. Popular activities here include picnicking, hiking, and nature trail walks.

Other Resources:

Woodland Dunes State Natural Area

This State Natural Area features a low portion of ridge and swale topography near Lake Michigan. The series of narrow, parallel sand ridges are remnants of former Lake Michigan shoreline that were left behind as water levels fell during post-glacial times. The ridges are separated by perennially wet swales. About two-thirds of the ridges are timbered with aspen, white birch, and red maple; the remaining third support a mature forest of yellow birch, beech, hemlock, and white pine. Understory vegetation contains elements typical of northern mesic forest including shining club-moss, spinulose wood fern, American starflower, naked miterwort, and yellow-blue-bead-lily. Ash, elm, and alder dominate the swales with occasional patches of dogwood, willow, and sedges. White cedar and the occasional tamarack are also found in the swales and on the ridge edges. Sweet colt's-foot (*Petasites sagittatus*), a threatened plant species, is found here in small numbers. With its variety of habitats and proximity to Lake Michigan, Woodland Dunes is used by a great diversity of birds. Shorebirds utilize a nearby river marsh and often forage in adjacent farm fields. Songbirds, especially warblers and thrushes, make use of the forested portions of the dunes during migration. Southern bird species such as hooded warbler, blue-gray gnatcatcher, and white-eyed vireo are at the northern edge of their range here. The natural area is an excellent place to view all of Wisconsin's raptors during their fall migration down the lakeshore. Woodland Dunes is owned and managed by Woodland Dunes Nature Center and was designated a State Natural Area in 1992.

Rawley Point Recreational Trail

The Rawley Point Recreational Trail has a hardpacked limestone base and connects the city of Two Rivers with Point Beach State Forest. The five-mile trail winds through pine and hemlock forests, dunes, and fields.

Ice Age Trail

There are 0.7 miles of Ice Age Trail, named the Weber Woods Segment, located in the northern section of Manitowoc County. This trail segment is located 0.2 miles south of the intersection of County Roads B and BB to the west of the unincorporated Village of Tisch Mills. The trail is accessible from a metal fence stile placed on the edge of a field and emblazoned with yellow paint marks. The segment crosses over Tisch Mills Creek roughly midway through the segment.

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There are 0.8 miles of Ice Age trail located north of Mischicot off County Hwy B. This segment runs between Rockledge and Princ Road and is named the East Twin River Segment. The trail is accessible off both Princ and Rockledge Road. Vegetation in the area is marked by tall stands of white pine and open farm fields. Continued trail work is planned for this area to upgrade the segment location.

Sheboygan County

State Lands and Trails:

LaBudde Creek Fishery Area

This 504-acre project is a creek environment stocked yearly with populations of brown trout. The area is used by fisherman for trout fishing.

County and Local Lands:

Broughton Sheboygan Marsh Park

This 30-acre developed year-round park boasts the Marsh Lodge full service restaurant and tavern, and Broughton Lodge, a multi-purpose facility. The 64 fully developed campsites on the site include showers, playground facilities, picnic areas, canoe and boat rentals, a launch ramp, and fishing piers. County snowmobile trails traverse the marsh and connect with the countywide 199-mile trail system. The Sheboygan Marsh Wildlife Area includes over 13,000 acres and attracts hunters, fishers, and wildlife/nature observers.

Other Resources:

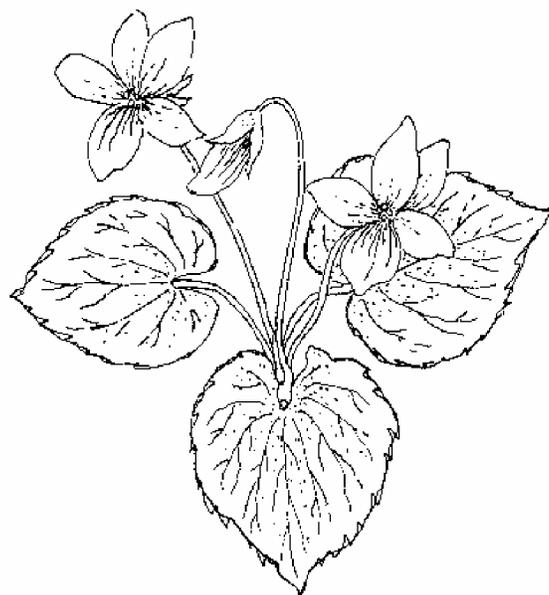
Ice Age Trail

The Ice Age Trail runs through the Kettle Moraine State Forest in Fond du Lac and Sheboygan counties. Within the corridor there is one mile of existing Ice Age Trail located south of County Road P in the Northern Unit of the Kettle Moraine State Forest. A varied landscape of wetlands and forested uplands characterize the area, as do glacial features such as kettles, kames, and eskers.

Summary

Collectively, the many support facilities within the corridor of the LMIAT will provide a range of low and moderate impact recreational activities within and near the corridor. One significant deficiency within the corridor is the lack of campsites for short-term camping. Most of the campsites within the corridor are rented on a seasonal basis, providing little opportunity for overnight visitors.

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Chapter Five – Corridor Impact Analysis

This chapter presents the probable environmental effects or consequences of the No-Action and Preferred alternatives. Evaluation of environmental effects requires consideration of the intensity, duration, and cumulative nature of these effects, as well as a description of any measures to mitigate adverse impacts. A summary of environmental effects is discussed below. Effects are described as adverse or beneficial and the level of intensity for each resource topic is also discussed.

Impacts Common to Both Alternatives

The Ice Age NST is by law a non-motorized trail. It is administered by the NPS and managed by a number of public and private partners as a trail suitable for foot travel only. It is reasonably foreseeable that trail construction of a footpath would eventually take place under management of either the No-Action alternative (1983 route corridor) or the Preferred alternative. This construction would be expected to have minor and temporary adverse impacts on natural resources located within the construction zone. These impacts would be limited to the period of actual trail construction. Trail use would be expected to have negligible and continuing impacts on the physical environment of the area, primarily in the form of increased foot traffic and periodic maintenance of the corridor. Neither alternative would require actions resulting in impairment of natural, cultural, or social resources.

Differences Between Alternatives

Despite similarities between the No-Action and Preferred alternatives, several differences exist between them. These differences, discussed below, clearly indicate that the Preferred alternative is preferable for its scenic and recreational value, efficient use of resources, and protection of threatened/endangered species and cultural resources.

Scenic and Recreational Values

Under the No-Action alternative, it is likely that volunteers would initiate trail construction wherever they could gain permission from landowners. This type of unplanned construction would result in a trail that does not highlight or protect important scenic or recreational resources. Under the Preferred alternative, an evaluative process will allow planners to carefully designate trail route options that will highlight and permanently protect the area's scenic and recreational resources.

Efficient Use of Resources

Unplanned trail construction that would occur under the No-Action alternative may result in a trail that is more expensive to construct because of a longer length, more water crossings, or trail reconstructions due to improper placement. Under the Preferred alternative, trail will be constructed according to a carefully evaluated plan. Construction of a planned trail will likely result in a more efficient use of resources as the trail length and number of water crossings will only be enough to meet plan recommendations. Ice Age Trail construction standards call for a 24-inch tread, with an additional one-foot vegetation clearance zone on either side. Ground disturbance will be limited to those areas where side-slope benching is required to create a level tread. Total surface impacts are estimated to be less than one-half acre per mile of trail construction. Generally, trail construction and maintenance will take place using hand tools and volunteer labor. Resource impacts will be limited by proper trail design and construction standards as called for in the “Ice Age National Scenic Trail Handbook for Trail Design, Construction, and Maintenance².”

Threatened/Endangered Species and Cultural Resources

Under the No-Action alternative, unplanned trail construction may adversely impact threatened/endangered species or cultural resources. This effect will be avoided with the planning of the Preferred alternative, which recognizes environmental and cultural resources within the trail corridor. Trail construction under this alternative will make efforts to avoid or protect sensitive resources.

Issues Identified and Analyzed In This Corridor Assessment and Environmental Assessment

During the internal and external scoping process for this route assessment, a number of issues were considered. Opinions and comments from members of the general public, state agencies, trail groups, and all other interested parties are required by law to be considered during the planning process. To encourage the participation of these different parties, comments were collected via e-mail, letter, telephone conversation, and at public open house meetings held throughout the scoping process. Most comments were related to construction and use of the trail. From these comments, the following list of issues was identified. Following each issue is a reference to the section of this chapter (the Corridor Impact Analysis) that addresses the issue.

² The NPS, in conjunction with the WDNR and the IAPTF, has developed a handbook on trail design, construction, and maintenance for the Ice Age NST. This handbook, published by the National Park Service and entitled “Ice Age National Scenic Trail, a Handbook for Trail Design, Construction, and Maintenance,” is used by all volunteer trail builders. For more information about this handbook, please contact the NPS Ice Age National Scenic Trail Office in Madison, Wisconsin.

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- Impacts on natural resources by trail construction and trail use. This issue is discussed in sections A, B and C.
- Impacts on cultural resources by construction of the new trail and continuing trail use. This issue is discussed in section D.
- Cost of construction and operation of new trail. This issue is discussed in section E.
- Impacts on existing trails by designation as part of the Ice Age NST. This is discussed in section E.
- Impacts on trail users and communities. This is discussed in section E.

A. Impacts to Physical Resources

Geology

Under both the Preferred and the No-Action alternatives, little if any impacts are expected to affect the geological features within the corridor. When the trail is laid out for construction, the alignment chosen will attempt to accommodate any geological features present, minimizing possible impacts to these features.

Soils

Under both the Preferred and the No-Action alternatives, impacts to soils may occur but will be mitigated to a non-significant level. Soil type, slope, and drainage all influence the suitability of an area to withstand the potential impacts of trail construction and use. Trail alignment will be chosen so as to minimize the possibility of compaction or erosion of the soil surface. Soils that are rocky or frequently wet create difficult hiking conditions and will be avoided as trail tread.

With proper trail alignment along the landscape (e.g. on slopes less than 10%), the implementation of erosion control techniques, the use of planking or bridges, and vigilant trail monitoring, potential impacts to soils from trail construction and use can be mitigated to a non-significant level. As necessary, proper erosion control techniques such as sidehill construction, waterbars, and drainage dips will be employed. Soils that are particularly unsuitable, such as those in poorly drained areas, will be avoided. If the trail must cross a wet area, planking or bridges will be employed to minimize negative impacts from the crossing. Monitoring of the trail by volunteer trail maintenance staff will identify any cumulative erosion problems so that appropriate control actions can be taken.

Water Resources

The most significant surface water features within the trail corridor are Lake Michigan, the Kewaunee River, the Manitowoc River, the East Twin River, the Sheboygan River, and the West Twin River, as well as numerous kettle lakes, streams, marshes, and wetlands. Creation of the trail affords the opportunity to preserve these water features and interpret their significance within the landscape. Impacts on water resources may occur during construction, use, and maintenance of the trail. These impacts may include sedimentation, degradation to habitat, and stream bank destabilization.

Executive Order 11990, Protection of Wetlands, requires federal agencies to avoid, where possible, impacts to wetlands. Proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings. Soils, hydrology, and vegetation typical of a wetland environment exist within the Lake Michigan Ice Age Trail project area. The NPS would expect that the necessary permits will be obtained before trail construction begins on any portion of the Ice Age NST.

Trail construction in wetlands is subject to permitting under federal regulations administered by the U.S. Army Corps of Engineers and the Environmental Protection Agency. Wisconsin State Law also has provisions regulating the construction of trail in wetlands and stream crossings. These provisions will be followed in the Preferred alternative.

Under both the Preferred and No-Action alternatives, impacts to water resources would be mitigated to a non-significant level by using proper water crossing structures where water and wetlands cannot be avoided or where water features are included as part of the trail's glacial heritage. Bridges would be constructed to span creeks and streams, and boardwalks would be constructed through wetlands.

Under the Preferred alternative, up to 180 possible water crossings (as estimated from the 1:24k hydro layer maps) may be constructed. A planned corridor and professional involvement in siting these structures will help minimize the number of crossing structures necessary and also minimize related negative impacts to water resources. Ongoing monitoring of existing segments of the Ice Age NST has ensured that there have not been significant impacts to water resources as a result of either trail construction or trail use.

When water structures are constructed, placement of fill materials or structures in wetlands will be subject to state and federal regulation. The rules in place governing activities in Wisconsin wetlands include NR 1.95 and NR 103, Wisconsin Administrative Code. Any work on the bed or banks of navigable waters, including bridges, is governed under Chapter 30, Wisconsin Statutes. Permits from the WDNR will be needed to construct bridges and approaches, or conduct development activities in wetlands. Additionally, the U.S. Army Corps of Engineers has jurisdiction over wetlands and waters of the United States under Section 404 of the Clean Water Act. Permits from the Corps will therefore be needed to construct bridges and boardwalks in wetlands.

Under the No-Action alternative, similar impacts may occur, though these impacts are difficult to quantify since new and existing trail may be relocated without a planned corridor. Furthermore, the uncoordinated trail development that would occur under the No-Action alternative may lead to the construction of more water related structures (i.e., bridges, boardwalks, etc.) than may be necessary or efficient.

Air Quality

According to the U.S. Environmental Protection Agency (EPA), Kewaunee, Manitowoc, and Sheboygan counties are identified as “nonattainment” areas, or areas that do not meet the EPA’s eight-hour ozone national air quality standard of 85 parts per billion. Nonattainment areas may be subject to certain requirements that reduce ozone-forming pollution and states are required to submit plans for reducing levels of ozone.

Under both alternatives, impacts to air quality would be minimal. The increased number of hikers in the area may slightly increase the level of motorized vehicle emissions as trail users travel to the trail. Conversely, overall emissions in the area may be reduced as more people walk the trail rather than drive for pleasure. Under the Preferred alternative, the presence of a protected greenway will limit some development and therefore limit negative impacts to air quality. Trail use is expected to be moderate, and effects on air quality resulting from trail users’ vehicles are expected to be negligible.

Visual Resources

The Preferred alternative will, over time, permanently protect land within the trail corridor from development. The trailway will typically include an area greater than the width of the trail itself, providing a visual buffer from the surrounding landscape. A planned corridor for the trail will ensure that possible trail route options are evaluated to provide outstanding views and excellent hiking experiences for trail users.

Vegetative management plans could be implemented to further increase the trailway's scenic value over time. This will benefit not only the trail but also surrounding areas. Employing vegetative management plans might involve work to enhance existing plant communities or re-create communities such as prairie restorations. Selective pruning or cutting may also be implemented to improve views of features inside or outside the immediate trailway.

Depending on its location, the trail will offer numerous opportunities to preserve views, vistas, and other visually appealing topographical and vegetative features. Incorporation of these elements into the trailway will expose visitors to scenic resources they would not normally encounter. Because many of the areas within the trail corridor are known for their scenic beauty, they are especially threatened by scattered site rural development. Incorporating scenic points into the trailway will preserve many of these areas for generations to come.

Under the No-Action alternative, the location of the trail will be dependent on handshake or written agreements. Under this arrangement, only the trail itself or a very limited area surrounding the trail would be protected from development. This protection would generally be temporary. Under this alternative, the natural area created by the trail may be limited in size and could eventually be lost due to trail relocation. Planning activities to determine the trail route would be minimal and significant views might therefore be left out of the eventual trail route.

The LMIAT corridor has experienced considerable growth pressure. As new rural residences encroach upon potential trail, a user's experience of the trail will diminish. Although development along the trail route has primarily been limited to single-site rural development, some areas along the trail are prime candidates for rural subdivisions. This type of larger-scale development would significantly threaten the integrity of the trail environment as well as the stunning visual resources found within the trail corridor. Because the No-Action alternative does little to quell the growth of rural homesite development, all visual features along the trail would be threatened under this alternative.

B. Impacts to Biological Resources

Ecosystem Impacts

Development of the Preferred alternative for the Lake Michigan Ice Age Trail will create a continuous, protected, undeveloped trailway of diverse habitats—both uplands and wetlands—that will promote an increase in biodiversity within the trailway. Because of the linear nature of the trail, this greenspace will serve as a wildlife corridor, facilitating movement between areas of protected land. This trailway will also prevent future fragmentation of the trail by prohibiting encroachment of suburban developments.

Although the development of a trailway will have limited adverse environmental effects, these impacts will be less destructive than many of the existing land uses. Current agricultural land practices make the soil prone to erosion and the use of petro-chemicals may have a negative effect on land and wildlife health. The trailway will create an improved biological habitat for birds and wildlife by supporting plant diversity, allowing natural processes to occur, and reducing fertilizer and pesticide use.

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It is possible that the development of the LMIAT may lead to increased residential development along the trailway, which could have a negative impact on the plant and animal communities in the area. Residential development in Kewaunee, Manitowoc, and Sheboygan counties, however, is based on larger market trends. In recent years, new residential construction has averaged an annual 150 new residences in Kewaunee County, 350 new homes in Manitowoc County, and 1400 new homes in Sheboygan County. Most of these homes have been sited to take advantage of the scenic values of the topography and tree cover associated with the area's moraines. The trail's role in encouraging residential development is likely to be limited to areas directly adjacent to the trailway and will not be significant within the larger development trends of Sheboygan, Manitowoc, and Kewaunee counties.

Further land acquisition and development of the Ice Age NST into adjacent counties and beyond will extend the protected trailway. The cumulative effects of this protection will increase public recreational opportunities and promote increased biodiversity by discouraging habitat fragmentation and resource destruction.

Under the No-Action alternative, the ecosystem may temporarily benefit from the use of private lands within the trail corridor. However, because land ownership can change, protection provided under this alternative would only be temporary. Development would be a constant threat to the trailway and surrounding ecosystem.

Threatened and Endangered Species

The National Park Service and United States Fish and Wildlife Service (USFWS) are currently developing Best Management Practices (BMPs). These practices are intended to minimize the impacts to threatened and endangered species resulting from the construction and use of the Ice Age NST. By adhering to the BMPs being developed, the Preferred alternative is unlikely to negatively impact threatened and endangered species. In the event that the NPS is not able to avoid adverse effects to listed species, formal consultation will be initiated with USFWS.

Under the No-Action alternative, lack of a planned corridor and coordination with USFWS and WDNR Bureau of Endangered Resources may result in unintentional adverse impacts to species and habitats.

Invasive Species

According to Executive Order 13112, the "Invasive Species Act," an invasive species is "a species that is: 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health."

Under the Preferred alternative it is possible that a non-native or invasive species could be introduced to the trailway. Currently, the primary vegetation within the LMIAT corridor is

agricultural cropland. Forests represent only about 10% of the land area and consist of maple-basswood, lowland hardwoods, and oak. The only large mesic forest in the region is on the southern edge of the corridor in the Kettle Interlobate Moraine, an area characterized by rugged topography unsuitable for agricultural use.

A program of regular monitoring and inspection for invasive exotic species should be implemented as part of the Preferred alternative. The monitoring and control of invasive species is considered a regular trail maintenance activity. Trail maintenance on publicly-owned properties is performed according to specific agreements, schedules, and policies developed specifically for the property. In some instances, trail maintenance will be performed by the WDNR agency's paid staff according to established procedures. In other cases, maintenance will be done by volunteers who participate in annual and periodic trail activities. This program should be started during the construction phase of the trail. Some common invasive exotics that will be monitored within the corridor include purple loosestrife, garlic mustard, spotted knapweed, tatarian honeysuckle, buckthorn, black locust, and wild parsnip.

Management of invasive species will follow all appropriate WDNR and federal policies. Control measures will differ according to the species of invasive and may include manual harvesting, plowing, use of herbicides or poisonous agents, fire, and natural predators. The goal of all control activities will be to purify the biotic community and to protect it from future invasions. It is possible that equestrian use may cause the spread of invasives along a small portion of the trail corridor. To combat these effects, control efforts will be taken to educate local chapters on proper invasive control methods and involve members in manual removal such as trail work days.

Under the No-Action alternative, development of the trail would be more opportunistic. Development would not undergo the same evaluative process as will occur under the Preferred alternative. This process would also not include WDNR land managers to help identify a route that would have the least impact on advancing exotic species. Development under the No-Action alternative would therefore adversely affect the growing problem of invasive species within the LMIAT region.

C. Impacts to Historic/Cultural and Archeological Resources

The NPS has a Programmatic Agreement with the Wisconsin State Historic Preservation Officer (SHPO) on methods to identify and avoid impacts to cultural resources when designing and building the Ice Age NST. Table 4-4 contains a summary of known archeological resources—sites that will be avoided in trail development. This list will be updated as additional information becomes available through consultation with the SHPO and other groups and individuals. See Appendix D for the full text of the Programmatic Agreement between the Wisconsin State Historic Preservation Office and the Ice Age NST.

D. Impacts to Socio-Economic Resources

Communities and Businesses

Establishment of the trail under the Preferred alternative will attract users into the communities through which the trail passes. Additional trailheads with parking areas may be developed with minor increases in local traffic possible.

Increased public use of the area may benefit local businesses. Although the trail may attract some new commercial establishments to local communities, a significant increase in this type of development is not expected. As awareness and use of the Ice Age NST increases, some economic benefits to existing area businesses such as grocery stores and bed & breakfasts may result from spending by day hikers and overnight backpackers.

Economic benefits to trailside communities would not be as great under the No-Action alternative since completion of a continuous Ice Age NST through Kewaunee, Manitowoc, and Sheboygan counties would be unlikely.

Under both alternatives, emergency services for hikers may be necessary. The appropriate local jurisdiction will be responsible for any law enforcement or emergency responses along the trail.

Land Use and Land Ownership

In some areas of the trail corridor, land use will change from agricultural use to conservation/recreational use. This means that currently cultivated land will revert to native plant communities. The increased plant diversity and decreased use of fertilizers and pesticides in these areas will create an improved biological habitat for birds and wildlife.

According to the Natural Resources Conservation Service (NRCS), projects that irreversibly convert farmland to non-agricultural uses are considered subject to the Farmland Protection Policy Act. The NRCS does not consider the Ice Age NST project as an irreversible conversion of farmland. Some land acquired for the trail may be leased back for agricultural purposes, thereby preserving the existing land use.

Conflicts may develop between trail users and neighboring agricultural areas. For example, farmers are concerned about how and to what extent the trail and its users will impact their management practices (pesticide application, manure spreading). To address these concerns, the trailway will typically provide a buffer between the trail and neighboring landowners.

Land use and ownership patterns within the trail corridor are changing. In all three counties of the Lake Michigan Ice Age Trail study area, large ownerships are increasingly being subdivided for residential use, second homesites, and recreation purposes. Trends indicate that this change is occurring rapidly in some areas. Most of the parcels being created for new homesites are less

than five acres in size. Under the No-Action alternative, this trend will continue with a subsequent loss of opportunities for trail construction. Completion of a permanent, continuous trailway would therefore be unlikely under this alternative.

Securing lands for the trail may change current land uses. This does not, however, preclude other future uses. Under the Preferred alternative, lands are protected for trail use, development is restricted, and resources are protected. The trailway may, however, be such an attractive and desirable resource that it attracts residential development. The Ice Age NST is a permitted use in all zoning classifications (§ 236.292 Wis. stats).

Land acquired or protected for the trail will provide opportunities for neighbors, non-residents, and non-property owners to access glacial features along the trail. Some neighboring landowners are concerned about the possibility of trail users trespassing onto their lands and the loss of privacy that may occur as a result of these users. The acquisition zone of the trailway will provide a natural buffer between trail users and property owners. Signage will be used to direct trail use. Volunteers will monitor the trail and provide information to users to discourage inappropriate uses and activities.

Recreation Resources

Creation of the Ice Age NST through Kewaunee, Manitowoc, and Sheboygan counties will not only enhance public awareness of Wisconsin's glacial landscape, it will also connect these counties to an existing statewide recreational trail system. The Lake Michigan Ice Age Trail will provide a continuous link between two existing segments of the Ice Age Trail at the Kettle Moraine State Forest and the Ahnapee Trail. The trail will also provide a link to the Mariners Trail and the Kewaunee River section of the Ahnapee Trail corridor running through the Besadny Wildlife Area. The trail will be used primarily for hiking, birdwatching, interpretive walks, and snowshoeing.

As part of the 2005-2010 Wisconsin SCORP, researchers completed a statewide survey of state and local recreation plan recommendations. From this survey, the Ice Age NST was found to be a desirable feature across the state. Development of the Ice Age NST will also help accomplish the Upper Lake Michigan Coastal SCORP regional recommendation of providing more hiking trails. The Lake Michigan Ice Age Trail will support a regional population that day hikes (34.7%), runs or jogs (32.6%), picnics (54.3%), snowshoes (8.0%), and cross-country skis (19.4%). In addition to this regional population, the trail will also provide increased recreation opportunities to citizens across the state and the Upper Midwest region.

Kewaunee River Section of the Ahnapee Trail

The Kewaunee River section the Ahnapee Trail serves as a connection from Casco Junction to the City of Kewaunee. Under the Preferred alternative, the designation of this trail section as Ice Age NST will provide two primary benefits. The first benefit will be the provision of a trail connection to other state recreational lands near the City of Kewaunee, allowing for increased recreation within the city. The second benefit will be a connection to the Lake Michigan

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shoreline, which will facilitate participation in other types of recreation such as fishing and swimming. Public and governmental comments have shown strong support for the Ice Age NST to be located within this corridor. Under the No-Action alternative, the primary goal of allowing a user to experience Lake Michigan may not be met.

Mariners Trail

The Mariners Trail is an established pedestrian trail that serves the City of Manitowoc and offers connections to the Lake Michigan shoreline. Under the Preferred alternative, this trail will be designated as part of the Ice Age NST, an act that will increase the number of trail users on both trails, and will encourage visitors to explore other sections of the larger Ice Age NST. Public and governmental comments have shown strong support for connecting Mariners Trail with the Ice Age NST. Under the No-Action alternative, the primary goal of allowing a user to experience Lake Michigan may not be met.

Rawley Point Trail

The Rawley Point Trail is an established bicycle and pedestrian trail that serves the City of Two Rivers and offers connections to Lake Michigan and the Point Beach State Forest. Under the Preferred alternative, this trail will be designated as part of the Ice Age NST, an act that will increase the number of trail users on both trails, and will encourage visitors to explore other sections of the larger Ice Age NST. Public and governmental comments have shown strong support for the connection of Rawley Point Trail to the Ice Age NST. Under the No-Action alternative, the primary goal of allowing a user to experience Lake Michigan may not be met.

Impacts to Other Recreational Resources

The Lake Michigan Ice Age Trail may impact recreational uses on other public lands it comes in contact with. One positive impact the trail will provide is better hiker access to portions of public holdings. In the 2005-2010 Wisconsin SCORP, “lack of access to public lands” was identified as a primary environmental barrier to increased physical activity/outdoor recreation. Development of the Lake Michigan Ice Age Trail will allow for better access to public lands and a greater awareness of these lands. A possible negative impact of the trail is that trail users may conflict with hunters and fishers, diminishing the recreational quality of each user’s experience. In the 2005-2010 SCORP, recreation compatibilities were assessed for a number of common recreation uses across the state. Through this work it was found that hikers view hunting as an activity antagonistic to their own. From the hunter’s perspective, however, hiking has a neutral/supplementary interaction with hunting. These findings suggest that hiking and hunting—as well as other potential trail uses—can be compatible given proper planning and managed user interactions.

Because the corridor will pass through local recreation lands, these areas may receive additional visitors as a result of the trail. These facilities, however, are not expected to be greatly affected. Some secondary impacts such as litter and trespassing may also occur. These impacts will be minimal, however, as the Ice Age NST is designed and managed to provide for low-impact experiences.

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Future use of the Lake Michigan Ice Age Trail is hard to anticipate. Based on use patterns of other trails, it is likely that use will be highest near populated areas or existing recreation areas. In some areas, conflicts between user groups could develop. These conflicts are also difficult to predict, because perceived conflict is directly related to volume of use. Trail volunteers and local law enforcement agencies will monitor the trail as necessary.

The physical and social carrying capacities of the trail are not known, and to some degree may be dependent upon the width of the trailway actually acquired, volume of use, and other factors. Use of the Ice Age NST in other areas has not resulted in deterioration of local resources or a lessened user experience.

As the trail is developed and becomes more widely known, users and patterns of use can be studied and monitored. Actions will be taken as necessary to resolve user conflicts or other conflicts that develop as a result of the trail's presence.

In the case of injury to a trail user or a fire along the trail, an emergency response may be needed. In these situations, law enforcement and medical professionals from the nearest community will be responsible for proper emergency response. The risk of such an event occurring is minimal, as is the risk of environmental damage from such a response.

Under the No-Action alternative, trail development and management responsibilities are the same as for the Preferred alternative. Potential impacts would therefore be the same.

Impacts to Public Health

Within the State of Wisconsin, 61% of adults are overweight or obese. By providing a space for active outdoor recreation, the Preferred alternative establishment of the Ice Age National Scenic Trail may help the state reach the 2010 Center of Disease Control (CDC) goal of only 15% of adults being overweight/obese. The trail corridor may also help the state meet an additional CDC goal of 30% of adults being physically active. Under the No-Action alternative it is very possible that the overweight/obesity trend will continue, leading to an increased incidence of type 2 diabetes, coronary heart disease, high blood pressure, and stroke, all of which contribute to shortened life expectancies and higher medical care costs.

Fiscal Impacts to Government

The fiscal impacts to local governments resulting from the development the Lake Michigan Ice Age Trail are unknown at this time. This is because there is no way to predict the amount of privately owned land that may become available for future acquisition or donation on a "willing buyer – willing seller" basis.

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In the event that lands within the preferred corridor are acquired on a willing buyer – willing seller basis, local governments will experience a minor, short-term increase in property tax revenues. Under a Wisconsin State Statute enacted on January 1, 1992, each time a new property is acquired, the purchase price is set as an equivalent of an assessment and aids-in-lieu-of-taxes are paid on that basis. One of the impacts of additional land acquisition for this project will therefore be an increase in these payments. Because the purchase price of these properties is often higher than the equalized assessed value of the property, the state's payment is often greater than the current tax value. As additional properties are acquired for the project, this increase in the tax base will continue.

On lands purchased by the State of Wisconsin since January 1992, the property value base used to calculate payment in-lieu of taxes (PILT), must be equal to or greater than estimated fair market value on a parcel for the year of purchase (s.s. 70.114). The purchase price is determined by an appraisal, which is completed by a certified general private appraiser or staff appraiser. The year after the initial PILT payment year and in all future tax years in which the WDNR owns the parcel, its property value base is adjusted based on the change in land values in the municipality where the property is located.

For example, if, in 1992, the state purchased 100 acres in the Town of Liberty at a price of \$1,000/acre, the state would assume the normal tax bill for the 1992 tax year. The following year, in 1993, the 100 acres would be designated as tax exempt and would receive a PILT. If the 1993 assessment level on land in the Town of Liberty increased and land was now valued at \$1,500/acre (an increase of 50% from original land values), the state would adjust its property value base and make the PILT payments to the Town of Liberty based on that figure, thereby realizing the same assessment level adjustment as that of other private landowners in the town. Likewise, if the assessment in the township went up in the following year, the state would adjust the PILT payment accordingly.

Existing improvements on properties acquired for the trail will be auctioned, sold for reuse elsewhere, or salvaged for materials. Because land within new property acquisitions will not generally be developed, fewer residences and cottages will exist within the project area, thus reducing the demand for public services such as police and fire protection. If the former owners relocate or build within the same municipal jurisdiction, the net effect would be zero.

Currently, the federal government does not have land acquisition authority to directly purchase lands for the trail, although they do provide grants to the State of Wisconsin to match funds for acquisition purposes. If the federal government was granted authority to purchase lands under Federal Law 31 U.S.C. 6901-6907, the Payments in Lieu of Taxes (PILT) Act, would authorize payments to certain units of local government with eligible federal lands within their jurisdictions. These payments would occur under prescribed payment formulas and within amounts annually appropriated by Congress. The laws that implement these payments recognize that the inability of local governments to collect property taxes on federally-owned land can create a financial impact to local communities. PILT payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. PILT payments are made annually for tax-exempt federal

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lands. The Bureau of Land Management administers the program by calculating payments according to formulas established by law and distributing the funds in an equitable manner. The two basic formulas are based on population and the amount of federal land in a local jurisdiction. One formula allows \$1.99 per acre. The other applies as follows: if property taxes were paid for the previous five years, payments will be 1% of fair market value of the property (sale price) or the amount of property taxes paid, whichever amount is smaller.

If land is acquired by the IAPTF, a non-profit foundation, a petition to exempt the land from property taxation could be filed. However, it is the current policy of the IAPTF to pay property taxes on Ice Age NST lands it owns unless invited not to do so by the local authority.

Lands purchased for this trail corridor will likely be acquired using State Stewardship funds or a similar bonding fund. The state pays for bonding on land acquisition costs when the interest or dividends must be paid on the bonds. Since 2000, \$10.3 million in federal funding has been available to match the State Stewardship Program for acquisition of lands for the trail.

Estimated Costs of Land Acquisition:

Under the No-Action alternative, development of the Ice Age NST would be opportunistic and would not identify the costs associated with the development of the trail, support facilities, or land acquisition costs. Without a plan to optimize costs, fiscal resources would likely be used in an inefficient manner. These impacts will largely be avoided under the planned trail construction and land acquisition practices outlined in the Preferred alternative. The costs of developing the Ice age NST under the Preferred alternative are discussed below.

The costs for acquiring and developing 120 miles of land in Kewaunee, Manitowoc, and Sheboygan counties will vary, depending on the location of the trail, width of the actual trailway, and the extent of trail that can be routed on lands already under public ownership. Within the 120-mile long corridor, 85 miles are located on private lands. Recent property sales of rural, non-agricultural land in the corridor have been upwards of \$2,000 to \$2,500 per acre for 40-acre parcels. This cost translates to about \$24,000 - \$30,000 per mile for each 100 feet of average corridor width acquired. For example, assuming that 80 miles of trail with an average corridor width of 200 feet would need to be developed on lands presently under private ownership, total land acquisition cost would be in the range of \$3,800,000 - \$4,800,000. Table 5-1 lists approximate trail development costs based on different trail length and average width scenarios.

Estimated Costs of Trail Development:

The majority of the trail built in Kewaunee, Manitowoc, and Sheboygan counties will be a simple brushed trail through grasses and trees. Labor will be provided by volunteers from the Ice Age Park and Trail Foundation. In steep or wet areas, trail construction will require more specialized developments such as sidehill construction and puncheon, turnpike, or boardwalk.

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These areas are expected to be limited, but as the precise location of the trail is unknown at this time, it is difficult to provide exact costs for these situations.

Depending on trail location, bridges may be required on the LMIAT.

Although the trail is expected to encounter several intermittent streams and/or drainage swales, none will require a significant bridge. A reasonable estimate for bridge construction cost on the Lake Michigan segment of the Ice Age Trail is \$225,000. This estimate assumes that two new bridges will be constructed at \$75,000 each, and that more minor construction valued at approximately \$5,000 will be used to span smaller swales and intermittent streams.

Parking is presently available at several locations within the corridor. Depending on trail location, this existing parking may minimize the number of new parking lots that need to be constructed.

Based on available road crossings and an approximate spacing of 8 – 12 miles between trailhead parking areas, additional parking areas may need to be developed. These trailheads will be designed to accommodate approximately two to five vehicles, with larger parking areas located on public lands designed for other recreational activities. A total estimated cost of \$34,000 is projected for construction and improvement of parking areas. This cost is based on an average cost of \$10,000 for one large lot and \$6,000 for four smaller lots. Simple information kiosks will be placed at each parking area. Three of these kiosks are presently in place and about six more are expected to be needed. Based on an estimated cost of \$1,500 per unit, the total cost for the new kiosks is estimated at \$10,000.

Table 5-1: Estimated Costs of Trail Development and Land Acquisition

<u>PROJECT ITEMS</u>	<u>PROJECTED COST</u>
Signage	\$ 75,000
Water Crossings	\$ 225,000
Parking Lots	\$ 34,000
Trailheads	\$ 10,000
Tread Construction	\$ 250,000
Land Acquisition	\$ 4,800,000
TOTAL ESTIMATED COST	\$ 5,394,000

Costs for development of this project are based on 2006 dollars. The implementation of improvement projects will be phased over five or more biennial budget cycles.

E. Summary of Cumulative Impacts

The Ice Age NST Corridor Planning Process for the Lake Michigan Ice Age Trail is part of the overall implementation of the trail across 30 Wisconsin counties. Statewide, approximately 600 of the trail’s eventual projected 1,200 miles have been developed. Much of the Ice Age NST has been and continues to be developed on private and public property. This development has occurred regardless of a Corridor Planning Process. Approval of a federal and state sanctioned plan will allow federal and state funds to be used to acquire private lands from willing sellers to permanently protect a trailway in Kewaunee, Manitowoc, and Sheboygan counties. With the continued development of the trail in other counties, there will be several cumulative impacts to state and local governments and communities. This section summarizes these impacts.

- The continued planning and development of the Ice Age NST throughout Wisconsin will require a commitment of funds to protect lands for the trail. Funds for acquiring lands will come primarily through the Federal Land and Water Conservation Fund and the State Stewardship Fund. The State Stewardship Program provides funds to acquire lands for the trail that are matched with federal and/or private dollars. The program also provides funds for the WDNR to acquire lands directly.
- For lands it owns in fee simple, the WDNR pays aids in lieu of taxes. WDNR acquisition of lands for use by the Ice Age NST will therefore not place a tax burden on local units of government. As more lands are acquired, however, the tax obligation placed on the WDNR may become substantial.

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- Some farmland will be used as trailway for the Ice Age NST. This farmland will in essence be “banked” since the land will be returned to a natural state. This reversion will increase wildlife habitat and biodiversity over the long-term. The Natural Resources Conservation Service confirmed that only federal projects that irreversibly convert farmland to non-agricultural uses are covered by the Farmland Protection Policy Act.
- Establishment of the Ice Age NST will result in an increased preservation of green, open space over both the short-term and the long-term.
- The Ice Age Park and Trail Foundation (IAPTF) is a 40-year-old organization whose primary focus is to protect, develop and maintain the Ice Age NST. The IAPTF works with local trail chapters, the NPS, and the WDNR to assure the continuity of the trail throughout the state. Continued development of the trail throughout its 30 Wisconsin counties will require a greater commitment by the IAPTF to recruit more members and develop and maintain trailway.
- Time is an important factor in the development of the Ice Age NST. The continued implementation of the Corridor Planning Process will speed up consensus on where the trail is located, and aid in its acquisition and development. Given the rising cost of land values within the trail corridor, shortening the time for completion of the Ice Age NST will ultimately decrease its cost.
- Establishment of the Lake Michigan Ice Age Trail in Sheboygan County will connect the trail with the existing trail corridor through the Kettle Moraine State Forest. The location of the northern end of the Kewaunee County trail corridor will establish a connection to the Ahnapee State Trail.
- Development of the Ice Age NST will provide families and individuals with opportunities to recreate and exercise. Rates of physical activity have reached an all-time low in the United States, a factor that has led to increased rates of obesity and associated diseases (type 2 diabetes, heart disease, etc.). Part of this inactivity may be attributed to the lack of safe, outdoor areas in which to recreate. A fully developed Ice Age NST will serve as a backbone for a statewide off-road trail system by offering 1,200 miles of hiking trail. Those who travel the Ice Age NST will relieve stress, better their health, and enjoy the scenic natural areas on the trail route.

Implementation of this corridor plan will require the commitment of human, natural, and fiscal resources to trail construction, development, and maintenance. This commitment is justified given the public benefits of the trail in terms of recreation, education, and preservation of significant national and state natural resources. Because this project is a partnership composed of federal, state, regional, county, local, and volunteer participants, its overall economic and management impacts will be shared, thereby diminishing the cost to any one agency or group.

Impairment

After review of the impacts of the proposal, it has been determined that the alternative selected will not result in the impairment of resources and will not violate the NPS Organic Act.

Chapter Six – Public Involvement, Consultation, and Coordination

Public Involvement

There has been considerable emphasis on public involvement during this trail planning effort. As part of the planning process, the IAPTF, NPS, and WDNR have made numerous contacts with citizens and agencies in Kewaunee, Manitowoc, and Sheboygan counties. The following list outlines the results of these contacts:

Core Team Meetings:

The Corridor Planning Process formally began on October 28, 2002, with the initial meeting of the Core Team. The purpose of the first meeting was to explain the Corridor Planning Process, discuss past efforts to establish the Ice Age NST in Kewaunee, Manitowoc, and Sheboygan counties, and gain an overview of the county's glacial landscape and other significant natural and cultural features. Since that time, the Core Team has met more than fifteen times to coordinate public involvement, conduct field work, and undertake other activities involved with refining the corridor, identifying potential trail routes, and assessing landowner interest.

County Team Meetings:

The Core Team held a series of meetings in October 2003 in each county of the LMIAT. These meetings included staff from county planning, zoning, land conservation, and recreation departments as well as local Ice Age Trail volunteers and conservation groups. All parties were asked to give input on locations of possible trail corridors.

Public Open House Meetings:

After providing further definition to the corridor, the Core Team hosted several rounds of public open houses. These meetings provided area landowners with an opportunity to learn about the Lake Michigan Ice Age Trail project, gain insight on how it would impact them, and share their level of interest as potential participants.

Two public open houses were held in 2003 to review background material for the development of possible Lake Michigan Ice Age Trail corridors through Sheboygan, Manitowoc, and Kewaunee counties. One open house was held on May 13 at the Fox Hills Golf Resort in Mishicot in northern Manitowoc County. The second open house was held on May 21, 2003 at Lakeshore Technical College in Cleveland in southern Manitowoc County. Information on both meetings was distributed to all the units of government in each county and to media sources in all three counties. A list of possible corridor features was generated at each meeting.

A second set of public open houses to review possible trail corridors for the LMIAT was held in 2004. One open house was held on April 6, 2004, at the Winter Park Ski Chalet in Kewaunee County. The second open house was held on April 7, 2004, at the Manitowoc Public Library in the City of Manitowoc. Information on both meetings was sent out to all units of government in each county and to media sources in all three counties. Features and issues identified at these

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meetings were noted on maps and were used to further refine possible trail corridors and alternative trail alignments.

A third set of public open houses in 2005 focused on landowner contact. These meetings reviewed possible trail corridors and gauged landowner reaction to the LMIAT. Information on each segment of the LMIAT was sent out to more than 6,000 landowners across the corridor's three counties, as well as to local government officials and media sources. Open houses were held on May 16, 2005 at the Montpelier Town Hall in Kewaunee County; May 23, 2005 at the Elkhart Lake Village Hall in Sheboygan County; May 25, 2005 at the Manitowoc Public Library in the City of Manitowoc; and June 7, 2005 at the Liberty Town Hall in Manitowoc County. A list of landowners both supporting and opposing trail development was compiled from these meetings.

Draft Plan and Environmental Assessment Review

The Draft Master Plan and Environmental Assessment was released for a 35 day review period starting July 19, 2006. To announce the draft review period the WDNR mailed postcards to over 6,000 landowners within the corridor's three counties. Letters were also sent to local government officials and media sources. Four public meetings were held during the review period: July 31, 2006, in the Town of Liberty; August 3, 2006, in the Town of Rhine; August 7, 2006, in the City of Manitowoc; and August 9, 2006, in the Town of Montpelier. In total, 122 persons attended these open houses. 56 comments were received on the draft, with 17 comments opposed to the trail, 24 in favor of the trail, and 15 neutral or requesting more information about the trail.

Comments opposed to the trail were generally from landowners who did not want trail on their property. These property owner locations were noted on parcel level maps. Because of the wide nature of the Corridor of Opportunity, landowners opposed to the trail could be avoided as trail alignments are developed. After reviewing all comments it has been determined that no changes are needed in the Corridor of Opportunity for further development of the Ice Age Trail.

Consultation for Preparation of Environmental Assessment

Agencies and Individuals Contacted:

- Wisconsin Department of Natural Resources
- Wisconsin Geologic and Natural History Survey
- State Historical Society of Wisconsin
- Ice Age Park and Trail Foundation
- United States Fish and Wildlife Service
- Natural Resources Conservation Service
- Carl Wacker, Assistant State Conservationist, Natural Resources Conservation Service
- Barney Olson, Real Estate Specialist, National Park Service
- U.S. Geological Survey
- United States Environmental Protection Agency
- U.S. Army Corps of Engineers
- U.S. Forest Service
- Federal Highway Administration
- 15 Indian Tribes and Nations

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Project Name: ICE AGE NATIONAL SCENIC TRAIL CORRIDOR PLAN County: KEWAUNEE, MANITOWOC, AND SHEBOYGAN

DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s.1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required

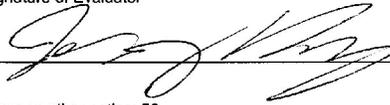


The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department.

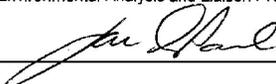
B. Major Action Requiring the Full EIS Process



The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator 	Date Signed 9/26/06
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Number of responses to news release or other notice: 56

Certified to be in compliance with WEPA	
Environmental Analysis and Liaison Program Staff 	Date Signed 9/26/06

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes, administrative codes and case law establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, ss. 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. Such a petition shall be filed with the appropriate circuit court and shall be served on the Department. The petition shall name the Department of Natural Resources as the respondent.

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Finding of No Significant Impact

When Congress amended the National Trails System Act in 1980, it authorized the establishment of the Ice Age Trail as a National Scenic Trail (NST), but designated only a general route for it. This general route frequently identified roads as “connecting road segment to NST” where there was no actual “trail” in existence and no specific idea where an off-road trail could be established in the future. This proposed route was then incorporated into the 1983 “Comprehensive Plan for Management and Use of the Ice Age National Scenic Trail” (Plan) with instructions that “detailed planning for the location and construction of new trail segments needed to make the Ice Age NST a continuous off-road trail...[should] begin as soon as possible.” Over the years, independent efforts to establish the Ice Age Trail in Kewaunee, Manitowoc, and Sheboygan counties have been sporadic and have needed a professional analysis to identify a viable route.

Through the Corridor Planning Process, the Wisconsin Department of Natural Resources, National Park Service, and Ice Age Park and Trail Foundation, partners in the Ice Age NST project, identified and evaluated alternatives for establishing a Corridor of Opportunity within which the Ice Age NST would be developed across Kewaunee, Manitowoc, and Sheboygan counties. The Corridor of Opportunity, which is approximately 3-5 miles in width, defines the area within which lands for the trail will be acquired or otherwise protected, but only on a willing seller basis. These lands, known as the “trailway,” average 200-1,000 feet in width. It is on these lands that the trail will be developed. The Corridor of Opportunity serves as a guide for federal, state, local, and private efforts to secure lands for the trail and as advisory information for town and county land-use planning. All participation in the Ice Age NST is voluntary.

The Purpose of the Ice Age NST is:

To establish a trail within scenic areas of the Nation to provide increased outdoor recreation opportunities and promote preservation of, public access to, travel within, and enjoyment and appreciation of the national scenic and historic resources.

To provide for maximum outdoor recreation opportunities and for the conservation and enjoyment of the nationally significant scenic, historic, natural, and cultural qualities of the areas through which the trail passes.

To provide a superlative hiking trail facility and experience consistent with preserving the landscape in which the trail is established.

To encourage and assist volunteer citizen involvement in the planning, development, maintenance, and management of the trail, wherever appropriate.

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The Preferred alternative will allow permanent protection of some of the geological, biological, and archeological resources within the corridor from development and will create a protected, undeveloped trailway of diverse habitats (both uplands and wetlands) that will promote an increase in biodiversity. The Preferred alternative will increase public recreational opportunities and connect existing recreational resources. Securing a trailway in public ownership will help maintain the existing wildlife and in some cases, will benefit threatened and endangered species by permanently protecting their environment. The Preferred alternative will provide opportunities for local landowners and visitors to have access to the glacial features along the trail as well as enhance public awareness of Wisconsin's glacial landscape through interpretation of glacial features.

The Preferred alternative will amend the route identified in the plan for Kewaunee, Manitowoc and Sheboygan counties. Approximately 125 new miles of trail will be built through these three counties; 5.3 miles of the Ice Age NST currently exist within the corridor. The Preferred alternative follows the unique interlobate moraine as it winds north to Door County. It incorporates existing and proposed local trails including the Mariners Trail, which follows the shoreline of Lake Michigan through the City of Manitowoc, and the proposed Kewaunee River section of the Ahnapee Trail as it winds through a distinctive tunnel channel. The Preferred alternative encompasses numerous state wildlife, forest and fishery areas, county parks, and municipal greenways. It includes Point Beach State Park, portions of which are designated a National Natural Landmark and State Natural Area because of the rare ridge and swale topography.

The NPS decision is to adopt the corridor described as the Preferred alternative in the Corridor Plan and Environmental Assessment. This is also the environmentally preferred alternative.

Environmentally Preferred Alternative

As stated in Section 2.7.D of *Director's Order #12 and Handbook*, the environmentally preferred alternative is the alternative that will promote the national environmental policy expressed in the National Environmental Policy Act (NEPA) (Sec. 101 (b)). Thus, the environmentally preferred alternative is the alternative that: "...causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources."

The EA evaluated two alternatives: the "Preferred" alternative and a "No-Action" alternative. The No-Action alternative would not adopt a specific corridor for the trail. The Preferred alternative is to adopt a specific corridor for the trail. A planning team was formed to investigate corridor and trail route options and conduct a public involvement process. A number of trail routes within the Preferred alternative's corridor were also identified and evaluated.

The Preferred alternative—to adopt a continuous corridor through Sheboygan, Kewaunee, and Manitowoc counties within which a high quality recreation trail (the Ice Age NST) will be

developed—is the alternative that maximizes the attainment of the national environmental policy expressed in NEPA. This alternative is also the alternative that best meets the intent of federal legislation relating to the trail as described in the “Purpose of the Ice Age NST.” The Preferred alternative incorporates those geologic features that best tell the story of the most recent glacial event that occurred in this region of the state. It also optimizes the use of public lands and existing support facilities, and will provide an outstanding hiking experience that will take the user through a diversity of habitats, topography, and cultural settings. The No-Action alternative amounts to abandoning any coordinated, collaborative effort to attain these goals.

Other Alternatives Considered

During the initial stages of the Corridor Planning Process, the Core Team evaluated seven other alternatives for potential Corridor of Opportunity locations. These alternatives were considered but eliminated. They are briefly described below.

- An alternative that followed roads through Manitowoc County. This corridor was dropped because the Ice Age NST is an off-road footpath.
- An alternative from Lake Michigan and Point Beach State Forest directly north to the City of Kewaunee. This possible corridor was dropped due to security concerns with developing a trail that would bypass two nuclear power plants.
- An alternative from Valders north to Maribel and Mishicot. Development of a trail along this corridor would preclude a connection to Lake Michigan and Point Beach State Forest.
- An alternative from Mishicot to Maribel Caves was not felt to be viable because of the difficulty in identifying public lands that connected to the caves. This corridor was also far removed from a trail connection to Kewaunee County.
- An alternative along Lake Michigan to the City of Kewaunee was dropped due to a lack of diversity in the landscape and a lack of public lands available for trail development.
- An alternative along the Ahnapee Trail from Casco Junction east to Algoma in Kewaunee County was dropped due to a lack of diversity in the landscape along the trail and the need to create a connection from the City of Kewaunee to Casco Junction.
- A connection to the City of Sheboygan along the Plank Road Trail paralleling State Highway 23. This alternative was dropped from consideration due to the lack of diversity of the landscape along the trail and the challenges posed by trying to establish a connection to the trail in Manitowoc County

Public Involvement

The WDNR issued a “Draft Ice Age National Scenic Trail Corridor Plan and Environmental Assessment for Kewaunee, Manitowoc, and Sheboygan Counties” for public review and comment for a 30-day period ending August 25, 2006. Comments about the assessment were accepted until the end of the review period. Comments were received from over 56 interested parties. Public comment was solicited throughout the planning process as well. Some comments stated support for the trail, expressed interest in selling land or easements for the trail, and offered to help build some of the trail. These comments were noted on parcel level maps. Comments received opposing the trail were generally from landowners who did not want the trail on their property. These property owner locations were also noted. Because of the wide nature of the Corridor of Opportunity, landowners opposed to the trail will be avoided as trail alignments are developed. After reviewing all comments, it has been determined that no changes are needed to the Preferred corridor alternative for further development of the Ice Age NST.

Scoping

Two public open houses were held in 2003 to collect and review background material for the development of possible Ice Age NST corridors through Sheboygan, Manitowoc, and Kewaunee counties. One open house was held on May 13 at the Fox Hills Golf Resort in Mishicot in northern Manitowoc County. The second open house was held on May 21, 2003, at Lakeshore Technical College in Cleveland in southern Manitowoc County. Information on both meetings was distributed to all the units of government in each county and to media sources in all three counties. Twenty-one people attended the events. A list of possible corridor features was generated at each meeting.

Alternatives Development

Public open houses were held to review possible alternative corridors for the Ice Age NST in 2004. One open house was held on April 6, 2004, at the Winter Park Ski Chalet in Kewaunee County. The second open house was held on April 7, 2004, at the Manitowoc Public Library in the City of Manitowoc. Information on both meetings was sent out to all the units of government in each county and to media sources in all three counties. 51 people attended the open houses. Features and issues identified at these meetings were noted on maps and were used to further refine possible trail corridors and possible route alignments.

Proposed Alternatives

Public meetings in 2005 focused on obtaining input from landowners within the proposed corridors. Information on the Ice Age Trail and possible corridor alternatives were sent out to more than 6,000 landowners across the proposed corridor’s three counties, as well as to government officials and media sources. Open houses were held on May 16, 2005, at the Montpelier Town Hall in Kewaunee County; May 23, 2005, at the Elkhart Lake Village Hall in Sheboygan County; May 25, 2005, at the Manitowoc Public Library in the City of Manitowoc; and June 7, 2005, at the Liberty Town Hall in Manitowoc County. 156 people attended the open

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houses. A list of landowners both supporting and opposing trail development was compiled from these meetings.

Preferred Alternative and Possible Route Options

A final series of open house meetings was held the summer of 2006 to present the Preferred corridor alternative to the public with possible route options for the trail. Meetings were held July 31 at the Liberty Town Hall, in Manitowoc County; August 3 at the Rhine Town Hall in Sheboygan County, August 7 at the Manitowoc Public Library in Manitowoc County, and August 9 at the Montpelier Town Hall in Kewaunee County. In total, 122 persons attended these meetings.

Environmental Consequences – Selected Alternative

The environmentally preferred alternative will not have a significant impact on the natural and cultural environment, or the socioeconomic resources of the project area. As defined in 40 CFR 1508.27, the significance of the proposal has been evaluated using the following ten criteria.

1. Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts which require analysis in an Environmental Impact Statement:

The NPS has determined that the environmentally preferred alternative can be implemented with no significant adverse effect to soils, air quality, water resources, floodplain, wetlands, fisheries, wildlife, threatened/endangered species, visual quality, aesthetics/recreation, cultural resources, and local economy. Implementation of the Preferred alternative will actually produce long-term beneficial effects for hikers and the environment.

The Preferred alternative is a 3-5 mile wide continuous corridor. It begins in northern Sheboygan County at the Kettle Moraine Ice Age National Scientific Unit and winds circuitously north through Manitowoc and Kewaunee counties, eventually connecting to the Ahnapee State Recreation Trail at Algoma. It follows the unique interlobate moraine that was formed between the Green Bay and Lake Michigan Lobes of the last glacial advance 10,000-100,000 years ago. This corridor was carefully designed to link six county parks; a state fishery, wildlife area, and park; two state natural areas; the Kewaunee segment of the Ahnapee State Recreation Trail; and numerous local trails and greenway systems including the Mariners Trail in the City of Manitowoc and the Rawley Point Recreation Trail that connects the City of Two Rivers to Point Beach State Park. This corridor will also facilitate the connection of scattered segments of the Ice Age Trail and existing state and local recreation facilities into a continuous 125-mile trail.

Development of this corridor will allow the expenditure of federal and state monies to permanently protect lands for the Ice Age NST for future generations. Today much of the trail exists on handshake agreements and is vulnerable to changes in land ownerships. Acquisition of lands for the trail will restrict residential, commercial, and extractive development, thereby protecting existing natural resources such as wetlands, fisheries, and wildlife habitat. A continuous trailway will connect islands of existing public lands, allowing movement of wildlife

and the perpetuation and enhancement of indigenous plant communities. Support facilities for hikers such as trailheads, water, parking, camping, and phones will be provided by the numerous public lands located within the corridor, thus saving major construction/development dollars.

Possible adverse effects may include problems with litter, additional soil compaction and erosion, trespass onto private lands, and interruption to wildlife patterns caused by increased access to areas within the corridor. Experience on existing segments of the Ice Age Trail and other long distance trails has shown that these impacts are minimal. Proper construction of trail, clear and sufficient signage, and ongoing monitoring of completed trail segments by volunteers should alleviate use problems. It is possible that some wildlife may be disturbed by the use of the trail, but this disturbance is short term and wildlife will become accustomed to the users' occasional presence.

Other adverse impacts include the possibility of increased residential development along the corridor, changes of land use from agricultural to conservation/recreation, and property tax implications of land acquisition for the trail. Securing lands for the trail may change land use. However, regardless of the trail, current land use and ownership patterns are changing. The effect of the trail will be localized to areas directly adjacent to the trail corridor and will not be significant on a larger scale. Presently, acquisition of lands for the trail is done primarily by the State of Wisconsin. The state pays property taxes, just like private landowners. Therefore, townships receive tax payments on state land with little or no demand for services to such lands. If, in the future, the National Park Service obtains the ability to purchase lands for the trail, then this action would constitute a minor, adverse impact on the local tax base. None of these adverse impacts were determined to be significant.

2. The degree to which public health and safety are affected:

Development of the Ice Age National Scenic Trail will provide the public with many benefits. First, none of the activities associated with establishing the preferred alternative will have an effect on public health or safety. However, a long distance, continuous trail that links numerous state, county, and local lands will provide many opportunities for the public to walk and hike for health and fitness purposes. Today in the State of Wisconsin, 61% of adults are overweight. Establishment of the preferred alternative for the Ice Age NST may help the state reach the 2010 Center of Disease Control (CDC) goal of only 15% of adults being obese. It may also help the state meet an additional CDC goal of 30% of adults being physically active. The impact to local communities of additional emergency response requests along the trail will be minimal.

Possible adverse effects consist of potential conflicts with agricultural management practices implemented by adjoining landowners such as pesticide applications and manure spreading. Since the trailway typically provides a buffer between the hiker and the neighboring landowner, this impact will be minimal.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:

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The Preferred corridor alternative was selected because of its high scenic, geologic, and cultural values. The landscape, shaped by multiple glacial advances of the late Pleistocene epoch, is largely defined by features such as moraines, drumlins, waterlain sediments, kames, kettle depressions, and drainage and tunnel channels. With its undulating topography and open spaces, the Preferred corridor alternative for the Ice Age NST will provide users with an ever-changing viewscape of distant panoramas and nearby landmarks. Viewsapes considered important in telling the geologic story of the area include Lake Michigan, Sheboygan Marsh, Lower Cato Falls, and Point Beach Ridges and State Forest. Significant landscape and geologic features include: the Interlobate Moraine best viewed between the Northern Unit of the Kettle Moraine and Valders, the Balderan Drift boundary best viewed along the East Twin River and the Montpelier area, and the outlets of Glacial Lake Oshkosh that include the Manitowoc River, West Twin River, and Kewaunee River. Within the corridor there are a plethora of interesting cultural features. Some of the more outstanding include Road America, Pinecrest Historic Village, the City of Two Rivers historic district, Rawley Point Lighthouse, and the USS Cobia located at the Wisconsin Maritime Museum in the City of Manitowoc.

The benefit of winding the trail through these areas is to provide a delightful hiking experience, educate the public about the region's significance, and to protect the area's scenic and natural values through land acquisition.

Construction of trail through these areas may cause a slight amount of soil erosion. However, with proper layout of the trail on the landscape, erosion control techniques, planking or bridges, and trail monitoring, all potential impacts from constructing and using the trail will be mitigated to a non-significant level. Wetlands will be avoided where possible and where wetlands must be traversed, they will be crossed utilizing elevated structures to minimize impacts. There are no national wild or scenic rivers that will be affected.

4. The degree to which impacts are likely to be highly controversial:

There are no highly controversial effects on the quality of the human environment identified during either preparation of the EA or the public review period. Comments received from the public expressed concerns about the trail's proximity to residences, security for home owners, trail users trespassing on private property, snowmobile trespass, the trail's affect on property values and tax base, parking for trail users, disturbing wildlife, and conflicts with hunters. Other comments stated support for the trail, expressed interest in selling land or easements for the trail, and offered to help build some of the trail. The impacts of this action are not highly controversial.

5. The degree to which the potential impacts are highly uncertain or involve unique or unknown risks:

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There are no highly uncertain impacts to this action. The Ice Age NST is primarily a 18 – 30 inch-wide brushed or constructed footpath through meadows and woodlands. This action will not involve any unique or unknown risks.

6. Whether the action may establish a precedent for future actions with significant effects, or represents a decision in principle about a future consideration:

The Corridor Planning Process for the Ice Age NST is typically done on a county-by-county basis. Designation of this preferred corridor alternative in Sheboygan, Manitowoc, and Kewaunee counties will connect future trail with existing trail in the Northern Unit of the Kettle Moraine State Forest on its south end and on its north end to the Ahnapee State Recreation Trail. This action is not deleterious and will not have significant future effects. These connections have been well thought-out in terms of significant glacial features regionally, linkage to public lands for support facilities, provision for a varied and scenic hiking experience, and preservation of natural features.

7. Whether the action is related to other actions that may have individual insignificant impacts but cumulatively significant effects:

Acquisition of land or easements by public agencies is often perceived by landowners or townships as threatening, detrimental, or resulting in loss of tax base. The local tax base should not be significantly affected by this action. If land is acquired by the state, property tax revenues on that land will be paid under provision of state law. If land is purchased by the Ice Age Park and Trail Foundation, a non-profit organization, a petition to exempt the land from property taxation could be filed. However, it is the current policy of the Ice Age Park and Trail Foundation to pay property taxes on all Ice Age NST lands it owns. If Congress should grant the National Park Service the authority to acquire land for the Ice Age NST, taxes would be paid under the PILT program. This action would constitute a minor, adverse impact on the local tax base.

8. The degree to which an action may adversely affect historic properties in or eligible for listing in the National Register of Historic Places, or other significant scientific, archeological, or cultural resources:

On March 19, 2004, the NPS signed a Programmatic Agreement with the Wisconsin State Historic Preservation Officer (SHPO) that defines methods to identify and avoid impacts to cultural resources when designing and building the Ice Age NST. During the Corridor Planning Process, known archeological sites were identified that will be avoided during trail development. If any other historic properties are discovered during trail design and construction, the trail will be relocated or other mitigating measures will be taken in consultation with the SHPO, as required under Section 106 of the National Historic Preservation Act.

9. The degree to which an action may adversely affect an endangered or threatened species or its habitat:

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Over ten years ago, the endangered piping plover nested at Point Beach State Park, but has not been seen in recent times. Through consultation with the United States Fish and Wildlife Service (USFWS) in June 2006, the NPS and WDNR agreed that if the piping plover should return to the park and nest again, users of the Ice Age NST will be temporarily detoured around the area on a designated route to avoid impacting the bird.

Currently, the NPS and USFWS are working together to develop Best Management Practices (BMPs). These practices are intended to minimize the impacts to threatened and endangered species resulting from the construction and use of the Ice Age NST. By adhering to the BMPs being developed, the Preferred alternative is unlikely to negatively impact threatened and endangered species. In the event that the NPS is not able to avoid adverse effects to listed species, formal consultation will be initiated with USFWS.

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment:

The Preferred alternative violates no federal, state, or local law, including environmental laws.

Impairment

After review of the impacts of the proposal, it has been determined that the alternative selected will not result in the impairment of resources and will not violate the NPS Organic Act.

Basis for Decision

The NPS selected the Preferred alternative over the No-Action alternative to ensure that the intent of the Ice Age National Scenic Trail’s authorizing legislation, the National Trails System Act, is met. The Preferred alternative is consistent with the Comprehensive Plan for Management and Use of the Ice Age National Scenic Trail, and will provide protection to cultural, historical and natural resources.

I find that the Preferred alternative does not constitute a major federal action significantly affecting the quality of the human environment. Therefore, in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40CFR 1508.9), an environmental impact statement will not be prepared for the project.

Recommended: Thomas L. Gilbert 12/6/06
Superintendent, Ice Age National Scenic Trail Date

Approved: James C. [Signature] 1-30-2007
NPS Midwest Regional Director Date

Definition of Terms

Biodiversity: The variety and variability among living organisms and the ecological systems in which they occur.

Corridor of Opportunity: A planned and mapped linear space, generally one to three miles wide, though it may be wider in some areas to protect exceptional features. This corridor is the area within which cooperating partners of the Lake Michigan Ice Age Trail are working to establish the "Trail" and a suitable "Trailway." The Corridor of Opportunity has different implications for each primary partner:

- To the WDNR, the Corridor of Opportunity represents the area within which the organization may (1) accept gifts of lands for dedication for the Ice Age National Scenic Trail, and (2) acquire lands for the trailway of the Ice Age NST.
- To the NPS, the Corridor of Opportunity represents the area within which it will exercise authority to establish, protect, and manage the Ice Age NST. The corridor is an area that has been delineated through a public planning process and has met federal environmental compliance requirements. The lines defining the corridor will be treated as the boundary for the trail within which federal land acquisition authority for the trail will be exercised to create a suitable trailway, should that authority be legislatively given. The corridor also represents the area which will be considered in all other planning documents such as resource management plans and land protection plans.
- To the IAPTF, the Corridor of Opportunity represents the area within which the organization will seek to protect or have protected a suitable trailway for the Ice Age NST. This trailway will preserve significant glacial features, provide an outstanding trail user experience, and manage, on a sustainable basis, the resources along the trail corridor. See also *Trail* and *Trailway*.

Rarely will these partners seek to acquire or protect the entire width of the corridor for the trail, except in cases where the corridor contains outstanding glacial features. The wide corridor width has been designed to accommodate private landowners as lands for the trail are acquired from these landowners on a voluntary basis. See also *Trailway*.

Dedication: As provided for in Wis. Stats. 23.293, dedication is the transfer of land or a permanent interest in the land to the State of Wisconsin (for Ice Age NST purposes), and a binding unilateral declaration by the state that the land rights under state ownership will be held in trust for the people of Wisconsin by the WDNR in a manner which ensures the stewardship of the area.

Drumlins: Elliptical or elongate hills formed by erosion and deposition of material beneath thick glacial ice. Drumlins are streamlined in the direction of ice flow.

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Endangered Species: A species on the Federal Endangered Species or Wisconsin Endangered Species list whose continued existence as a viable component of the state or national biotic community has been determined, on the basis of sound scientific evidence by the U.S. Fish and Wildlife Service or the WDNR, to be in jeopardy.

Exurban: Pockets of residential development lying beyond the suburbs of a city, typically composed of upscale homes.

Ice Age Park and Trail Foundation (IAPTF): The Ice Age Park and Trail Foundation is a non-profit Wisconsin corporation whose mission is to create, support and protect a continuous thousand-mile foot trail tracing Ice Age formations across Wisconsin. It accomplishes this mission by cooperating with the NPS, DNR, local governments, businesses and private landowners to preserve Wisconsin's glacial heritage for the education and enjoyment of present and future generations.

Kettle: A depression formed by the melting of buried glacial ice. Some kettle holes hold water.

LMIAT: The Lake Michigan Ice Age Trail planning process for the Kewaunee, Manitowoc, and Sheboygan counties.

Memorandum of Understanding: A legal document describing an agreement between separate parties.

Moraine: a landform created by the rocks and debris carried by a glacier. The landscape of the future Lake Michigan Ice Age Trail has many moraines left by the retreating ice sheets of the Wisconsin Glaciation.

National Park Service (NPS): The agency within the U.S. Department of the Interior that is responsible for preserving, protecting, and managing the natural, cultural, and recreational areas of the National Park System. The mission of the NPS includes two primary goals: to preserve natural and cultural resources, and to provide for public use and enjoyment of these resources in ways that leave them unimpaired for future generations. At the federal level, the NPS is responsible for carrying out the provisions of the National Trails System Act as they relate to the Ice Age NST by coordinating, guiding, and assisting the efforts of others to acquire, develop, operate, protect, and maintain the trail. The 1983 Comprehensive Plan for the Ice Age NST identifies the WDNR and the IAPTF as the primary cooperators in the long-term effort to develop and manage the trail.

National Scenic Trail: National Scenic Trails are 100 miles or longer of continuous, primarily non-motorized routes of outstanding recreation opportunity. Such trails are established by Act of Congress.

Outwash: A sloping deposit of rounded gravel and fine sand left by the ice streams flowing away from a glacier.

Special Concern Species: Species which are suspected to have low populations or limited distributions, but which have not yet received state or federal classification as threatened or endangered. This state classification was developed to call attention to species before they become threatened or endangered.

Stewardship Fund: A legislatively established Wisconsin fund that is administered by the WDNR and provides funding for conservation and recreation programs, including matching grants to non-profit conservation organizations for certain projects. The Ice Age NST is one such qualifying project, and may receive state grants for land acquisition.

Threatened Species: A species on the Wisconsin or federal Threatened Species list which appears likely, within the foreseeable future and on the basis of sound scientific evidence, to become endangered.

Trail: The usable tread and immediate surrounding space that is maintained for the purpose of passage along the trail route. For walking only segments of the Ice Age NST, this tread may be 24 – 30 inches wide with an additional two feet of cleared space on either side. For segments where other activities are also allowed, these measurements will likely be greater. See also *Corridor of Opportunity* and *Trailway*.

Trailway: The width or area of land that is managed for the purposes of the Ice Age NST. The trailway includes the trail and surrounding lands that are owned, leased, held by easement, or in some way controlled for management as part of the Ice Age NST. Generally the trailway width ranges from 50-1000 feet. It is most often the land that the IAPTF has secured for the Ice Age NST, frequently with Stewardship Fund grants. These secured rights may be held by the foundation, or may have been transferred to the WDNR. Where the trail passes through existing public ownership or management areas, the trailway is the width or area of land that the managing agency has committed for management by the trail. See also *Corridor of Opportunity* and *Trail*.

Wisconsin Department of Natural Resources (WDNR): The state agency responsible for implementing state and federal laws that protect and enhance Wisconsin's natural resources—its air, land, water, wildlife, fish, and plants. The agency coordinates the many state-administered programs that protect the state's environment while also providing a full range of outdoor recreational opportunities for Wisconsin residents and visitors.