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Executive Summary

The purpose of this Plan is to create a long-term guide for the development and management of the Shiawassee Basin Preserve. The mission of the Township's Parks and Recreation Commission is to enhance residents' quality of life and leisure by providing programs and facilities while being committed to the preservation of our natural environment. This Plan, in part, fulfills this mission.

Site Inventory and Analysis
The Shiawassee Basin Preserve is 515 acres and has three distinct sections: the northern section, the southern section, and east Shiawassee. An existing railroad corridor divides the north and south sections. The north and east sections are divided by Eaton Road.

The northern site is characterized by hilly topography with many wetland depressions. It also contains the Shiawassee River, Long Lake, Davis Lake, and an environmentally important wetland type called a prairie fen. This plant community only occurs in the glaciated interlobate region of the Midwest region where cold, calcareous water seeps from the ground. Prairie fens are considered rare throughout its range and also support a number of rare plants and animals. The fen, because of its size and quality, has been identified by the Nature Conservancy as rare within its range, and globally significant. Long Lake has over 1.5 miles of shoreline, and 31 acres of surface water with an approximate depth of 50 feet. Davis Lake has approximately 3,000 feet of shoreline and 8.4 acres of surface water.

Because much of the southern property had been cleared for agriculture, the natural features in this section are primarily made up of gently rolling hills and three ponds, one of which has wetland vegetation around its perimeter. The southern section contains soccer fields, ball fields, and library and Township offices and was previously under agricultural use.

Soil types on both sites are primarily loamy sands and sandy loams with varying degrees of permeability and erosion potential. The natural variation in vegetation on the site is a direct result of soil types, ground water conditions, exposure and topography, as well as humans' past activities on the site. Shiawassee Basin Preserve provides a wide range of wildlife habitat and plant community types: open fields, oak woodlands, uplands, wetlands, and open water that support most animal species common to southern Michigan. The park is also home to a Great Blue Heron rookery, along with threatened and special concern plant species. The park also supports threatened and special concern animal species. A full ecological report from the Shiawassee and Huron Headwaters Resource Preservation Project is included in the Appendix of this document.

Buildings contained within the park include two homes currently used as rental properties in the northern section, and the Township's Civic Center and Library in the southern section. The Civic Center building was completed in 2002. The 6-acre site of the Civic Center was exchanged for other property dedicated to outdoor recreation. The Civic Center site is zoned public land, but is considered by the Township to be an important part of the park. Active recreation facilities are located in the southern portion, including two baseball/softball fields, three soccer fields, two fishing ponds, a picnic pavilion, picnic areas, and a parking lot. The southern portion also includes a large open-water wetland.

Analysis of the site indicates that the northern portion, because of its unique and special environmental features, should be considered a nature preserve, whereas the southern portion should be considered a community park available for further active recreation development.

Public Input

The public's ideas, suggestions, and concerns regarding the park were sought in developing this Plan. Two meetings were held, the first in June 2002, with Parks Commission members, Township Board members, and Planning Commission members. They toured part of the park, and then discussed ideas and issues concerning future development of both sections of the park. A second meeting was held in October 2002, where residents were invited to participate in a visioning session. Participants were divided into small groups, where they discussed and prioritized recreation facilities and management concerns. The results of these group discussions provided a basis for development of the Master Plan. The top ideas brought out in these sessions include the following:

Northern Section: Passive recreation including interpretive signage, map, educational booklets; nature/interpretive trails, boardwalks, and viewing platforms or overlooks; naturalist/guided tours; and a nature center.

Southern Section: Active recreation including Hockey/In-line skating; 2-mile walking/biking trail; restrooms; fishing pier/deck/seating; and soccer fields were added to the existing facilities.

Note that East Shiawassee and the conservancy area in the northern section were not part of the park at the time the public input sessions were conducted. Improvements to these areas were solicited from the Parks Commission, North Oakland Headwaters Land Conservancy, and Township staff.

Master Plan

The public meetings also helped in the development of the goals for the Shiawassee Basin Preserve Master Plan. These goals include:

1. Protect the natural features of the park by limiting recreation in the northern section to conservation and passive recreation.

2. Expand passive recreation amenities and environmental education opportunities in the northern section.

3. Provide guidance for an ecosystem management plan for the northern section that controls the spread of exotic invasive species, preserves sensitive natural areas, protects threatened and special concern species, and encourages native species to thrive.

4. Expand active recreation facilities in the southern section that provide varying levels and types of recreation for people of all abilities.

5. Integrate the Civic Center building and site into the recreation options available in the southern section of the park.

Northern Section

Improvements for the northern section include additional amenities at the existing trail head parking entrance, such as signs with a trail map, a self-guided tour in brochure format, vault toilets, and picnic pavilion. The existing trails can be amended with the use of "education stations" that include interpretive signs describing natural features in the park, boardwalks and overlooks to wetlands, and benches. New trails are proposed for the northern section in locations where informal trials currently exist. These new trails will also have education stations. Trails could lead to an observation deck overlooking Long Lake, and another overlook to the south, with picnic facilities.

A new park entrance is proposed next to the existing rental house at 8625 Eaton Road. The house could be used as a visitor or nature center. Amenities such as a trail head parking lot, picnic pavilion, trail map signs, and a restroom would be built nearby or adjoining the house. The existing park drive would be blocked off to vehicle traffic with collapsible bollards, and the drive would be improved for trail use by adding education stations along its .9-mile length. The house at the end of the drive 8625 Eaton Road would be converted to a ranger station and/or employee residence.

Across Eaton Road from the small rental house is the area of the park called East Shiawassee. Proposed modifications include a parking area, day camp with picnic shelter and amphitheater for outdoor education, and sledding hill.

Another entrance off of Eaton Road would be constructed at an existing gravel driveway to access the area of the park covered by the conservation easement. Improvements here would include a gravel trailhead area; an overlook with educational signage and picnic area; trails that connect to other trails in the northern section; and, if environmentally appropriate, a boardwalk trail to Davis Lake.

To improve understanding of the park's boundaries, a series of boundary fencing and markers is proposed to be installed along the border. Educating adjacent property owners on the activities allowed within the park will help to reduce the amount of damage caused by prohibited activities. The impact of prohibited activities could also be minimized by the presence of a park naturalist or ranger.

Access to Long Lake and Davis Lake should be limited because of the sensitivity of the prairie fen that surrounds the lakes. To address this issue, boat launches have not been included and motorized boats are not allowed. A designated area for fishing in Long Lake and Davis Lake, or duck hunting in the Long Lake area may need to be identified to limit trampling of the fen. Note that hunting and trapping are not allowed within the conservancy area of the park.

Future acquisition of additional parcels next to the northern section should also be considered. Many of the adjacent parcels contain a continuation of the existing natural systems, which would in turn, put more of these systems into public protection.

The Master Plan also outlines management issues that need to be considered for the northern section. These include vegetation management, control of exotic invasive plant species, prescribed burning, re-seeding or planting, and changes in water quantity or quality in Long Lake, Davis Lake, the Shiawassee River, and the prairie fen. The Plan also discusses the impacts of horseback and mountain bike riding, off-road vehicles (ORV's), and hunting or fishing activities.

Southern Section

Design proposals for the southern section include development of more active and passive recreation opportunities for the community. The concept for this section is a "community park." Amenities included in the Plan for future development are two additional baseball/softball fields, a disc golf course, relocation and expansion of the three existing soccer fields, and amenities that support these activities, including a restroom/concession building, play structure, picnic area, and an expanded parking lot. An additional parking lot may be considered if needed based on soccer activity. Walking trails, to be used by walkers, joggers, bikers and in-line skaters, are proposed, as well as an in-line skating rink. To maintain safety boundaries, a fence is proposed to be installed along Davisburg Road and around the parking area.

The Civic Center building is connected to the other recreation facilities in the park by adding walking trails that join the Center's paved sidewalks with other park facilities. Walking trails will also circumvent the building through its native landscaping, providing education stations that explain how this style of landscaping supports the park's habitats. A basketball hoop in the Center's parking lot and a picnic area are also proposed here.

The southern section also offers passive recreation facilities including two fishing ponds with decks, an open-water wetland with a proposed "wet

meadow" planting at its shores, a proposed prairie planting "meadow" traversed with a walking trail and education stations, and an overlook to Long Lake with picnic tables. A disc golf course (9-hole) shares the prairie trail.

Management issues for the southern section of the park include vegetation management for prairie installation and maintenance. To ensure that the prairie vegetation in the picnic areas remain vibrant, the picnic tables will be rotated to different locations to allow recovery time.

Implementation

To assist in the implementation of the Plan, a cost estimate was developed outlining the potential funding requirements for the proposed improvements. A phasing strategy is also provided, as well as a listing of potential grant and other funding opportunities.

The Shiawassee Basin Preserve is located in the northwest quadrant of Springfield Township and is made up of 515 acres adjacent to both Davisburg and Eaton Roads. The original parcel was acquired in 1985, and another 78 acres was acquired in 2000. Most recently, two additional parcels were added to the park: one 36-acre parcel contiguous with the northern section and another 6-acre parcel on the east side of Eaton Road. The park currently provides both active and passive recreation opportunities and is the location of globally significant environmental features and habitats. Other assets to the southern portion of the park are the Township Civic Center and Library.

Parks Commission's Mission and Purpose of the Plan

The mission of the Springfield Township Parks and Recreation Commission is to enhance residents' quality of life and leisure by providing programs and facilities while committing to the preservation of our natural environment. The development of this Master Plan, in part, fulfills this mission by creating a long-term guide for the development and maintenance of the property. The Plan inventories and analyzes the site, establishes a park design, and proposes an implementation program.

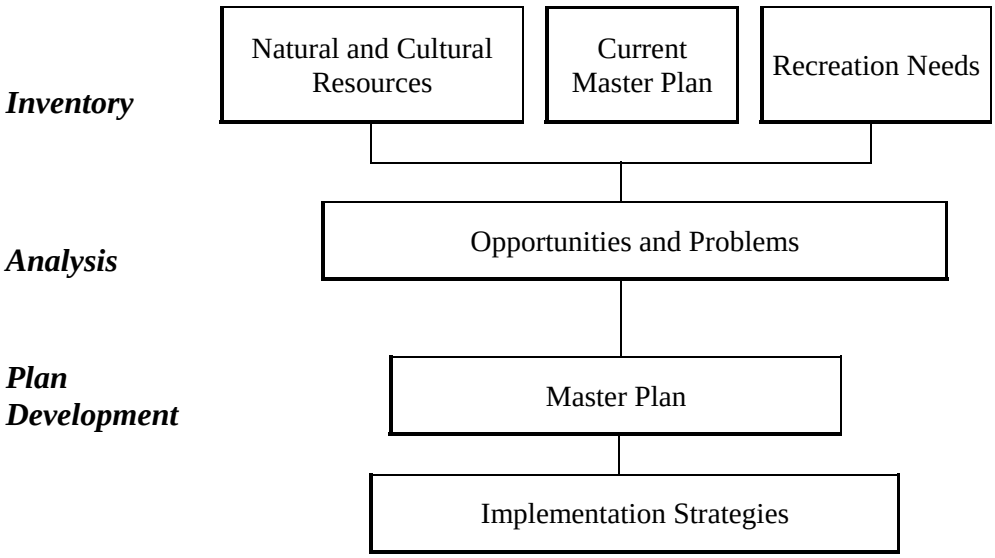
Planning Process

The process used to generate the Plan consists of three phases: inventory, analysis, and plan development. The Plan includes the following elements:

- An updated inventory of the natural features
- An updated inventory of the cultural/recreational features
- Input from the Parks Commission, Township Board members, Planning Commissioners, and the public on the future recreational use and management of the property
- The development of an overall park design incorporating proposals for recreational facilities; and
- An implementation program addressing phasing and funding.

A table outlining this process is provided on the following page.

Planning Process



Park History

Cultural History

This site has a long established connection to the history of Springfield Township. The Davis family, who founded Davisburg in 1836, owned the property and used it as a retreat and hunting preserve. Most of the southern section of the park was farmed and the foundations from two agricultural structures are still visible.

In 1985, Springfield Township began a process to acquire the original park property, made up of 394 acres, from Mary Barker of the Township. The process was not completed until October 1987. The purchase was primarily funded through a grant from the Michigan Department of Natural Resources, Land Trust Fund. The acquisition of the property received public support in 1986, at which time the purchase was approved by the electorate.

The Township adopted the park's first Master Plan in 1991, which detailed the environmental sensitivity of the northern portion of the property, along with the types and location of recreational facilities to be built throughout the park. The original master plan called for passive recreation in the northern section, and active recreation in the southern section. Since the original Master Plan's adoption, the Township has built elements of this plan, including two baseball/softball fields, three soccer fields, parking, a picnic pavilion and walking/nature trails.

In the fall of 1997, the Township, together with five other communities in northwestern Oakland County, began participation in the *Shiawassee and Huron Headwaters Preservation Project* (subsequently referred to as "the Headwaters Project"). The project site covered approximately 180 square

miles, concentrating on the Shiawassee and Huron headwaters area. The main purpose of the project was to identify and then determine how best to preserve and conserve sensitive natural areas within the project boundaries. The Long Lake complex, which makes up much of the northern portion of the Shiawassee Basin Preserve, was identified through this project as a highly sensitive and rare ecosystem. The Township always knew that the Long Lake area was special, but the ecological inventory and assessment through the Headwaters Project combined with the information in the original Master Plan confirmed their beliefs.

With this information, the Township then added to the park in 2000 by acquiring a 78-acre parcel on the northwest boundary of the park. This acquisition now provides the Township with the opportunity to preserve the majority of the Long Lake area and its associated wetlands and uplands.

At the same time, the Township made the decision to use approximately 6 acres in the park for a new Township Civic Center. This building houses the Township's Parks and Recreation Department, administrative offices, meeting rooms and the Township Library.

Most recently, the Township has purchased an additional parcel as part of the Basin Preserve. The parcel is 36.76 acres in size and abuts the northern section of the park along Eaton Road, including a portion of Davis Lake. Another Township owned parcel was recently transferred to the park system by the Township Board. The parcel is 6.48 acres in size and is located on the east side of Eaton Road, opposite the existing rental house, and the entrance drive to the main house in the park's interior.

Natural History

Glacial ice covered Michigan five times, each time depositing a cover of drift measuring hundreds of feet thick in some places. The drift was composed of soil and boulders, which formed ridges called Moraines. A system of lakes, streams and rivers were also left by the glaciers, shaping the surface features of the Township.

Glacial action is most evident in the northern portion of the park, where the land is characterized by rolling hills sloping in many directions. These hills form small drainageways, such as the Shiawassee River, and direct water to wetlands, ephemeral (seasonal) ponds, Long Lake, and Davis Lake. A particularly rare wetland type, called a prairie fen, exists on both the northern and southern edges of Long Lake and Davis Lake, and along both banks of the Shiawassee River. The fen formed because of the calcareous (alkaline) soils and ground water that reaches the surface in this area.

Much of the northern portion of the park is wooded, although some of the land along Eaton Road and further west has been cleared. Mr. Karl Bailey, in a report completed November 1968, states:

> “Areas along Eaton Road were cleared and farmed in spite of the steep slopes. Most of the great woods occurring east and north of Long Lake are primeval except for the harvesting of marketable timber.” (p.5)

This observation still holds true today, confirmed by the occurrence of both the Red Maple-Cherry and Oak-Hickory plant communities on the property.

Before developing a Master Plan for the Shiawassee Basin Preserve as was done in 1991 and now in 2004, it is important to inventory and analyze the existing features of the site. The inventory and analysis are the basis on which the design and land use recommendations are developed.

Existing Conditions

Site Overview

The Shiawassee Basin Preserve is located within the Shiawassee River watershed in the northwest quadrant of Springfield Township. Much of the Preserve is within the boundaries of the Michigan Natural Features Inventory (MNFI) site called the Long Lake Complex. The MNFI designation was created as part of a project that identified and then field inventoried significant natural features within Springfield Township and five adjacent communities. The map on the following page shows the location of the park within the Township and boundary of the Long Lake Complex.

The park fronts both Davisburg and Eaton Roads, with entrances to the park on each. Currently, the park is 515 acres and is bisected by the Canadian National/Grand Trunk railroad tracks that are built on a constructed ridge. This ridge divides the park into two distinct sections: a northern section and a southern section. Eaton Road divides the northern section from the new six-acre section called East Shiawassee.

The northern section is characterized by rolling hills and has been reserved for passive recreation activities and environmental preservation. Long Lake, located in the northern portion, is 31 acres in size and is bordered by globally significant prairie fens, as well as other high-quality wetland types. Davis Lake is also located in the northern portion, and is approximately 8.4 acres in size. 4 acres of this lake are within the park's boundaries. South of the railroad tracks, the property is gently rolling with three ponds all named Kirby Lake. Currently the southern portion includes active and passive recreation facilities for use by community residents.

Two houses exist on the northern section of the park and are currently operated as rental properties. All revenues from these properties are directed back to the park's budget. One house is located on Eaton Road next to the Shiawassee Basin Preserve's existing authorized vehicle entrance and drive. At the end of this drive, and almost one mile west of Eaton Road, is the other, or "main," house. This home is adjacent to a five-acre pond. The drive to the main house meanders back to the residence providing views of flora and fauna in meadows, woods and wetlands.

(**LOCATION MAP W/GENERAL PARK FEATURES AND MNFI BOUNDARIES FOR LONG LAKE COMPLEX**.)

Natural Resources

The site is composed of a variety of ecosystems and natural features. Through the Headwaters Project, botanists, biologists, and other environmental professionals from the Michigan Natural Features Inventory staff did aerial and field studies of the area designated as the Long Lake site. Information regarding the environmental significance of the area from that report has been included here. The complete report is included in the Appendix of this document.

Topography and Soils

The Shiawassee Basin Preserve geology, like the surrounding countryside, is the result of glacial action. This park lies in the northern portion of the geological feature called the Jackson Interlobate subsection. This region lies between the extensions of two glacial lobes that extended into southern Michigan approximately 16,000 years ago.

The northern site is characterized by rolling, broad, sandy outwash plains with numerous ice contact features creating a mosaic of steep ridges, scattered depressions, and outwash channels. The topography varies considerably, ranging from steep hills and scattered depressions to the north, to the gently sloping channel of the Shiawassee River along the south. The southern property is gently rolling and has been partially developed into active recreational fields and is the location of the Township Civic Center.

The slopes are generally short, abrupt, and run in all directions. They range in steepness with a maximum of 30%. The minor basins or depressions created by these slopes are generally from 2-3 acres and are either wetlands or seasonally wet areas. The most significant minor basin is approximately five acres and forms Dollar Lake and wetlands immediately east of the main house. (Note that Long Lake and Davis Lake are described under “Water Resources” further on in this report.)

Soil types on both the north and south portions of the park are primarily loamy sands and sandy loams with varying degrees of permeability and erosion potential. The exception being the wet organic muck soils associated with the floodplain wetlands (prairie fen) along the Shiawassee River and other wetlands across the site. These soils are extremely sensitive to impact and therefore, will essentially limit the nature of any recreational development or access around them. Detailed soils information is presented on the following page.

(**SOILS MAP**)

Vegetation Types

The Shiawassee Basin Preserve's size and diversity is reflected in the plant communities that exist here. The natural variation in vegetation on the site is a direct result of soil types, ground water conditions, exposure, and topography, as well as farming and forestry activities. The park contains a large variety of plant species, which can be generally classified into six basic vegetation types. A map showing the general location of each plant community can be found on page 12.

A. Old Field - The majority of the undeveloped portion of the southern area and a portion of the northern area is old field, or areas that had once been farmed or used as pasture. The areas in which farming has been abandoned have taken on a characteristic "old field" vegetation type of non-native (or “exotic”) herbaceous plant material. These areas are also beginning to be colonized by fast growing, pioneer-type, woody species such as American elm, staghorn sumac, hawthorn, cedar, etc. Herbaceous plants growing in the old fields include exotic plant species such as brom grass, orchard grass, and spotted knapweed. Some natives are also found here including black-eyed-susan, goldenrod, and asters. Over time, and without any grazing or prescribed fire maintenance, woody plants will overtake these grassy areas through the process of plant succession. One such woody species that is currently a problem in the old fields is autumn olive. This exotic shrub will likely spread further into the oak forest via seed dispersal by recreational horseback riding, birds, deer and small mammals.

B. Southern Dry-Mesic Forest – Immediately bordering the prairie fen on the north is a 200-acre block of second growth forest dominated by white, black and red oak, and pignut hickory and contains numerous shallow depressions or vernal pools. A few oak trees with trunk diameters greater than 30 inches exist in this area. The understory is dominated by red maple and American hazelnut, and the ground (herbaceous) layer is varied, but sparse, and includes species such as white lettuce and early meadow-rue. The mix of southern dry-mesic (dry to moist soils) uplands interspersed with wet depressions contributes to the forest’s moderately high diversity. Exotic species are primarily localized along the trails. However, oak regeneration is limited due to years of fire suppression, which will eventually cause a change in the species composition of the canopy to sugar and red maple. This change is already taking place in the forest’s understory.

There are mesic (or moist soil) pockets in the forested areas that are dominated by red maple in the overstory, and associated herbaceous species such as the large-flowered trillium and jack-in-the-pulpit in the ground layer.

Historically, much of the forest on the steep ridges may have had a closed canopy. However, evidence of the more open oak barrens plant community, which is typical of presettlement northern Oakland

County, can be seen in the flatter portions of the forest. Here, species such as little bluestem, lupine, and bush-clover, were found in small, scattered openings within the forest matrix. These species can also be found along the south border of the northern portion of the park, where the wetlands gradually merge into upland at the railroad tracks. The current closed canopy in these areas is most likely the result of fire suppression.

C. Prairie Fen – Within the floodplain of the Shiawassee River and next to Long Lake and Davis Lake is a matrix of several different types of wetland plant communities. One of these wetland communities is called a prairie fen. This plant community only occurs in the glaciated interlobate region of the Midwest where cold, calcareous water seeps from the ground. Prairie fens, which are considered by The Nature Conservancy to be very rare throughout its range, also support a number of rare plants and animals. A unique type of prairie fen called a hanging fen is found on the slope along Long Lake's northwest shore.

The Long Lake site is an integral part of a large linear wet meadow/oak forest complex bordering the Shiawassee River and its headwaters. To the northwest in Rose Township lies Rattalee Lake Fen, a site of similar size and quality as the fen in Springfield Township. To the southeast lies I-75 Woods, another large wetland and forest complex in Springfield Township. Together, these three adjacent sites form a highly significant wetland corridor along the Shiawassee River.

Although the true hanging portion of the fen is restricted to the northwest side of Long Lake, the fen extends for approximately two miles along the river corridor covering approximately 265 acres. As such, it is one of the largest known fen complexes in southern Michigan. Seventy-eight native plant species, 26% of which are grasses and sedges, were documented during field investigations. One of the grass species found is listed as a state threatened species. ***The occurrence of a large, intact, high quality prairie fen community along a major river corridor in close proximity to a large block of upland forest, renders the Long Lake complex a site of exceptional ecological value.***

Currently, there is little evidence of direct disturbance to the fen, and the occurrence of exotic plant species is minimal. Purple loosestrife, an exotic plant species, has been found scattered in small pockets in the prairie fen. In addition, any changes to the fen's hydrology, including changes in the amount of water, or the quality of the ground water due to pollution or leaking septic tanks, could threaten the prairie fen. Changes in hydrology could also allow aggressive plant species, such as cattails and reed canary grass to invade the fen.

D. Southern Shrub-Carr and Southern Wet Meadow – The other two types of wetland plant communities that are found within the river

floodplain and next to Long Lake and Davis Lake are the southern shrub-carr and the southern wet meadow. Both of these plant communities are common in the Midwest and are comprised of a diverse group of native plants.

E. Relic Conifer Swamp – Adjacent to Long Lake's northern shore grows a small relic conifer swamp that is dominated by tamarack trees.

F. Conifer Plantation - A small area of evergreen plantation remains in the northeast corner of the site, which, while not native in origin, adds to the diversity of the site and provides important winter wildlife cover.

Please refer to the Long Lake Site Ecological Report in the Appendix of this document for a detailed listing of the Plant Survey.

(**VEGETATION MAP**)

Water Resources

The Shiawassee River, Long Lake, and Davis Lake are the main water features in the park. The Shiawassee River flows along the main channel of the glacial outwash plain and flows through Davis Lake and Long Lake, as well as Rattalee Lake to the northwest of the site. The headwaters and main branch of the Shiawassee River begin at Shiawassee Lake, southeast of the preserve.

Long Lake, which has 1.75 miles of shoreline, is 31 acres in size and has an approximate depth of 50 feet. Approximately one and one-half miles of shoreline are within the Shiawassee Basin Preserve. It is termed a two level lake, meaning that the lower level is relatively cold, and the upper level is warm. The inlet of the Shiawassee River is much smaller than the outlet indicating that much of its water is derived from the prairie fen and rivulets along the sides. There currently is no development on either bank. Davis Lake has 3,040 feet of shoreline and is 8.4 acres in size. However, only 1,654 feet of shoreline and 4.06 acres of surface water are within the park boundaries.

The prairie fen serves an important function as a wildlife habitat and as a water catchment area for both lakes. Fishing in the lakes is by small watercraft only (no public access or docks exist), and the known fish species are considered common. Water quality is good; however, the nature of the lakes makes them susceptible to damage from changes in flow, pollutants, or modification of adjacent wetlands. The numerous wet basins in the preserve also serve as rainfall catchment areas, groundwater recharge, and wildlife areas.

Wildlife Habitat

Shiawassee Basin Preserve provides a wide range of wildlife habitat types, from open field to dense woodlands, uplands and wetlands, which can support most animal species common to southern Michigan. This property has high ecological value because the wooded uplands and grasslands are in close proximity to the diverse wetland types and open water. This allows many wildlife species to conduct their entire lifecycle within one area, without needing to cross roads or other barriers to reach appropriate breeding, nesting or foraging areas.

Some of the key wildlife areas within the preserve include:

- Open water and wetlands of Long Lake, Davis Lake and the existing ponds provide habitat for fish, amphibians, and waterfowl, and a water supply for land animals;
- Open fields provide nesting material and food sources for birds and mammals;
- Dense woodland edge vegetation provides cover and acts as a food source for many animals.
- The size of the preserve also allows habitat protection for the ranges of some larger animals such as deer and fox.

Numerous animal species can be found on the site and surrounding properties. (Please refer to the Long Lake Site Ecological Report in the Appendix of this document for a detailed listing of the Animal Survey.) The largest animals are white-tailed deer, which are prevalent in the area. Other mammals typical to the site include coyote, turkey, fox, rabbit, weasel, raccoon, opossum, groundhog, squirrel, beaver, muskrat, and various other rodents. Bobcats have also been sited in the region.

The wetlands play a significant role for waterfowl, both as a resting and feeding stop in migratory flights, and as a nesting site. Nesting waterfowl of note include blue heron, woodduck, and sandhill crane. Amphibious residents, typically found near water or wetlands, include turtles, frogs, snakes, toads, and salamanders. The prairie fen plant community supports several rare insects, as well as the massasauga rattlesnake, a state listed species of special concern.

A Great Blue Heron rookery was discovered in the southeastern portion of the forest, and an additional thirty-six bird species were either observed or heard during field surveys. Although many of the species are relatively common, the forest tract probably serves as an important stopover site for many migrating warblers. This is most likely due to its large size relative to other sites in southeastern Michigan, its numerous vernal pools and ponds scattered in the uplands, and close proximity to the large wetland complex along the Shiawassee River.

Vernal pools are another important wildlife habitat. They are shallow depressions that fill with water in the spring and provide prime breeding habitat for frogs, toads, and salamanders. Vernal pools also tend to incubate large quantities of invertebrates, which are an important food source for migratory songbirds.

Cultural Resources

Within the Preserve

Human impact on the site is reflected by the property's agricultural history. On the northern property, several fields were used for either cropland or grazing, especially along Eaton Road and the access drive. It has been many years since any farming took place in these fields, so the land has reverted to a typical "old field" plant community. As was mentioned in the previous section, this type of vegetation provides important wildlife habitat as a food source, although it is made up of exotic plants that could spread to other areas of the preserve. Agricultural activity on the southern property ceased in 1999. The southern area also includes the Township Civic Center building. Two of the three ponds in the southern portion of the site are relatively steep banked and are the result of some past manipulation of wet areas to maximize cropland. The third pond is spring fed with shallow, gradual edges. Two of the three ponds are currently being used for recreational fishing.

Other agricultural activities include a conifer plantation in the northeast corner of the northern site and relatively recent (1986) timber removal from the woodland immediately west of the conifers.

As described earlier, two houses and associated buildings exist in the northern section and are currently operated as rental properties. All revenues generated from these rental properties are placed into the Preserve's budget. The house on Eaton Road is a brick home that is approximately 1,000 sq. ft. in size. Almost one mile west of Eaton Road is the site's "main" house, which is approximately 2,800 sq. ft.

Numerous trails and a drive also traverse the site. A 100-foot wide railroad easement bisects the north and south sites. Currently (2004), about 12 trains a day travel this track.

The East Shiawassee property was previously excavated for sand and gravel, creating a large sunken bowl adjacent to residential parcels to the north, east, and south.

In 2002, the Township finished construction of a new Civic Center building that houses the Township's Parks and Recreation Department, administrative offices, meeting rooms and the Township's library. This building was constructed on a former farm field in the parks southern section on approximately 6 acres within the preserve's boundaries. The location of the building, its stormwater management system, and landscaping were all designed to have a minimal impact on the natural features of the preserve. The runoff from the building and parking areas goes through a series of created vernal streams, ponds, and swales to ensure that sediments and pollutants are captured before being released into an adjacent wetland. The landscaping incorporates the use of native species, including prairie plantings that will provide wildlife habitat, storm water benefits, and a natural appearance to the site.

Outside the Preserve

The site is located just northwest of Davisburg, with access to the preserve from Davisburg and Eaton Roads. Davisburg Road is located on the southern boundary of the south portion of the park, and provides approximately one-half of the road frontage to the site. The road is paved and is the major east/west route in the Township. The intersection of Ormond and Davisburg Roads occurs just south of the existing ballfields, providing a scenic view of the park's amenities and natural areas. The northern property borders Eaton Road on its eastern edge and East Shiawassee borders Eaton Road on its western edge. Eaton Road is a narrow gravel road.

The surrounding land uses are relatively low-density residential or vacant. Approximately 10 - 12 residential properties back up to the site: several fronting Clemae Road to the west of the southern portion, and several fronting Sandmar, Davisburg and Eaton Roads. "Cluster" residential

developments have been planned for two properties north of the park. Each conserves the wooded uplands adjacent to the preserve, and is using native vegetation to landscape the developments.

Davisburg Elementary is located directly across Davisburg Road from the southern portion of the site.

Two large natural areas that have been identified by MNFI as part of the Long Lake complex are located adjacent to the original park boundaries. The first is located directly south of the north portion of the park on Eaton Road. It contains Davis Lake, the Shiawassee River, and its associated wetlands. This property was acquired by the Township in 2003, and is covered by a conservation easement. The second area is directly north of the northern portion of the park and contains a continuation of the mature woodlands and wet basins found on the site. Both of these areas are continuations of the ecosystem found in the Shiawassee Basin Preserve.

Site Analysis

Zone 1 and Railroad

This zone, an approximately 90-acre parcel located on Davisburg Road, offers the most opportunities for additional active recreational development. The land is open, relatively level, and provides soils, which can accommodate development and septic field suitability. This zone also offers direct physical and visual access to both Davisburg and Ormond Roads and in turn, the entire community, especially the hamlet of Davisburg and the adjacent Davisburg Elementary School.

The railroad creates a significant barrier between the north and south parcels. Views to Long Lake from Zone I should be maintained and enhanced. If the railroad line is ever abandoned, the Township should encourage conversion to the "Rails to Trails" program, the Oakland County Linked Path/Trail System, and associated local and county efforts at creating non-motorized trails.

One such group is the Headwaters Trails, Inc. This is a not-for-profit organization, which has worked with local communities, and other governmental organizations to plan and create a trail network within Northwest Oakland County (Groveland, Holly, Rose, and Springfield Township and the Village of Holly.) The Headwaters Trails Committee has developed a concept plan that shows proposed trail locations linking these five communities together, as well as providing links to County-wide existing and future trails. Trail connections to the Shiawassee Basin Preserve should be a part of this network.

The new Civic Center building and site provides additional opportunities for varied active and passive recreation. The parking lot could be used for additional parking space for residents using the existing recreation

facilities to the west. It could also double as an area for hard-surface court games, such as basketball. Sidewalks or pathways from the Civic Center to the recreation amenities to the west could be installed allowing visitors access to the ballfields, fishing ponds, or other existing facilities. A pathway leading from the sidewalk to Davisburg Road could also be extended to connect the site to the nearby hamlet of Davisburg to the east. This would provide non-motorized transportation opportunities from the hamlet to the ballfield area, fishing ponds, picnic areas, and other amenities. The landscaping around the Civic Center is designed to demonstrate the use of native plants. Signs identifying specific species or ecosystem types could be added to educate visitors. Similar trails and signs could be installed in the prairie plantings closer to Davisburg Road.

Davisburg Road

Care should be given to a safety path along the park's edge that can be incorporated as part of a larger system to link Davisburg with other communities such as Holly, other Township facilities, and parks such as Springfield Oaks and Indian Springs at some future time. Future trails planned by the Oakland County Linked Path/Trail System and the Headwaters Trails Committee should be considered. See the discussion for Zone 1 above for more information regarding proposed trails.

Zone 2

Zone 2 represents the most sensitive and inaccessible areas of the preserve because of the fragile wetlands and prairie fen adjacent to Long Lake. The zone's primary function is the protection and preservation of sensitive plant communities and wildlife habitat. The secondary function, which is still of significant importance, is the high visual quality of the zone. Its most appropriate human use may be viewing it from other zones. Zone 1 has aesthetic vantage points to view Zone 2. Access is limited and may be restricted to some trail development, boardwalk and/or possible non-motorized boat access. Active monitoring and management of this area should be a priority to protect the prairie fen from exotic plant invasion and to protect the water quality of the lake and river.

Zone 3

This zone is the largest single area of the preserve and the most diverse, containing numerous woodlands, wetlands and meadows. Soils are typified by numerous wet areas of organic muck and sandy loams. Many soils are susceptible to erosion problems, because of the physiological character of these soil types. Development capacity is limited to small areas around wet soils, steep slopes, and mature woodlands. Recreational facilities are necessarily passive in nature, enhancing the site features. These could include trail systems, picnicking, nature study, as well as hunting. This area requires active management to control exotic plant species and encourage oak regeneration.

Main House

The main house could represent a major resource for Zone 3. It is attractively sited and suitable for conversion to alternative uses, which would complement park activities. These uses could include a ranger station or employee residence, retreat center, a visitor or nature center or a weekend lodge. Limitations include the need for building expansion, increased septic capacity, the need to be compliant with the Americans With Disabilities Act, restricted area for parking, and the limits of the existing entry drive.

Park Drive

The existing drive is very narrow and inadequate for a large amount of public vehicle use. Its current alignment is susceptible to poor soils and seasonal water problems. It also does not provide for adequate access to numerous areas of Zone 3, and the entry onto Eaton Road is steep with poor site distance. However, because of the sensitive ecological features on either side of the drive, significant road improvements for large amounts of traffic are not desirable. In addition, improvements to the road would incur significant expense. As an alternative, the drive could be used in its current condition as a hiking trail to the main house.

Northern Entrance

The existing entrance at the far north end of the park provides the current parking and trail access to the northern section. This area, which is a trail head, could be improved to help walkers find their way around the northern section, provide restroom facilities, and a map system, and to educate them about the natural features they will be passing by. Amenities such as a trail map, self-guided tour brochure, and interpretive signs could be used for this purpose.

Entry House

This house provides a good location for controlled access into the park. Depending on conditions, it could be converted for use as a visitor or nature center.

Eaton Road

Eaton Road is a narrow, gravel road with a high scenic value. The capacity to handle high traffic volumes is very limited in its current condition; therefore, passive uses currently planned for the preserve should not excessively tax this roadway.

Zone 4

East Shiawassee, or zone 4, is located directly across the street from the small rental house on Eaton Road. This location could offer additional

parking into the main parkland. This parcel also provides an area for more varied and unique recreation activities than in the other zones of the park. This property was previously a gravel pit. Excavations down approximately 25 feet were conducted almost to the property lines on the north and east side. Excavations on the south side were further from the property line, thus preserving a ridge here. The west side was used for removing the gravel and sand, and therefore presents opportunities for gradual access into the property. The steep slopes provide the grade changes needed for amenities such as an amphitheater for outdoor education and a sledding hill. Vegetation on this site is generally pioneer species; however the trees on the south ridge and slope, as well as along the other edges of the pit, offer shade and some erosion protection. A house on the residential property to the north is fairly visible from East Shiawassee, and buffering this residence from activity in the park should be considered while planning its development.

Zone 5

This zone represents one of the most recently acquired properties within the park. It was purchased with funding from Great Lakes Coastal Restoration Grant, provided through the Michigan Coastal Management Program, Michigan Department of Environmental Quality and the National Oceanic and Atmospheric Administration, U.S. Department of Commerce. The property is covered by a conservation easement held by the North Oakland Headwaters Land Conservancy. (Please refer to the Appendix to review the conservation easement document.) The conservation easement prohibits any activities that are inconsistent with conservation values stated in the easement that, in general, act to preserve the land and vegetation, wildlife habitat, and the property's scenic character. Unlike in zones1, 2 and 3, no hunting or trapping is permitted in zone 5. The landscape features of this zone are a continuation of the ecosystems within the rest of the northern section, and have the same ecological limitations and opportunities as zone 3. Recreational facilities should be passive in nature such as walking, picnicking, and nature study. As the adjacent zone, this zone will also require active management to control exotic plant species, particularly purple loosestrife adjacent to Davis Lake.

Adjacent Properties

Properties adjacent to the preserve are significant continuations of the Shiawassee Basin Preserve's ecosystems. During development of this plan, the Township acquired one parcel (Zone 5) directly adjacent to the northern section that includes part of Davis Lake. Acquisition is the most desirable method of protection, although it may not in reality be either practical or feasible in all situations. Given this, the Township should make every effort to maintain these adjacent lands in their present condition in regards to both resource protection and "viewshed" protection from within the park. Potential mechanisms to achieve this level of protection would be private donations, conservation easement, use of grant funds, or an open space millage or bond.

(**SITE ANALYSIS MAP**)

Public input in Springfield Township is always sought and welcomed. Needs and priority issues regarding Shiawassee Basin Preserve were identified through two methods: a public officials and commissions workshop, and a public "visioning" workshop. This information forms the basis for determining the facilities and management efforts to be included in the Preserve's Master Plan.

Public Officials/Commission Workshop

At the beginning of the park planning process (June, 2002), a joint workshop was conducted with members of the Parks Commission, Township Board, and Planning Commission to discuss future options for the park's development and management. The first two hours of the meeting were spent walking through a portion of the park, observing important natural features such as Long Lake and the prairie fen. The group also observed management concerns, such as exotic invasive species and ORV traffic. The group reconvened at the Civic Center to discuss their observations, and began compiling a list of topics that should be addressed in the Master Plan. The group categorized their comments by the northern park area and the southern park area. A complete listing of topics discussed at this meeting is shown in the table on page 24.

Note that East Shiawassee and the conservancy area in the northern section were not part of the park at the time the public input sessions were conducted. Improvements to these areas were solicited from the Parks Commission, North Oakland Headwaters Land Conservancy, and Township staff.

Public Visioning Process

Additional opinions and ideas were gathered at a public visioning session, held in October 2002. Twenty-two residents attended the meeting and were asked to explain what facilities they would like to see in the park, and any concerns they had about how the park should be managed.

The meeting began with a short presentation about the park's features and existing conditions. Then the large group split into four smaller groups. Each small group was lead by a facilitator who encouraged brainstorming, kept the conversation focused, and took notes on a flip chart.

Each small group was asked to identify park facilities or management concerns that they had regarding both the northern and southern portions of the park. Each group was then asked to prioritize the topics they had come up with and choose the top five topics and/or facilities for each park section.

Once the discussions were complete, the large group reconvened and a representative from each small group presented the results of their work to everyone. The following summarizes the top priority facilities and management concerns identified by the groups. Note that the ideas shared by three or more groups are highlighted. Please refer to the Appendix for complete listings of each group's visioning effort.

Results of Input Sessions:

	6/20/2002 Joint Workshop	10/15/2002 Visioning Session Workshop			
		G1	G2	G3	G4
North Park Area					
Signage/Map/Booklets		x		x	x
Clearly Mark Boundaries		x			x
Protect Fen/Limited Access		x			x
Limit Access to Heron Rookery		x			
Keep Northern area "Natural"		x			
Hiking Trails	x	x			
Nature/Interpretive Trails & Boardwalks	x		x	x	x
Naturalist/Guided Tours	x		x		x
Nature Center	x		x	x	
No motorized vehicles/Boats			x		x
No Horses	x		x		
No Boat Launch			x		
Resolve conflict bet. Hunters/passive users			x		
Viewing Platform	x			x	
Sanitary Facilities				x	
Bird Watching	x				
Fishing	x				
Wildflowers	x				
Educational Classes for Hunters	x				
Controlled Horseback Riding	x				
Canoeing/Kayaking	x				
Controlled Biking and/or Mountain Biking	x				
Amend existing drive for pedestrians	x				
Connect Civic Ctr. grounds w/park	x				
South Park Area					
Hockey/In-line Skating	x	x		x	
Frisbee Golf		x			
Volleyball		x			
Driving Range		x			
Archery Range		x			
2-Mile Walking/Biking Trail	x		x		x
Restrooms	x		x	x	
Wildflower Meadow w/Walking Path			x		
Fishing Pier/Deck/Seating	x		x	x	
No Lighting			x	x	
Soccer Fields	x		x		x
Ice Skating Rink				x	
Athletic League Facility Improvements					x
Model Airplane Facility					x
Concentrate resources in the front	x				
Connect Civic Ctr. grounds w/park	x				

This long-term Master Plan for the Shiawassee Basin Preserve is based on the analysis of the natural and cultural resources and existing conditions found in the park. The design offers recommendations for future improvements and management of the property. The Master Plan is described and illustrated in the following pages and addresses these main goals:

1. **Protect the natural features of the park by limiting recreation in the northern section to conservation and passive recreation.**

2. **Expand passive recreation amenities and environmental education opportunities in the northern section.**

3. **Provide guidance for an ecosystem management plan for the northern section that controls the spread of exotic invasive species, preserves sensitive natural areas, protects threatened animal and plant species, and encourages native species to thrive.**

4. **Expand active recreation facilities in the southern section that provide varying levels and types of recreation for people of all abilities.**

5. **Integrate the Civic Center building and site into the recreation options available in the southern section of the park.**

One of the major purposes for the development of the Shiawassee Basin Preserve Master Plan is to develop an overall philosophy regarding the future of the park. The development goals will help govern and protect the significant resources within the park, as well as provide both active and passive recreational opportunities for community residents.

Overall Plan

The Master Plan reflects conditions that were observed at the site analysis stage. The property has three distinct sections: the northern section, the southern section, and East Shiawassee. The northern 419.6 acres has the greatest potential for passive recreation because of the fragile ecosystems prevalent there, which would prohibit development of some facilities and offer the greatest opportunity for nature study. This section should be viewed as a nature preserve.

The south 90 acres is better suited for expansion of the existing active recreation facilities, but has the possibility for some passive recreation as well. It has the benefits of existing recreational facilities, immediate road access, soils and topography suited for development, and proximity to another important community facility, the Civic Center. This should be viewed as a developed community park.

The six-acre parcel known as East Shiawassee has features unique to the entire park. Its history as a gravel pit has shaped the parcel to provide amenities that require slopes, such as a sledding hill or outdoor education amphitheater. This parcel also has a gentle slope adjacent to Eaton Road, permitting easy access by vehicles. Its location across from the existing rental house will also allow this parcel to be an extension of the large northern section, provide additional parking, as well as a unique setting for day camps, nature interpretation, and winter activities.

Northern Section/Nature Preserve

A. Design Concepts

The design for the northern portion suggests a series of improvements to encourage walking, hiking, and environmental study. Hunting is also discussed, as this activity is required under the terms of the grant used to purchase the original park property. (Note that since the western 78 acres, the conservancy property and East Shiawassee were not part of this purchase agreement, hunting is not required here. Hunting is in fact prohibited by the conservation easement on the one parcel.

1. Northern Park Entrance. The existing parking area in the northeast corner of the park could be improved by adding a picnic pavilion, vault toilet, a sign with a trail map, and self-guided tour in a brochure format. These tools would be used to educate park visitors about the location and facts on ecosystems they will pass along the trail, as well as park use rules.

2. Trails. The proposed trail system is designed to minimize fragmentation of existing plant communities and for use by pedestrians walking, hiking, or cross-country skiing. Use of the trails for horseback riding, mountain biking, snowmobiling, and other off-road vehicles (ORVs) will cause severe erosion problems due to the soil conditions on site, and are prohibited. The existing seasonal woodland and meadow trails begin at the northern park entrance trail head and leads to Dollar Lake.

Any new trails to be built should use the existing, informal trails already in place. Existing trails that lead to sensitive areas, such as the prairie fen at Long Lake, or the Heron rookery, should be barricaded and if necessary, re-seeded to discourage use and disturbance of these systems.

The surface of the trails will mostly be mown grass, woodchips, crushed aggregate or limestone, or bare earth depending on the area the trail passes through. Boardwalks will be installed if necessary to protect sensitive areas from trampling. The trails will have “education stations” that will contain amenities such as benches, signs and/or markers that describe the site features that the walker is viewing, such as a prairie, oak-hickory woodland, the prairie fen, or Long Lake,

as well as the wildlife. Environmental preservation concepts, such as management regimes, invasive species control, or the effects of ORV/mountain bike traffic will also be discussed. Three specific stopping points are shown on the Master Plan Map: a boardwalk to a wooden platform that affords a view of the prairie fen and Long Lake, a picnic area on the peninsula overlooking the Shiawassee River and Long Lake, and, if environmentally appropriate, an overlook with views of Davis Lake.

3. New Park Entrance and Visitor/Nature Center. A new park entrance area is proposed at the existing rental house on Eaton Road to encourage more visitors, with varied physical abilities, to use the park. The building could be renovated for a visitor or nature center. Public toilet facilities could be available in the house, or a separate restroom building may be considered near the proposed trail head and parking lot (for approximately 20 cars) located behind the house. The existing drive that leads to the main house would be blocked off from vehicle traffic with collapsible bollards and used for pedestrians. Only service and Township vehicles would have access to the drive leading to the main house. The drive should be evaluated for regular maintenance to ensure that it can provide safe, universally accessible use. Education stations that have interpretive signs, benches, overlooks for wetlands, and other similar amenities would be scattered along the drive.

4. Main House. The main house could be converted for future use to a ranger station or park employee residence.

5. East Shiawassee. Because of the steep slopes created by past gravel extraction, this property provides opportunities for a hillside outdoor education amphitheater on the northern border. The southern slope would be a sledding hill, as the top of the hill is accessible from a flat area off of Eaton Road. This flat area next to the roadway would include a parking and drop off area for day-camp participants. Other amenities for the day camp would include a picnic shelter and vault toilets.

6. Park Boundary Markers. Currently, the boundary between the park and adjacent properties may not be clear. Therefore, prohibited activities occur within the park, when users are not aware that they are in the park. A boundary marker system should be installed along the park's property lines that are directly adjacent to other properties. This would include the entire border of the park. Educating the neighbors on a regular basis should also be pursued so that those closest to the park know which activities are and are not allowed within the park boundaries.

7. Park Naturalists and/or Park Ranger. As the Township grows, knowledge and use of this park will increase. Many of the problems that the park is currently experiencing with prohibited uses could be minimized if a staff member were on site to intercept them. Someone

with a natural resources background could also provide guided tours, educational programming, and other services to park users, and the community at large.

8. Access to Long Lake and Davis Lake. Long Lake and Davis Lake, and the prairie fen that surrounds them, is currently considered a high-quality system. For this reason, it is important to limit access to the lakes, and minimize disruption to the prairie fen at the lakes' shores. It is recommended that no motorized boats be permitted in the lakes, and that no boat launch be provided for any watercraft. However, hunting is allowed in areas near Long Lake, and fishing is allowed on both lakes. It is recommended that if an appropriate area exists, an upland location be identified for these activities. Please see the section on hunting and fishing under "Management Practices" for more recommendations regarding these sports.

9. Future Acquisitions. Several parcels next to the northern section of the park should be considered for acquisition in the future. These privately owned areas have natural features such as wetlands, lakes, and the Shiawassee River. They are a continuation of the significant features within the park. The water features on these adjacent parcels also provide a continuous, unpolluted flow of water to the river, Davis Lake, and Long Lake. In addition, access may be better controlled with some key parcel acquisitions.

Summary of Northern Section Future Improvements:

Northern Park Entrance:

Picnic Pavilion
Trail map/signs with park rules (2)
Self-guided tour brochure
Vault toilets (2)
Interpretive trail signs
Benches
Trash receptacles
Wetland overlook platforms along trail
Boardwalks
Vegetation restoration
Trails
Western boardwalk and observation deck
Picnic tables
Boundary markers

New Park Entrance and Visitor/Nature Center:

Renovation of visitor or nature center
Park identification sign
Trail map/signs with park rules
Crushed limestone/asphalt parking lot for 20 cars
Restroom building

Picnic pavilion
Collapsible bollards
Benches
Picnic tables
Trash receptacles
Interpretive trail signs
Wetland overlook platforms along trail
Improvement of main house into naturalist station or employee residence

*Note: Restoration efforts and costs will be more fully defined by the Ecosystem Management Plan, described in the following section.

B. Management Practices

Management of the park's natural features will determine the future quality and significance of these ecosystems. It is recommended that an Ecosystem Management Plan be developed for the park. This plan would include a plant and animal inventory, listing of threats to the existing ecosystems, prioritized areas for monitoring and management, and appropriate methods of management for each ecosystem. The inventory information from the Shiawassee and Huron Headwaters Resource Protection Project (the Headwaters Project) can be used as a baseline in which to measure change over time. It is also recommended that the Township involve residents in the development of this plan and in implementing appropriate management activities. This will increase citizen's awareness of the park's features, their connection with the park, and their desire to protect the unique and sensitive elements in the park.

The following discusses current threats to the sustainability of the park's natural features, and ways that should be considered to minimize or eliminate damage caused by these threats. These management practices will also help to restore natural ecosystems, a goal of this Master Plan.

1. Vegetation Management.

a. Exotic Invasive Species. The following are exotic invasive species that were identified in the Headwaters Project that should be monitored and controlled in the park. All these plants have the potential to completely take over the ecosystem in which they live, displacing the native flora, and thereby wildlife that depends on it. The following species that must be actively managed include:

Purple Loosestrife (*Lythrum salicaria*). This herbaceous wetland plant has been seen in the prairie fen and other wetland areas in limited numbers. It was originally introduced into this county as an ornamental garden plant, and has escaped cultivation. Each plant produces millions of tiny

seeds that are dispersed by water movement and by sticking to waterfowl and boats. As the species can reproduce extremely fast, a management strategy needs to be developed to strictly control it. Methods of control include cutting before seeds are set and painting the stumps with herbicides approved for use over water, pulling and/or digging. The latter methods, however, disturb the soil, giving the remaining loosestrife seeds an opportunity to germinate. One method that does not disturb the soil is the use of Galerucella Beetle, which has been successfully used up river and could continue to be used. All plant parts are capable of rooting, and need to be destroyed after removal.

Reed Canary Grass (*Phalaris arundinacea*). This is also a wetland plant, and a perennial grass. This plant has been widely planted for forage and for erosion control, but has escaped into wetlands, and has become a problem because of its aggressive nature. Currently, reed canary grass has been observed in wetlands within the park. Because it grows so intertwined with other desirable plants, it is very difficult to control with any method other than prescribed burning. This management method would be appropriate for any wetland area within the park, including the prairie fen.

Cattail (*Typhia* spp.). There are three main species of cattails that grow in Michigan, with one, the broad-leafed cattail, being native. This wetland plant is aggressive, and tends to form monocultures in previously disturbed wetland areas, producing a dense rhizome mat with thick layers of leaf litter. These characteristics reduce the ability of other plants to take hold or survive. In high-quality natural communities, cattails usually occur as scattered sterile plants.

This species should be monitored so that it does not spread and displace the existing prairie fen, or other sensitive wetland habitats. Cattail monocultures are thought to happen after a disturbance, where they reproduce vegetatively very fast. Therefore, minimizing disturbance at the edge of cattail monocultures is important. Managing cattails is difficult. Specific regimes would need to be developed for a certain area, but would most likely include hand-cutting root stalks and flooding.

Glossy Buckthorn (*Rhamnus cathartica*). This large shrub was also a landscape ornamental that escaped cultivation. It produces many juicy seeds that birds relish. However, as its name indicates, the berries have a “cathartic” effect on the birds, which eliminate them soon after eating. The berries have been found to have little nutritional value.

This method of seed dispersal means that glossy buckthorn can be spread wherever birds fly and roost. In the Shiawassee Basin Preserve, this species has been observed in the prairie fen, in uplands, the edges and interiors of woodlands. Control of this shrub requires significant physical effort over several years. The existing plants (that are usually quite large) need to be either cut down or dug out, and the branches removed and destroyed. If the plants are cut down then herbicide is applied to the cut stems. Once this is done, then the area where the plant was located will spring up with many buckthorn seedlings, which also need to be removed, sprayed with herbicide, or burned. It takes several years and a consistent effort to keep on top of this plant.

Autumn Olive (*Elaeagnus umbellata*). Like the previous described shrub, autumn olive produces a prolific number of berries disbursed by birds. Originally, this plant was considered a favorable wildlife species and was planted across Michigan in parks and natural areas. Now it can be seen along every major roadway and identified by its gray-green color and iridescent red berries. In the Shiawassee Basin Preserve, the plant has mostly invaded the uplands, in open fields and the edges of woodlands. Management techniques are the same as described above for Buckthorn, and includes cutting and applying an herbicide to the cut stems, or removing the shrub.

b. Woodlands. The woodlands represented in the park are mostly Oak-Hickory woodlands that are transitioning to include red maple as a major tree species. This is occurring because of the absence of fire, which is necessary for oak regeneration. The woodlands on the slopes were historically closed canopy woodlands. However, the oak woodlands in the flatter areas of the park were probably more open “oak barrens” with a mixture of prairie species in the ground layer. The ultimate result of woodland management efforts needs to be determined before a management regime is developed. To restore the oak woodlands on slopes, some tree thinning and prescribed burning would be necessary. To restore the oak woodlands in the more level areas to oak barrens, more aggressive thinning and burning is recommended.

c. Old Field. The Master Plan Map identifies areas that could be converted from agricultural weeds to prairie plantings. These plantings would support a wide range of birds, both local and migratory, mammals and insects. Steps involved in this process would be to kill the existing vegetation through burning, disking, or herbicides, and re-seeding the areas with prairie species. Each restoration site will also require several years of weed management to allow the prairie species to become established. Future maintenance would include

periodic burning or mowing to keep woody species out of the prairie plantings.

d. Prairie fen. A major risk to the prairie fen is a change in the hydrology of the site. This could be caused by a draw-down of the water table reducing water quantity and quality, or other changes in water quality through increased levels of phosphorus from fertilizers, other landscape chemicals, or leaking septic systems. The Township, through application of its zoning ordinance, has been careful to recommend developments adjacent or upstream from the preserve that fit the carrying capacity of the land. The guidelines suggest maintaining existing drainage patterns, treating sewage to a high degree, and limiting as much as possible the amount of landscape chemicals that potentially will reach the preserve. A management activity that could be added to these efforts is to regularly monitor water levels and water quality in Long Lake and Davis Lake, and adjacent wetlands and groundwater seeps that feed the fen.

2. Recreation Activities.

a. Horses, ORVs, and Mountain Bikes. Current park rules prohibit the use of off-road vehicles (ORVs), horseback and mountain bike riding in the park. All of these activities have detrimental impacts on the park's natural environment. Horses not only cause significant erosion problems, but they also spread exotic weed seeds (some being invasive) through their manure. ORVs and mountain bikes also cause extensive erosion, which widens trails, disturbs vegetation, creates gullies in and around steep slopes, and exposes tree roots. This is particularly an issue when the operators ride "off trail," which is a consistent problem throughout the park. Management strategies to consider are park boundary markers, "rules" signs at all entrances with prohibited activities clearly stated (currently installed in some locations, and underway in others), a park ranger to improve enforcement, modifications to the park rules ordinance to prohibit horseback and mountain bike riding, educating residents about the park's fragile systems and the reasons behind the rules, and encouraging park neighbors to report prohibited activities. Important resident groups to include in environmental management activities are horseback riders, ORV users and mountain bikers.

b. Hunting. The funding used to purchase the original park property requires that hunting be permitted within the park. However, this is not true in the recent 78-acre acquisition along the west side of Long Lake purchased in 2000, nor in the 36-acre conservancy property on the East Shiawassee property on Eaton Road acquired in 2003. In the areas where

hunting is permitted, these activities include all hunting activities, such as deer, turkey and duck hunting, as well as trapping and fishing. To ensure the safety of all park users, and preservation of sensitive natural features, hunter education should be included in park management activities. The following ought to be considered:

1. Post warnings at the entrances to the preserve stating that it is open to both hunters and non-hunters, and that all users should wear safety orange clothing during the hunting season. Temporary, additional hunting signs, on orange paper, could be posted only during the season to capture visitors' attention. Warning signs should include the opening and closing dates for each season (different species, and bow, firearm, and muzzleload).

2. Enforcement of park rules will ensure the safety of all park users. A park ranger, naturalist, or other park staff member, could be on site to increase the awareness of hunters that the park is also used by non-hunters.

3. Hunter education workshops, where potential hunters could receive information about the park, its sensitive features, and its wildlife. An incentive to attending the workshop could include guest speakers on hunting and/or shooting techniques on both bow and firearm use.

4. Sensitive areas could be flagged before the hunting season begins, and signs posted at entryways and along trails to indicate sensitive areas that should be avoided.

c. Fishing. Environmental management activities should include anglers that use Long Lake or Davis Lake as a fishing spot. Their understanding of the prairie fen and its sensitivity is important in protecting this area.

Southern Section/Community Park

A. Design Concepts

The design for the southern portion of the park concentrates on providing facilities for active recreation.

1. Sports Field Area. Amenities supporting use of the existing active sports fields include a restroom/concession building, play structure, picnic area and an expanded, parking lot. The parking lot would be in its current location, but expanded to the east by one row of parking spaces. Future sports fields are proposed as needs dictate, including two additional ballfields. This change will necessitate relocating the three soccer fields to other sites in the park. An additional parking lot could be considered for the soccer fields if needs dictate. New active

recreation amenities proposed for this area include a walking trail with distance markers and an in-line skating rink. A fence is proposed along Davisburg Road and around the parking area, to require vehicles to use the entry drive and stay on the road.

2. Civic Center Area. This area makes available both active and passive recreation opportunities. A basketball hoop is proposed for the eastern parking lot of the Civic Center, as well as walking trails that connect the center's main sidewalk to the ballfields, ponds, and picnic areas. The walking trails also traverse the prairie planting in front of the building and provide access to the future memorial garden. Another picnic area is proposed to the north of the Civic Center building. Interpretive signage could be considered for areas along these walking trails when they pass by wetlands, the prairie plantings, or the stormwater demonstration area in front of the building. To identify the entrance into the southern section of the park, and to recognize the Civic Center and the Shiawassee Preserve as one entity, a new sign is proposed at the vehicle entrance off of Davisburg Road.

3. Pond/Meadow Area. Three ponds exist in the southern section of the park. Fishing docks are proposed for the two ponds that are currently used for fishing. Another pond exists on the western side, which also has open water. However, the wetland edge vegetation makes this pond more inviting for nature and bird watching. A wet meadow planting is proposed around this pond, and wood duck boxes could be installed in the water. The remainder of this area of the park is proposed to be meadow/prairie plantings, traversed by unpaved trails. The trails could include interpretive signs describing the prairie plantings, as well as provide the pathway for disc golf. The prairie itself could also be used for hunting dog training, and supplies prime pheasant habitat. The northwest corner of the park is high enough to offer an overlook to Long Lake, and a picnic site is proposed here.

Summary of Southern Section Future Improvements:

Sports Field Area:

Restroom/concession building
Play equipment
Parking lot expansion
Walking trail
In-line skating rink
Picnic tables
Trash receptacles
Fence along Davisburg Road and around parking

Future Sports Fields:

Baseball/softball fields (2)
Soccer fields (3)

Civic Center Area:

Basketball hoop
Walking trails
Interpretive signs
Picnic tables
Trash receptacles
Dual entry sign

Pond/Meadow Area:

Fishing docks (2)
Wet meadow planting
Prairie/meadow planting
Walking trails
Interpretive signs
Disc golf course
Picnic tables
Trash receptacles

B. Management Practices

1. Vegetation Management. The Master Plan Map identifies areas that could be converted from agricultural weeds to prairie or wet prairie plantings. These plantings would support a wide range of birds, both local and migratory, mammals and insects. Steps involved in this process would be to kill the existing vegetation through burning, disking, or herbicides, and re-seeding the areas with prairie species. Each restoration site will also require several years of weed management to allow the prairie species to become established. Future maintenance would include periodic burning or mowing to keep woody species out of the prairie plantings. Participating in these efforts could be a way for volunteers and park users to learn about the prairie plant community, and ecosystem management.

   As in the northern section, any exotic invasive species found in this area of the park should be removed using appropriate techniques.

2. Regeneration. In the future, the picnic area trees and vegetation may become stressed if long-term use causes soil compaction problems. If this occurs, some areas should be allowed to regenerate by removing picnic facilities and alternating use areas over time.

(INSERT MASTER PLAN MAP HERE.)

The Shiawassee Basin Preserve Master Plan outlines improvements for park development. However, the plan is incomplete without an implementation program. Specific timing of each improvement, estimated costs, strategies for implementation, and funding options are provided here.

Cost Estimates and Phasing

The following chart illustrates preliminary estimated costs and phasing priorities of specific projects associated with the proposed plan. These costs are estimated at 2003 construction costs. Project development is divided into three phases

		Estimated Cost
	Southern Sports Field Area: Phase 1	
1.	Restroom/Concession Building	$60,000.00
2.	Play equipment and surfacing	$30,000.00
3.	Expansion and paving of parking lot (On existing base)	$48,000.00
4.	Walking trail (8' wide)	$63,800.00
5.	In-line skating rink (Pavement and grading)	$4,500.00
6.	Picnic tables	$3,200.00
7.	Trash receptacles	$500.00
8.	Fence along Davisburg Road & around pkg.	$16,500.00
9.	Disc golf course (9-hole)	$5,000.00
	Subtotal	**$231,500.00**
	Northern Park Entrance: Phase 2	
1.	Picnic pavilion (800 s.f.)	$20,000.00
2.	Trail map/signs with park rules	$7,500.00
3.	Self-guided tour brochure	$2,500.00
4.	Vault toilets	$36,000.00
5.	Interpretive trail sign system (On existing trails: Prairie, wetland overlook, woodland, etc.)	$30,000.00
6.	Benches (On existing trails)	$3,000.00
7.	Trash receptacles	$1,000.00
8.	Wetland overlook platform (Premium for difficult location)	$1,500.00
9.	Boardwalks (6' wide) (Premium for difficult location)	$13,500.00
10.	Vegetation restoration (bed prep., prairie grass seeding and management for 3 years)	$4,000.00
11.	Prescribed burning/management program (5 years, conducted every other year)	$25,000.00
		Price

Northern Park Entrance: Phase 2 (Con't.)

12.	Management Plan	$25,000.00
	Subtotal	**$169,000.00**

Civic Center Area: Phase 3

1.	Basketball hoop and striping	$2,500.00
2.	Trails 6' wide (Most will only require mowing, however some grubbing and clearing, and grading may be necessary. No surfacing)	$7,500.00
3.	Interpretive trail signs (Wildflower meadow, stormwater demonstration system)	$10,000.00
4.	Picnic tables	$1,600.00
5.	Trash receptacle	$250.00
6.	Directional and event signs	$4,000.00
7.	Maintenance building (3000 s.f.)	$225,000.00
	Subtotal	**$250,850.00**

Southern Pond/Meadow Area: Phase 4

1.	Fishing decks	$10,500.00
2.	Wet meadow planting (Bed prep., wet meadow seeding, and management for 3 years)	$5,000.00
3.	Vegetation restoration (Bed prep., prairie grass seeding, and management for 3 years)	$15,000.00
4.	Trails 6' wide (Most will only require mowing, however some grubbing and clearing, and grading may be necessary. No surfacing)	$10,000.00
5.	Interpretive trail signs (Picnic overlook, wet meadow)	$10,000.00
6.	Picnic tables	$1,600.00
7.	Trash receptacles	$2,000.00
	Subtotal	**$54,100.00**

Price

	New Northern Park Entrance and Visitor/Nature Center: Phase 5	
1.	Renovation of house at Eaton Road into visitor/nature center	$20,000.00
2.	Park identification signs	$4,500
3.	Trail map/signs with park rules	$7,500.00
4.	Crushed limestone/asphalt parking lot for 20 cars, and driveway entrance improvements	$101,500.00
5.	Restroom building with flush toilets (septic & water)	$75,000.00
6.	Picnic pavilion (800 s.f.)	$20,000.00
7.	Break-away bollards	$3,400.00
8.	Benches	$2,000.00
9.	Picnic tables	$3,200.00
10.	Trash receptacles	$2,000.00
	Subtotal	**$239,100.00**
	New Northern Trails and Amenities: Phase 6	
1.	Trails 6' wide (Clearing and grubbing, and/or mowing; some grading, no surfacing)	$65,100.00
2.	Boardwalks (6' wide) (Premium for difficult location)	$15,000.00
3.	Interpretive signs (On new trails: Heron rookery vicinity, picnic overlook, two at observation deck, woodland)	$25,000.00
4.	Benches (On new trails: All sites with interpretive signs except for observation deck, which will have built-in benches)	$2,400.00
5.	Picnic tables at outlook peninsula	$1,600.00
6.	Rules sign at outlook peninsula	$1,000.00
7.	Renovation of Main House into ranger station/employee residence	$50,000.00
8.	Western boardwalk and observation deck (with built-in benches) (Premium for difficult location)	$24,000.00
9.	Boundary markers	$12,000.00
10.	Vegetation restoration (trees, shrubs, seeding and management)	$50,000.00
	Subtotal	**$246,100.00**
	East Shiawassee: Phase 7	
1.	25-space gravel parking lot	$71,500.00
2.	Vault toilets	$36,000.00
3.	Picnic pavilion	$20,000.00
4.	Outdoor education amphitheater	$30,000.00
5.	Sledding hill	$10,000.00
	Subtotal	**$167,500.00**

Price

	Sports Fields - Future	
1.	Two baseball/softball fields (Only minor grading required, irrigated)	$70,000.00
2.	Three soccer fields (Grading required, irrigated)	$75,000.00
	Subtotal	**$145,000.00**

Subtotals and Project Total

Subtotal for Future Facilities	**$145,000.00**
15% Contingency	$21,750.00
15% Design, Engineering & Soil Testing	$21,750.00
Total for FUTURE Facilities	**$188,500.00**
Subtotal for Southern Section	**$536,450.00**
15% Contingency	$80,467.50
15% Design, Engineering & Soil Testing	$80,467.50
Total for SOUTHERN Section	**$697,385.00**
Subtotal for Northern Section	**$821,700.00**
15% Contingency	$123,255.00
15% Design, Engineering & Soil Testing	$123,255.00
Total for NORTHERN Section	**$1,068,210.00**
PROJECT TOTAL	**$1,954,095.00**

A cost estimate is included in the Appendix that includes quantities and unit prices.

Funding Strategies

The cost of implementation will place added importance on outside grants and assistance programs. A variety of local and national sources have been researched to locate funding for construction of proposed facilities, restoration of plant communities, and development of a management plan and/or management activities.

Local Resources:

Community Block Grant Program – Provides eligible communities with funds to use to improve community facilities and services.

General Fund – Springfield Township's general fund.

Recreation Millage – Specific tax increase that will be used to develop recreation facilities.

Bonds – An option to borrow money for specific recreation development needs. Electorate approval is required for this option.

Park Trust Fund – Special account set up to receive and disburse revenues for a specific program/activity. Can earmark portions of taxes, fees, or referendum bond dollars.

Adopt-A-Habitat Program – This program solicits individuals, businesses, and other community residents to adopt a habitat that needs to be improved. For a fee, interested parties support their habitat through the purchase of a kit of educational materials on their chosen area.

Timber Sales – As mentioned in previous sections of this document, woodland and Oak barren restoration may require thinning of existing timber throughout the park. If this becomes a recommendation of the Ecosystem Management Plan, sales of this timber could be a potential revenue source.

Community Donations – In kind and monetary donations from community members could fund improvements.

Fund Raising Activities – Fund raising activities would be beneficial in raising awareness and helping to meet a financial goal.

Public Grants:

Land and Water Conservation Fund – Provides federal dollars for acquisition and development of outdoor recreation facilities. Grants from $30,000 - $500,000 are available, with a 50% local match required.

Michigan Natural Resources Trust Fund – Assists local governments in acquiring land or rights to land for recreational uses, protecting land because of its environmental importance or scenic beauty, and

developing public recreational facilities. Grants from $15,000 - $500,000 are available, with a 25% local match required.

Nongame Wildlife Fund – Used to identify, protect, manage, and restore native plant and animal species, natural communities, other natural features, and to promote the knowledge, enjoyment, and stewardship of Michigan's native species and ecosystems for present and future generations. Note that this fund is not active in 2003, but may be reactivated in the future.

Community Forestry Grant Program – Provides funds for active management of forest ecosystems, developing long-term management plans for municipal forests, outreach and education projects, demonstration areas and ecosystem projects. All proposals must include a component or specifically target the non-industrial private landowner. Grants from approximately $250 to $15,000 depending on the type of project, with a 50% local match required for plan writing grants.

Urban and Community Forestry Program – Assists local governments for urban and community forest activities such as tree inventories, management plans, planting, and other maintenance programs. Grants up to $20,000.

DTE Energy Tree Planting – Provides funds for tree planting projects in parks and nature study areas. Grants up to $4,000 are available.

Recreational Trails Program - Used to maintain and develop recreational trails and related facilities. However, trails must be on DNR land, or link with trails on DNR land. No limit on individual projects.

Recreation Improvement Fund – Grants that fund the operation, maintenance, development of recreation trials and restoration of lands damaged by off-road vehicles and in-land lake clean up. However, trails must be on DNR land, or link with trails on DNR land. No limit on individual projects. No limit on individual projects.

Off Road Vehicle (ORV) Grants Program – Provides funds for restoration of natural resources damaged by ORV use. No minimum grant amount, but maximum is up to 100% of the cost of the project.

North American Wetlands Conservation Act Grants Program – This program focuses on protecting, restoring, and/or enhancing critical bird habitat. Projects must support long-term wetlands acquisition, restoration, and/or enhancement. A 50% local match is required.

Private Foundations:

Compton Foundation, Inc. – This foundation's priorities include land, river, and watershed protection and management for purposes of long-term habitat and ecosystem preservation and restoration.

Surdna Foundation - Provides funds for forest management efforts and environmental education for behavioral change.

Shiawassee Basin Construction Cost Estimate					January 19, 2004
		Quantity	**Unit**	**Unit Price**	**Price**
	Southern Sports Field Area: Phase 1				
1.	Restroom/Concession Building	400	SF	$150.00	$60,000.00
2.	Play equipment and surfacing	1	LS	$30,000.00	$30,000.00
3.	Expansion and paving of parking lot (On existing base)	48,000	SF	$1.00	$48,000.00
4.	Walking trail (8' wide)	4,400	LF	$14.50	$63,800.00
5.	In-line skating rink (Pavement and grading)	1,800	SF	$2.50	$4,500.00
6.	Picnic tables	4	EA	$800.00	$3,200.00
7.	Trash receptacles	2	EA	$250.00	$500.00
8.	Fence along Davisburg Road & around Pkg.	3,000	LF	$5.50	$16,500.00
9.	Disc golf course (9-hole)	1	LS	$5,000.00	$5,000.00
	Subtotal				**$231,500.00**
	Northern Park Entrance: Phase 2				
1.	Picnic pavilion (800 s.f.)	1	LS	$20,000.00	$20,000.00
2.	Trail map/signs with park rules	1	LS	$7,500.00	$7,500.00
3.	Self-guided tour brochure	1	LS	$2,500.00	$2,500.00
4.	Vault toilets	2	EA	$18,000.00	$36,000.00
5.	Interpretive trail sign system (On existing trails: Prairie, wetland overlook, woodland, etc.)	3	EA	$10,000.00	$30,000.00
6.	Benches (On existing trails)	3	EA	$1,000.00	$3,000.00
7.	Trash receptacle	5	EA	$200.00	$1,000.00
8.	Wetland overlook platform (Premium for difficult location)	100	SF	$15.00	$1,500.00
9.	Boardwalks (6' wide) (Premium for difficult location)	900	SF	$15.00	$13,500.00
10.	Vegetation restoration (bed prep., prairie grass seeding and management for 3 years)	4	AC	$1,000.00	$4,000.00
11.	Prescribed burning/management program (5 years, conducted every other year)	5	EA	$5,000.00	$25,000.00
12.	Management Plan	1	LS	$25,000.00	$25,000.00
	Subtotal				**$169,000.00**

		Quantity	Unit	Unit Price	Price
	Civic Center Area: Phase 3				
1.	Basketball hoop and striping	1	LS	$2,500.00	$2,500.00
2.	Trails 6' wide (Most will only require mowing, however some grubbing and clearing, and grading may be necessary. No surfacing)	3,000	LF	$2.50	$7,500.00
3.	Interpretive trail signs (Wildflower meadow, stormwater demonstration system)	2	EA	$5,000.00	$10,000.00
4.	Picnic tables	2	EA	$800.00	$1,600.00
5.	Trash receptacles	1	EA	$250.00	$250.00
6.	Directional and event signs	1	LS	$4,000.00	$4,000.00
7.	Maintenance building	3000	SF	$75.00	$225,000.00
	Subtotal				**$250,850.00**
	Southern Pond/Meadow Area: Phase 4				
1.	Fishing decks	700	SF	$15.00	$10,500.00
2.	Wet meadow planting (Bed prep., wet meadow seeding, and management for 3 years)	1.25	AC	$4,000.00	$5,000.00
3.	Vegetation restoration (Bed prep., prairie grass seeding, and management for 3 years)	15	AC	$1,000.00	$15,000.00
4.	Trails 6' wide (Most will only require mowing, however some grubbing and clearing, and grading may be necessary. No surfacing)	4,000	LF	$2.50	$10,000.00
5.	Interpretive trail signs (Picnic overlook, wet meadow)	2	EA	$5,000.00	$10,000.00
6.	Picnic tables	2	EA	$800.00	$1,600.00
7.	Trash receptacles	10	EA	$200.00	$2,000.00
	Subtotal				**$54,100.00**

		Quantity	Unit	Unit Price	Price
	New Northern Park Entrance and Visitor/Nature Center: Phase 5				
1.	Renovation of house at Eaton Road into visitor/nature center	1	LS	$20,000.00	$20,000.00
2.	Park identification sign	2	EA	$2,250.00	$4,500.00
3.	Trail map/signs with park rules	1	LS	$7,500.00	$7,500.00
4.	Crushed limestone/asphalt parking lot for 20 cars, and driveway entrance improvements	7,000	SF	$14.50	$101,500.00
5.	Restroom building with flush toilets (septic & water)	500	SF	$150.00	$75,000.00
6.	Picnic pavilion (800 s.f.)	1	LS	$20,000.00	$20,000.00
7.	Break-away bollards	4	EA	$850.00	$3,400.00
8.	Benches	2	EA	$1,000.00	$2,000.00
9.	Picnic tables	4	EA	$800.00	$3,200.00
10.	Trash receptacles	10	EA	$200.00	$2,000.00
	Subtotal				**$239,100.00**
	New Northern Trails and Amenities: Phase 6				
1.	Trails 6' wide (Clearing and grubbing, and/or mowing; some grading, no surfacing)	9,300	LF	$7.00	$65,100.00
2.	Boardwalks (6' wide) (Premium for difficult location)	1,000	SF	$15.00	$15,000.00
3.	Interpretive signs (On new trails: Heron rookery vicinity, picnic overlook, two at observation deck, woodland)	5	EA	$5,000.00	$25,000.00
4.	Benches (On new trails: All sites with interpretive signs except for observation deck, which could have built-in benches)	3	EA	$800.00	$2,400.00
5.	Picnic tables at outlook peninsula	2	EA	$800.00	$1,600.00
6.	Rules sign at outlook peninsula	1	EA	$1,000.00	$1,000.00
7.	Renovation of Main House into ranger station/employee residence	1	LS	$50,000.00	$50,000.00

		Quantity	Unit	Unit Price	Price
	New Northern Trails and Amenities: Phase 6 (Con't.)				
8.	Western boardwalk and observation deck (with built-in benches) (Premium for difficult location)	1,200	SF	$20.00	$24,000.00
9.	Boundary markers	24	EA	$500.00	$12,000.00
10.	Vegetation restoration (trees, shrubs, seeding and management)	1	LS	$50,000.00	$50,000.00
	Subtotal				**$246,100.00**
	East Shiawassee: Phase 7				
1.	25-space gravel parking lot	6,500	SF	$11.00	$71,500.00
2.	Vault toilets	2	EA	$18,000.00	$36,000.00
3.	Picnic pavilion	1	LS	$20,000.00	$20,000.00
4.	Outdoor education amphitheater	1	LS	$30,000.00	$30,000.00
5.	Sledding hill	1	LS	$10,000.00	$10,000.00
	Subtotal				**$167,500.00**
	Sports Fields - Future				
1.	Baseball/softball fields (Only minor grading required, non-irrigated)	2	EA	$35,000.00	$70,000.00
2.	Soccer fields (Grading required, non-irrigated)	3	EA	$25,000.00	$75,000.00
	Subtotal for Future Facilities				**$145,000.00**

					Price
	Subtotal for Future Facilities				**$145,000.00**
	15% Contingency				$21,750.00
	15% Design, Engineering & Soil Testing				$21,750.00
	Total for FUTURE Facilities				**$188,500.00**
	Subtotal for Southern Section				**$536,450.00**
	15% Contingency				$80,467.50
	15% Design, Engineering & Soil Testing				$80,467.50
	Total for SOUTHERN Section				**$697,385.00**
	Subtotal for Northern Section				**$821,700.00**
	15% Contingency				$123,255.00
	15% Design, Engineering & Soil Testing				$123,255.00
	Total for NORTHERN Section				**$1,068,210.00**
	PROJECT TOTAL				**$1,954,095.00**

Shiawassee Basin Master Plan

Charter Township of Springfield

Joint Workshop Meeting Results
June 20, 2002

I. Suggestions for Recreation Activities:

Northern Section:

- Bird Watching
- Fishing
- Hiking
- Wildflowers
- Nature walks –
  - Self guided tours / education
  - Interpretive trail
  - Benches
- Overlook / Look-out tower – w/ telescope
- Hunting (Educational classes required. Permit system)
- Canoeing / kayaking
- Naturalist – programs
- Nature center
- Mountain biking / biking
- Ex. Drive - amend for pedestrians
- Connect Civic Center Grounds w/park – one facility

Southern Section:

- Walking trails
- Connect w/ Civic Center
- Resources concentrated in front part
- Soccer
- In-line hockey
- Restrooms
- Pond improvements
  - Deck
  - Sitting

II. Suggestions for Park Management Activities:

Signage (limited) plus educational signage
Permit system – resident / non-resident
Signs listing hunting seasons
    Map of park
Park ranger / naturalist
Accessibility trails / restrooms
Nature Center
Prescribed burns

Prioritize Management Plan Activities
Thin woodlands
Management plan schedule
Follow-up on MNFI Study
Friends of Shiawassee involvement
Park first
Handicap accessible
Trail system (loop)

More ideas about $$ for management & development
Resources ($$) go to southern portion to tie in Civic Center
Revenue ($$) recreation that generates revenue
Partners for revenue generating recreation
Land conservancy – partners
Education (kids) with technology
User pay policy
Park Commission provide facilities, not recreation programs
Uses not controlled by revenue
Grant Writer / after management plan developed

III. Suggestions for Preservation Activities:

Naturalist / nature education
Heron Rookery
Fen-Prairie
Long Lake – Dollar Lake
Large spring
Boardwalks
Carefully placed trails
Signage (limited) (educational) designate hunting areas
Wetlands
Inventory of features
Western property – no disturbance

Shiawassee Basin Master Plan

Charter Township of Springfield

Public Visioning Session
October 16, 2002

Group 1:

Top Priorities

Northern Section:

1. Improve signage / education and boundaries
2. Protect fens "educate"
3. Limit access to Heron Rookery
4. Keep North Area as wild as possible "Natural"
5. Hiking Trails

Southern Section:

1. Hockey (Ice/Inline) skating
2. Disc Golf
3. Volleyball
4. Driving Range
5. Archery Range

General Ideas/Concerns Discussed

Archery range
Skeet shooting
Bird watching – limit access to Heron rookery
"Education" – hardwood, fens, plantings, etc. (spring, fall walks)
Signage – limit people access
Nature trails from ADA (blind, etc.)
Protect fens – educate
Soccer fields
RC Planes
Disc golf
Go fly a kite (N/S)
Equestrian trails – dedicated only (N)
Mountain biking (N)
Basketball court
Rollerblading trails
Ice Skating
Tot lot - playground
Hiking trails
Driving range
Shuffle board/horseshoe pits
Bocci ball
Volleyball
More than just baseball & parking
Keep North as "wild" as possible
Limit motorized vehicles & enforce
Not lighted
Hockey

Group 2:

Top Priorities

Northern Section:

1. Keep passive recreation, nature trails
2. Provide naturalist & nature center / education
3. No motorized vehicles & horses, no boat launches
4. Conflict between hunters and passive recreation uses – re-classification of land w/State

Southern Section:

1. 2 mile walking / biking trails with outlooks, benches, picnic areas
2. Restrooms
3. Wildflower meadow w/walking path
4. Better access to ponds for fishing
5. No lighting, (additional), incorporate building, additional soccer fields

General Ideas/Concerns Discussed

Keep active recreation to southern side
Northern side passive recreation –
Keeping in mind environmental sensitive areas
(keep access available not hurting fen)
No motorized vehicles
Horses – limit access (they have high impact)
Hockey
Use drive – as trails limestone
Houses
Nature trails – possibility for hiking / biking
Concern with hunters & recreation users (conflict of interest)

- limit to small game
- control deer

Access to all including disabilities
Misuse / control of park
Naturalist / nature center

- using house help to police to park (ranger) as nature center

Trails starting in Southern section – the Northern section (block off Eaton Road)
Boardwalk
RR tracks (stopping access)
Fence along west side of lake by RR tracks
4 x 4 are a big concern also snowmobiles

Who do we want in there
Separate trails (like Indian Springs)

Northern side
- foot traffic only
- nature trails
- parking

Separate hunting from passive use
- control hunting

Active & passive use – South side
Walking limestone / paved all around south side (2 mile trail)
Biking
Benches / exercise equipment
With out-looks
Picnic areas
Restrooms
More soccer fields
No lighting
Dawn to dusk access only
Ponds access to all (fishing holes)
Wildflower / meadows w/walking path
Incorporate building w/park
Ranger for park
Signage
- protect area
- interruptive signage

Educate public on the significance of park
- articles
- videos

Things not to built / use
No boat launches on north access of lake
Electric motors – **NO** manual boats only
Central activity
- keep two (2) sections separate

Try to reclassify the land with State & DNR due to the sensitivity of the land

Group 3:

Top Priorities

Northern Section:

1. Viewing platform
2. Interpretative trail
3. Signage / Map / Booklet
4. Nature Center
5. Sanitary facilities

Southern Section:

1. Roller blade hockey
2. Ice skating rink / facilities
3. Fishing pier
4. Sanitary facilities
5. No lighted fields

General Ideas/Concerns Discussed

1) Roller blade/hockey
2) Ice skating rink
3) Fishing pier
4) Wildlife viewing platform
5) Sanitary facilities(north & south)
6) Concession stands
7) Benches
8) Interpretative trails

Facilities Don't Want in the North
1) Anything

Facilities Don't Want in the South
1) Lighted fields
2) No duplication

Active Recreation Missing in Area
1) Mountain / BMX biking
2) Fitness facility
3) Pool
4) Basketball
5) Archery target

Active Facility Targeted to Age Groups
Nature center (kids)
Archery target
Sledding
Cross country skiing

Passive Recreation
Viewing platform
Interpretation trail
Signage/map/booklet
Benches

Limited Access
Controlled access or managed access
Trash could be a problem
Controlled traffic/hunters

Group 4:

Top Priorities

Northern Section:

1. Fence off park for vehicles and boundaries
2. Controlled/guided tours
3. Signage
4. Birding trails
5. No motors / very limited access to Fen / trail to see long lake / contained boardwalks

Southern Section:

1. Pathway – some paved (around ponds)
2. Revenue through athletic leagues w/improvements
3. Radio controlled airplanes
4. Soccer

General Ideas/Concerns Discussed

Active Recreation

1. Revenue thru athletic leagues (with improvements lights)
2. Hockey rink – revenue
3. Keep trying for soccer
4. Driving range
5. Disc golf
6. Okay w/ radio controlled airplanes
7. Archery range
8. Skate park / not SBP
9. Bike path
10. Trails around ponds

Not to be Built Recreation

1. Putt Putt golf
2. Boat ramps
3. Waterslides
4. Amusement park
5. Pools
6. Motorized vehicles – no motors
7. Drag strips
8. No rifle range / skeet / clay pigeons

Missing Active Recreation Facilities

Swimming Pool (Not in Shiawassee)
Pathway/trails – some paved
Skate park
Indoor archery range

Single Age Bracket Facilities - NO

#1 Passive Recreation

1. Birding Trails
2. Trail to see Long Lake (Overlook)
3. Boardwalks that are contained
4. Control traffic
5. Very limited access to Fen
6. Controlled guided tours

#2 Restored Areas

1. Invasive plant control
2. Prescribe burn

Management

Fence off park for vehicle boundaries
Signage