WHITE RIVER GREENWAY CORRIDOR:
A Multi-Spectrum Recreational Plan
for Hamilton County, Indiana.

Ball State University
Department of Landscape Architecture
Undergraduate Thesis Project
May 21, 1988

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This thesis is dedicated to my wife Johanna who has given unconditional love, support, and understanding through good times and bad. And for helping me to realize my dreams and to believe in myself.
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Introduction

Rivers historically have been the lifeblood of many prosperous towns. They were depended upon as a means of transportation for shipping of goods from one town to another. As time passed newer and more efficient modes of transporting people and goods were invented and towns began to turn away from their rivers. Recently, however, interest in our great rivers is being revived. Only this time we are looking at them as a resource for good recreation and aesthetic value. Indiana is somewhat limited in its supply of diverse resources for recreational opportunities. Therefore, we must take advantage of one of the few resource bases that it has in abundance, its natural waterways. There relatively untapped resources have the potential to afford numerous and diverse opportunities for recreational uses.

Indiana as a whole, and specifically the central Indiana Region, is in great need for more quality recreational opportunities for its residents. Daily, miles of land and water resources ideally suited and available for recreation are being developed for other uses, especially those near our centers of high population densities. Traditionally, recreation spaces have been in the form of large city parks or small neighborhood playgrounds. These types of recreation areas provide the users with a place to escape the hustle and bustle of the city; however, they are severely limited in the types of recreational
experiences they can offer and the number of users that they can accommodate. Developing a White River Greenway Corridor would provide the unique opportunity to create a more natural type of recreation setting near a highly populated area and would offer the users a chance to experience the natural and man-made features of the Indiana landscape. This study will illustrate how a river, a resource base that is common in most areas, could be developed into a cultural, scenic, educational and recreational amenity to be used and enjoyed by many people.
CHAPTER 1

Area Demands for Recreation

Deficiencies in recreational opportunities in central Indiana have been brought to attention during the past decade. Recent studies conducted by the Indiana Department of Natural Resources, private research firms, and a number of various governmental agencies have clearly indicated the enormous need for additional outdoor recreation opportunities in central Indiana (Vollmar, 1974). The Vollmar Report, entitled Master Plan for Acquisition and Development, proposed a long range plan to help Indiana fill its recreational voids by developing five new state recreation areas (IDNR, White River, p. 6). Of these five, three have been developed, but all are outside the central region. These new recreational opportunities for northern and southern Indiana residents have developed as uneven distribution of people and resources.

With more than half of the state's total population, the central region is serviced by less than 30% of the state's total available recreation areas. This results in a large void in recreational opportunities for the largest number of the state's population. With yearly population increases, this is quickly becoming a critical issue which must be planned for and invested in for future growth. Of the four existing state recreation areas within central Indiana region, all exhibited a heavy use rating (IDNR, State Park, p. 22). Another problem is the location of these areas related to the major populous core around the
Indianapolis area. Uneven distribution of population and facilities forces central Indiana residents to travel more than an hour to gain access to major recreational areas.

With the increasing shift to large urban areas, over 50% live and work in urban centers. Like most regions surrounding a major metropolitan areas, central Indiana is experiencing a large boost in population. The eight-county region around Marion County and Indianapolis account for 21.5 percent of the state's total population and projections indicate a consistent rate of increase through the year 2000. Although this central core of the state is growing at almost geometric proportions, Marion County and Indianapolis are experiencing a 3.6% decrease in population. This reflects the present high density of the county and the increasing shift towards living in the peripheral areas of large urban centers and commuting to work. Each of the outlying counties exhibits growth factors higher than the state's average, with Hamilton County showing the highest growth rate in the state (IDNR, White River, p. 12). Hamilton County by far ranks number one in population increase from the years 1970 to 1980, increasing by just over 50 percent (Census Report, 1980). All projections point to its continued growth in the future.

The popularity of suburban living has drawn many urban dwellers out of Indianapolis into the rural areas and the small towns in the surrounding counties. This increased interest in moving to surrounding rural areas of large cities has placed a great strain on the outlying lands. Suburban sprawl and the
almost yearly increases in corporation areas with cities are rapidly encroaching on agricultural land, environmentally sensitive areas and areas of cultural, historical and scenic interest. The most aesthetic areas are usually the first to be developed and in Hamilton County this has meant those areas closest to the White River. Developers find the varying topography, wooded areas and views of the White River prime locations to build multi-family housing and commercial developments. The result is an endless string of similar developments that follows the curves and meanders of the river visually impacting the natural character and scenic quality along its path. If current development trends continue, the separations between the smaller towns of Carmel, Fishers, and Noblesville will become indistinguishable from each other and from the land ravenous Indianapolis. For this reason, it is imperative that areas of historic, scenic, cultural and recreational value be planned for and preserved for future generations.

The 1979 Indiana Outdoor Recreation Plan accessed the needs for recreation on a state wide level. The study recommended that the White River in Indianapolis and the Anderson- Muncie area be studied for its potential to meet the needs within the central Indiana region. Following this recommendation, the IDNR commissioned a two-part study, Recreation Potential for the White River, to explore the possibility of increasing the usability of the West Fork of the White River for recreation opportunities (IDNR, White River, p. 3). The study identified the outdoor
recreational and open space needs and opportunities within a 145-mile study area along the Upper West Fork of the White River and concluded that the White River corridor is one of the few resource bases in central Indiana around which a regional system may be established. Of particular interest is the fact that over one million people live within a fifteen minute drive to the banks of the river (Lappas, p. 40).

Data derived from the 1976 Indiana Outdoor Recreation Participation Survey was used to interpret favored activities of recreation seekers throughout the study area. Of all outdoor recreation activities picnicking, fishing, bicycling, hiking, canoeing, camping, and hunting ranked highest among most desired activities. The range of activities chosen exhibited a strong relationship to the types of opportunities that a river corridor could provide. Areas of intensive activity along with areas for extensive activities such as nature walks and primitive camping can best be facilitated by a linear site with natural areas such as a river corridor (INDR, White River, p. 3).

The study concluded that the natural resource base of the White River corridor possesses the potential for all of the above facilities. Field surveys of the river indicated a wide range of habitat and verified that many conditions were favorable for such areas as wildlife and forest management, and nature study areas for aesthetic and educational intent. The study also concluded that the land-uses adjacent to the river were evenly mixed and
that enough forested open space and agricultural areas still existed to preserve the natural quality of the corridor (IDNR, White River, p. 3).

By evaluating natural habitat, demographics, existing recreation areas, and the data gathered through numerous public workshops and questionnaires, the DNR proposed a network of 13,000 acres of planned areas for managed wildlife and forestry, recreational use and sites providing access to the river between Muncie and Martinsville. The study was concluded at this point and although it was a valid and reliable research project, it was little more than a regional scale inventory and acquisition plan for the 145-mile corridor. Lack of financial support and public interest slowed the White River corridor from being developed at that time.

Later the firm of Landplus West based in Yorktown was commissioned by the state DNR to further develop the network of resource areas and access sites that they had designated in the recreation potential study. The findings of the firm were documented in a book entitled White River Resource System - A Resource for Recreation. The proposed White River Resource System is made up of ten resource areas and eight access sites, each of varying size and variety of proposed recreation opportunities. The ten resource areas range from 300 to 3600 acres in size and include plans for the development of the natural resource base, and the recreational opportunities and environmental potentials of each site. Eight small parcels of land providing public
access to the river at selected locations allow small boat and canoe launching (Landplus West, p. 40).

The findings of this land planning firm are significant in the developmental steps leading to the White River Corridor being realized; however, giant strides remain. The concluding level of development that was presented was large scale land-use plans. This was undoubtedly due to the length of the corridor that was studied and a small budget for design services allotted by the state DNR. Possibly time and finances could have been served more usefully in the development of a small segment of the corridor to a greater level of detail. This lack of specific design solutions became the basis for the selection of my terminal project. This project is based on the premise that the general public will not comprehend a general conceptualized plan of a river corridor system. Following this line of thought, one can see how developing or concentrating on a smaller portion of the corridor may place the entire 145-mile corridor into perspective. Developing the corridor in a segment by segment fashion will gain public support. People are not likely to support something that they do not fully comprehend. Taking the proposed development to a greater level of detail and limiting it to a size that most people can relate to may ensure a greater amount of support, which may in turn make implementation a realizable goal.

The site for this project -- the White River Greenway Corridor -- is located in the central Indiana region within Hamilton County. The northern point of the corridor starts 16
river miles upstream from the Marion-Hamilton County line at the location of Potter Bridge just north of the city of Noblesville. It is within a one hour drive from any part of metropolitan Indianapolis, including the surrounding communities of Anderson, Kokomo, Frankfort, Lebanon, Brownsburg, Noblesville, Carmel, Plainfield, Mooresville, Franklin, Muncie, Marion, Shelbyville, New Castle, and Greenfield. Many small outlying communities should also supply the river corridor with a significant number of users. Additionally, Hamilton County exhibits the highest population growth rate in the state which ensures a large number of local users both at present and in the future.
CHAPTER 2

Problem Statement

The purpose of this is to research the process for developing a recreational greenway river corridor along the White River within Hamilton County, Indiana; to identify the best options for developing a recreational corridor, and to propose schematic design solutions to be used as a guide for areas of concentrated recreational opportunities.

Goals and Objectives

Goal: To provide much needed recreational opportunities for Hamilton County residents, the Indianapolis Metro Area, and the Greater Central Indiana Region.
- To develop recreational space along the White River as a greenway corridor.
- To research the options for recreational corridor schemes and select the option that best fulfills the regional and local needs.
- To propose areas of concentrated recreational facilities and to develop design options that can be used as guides for the development of recreational resource areas.
- To further link potential recreational and open space with existing public and private resources down stream.
Goal: To upgrade and increase the opportunities for recreational experience along the River Corridor.
- To explore and propose numerous and diverse recreational opportunities and cultural learning experiences.
- To research and propose areas of access and public right-of-way to the corridor.

Goal: To provide a natural, cultural, educational, and scenic resource for the users of the corridor.
- To maintain the corridor as a natural and navigable watercourse and flood plain.
- To develop areas for the viewing and experiencing of historic, scenic, and valued natural and man-made features of the Indiana landscape.
- To maintain and develop vegetation native to the region along the corridor area.

Goal: To develop a framework by which to make design decisions in the development of resource areas and a corridor scheme.
- To outline a progression-al process that incorporates objective data into a tool to guide in design decisions.

Delimitations

The following are issues that I have chosen to exclude in an attempt to keep the scope of my project within realistic and obtainable bounds:
- No attempt will be made to determine the impact of the proposed development on the immediate surrounding area due to the minimal impact of recreational uses on other land-uses.

- The carrying capacity of the corridor will not be con- tended with throughout any phase of the research or design proce- ss.

- The effect of the future and proposed development will be studied only in terms of future growth and development trends; no site specific studies will be conducted or taken into con- sideration.

- The issues of land acquisition and procurement will not be studied.

Nominal Definitions

Recreational Greenway Corridor shall mean a linear park-like recreational system that follows the contour of the river and is linked with areas of concentrated recreational facilities or resource areas at varied intervals along its distance.

Resource Area shall mean designated areas of concentrated recreational facilities, widened areas in the corridor for the development of both passive and active recreation.

Corridor Scheme shall mean an alternative in which the corridor may be developed, the options or overall concepts that are feasible as solutions for the development of the corridor in its entirety.
Design Alternative shall mean the development of schematic plans and sketch drawings that are designated as being prototypical throughout the corridor.

Assumptions

- The cost of land acquisition, development, and maintenance of the proposed corridor development is realizable and will be undertaken by Hamilton County or through a joint effort of state and county agencies.

- Land for the development of the corridor may be acquired at any location along the corridor for the development of Resource Areas Parks of varying size.

- Privately owned land along the corridor may remain as such with no impact on the corridor development with each land owner being responsible for maintaining his portion of the corridor by set guidelines of visual and aesthetic standards.

- Areas of access or public right-of-way to the corridor may be acquired and developed at any location designated as desirable access points.

- Newly developed right-of-way will be maintained by the agency that develops or funds the development of the access points.

Methodology

The data collecting phase will involve the gathering of information that will be used in the following phases of documen-
tation and development. It will include interviews with various persons and groups who are familiar with the research topic and with the project area. This phase will also include in-depth research of recreational demands of the region, the expansion plans of existing and proposed privately owned recreational lands, and site specific inventory data dealing with soil, vegetation, land-uses, and other existing conditions. The inventory and analysis phase will take place twice during the project, once at the corridor scale and once when the specific resource areas are selected.

The documentation phase will include the compiling and synthesis of data gathered from the initial research. This will be accomplished through the use of written and graphic format. The written document will require the production of a booklet of existing conditions and other site information, the development processes, and the final recommendations. The graphic documentation will consist of maps and plans showing existing conditions, synthesis, and final recommendations.

The third phase, design development, involves the use of data uncovered in the previous phases. This will result in the development of a corridor development scheme and a schematic design solution of a prototypical resource area that can be used as a guideline for the remaining resource and access sites.
CHAPTER 3

Corridor Inventory and Analysis

The inventory of site resources constitutes the initial phase of the corridor scheme planning process. This documentation of existing characteristics and site features is presented as objective information and includes data on the natural and cultural environment. Data such as land-use, circulation, soils limitations, slope and topography, and vegetation will be used to formulate a basis for selecting resource areas and access sites. The major portion of this initial phase presents the data in an objective quantitative manner. The following phase involve qualitative site judgments and analysis, which in conjunction with the inventory, will lead to the formation of a corridor scheme.

A similar process will be followed upon selection of resource areas. After site specific inventory data is obtained and qualitative site assessments are made, site specific concepts may be reached by cross-referencing programmatic elements with the conditions of each site with which they are compatible. Through this process, it becomes possible to derive an optimum fitting of desired facilities with existing site conditions.

Existing Conditions

Land-use and Growth Patterns

A survey of land-uses indicates that the study area is in
a predominantly rural setting with a diverse mix of cultural and natural land-uses ranging from residential developments and cemeteries to large stands of low land vegetation and golf courses. Extensive gravel and sand excavation is a dominant land-use along the river in the central and southern portions of the county. Some of the small sites have been abandoned leaving open pits and large mounds of overburden. These areas are ideal for wildlife habitat areas due to the water retention and sheltered areas created by mounds. Three large scale sites are currently in operation and are quite extensive in size. Although these areas are not yet usable for development, they should be considered potential resources for future recreational areas and wildlife management areas.

Also of significant importance is the abundant amount of standing timber within and adjacent to the river corridor. Large tracts of bottomland forest are found throughout much of the flood plain and on steep slopes adjacent to the river. These areas provide wildlife habitat attracting many native species of small mammal and bird.

Recent aerial photos and USGS quadrangle maps clearly identify the changes in land-use within the study areas. The areas receiving the most growth pressure are threatened most commonly by PUDs and single-family residential developments and to a lesser extent by commercial development. These areas are located in southern and western Hamilton County along the river extending north along Allisonville Road and pushing outward from
LAND-USE STUDY FOR GREENWAY: A MULTISPECTRUM RECREATIONAL PLAN FOR HAMILTON, INDIANA
Indianapolis and Carmel toward the river. Commercial shopping and office development is spreading from the Castleton area north along Allisonville Road as well.

The corporation limits of the small cities in Hamilton County have experienced substantial growth during the past few decades. The city of Carmel alone grew at a rate of 178 percent between the years 1967-1980. The result of this growth has pushed the boundaries of these cities closer together, and it is conceivable that they could someday become indistinguishable with one city blending into another. The direction of growth of Carmel and Fishers is pushing toward the river, while Indianapolis is extending an arm of development northward adjacent to the river along Allisonville Road.

Recognition of these patterns of changing and established land-uses in the surrounding areas will aid the planning and selection of resource areas. During the site specific design process land-use will influence the location of certain activities in order to attain desired mixing of proposed uses with the character of surrounding land-use.

Soils

The type of soil on a site dictates to a large degree the type and location of recreational land-uses to be developed. The characteristics of soil types (series) -- texture, structure, depth, wetness, organic matter content, slope -- become determining factors in the planning process (Lappas, p. 77). For the
The purpose of this study, soils are not classified by association or series, but by map units due to the small scale of the corridor study area. Map units are useful in large scale land planning because each unit represents a distinct pattern of soils and of relief and drainage. A general soil map of units provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land-use (USDA, p. 3).

The soils in the survey area vary widely in their potentials for major land-uses. The following chart shows the extent of the map units and gives general rating of the potentials and limitations of each in relation to the other map units for major land-uses. There are four map units within the study area (USDA, p. 61).

<table>
<thead>
<tr>
<th>Map unit</th>
<th>Extent of area</th>
<th>Cultivated farm crops</th>
<th>Special crops</th>
<th>Woodland</th>
<th>Urban uses</th>
<th>Intensive recreation areas</th>
<th>Extensive recreation areas</th>
</tr>
</thead>
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GREENWAY: A MULTI-SPECTRUM RECREATIONAL PLAN FOR HAMILTON CO. INDIANA
1. **Crosby-Brookston**

   This map units is on upland till plains that are characterized by swell and swale topography. These soils are mostly nearly level. Along drainageways and on slight rises, however, they are gently or moderately sloping. Some of the soils have short slopes.

   The nearly level, somewhat poorly drained Crosby soils are on broad flat and slight rises. The nearly level, very poorly drained Brookston soils are in depressional areas, swale and narrow drainageways.

   Nearly all areas of this map units are used for cultivated crops. A few undrained areas are wooded or are in pasture. Wetness is the main limitation to the use of this map units for urban and farm uses.

2. **Miami-Crosby**

   This map units is on rolling till plains. Areas along the major streams are characterized by steep slopes and sharp breaks. In many places this map units is dissected by drainageways.

   The Miami soils are well drained. Nearly level Miami soils on flats, and gently sloping to strongly sloping Miami soils are on knobs and breaks. The nearly level and gently sloping, somewhat poorly drained Crosby soils are broad flats and slight rises.
Most areas of this map units are used for cultivated crops, but in a few steep areas and on flood plains it is used for permanent pasture and wildlife habitat. Many areas in the southern part of the county are used for urban development.

Erosion is the main hazard. Many areas require artificial drainage for optimum production. This map units has severe limitations for many non-farm uses because of slope and permeability.

3. Ockley-Westland-Fox

This map units is on stream terraces. The soils are nearly level, but along drainageways and on slight rises they are gently sloping and strongly sloping. Short, steep breaks are along the flood plains.

The Ockley soils are well drained. Nearly level Ockley soils are on broad flats, and gently sloping Ockley soils are on breaks. The nearly level, very poorly drained Westland soils are in depressional areas, swales, and drainageways. The Fox soils are well drained. Nearly level Fox soils are on flats, and gently sloping to strongly sloping Fox soils are on breaks and knobs.

Many gravel pits are located in this map units. Many areas are used for urban development. This map units has good potential for most urban uses. Wetness in the Westland soils is the major limitation of this map units for urban uses.
4. Shoals-Genesee

This map units is on flood plains. The topography is mostly flat, but some areas are dissected by one flow channels and drainageways.

Shoals soils are nearly level and somewhat poorly drained. Genesee soils are nearly level and well drained. Most of this map units is used for cultivated crops and pasture. In a few areas it is in woodland.

Flooding is the main hazard. In most areas of Shoals soils, artificial drainage is needed to obtain optimum production. This map units has severe limitations for most non-farm uses because of the hazard of flooding.

Vegetation

The following information on vegetation was taken directly from the DNR, The Recreation Potential of the White River - Indianapolis:

The natural vegetation within the White River basin is predominantly the beech-maple association with American beech, sugar maple, black cherry, American elm, white ash, tulip poplar, white and red oaks found on the uplands. Common species found in river bottom lands are sycamore, cottonwood, silver maple, and green ash. Understory and shrubbery species commonly found in the beech-maple association are redbud, dogwood, blue beech, spice-bush, honey locust, greenbriar and maple leaf viburnum. Wild-flowers common to White River basin include spring beauty,
bloodroot, trout lily, rue anemone, trillums, may apple and violets. Although the beech-maple association is the most dominant, areas of oak-hickory association are found throughout the corridor.

Dense mesophytic woodlands occur along relatively undisturbed portions of the White River shoreline on steep slopes and depressional areas that flood frequently. Large cottonwood, sycamore, silver maple, and hackberry are dominant in these areas. These species extend inland away from the river along drainageways and ravines that maintain a yearly flow of water. The upland forest areas are on the upper terrace and extend to the higher elevations out of the flood plain. Species dominant in the upland xeric areas are sugar maple, beech, red and bur oak, white ash and basswood. These distinct woodland type provides an interesting contrast with each exhibiting outstanding seasonal qualities.

The protection of existing stands of mature trees is fundamental in the approach toward development of a corridor system for recreational and educational facilities. Evaluation of quality woodlands may be difficult at a regional level because most areas exhibit both areas of good and poor quality stands. However, it is important to view any remaining stands as a significant resource. These wooded areas, although not outstanding in quality, provide spatial definition, protection from extensive sun, and shelter and food for wildlife. Their contribution to
the natural and scenic quality of the river shoreline must become a prime determinant in the corridor planning process (Lappas, p. 83).

Circulation

The corridor study area is accessible at many locations along its length. Interstates 465 and 69, Keystone Avenue (State Road 431), State Roads 32, 38, 37, and 19, along with many small city and county roads provide access to the study area. Primary roads carry a high volume of traffic and are important on a state, regional, and local level because of the high speed of travel they provide and their connection to many major populated areas. Of the above mentioned routes, I-465, I-69, State Road 431, and State Road 32 are the most significant in bringing people to the corridor study area and are classified as primary access ways.

The remaining mentioned routes are less traveled than primary roads, but are no less important as access routes to the corridor. State Roads 38, 37, 19, along with Allisonville Road and River Avenue are significant at a semi-regional and local level. These routes carry a moderate volume of traffic and function as "backdoor" routes between populated areas. Allisonville Road and River Avenue are of special importance as corridor access routes due to their proximity to the river and the visual and vehicular access they provide.
Views of the river are controlled by accessibility to the river. Within the study area only five river crossings presently exist. As is suspected these crossing roads are heavily used on a local level and act as collector roads that funnel users from one side of the county to the other. Two roads run along the length of the study area. Allisonville Road, which runs north and south along the east bank of the river, is an extremely pleasant route that connects northern Indianapolis with Fishers and Noblesville. Curving roadways, gently sloping topography, and generous stands of woodland vegetation provide visual interest throughout each season of the year. Along a short stretch of Allisonville Road directly south of Noblesville, there is only one point of visual access to the river. Although there is only limited visual access, many secondary roads that lead to the river are available long its length. These tertiary roads are used mainly for residential areas and usually do not cross the river but allow limited visual and physical access to the river.

River Avenue, the road that parallels the river's west bank, is somewhat similar in character to Allisonville Road. It is, however, less of a direct route and is used a great deal less because it does not link major populated areas. This route conveys a rural image and is used mainly by the residents of the area. Visual access of the river is more frequent and although the land adjacent the river is privately owned, it appears to be more accessible to the public. This may become an important factor when selecting access points concerning the issues of safe
entrances to recreational areas and the circulation of slow moving recreational vehicles and automobiles towing canoe and boat trailers. Many private driveways and dead-end roads extend from River Avenue toward the direction of the river. These secondary roads and lanes seem to offer limited opportunity for access to the river and surrounding areas.

**Scenic and Special Interest Areas**

From the inventory information documented, it becomes possible to identify potential resource areas quantitatively. Inventory data was gathered through research of related material and studying maps of the area and objectively recording existing conditions. There are, however, conditions that cannot be measured in acres or numbers, but must be viewed in a subjective qualitative manner. The assessment of scenic quality of the corridor will aid in selecting areas that offer a high potential for recreational uses. This evaluation was developed through site observation and the use of aerial photos and maps. To aid in measuring the scenic quality of a given area, a value point was given to each desirable landscape component. Landscape elements that have the greatest contrast, topographic relief vegetative variety, accessible water, and a natural setting are generally viewed as positive or desirable features in a natural recreation area. Man-made elements may also contribute or distract from scenic quality as well. Areas of cultural and historical interest such as old buildings and monuments may add to the
scenic quality of an area. Those landscape components that offer a desirable base for recreational development were given a value point (if present on the site) to be used as a means for rating areas of the corridor. The following chart exhibits the ratings each selected resource area received:

<table>
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<tr>
<th>Resource Area</th>
<th>Access to River</th>
<th>Water on Site</th>
<th>Wooded</th>
<th>Varying Topography</th>
<th>Natural Setting (Low Human Impact)</th>
<th>Historic or Scenic Elements</th>
<th>Variety of Wildlife Habitat</th>
<th>Near Existing Recreation</th>
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**LEGEND**

- ☄ Component present on site, offers a significant scenic resource base
- ☣ Component present on site but offers a moderate to low scenic resource base
- ☀ Component not found on site
Each of the selected resource areas, with the exception of Trails End, received high ratings of scenic quality based on the evaluation method and the corridor inventory. The Trails End area was included as a probable resource area due to its strategic location on the corridor. This area is significant because it is the location of one of the few river crossings in southern Hamilton County, and will function as a major collector node for non-river users gaining visual and vehicular access to the river. This point may also become an important trailhead for bikers and those who will use the proposed corridor trail system. The remaining five resource areas all exhibited high ranking based on the variety of landscape components present. Each site has a different combination of landscape components which will become important when determining land-use limitations.

The assessment of these areas for scenic quality will be used in the following phases of analysis and design development. The data gathered will aid in establishing priorities and land-use compatibility to determine locations for particular recreational facilities.
CHAPTER 4

Resource Area Development

The following phases will include inventory and analysis of three resource areas that represent the widest range of recreational potentials. It is through these phases that site resources will be assessed and guidelines for the site to sustain a recreational land-use may be established. The combination of this data and its interpretations in terms of program elements will allow the formulation of general developmental guidelines. Limiting this process to three resource areas is due to the similarity between certain areas. If each area was developed using these phases, much of the information would be redundant. Developing three areas will also allow for a greater degree of detail in the final design phases. If time permitted all six of the resource areas would follow the same processes with a final recommendation being developed for each.

Of the three resource areas inventoried and analyzed, one will be selected to be carried through the design development phase. This resource area will be the one that exhibits the most potential to support a wide range of recreational land-uses.

The final recommendations for the resource area may be viewed as a prototypical design to be used as a guideline for the development of the remaining areas. Approaching the final recommendations in this manner offers a valid method for future development and allows a greater amount of detail and design decision to be accomplished. Anything short of at least one detailed
resource areas would produce little more than an addition to the overwhelming number of land-use suggestion plan. The resource areas selected for the site specific inventory and analysis phases are Potter Bridge, Forest Park, and River Band Gravel Pits.

**Inventory**

Each resource area was evaluated and a range of existing conditions was documented. Such site specific data as land-uses, poor soils, steep slopes, flood plain, location of structures, access points (vehicular), and access to river will provide a base from which potential opportunities and constraints to development may be observed. The above mentioned information was collected through the use of site maps and aerials. The study that Landplus West conducted was also used to gain data on existing land conditions and was used as a model for the inventory and analysis phases for the site specific resource areas. Most of the inventory data requires little interpretation; however, a short explanation is needed to clarify how the site soils were rated.

Each soil within Hamilton County was evaluated according to the capability tables in the 1978 Soil Survey of Hamilton County. The soils having a poor rating exhibit moderate to severe limitations for recreational development. Detailed soil map units were then transferred from the soil survey to larger scale site maps and the site soils that had a poor rating were given a hatcher value to distinguish them from areas of slight limitation for recreation.
During the site specific resource area inventory soils will be looked at by the degree of limitations which bear directly on their development potential. These ratings take into account the soils' physical properties, excavation capability, recreation potential, and wildlife and forest management capabilities. The characteristics are examined relative to their influence on a soil's ability to support a specific activity and land-use type (Lappas, p. 77) Each soil is ranked for slight, moderate, or severe limitations to form a guide for referencing activity and the soils they are compatible with.

Slight limitation to development:
  Fox loam, 0 to 2% slope
  Fox loam, 2 to 6% slope
  Miami silt loam, 0 to 2% slope
  Miami silt loam, 2 to 6% slope
  Milton Variant silt loam, 0 to 2% slope
  Nineveh loam, 0 to 2% slope
  Ockley silt loam, 0 to 2% slope
  Ockley silt loam, 2 to 6% slope
  Ross loam

Moderate limitations to development:
  Crosby silt loam, 3 to 3% slope
  Fox clay loam, 8 to 18% slope
  Miami silt loam, 6 to 12% slope
  Miami clay loam, 6 to 12% slope
Shoals silt loam

Severe limitations to development:

Brookston silty clay loam
Genesee silt loam
Hennepin loam, 18 to 50% slope
Houghton muck
Miami silt loam, 12 to 18% slope
Miami clay loam, 12 to 18% slope
Palms muck
Patton silty clay loam
Randolph Variant silt loam
Sleeth loam
Sloan silty clay loam
Westland silty clay loam
Whitaker loam

The following maps exhibit the inventory for each of the three resource areas.
Analysis

Evaluation and synthesis of site resource and existing condition data is conducted as a basis for the site specific resource area analysis. Using the soil and flood plain data, a guide for land-use capability was devised. Three levels of land-use limitations range from slight (areas of good soil which will support intensive recreation activity) to severe (areas of very poor soil usually in the flood plain which will support only recreation land-uses that are extensive in nature) were established. The following chart gives an indication of programmatic elements and the land-use areas they are compatible with. This chart will be used as a guideline for locating recreational activities on compatible areas.
<table>
<thead>
<tr>
<th>Program Element</th>
<th>Severe Limitations</th>
<th>Moderate Limitations</th>
<th>Slight Limitations</th>
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The Program/Land-use Compatibility Matrix measures the ability of each soil to support a recreational land-use.

Slight Limitations = Areas of good soil, able to support intensive recreational development.

Moderate Limitations = Moderately good soil, frequent flooding, may support some intensive recreational development.

Severe Limitations = Very poor soils, frequent flooding, wet for extended periods of year. May support extensive recreational development.
Other components on each site analysis sheet are proposed land-use areas, entry points, river access areas, buffer zones, and proposed bike/hiking trails. A conceptual land-use plan for each site will be developed indicating general areas suitable for various recreation activities. The program elements (recreational activities) used in this study are those activities based upon the findings of the Department of Natural Resources regional survey. Two relationship matrices were devised to show degrees of compatibility and conflict between program elements and other program elements and program elements and surrounding land-uses. This information will be used to guide the planning and location of recreational land-uses in relationship to each other and to the surrounding land-uses. Although the degree of the inventory and analysis for the site specific resource areas is somewhat general and broad-based, it is adequate for conceptual land-use and schematic level planning. These phases have provided a framework for the development of resource areas and the development of guidelines for future planning.
## Relationship

- **High**
- **Moderate**
- **Slight**
- **Conflict**

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The Program/Program Matrix measures the relationship of each recreational activity to other recreational activities. High, Moderate, or Slight ratings were given to indicate the degrees of activity compatibility. In some instances a conflict rating was given if one activity was heavily impacted by another recreational land-use. This chart may be used as a guide for locating recreational activities as they relate spatially to other areas.
### Program/Surrounding Land-use Matrix

The Program/Surrounding Land-use Matrix indicates the degree of conflict that land-uses adjacent to the resource area impose on the various recreational land-uses.

<table>
<thead>
<tr>
<th>Program Element</th>
<th>Woodland</th>
<th>Agriculture</th>
<th>Resident/Development</th>
<th>Industrial</th>
<th>Commercial</th>
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**CONFLICT**
- **High**
- **Moderate**
- **Low**
ANALYSIS

3. RIVER GREENWAY RESOURCE AREA B: FOREST PARK
In addition to the quantitative data gathered during the inventory phase, each site was evaluated qualitatively. This information is presented in an annotative fashion with general subjective site description of each areas. Each resource area was evaluated for its river characteristics, upland characteristics, human influence, and unique aspects. This data was obtained through site visits and aerial photos of the sites. These visual, scenic and spatial characteristics are purely subjective and would no doubt differ from another person's evaluation of the same observed areas thus, this information should be used only to gain a general image of the site.

**Potter Bridge**

River's Edge Character:

The river's edge varies from a gently sloping bank along the north edge to a very steep slope on the southern bank. The steeper grades occurring adjacent to the river allow views of the river and the opposite bank but are too strong to be negotiated on foot. Along this portion of the river cutback trails may be considered when developing access points to the river edge. Areas along the northern bank may be more readily developed due to shallow slopes. Most areas, especially along the steep slopes, are heavily wooded and should be preserved to control slope erosion and to maintain visual interest. The vegetation along the river is beech-maple association with mixed water tolerant species.
Upland Character:

The upland area is fairly level to slightly sloping with a limited number of land-uses. Much of the wooded acreage is in quality mixed deciduous trees which adds a natural character to the surrounding area. The upland area south of the river is located on an upland shelf landform, much of which is outside of the 100 year flood plain. The north is gently sloping with many areas lying within frequently flooded lowland and depressional zones. This yearly flooding created an alluvial plain that is abundant in nutrient enriched soils.

Influence of Man:

This resource area exhibits a low level of human impact. The major land-uses in the surrounding area is crop fields and isolated farm steads. Allisonville Road carries a moderate volume of traffic and although it is close to the site sufficient amounts of mature woodland and steep slopes reduce the visual impact within the site. A few secondary roads are located close to the site but do not impose a major impact on the area due to low volume traffic.

Unique Aspects:

Potter Bridge is a 300 foot wood covered bridge erected in 1871. Before its closing Potter Bridge served Hamilton County with one of the few, and certainly the most celebrated, river crossings in the north portion of the county. The site is now preserved for its historic significance but lack of planned recreational uses and inadequate parking greatly reduce the site
usability in its present form. This resource area presents an opportunity to develop a eventful entrance statement for the White River Corridor. Adequate land for recreational development, abundance of mature wooded areas, and the historic aspects of the site offers an outstanding resource base for the development of a gateway to the White River Greenway Corridor.

Forest Park

River's Edge Character:

The edges of the river have been heavily disturbed along this resource area. Many areas have been built up and reinforced to decrease the susceptibility of flooding this densely populated area. The east bank is very steep with some areas of 100 percent slope. This bank is relatively unmanageable and should not be disturbed. A major portion of the bank is heavily vegetated with mature overstory species and sparse underbrush. Unlike the east edge, the west bank is much more shallow in slope and offers more potential points of access to the river's edge. Areas upstream are ideal for development of recreational facilities. The area directly adjacent to the downtown area is occupied by a row of three small commercial and service related businesses. These buildings present an eyesore when looking up the west slope while at river's edge. All of these buildings back up to the river presenting service areas, dumpsters, and unsightly storage areas. In some instances the slopes have been used as dumping sites covered with tin cans, tires, and mounds of rusted metal and paper. Other areas have been disturbed and accelerated erosion
has exposed outcroppings of bedrock and cut deep v-shaped gullies into unprotected slopes. This area, by far, has the most extensively impacted banks due to misuse and apathy toward the river's sensitive ecological system.

**Upland Character:**

The heavily developed upland terrace rises 20-30 feet above river level protecting the city from the threat of flooding. The upland area east of the river is downtown Noblesville with the town square and the county court house located only one and a half blocks from the White River. Noblesville serves as the county seat and is quit busy during daily business hours but like most small mid-west towns it has experienced a decline in its importance as a retail center.

The west bank is less developed in terms of total density and mass of buildings. However, State Road 19 parallels the river and imposes a physical barrier for those who wish to gain access to the river. This is especially true for Forest Park which is separated from the river by this major artery. To the west beyond State Road 19 is a hodge-podge of small retail establishments and service oriented businesses. This area is growing rapidly and will introduce many issues and constraints to be considered during the development of this resource area.

**Influence of Man:**

Much has been discussed pertaining to the degree of human impact on this site. It should suffice to say that this area will impose major constraints during its development. Due to the
high density and large user threshold, and the implications of political and socio-economic forces a great deal of research will be needed in the initial phases of developing such an area.

Unique Aspects:

Forest Park is a large municipal park opporated by the city of Noblesville. It offers a wide variety of developed activities including a 9 hole golf course, miniature golf, tennis courts, an olympic sized swimming pool and tri-level diving platform, numerous picnic shelters, and horseshoe courts. The linking of the river with the park would greatly increase the usability of both the river and the park.

Also of importance is the downtown area due to its close proximity to the river. The downtown is typical in character to most mid-west towns with the county court house serving as the center of the small urban community. Much of the original architecture remains intact offering the visitor a sampling of vernacular styles from various periods. Although much of the commercial and retail has moved away from the downtown, the overall image of Noblesville can still be typifies as "mid-west main street" and will provide and interesting stop along the White River Greenway Corridor.

River Bend

River's Edge Character:

The river's edge along this resource area is shallow in slope which produces an extensive floodplain. Essentially all of this alluvial plain is used for agricultural land due to the
abundant nutrient enriched soils. Wooded vegetation along the bank is mostly mixed maples, cottonwood, and sycamore with areas of dense underbrush. Permanent drainageways are common in this resource area. Stoney Creek which flows through the resource area flows yearround and drains the large stone quarry west of the river. This resource area recieves its name from the path that the river takes forming a wide bend in the river in the shape of a large bow.

Upland Character:

The upland area along this site is located a fair distance away from the river due to the shallow slope. A secondary slope defines the 100 year flood plain. The upper terrace is more extensively developed with planned residential developments and single family homes. This secondary, steep slope is wooded with mixed maples, oak, red bud, ash, and beech species.

Private developments east of the river is generally located adjacent to Allisonville Road. The west upland area is the site of a large scale sand and gravel excavation operation. A large moraine extends southward along the river to the Hamilton-Marion County line. The processes used during excavation have created some interesting landforms throughout the gravel pit areas. Large depressions formed by excavation and mounded areas of displaced overburden have developed a variety of areas well suited for wildlife habitat. Although the facility is presently in operation the potential for this area to become a major recreational node along the river corridor is outstanding.
Influence of Man:

Allisonville Road, 146th Street, and River Avenue act as man-made boundaries of this resource area. The impact of these thoroughfares on the resource area is fairly minimal due to their location relative to the river. Residential developments along the periphery of the site and are concentrated mainly adjacent to the road. One area of more than minimal impact is the sand and gravel excavation operation located off of River Avenue. Although the area is in operation and may remain so for many years consideration on developing the site for future recreational uses should be planned at present.

Unique Aspects:

The River Bend Resource Area offers an abundance of wildlife habitat and existing wilderness areas. The presence of standing water throughout the site makes it a favorite resting and feeding place for small mammal and water fowl. A variety of landforms and woodland types add to the potential for protected wildlife and forest management areas. Easy river access will allow visitors to experience the site and the river by canoe, bicycle, or on foot. This area extends and exceptional opportunity to be developed as a major recreational node along the White River Greenway Corridor.
CHAPTER 5

Master Plan Development

The concluding phase of master plan development illustrates the idealized image of the potential that a site can provide. It is the synthesis of the site data along with interpretation of the various aspects that the site exhibits. But more over, master plan development is based on the subjective creative judgements of the designer. Thus, the concluding plan should be viewed as one of many possible solutions. What is more significant is that the phases leading to the design phase be objective and that they be viewed not only as related data but as decision making tools leading to a comprehensive design plan. It can almost be viewed in such a way that well defined site data and an objective and reliable means by which to evaluate this data becomes the initial steps in developing the design concept.

To illustrate the final phase of this progressional process the River Bend Resource Area was selected to be developed to a master plan level. This selection was based on the outstanding resource base that this site offers and its potential to support a wide range of recreational land-uses.

The design intent surrounding the final design solution is based on four main concepts: 1) enhancement and control of views, 2) separation of incompatible land-uses, 3) adaptive use and enhancement of existing land features, and 4) implementation of recreational land-uses determined by site inventory and synthesis of land-use limitation as outlined in the inventory and analysis
phases. Major emphasis was given to creating a "natural"
recreation area with each of the four design criterion
functioning as guidelines by which to guage design decisions.

Design Description

The River Bend Resource Area features 1,020 acres of open
recreation space with 260 acres of standing water on the site.
The entrance to the site is off of River Avenue due to the low
volume of traffic it supports. Deceleration lanes are provided
for easy and safe access. The main site entrance is denoted with
a rough-cut bedrock wall illustrating the site name and general
information about the resource area. The circulation system is a
long cul-de-sac drive which limits through traffic and also makes
the site easier to maintain and patrol.

A second separate entrance was developed to offer users who
wish to access the fishing pit area easy access for vehicles
pulling boat trailers. The length of stay and the conflict
between the different land-uses of fishing versus the active
playfield area dictated that a separate entrance be developed.

As the visitor travels through the site by automobile,
bicycle, or on foot, controlled and design enhanced views and
vistas are created. This concept is carried throughout the site
and becomes the means by which different land-use areas become
unified. Even when conflicting land-uses are buffered from one
another, controlled views and manipulated sitelines afford the
site user a glimpse of what lies ahead. A variety of methods are
employed in the attempt to focus and control views while trying
to maintain a natural character and frame scenic site features.
When the user enters the site a view is directed across the playfield which extends an opening image of outdoor recreation. As the drive curves back to the northeast the visitor is greeted with a framed view of a large rock outcropping located across the fishing pit. The view is framed by two twenty foot rough cut bedrock pillars. Extending away from these tall shear pillars is a shorter wall that run parallel to the fishing pit. This wall has a duel purpose: 1) to provide an environment for rock climbing and for wall fishing and, 2) to buffer the active playfield area from the relatively passive fishing pit area. This wall is also important for the image that it gives the resource area. When users climb or look at the rough-cut bedrock wall an image of the previous land-use and the history of the site is captured.

SECTION VIEW OF CLIMBING/FISHING WALL
Further along the road the user must make a decision either to follow the main drive which allows access to the active recreation node or to veer left (east) to eventually reach a less developed area. The main drive will be used by visitors who wish to gain access to playfields, playgrounds, large group picnic shelters, and large open space areas for unstructured uses. The drive meanders through the site and offers users a variety of developed views before terminating at a cul-de-sac loop. The user who prefers a more "natural" setting will follow the east fork of the drive to a small parking area. At this point he may choose to use a small open sided picnic shelter, open picnic table, or simply sit under a large shade tree to enjoy his meal.

Extending from this parking area leading toward the river is a boardwalk which orients the user to the rivers and directs him to its edge. The boardwalk also creates a character of water recreation and introduces the forthcoming experience awaiting the user. The boardwalk also functions as a controlling devise which will encourage users to remain on the walk which will reduce undesirable site disturbance. A large observation/fishing deck acts as a ending point of this celebrated walk through the lowland forest. However, this is not the only option available to the user. Once the observation deck has been explored, the user may experience more of the river by choosing to travel the boardwalk that parallels the river's edge. This area may be used to acquaint site uses with lowland vegetation species, aquatic and terrestrial wildlife habitat, and river ecology. A self guided tour could be developed to transform the boardwalk into a nature study path.
The end of the boardwalk presents the user with two choices; remain on the developed trail which follows the river edge or take the path that allows access to the active recreation node of the resource area. The river path is constructed of a hard surface material atop a man-made levee which separate the river from a shallow excavation pit.

This elevated trail offers bicycle riders and trail hikers unique and scenic views of both river and the active node located across the 40 acre pond. While hiking or riding along this path the user is surrounded by water.

**BICYCLE/HIKING TRAIL ALONG LEVEE**
This path extends south following the river to the end of the excavation pit. At this point the path turns west separating a large open field and a wetland area. This area offers a variety of existing wooded acres and wildlife habitat types and is developed as a Nature Study Area. The purpose of this area is to provide a protected zone to study forest ecology and native animal species. The Nature Study Area is divided into the different management zones such as: upland forest, lowland forest, wetland, and crop production.

As the trail encounters the wetland area a boardwalk extends into the aquatic habitat and wetland vegetation study area. At one location along the walk a large deck area is planned to allow for the congregation of small groups for outdoor lectures. The end of the walk presents a 70 foot observation tower which allow users to get a panoramic view of the resource area and the surrounding countryside. The crop production management zone will be devoted to illustrating various cropping techniques using a variety of crops. Most areas adjacent to wooded areas will be planted in crops to be used by wildlife to encourage a healthy population and wide range of species.

The northern portion of the resource area is planned for primitive camping and nature trails. The primitive camping is unique in that it is accessible by the river. Since this land-use exhibits a strong conflict rating with other recreational land-uses, great emphasis was placed on the management and buffering of this area. Stoney Creek, a natural drainage way on the site, assists in buffering the camping area from conflicting
BOARDWALK THROUGH WETLAND AREA LEADING TO OBSERVATION TOWER
uses around it. The creek flows yearround and is up to 30 feet wide in some areas imposing a physical barrier which is difficult to transverse without appropriate crossings. Three bridges were provide to gain access by foot from both outside and within this area. In addition heavily vegetative buffers are maintained to reduce noise and visual intrusions.

When a visitor wishes to use a camp site he may portage his canoe to interior camp sites but most sites are located adjacent
to the river which allows easy access for those who enter by canoe. A bad weather stop is located along the river for the use of all river users and trail hikers. Since the emphasis is on primitive camping only a stationary fire ring designates each camp site. A primary trail system connects all of the sites and forms a fairly lengthy hike for nature observation. Secondary trails connect the camp sites to the primary trail system but are buffered from the high use trail by dense vegetation and curved path formation. A signage system may be devised to keep trail users on the main trail to reduce visual impact to these isolated areas.

When developing an environment for recreation it is not only important to buffer incompatible land-uses within the development but also to control and buffer incompatible land-uses outside the development. This is especially true when the desired image of the site is one of "natural" recreation. Since the character of a natural recreation area depends on maintaining a natural setting, all conflicting external stimulus must be controlled. The overriding goal of this resource area is to create a natural setting for recreational use, therefore, opposing land-uses surrounding the site must have a minimal impact. To aid in this effort a strip of land adjacent to the river along the opposite bank should be protected and maintained as a buffer zone. This area would consist of large overstory trees and dense underbrush to reduce outside influence on the resource area.
Bicycle Route

The corridor bicycle route was devised to offer users an alternative way of experiencing the corridor. This development is based on the location and development of the resource areas of the corridor. A more indepth study will need to be conducted to locate the optimum areas to locate and develop access to the system on a detailed level of design. There are, however, some general criterion that were used to develop the bicycle route on a corridor level. These criteria are as follows:

- The bicycle route should be accessible from many points along the corridor. These major entry points should be located near the areas displaying high population rates but should be routes of low volume vehicular traffic.
- The route should offer a variety of experiences including access to areas of historic, cultural, and educational importance, as well as scenic and special interest and recreation areas.
- The route should use secondary roads when permissible to ensure safety. Where this is not possible abandoned rail road right-of-ways, fence rows, and developed river trails will provide both scenic variety and safety.
- The bicycle route system should be developed as a series of loops providing access to each resource area. This allows the user a variety of distances to choose from and a range of trails that would provide diverse experiences.
BICYCLE ROUTE SYSTEM

GREENWAY: A MULTI-SPECTRUM RECREATIONAL PLAN FOR HAMILTON CO. INDIANA

SCALE

NORTH
Shuttle System

The corridor shuttle system is based in the premise that the river will be used as a major recreational amenity. To support this type of system a canoe rental service is needed. This allows recreation seekers who do not own such equipment to experience a natural recreation activity without the burden of transporting specialized equipment. It also provides the convenient service of transporting people to and from different areas throughout the corridor.

The planned shuttle route system requires the user to rent a canoe at Potter Bridge. While enjoying his day on the river his automobile is parked in a secured area where he will be returned by the shuttle at the end of trip. The first pick-up stop on the shuttle system is at Conner Prairie 8 miles down river. This allows a day of unique outdoor river recreation with a visit to a reconstructed historical settlement. Another option allow the user to continue 8 more miles down river to the County Line Resource Area where he may use primitive camp sites, fishing pits, or active recreation areas. After staying as long as desired the user is shuttled back to Potter Bridge. Each of the remaining resource areas are accessible by the canoe renter but only the two above mentioned areas have shuttle return stops.
PROPOSED SHUTTLE ROUTE

GREENWAY: A MULTI-SPECTRUM RECREATIONAL PLAN FOR HAMILTON CO. INDIANA
Conclusion

Upon conception, this thesis project was aimed at suggesting a solution to fill the recreational void in the Central Indiana Region. And although the final product met the goals that were outlined during the initial phase of the program, the process that was developed in creating a corridor, rather than the final master plan solution itself, seems to have evolved into the final product of this project. The process and progression of methods used to reach the final solution are not limited to the development of a river corridor but may be applies to many large scale and small scale design problems. Any design problem can be better understood and easier to comprehend by developing a detailed plan of progression and development of criterion to be used as tools for decision making.

As for the White River Greenway Corridor, much more in-depth analysis and more detailed design criterion need to be established than could be produced during the short time allowed for this thesis project. This study has determined that the development of the White River within Hamilton County is feasible. Many issues come into play when developing a recreation system that encompasses such an extensive area and each one must be thoroughly studied on the way to the White River Greenway Corridor being realized.
References Cited


Related Material


