Residential development has historically been limited to farmsteads associated with ranch operations and small subdivided lands in the communities previously described. More recently, estate-type residential subdivisions have been developed to facilitate the suburban homeowner who desires rural-type housing densities or desires to own horses or other farm animals. These ranchettes occur along the principal east-west highways and include Myakka Valley and Manhattan Farms.

Except for the areas that have been subdivided for residential or ranchette uses, most of the watershed is under large tract ownership. Ownership patterns vary and include phosphate mining interests (in the northern and eastern portions of the watershed), and agricultural interests elsewhere with the exception of publicly held lands within and in the vicinity of Myakka River State Park. Public lands in addition to the State Park include land owned by the City of Sarasota and Sarasota County, (the Walton Tract, and the Carlton Reserve). DNR and SWFWMD have also expressed interests in acquiring lands in the vicinity of the Myakka River.

2.8.2 Existing Land Use Within the River Vicinity

Existing land use in the river vicinity is primarily composed of vacant land, consisting of either freshwater or saltwater marsh, hammocks, and pine flatwood communities. Ranchette-type residential development occurs north of Upper Myakka Lake (Hidden River), west of Vanderipe Slough (Myakka Valley), and subdivisions adjacent to and within the vicinity of Border Road, including Manhattan Farms, Myakka River Estates, and Royal Palms. Other land uses within the river vicinity include recreational and support facilities associated with Myakka River State Park and commercial enterprises including Snook Haven, Ramblers Rest Resort, and Becky's Bait. South of U.S. Highway 41, residential subdivisions occur on both sides of the river. Various types of infrastructure are also present and include highway bridges and approaches and electrical transmission and distribution lines. Several radio towers are also visible from the river, but these towers lie outside the immediate river vicinity. Figure 2-8 depicts the location of these types of land uses as well as land cover.

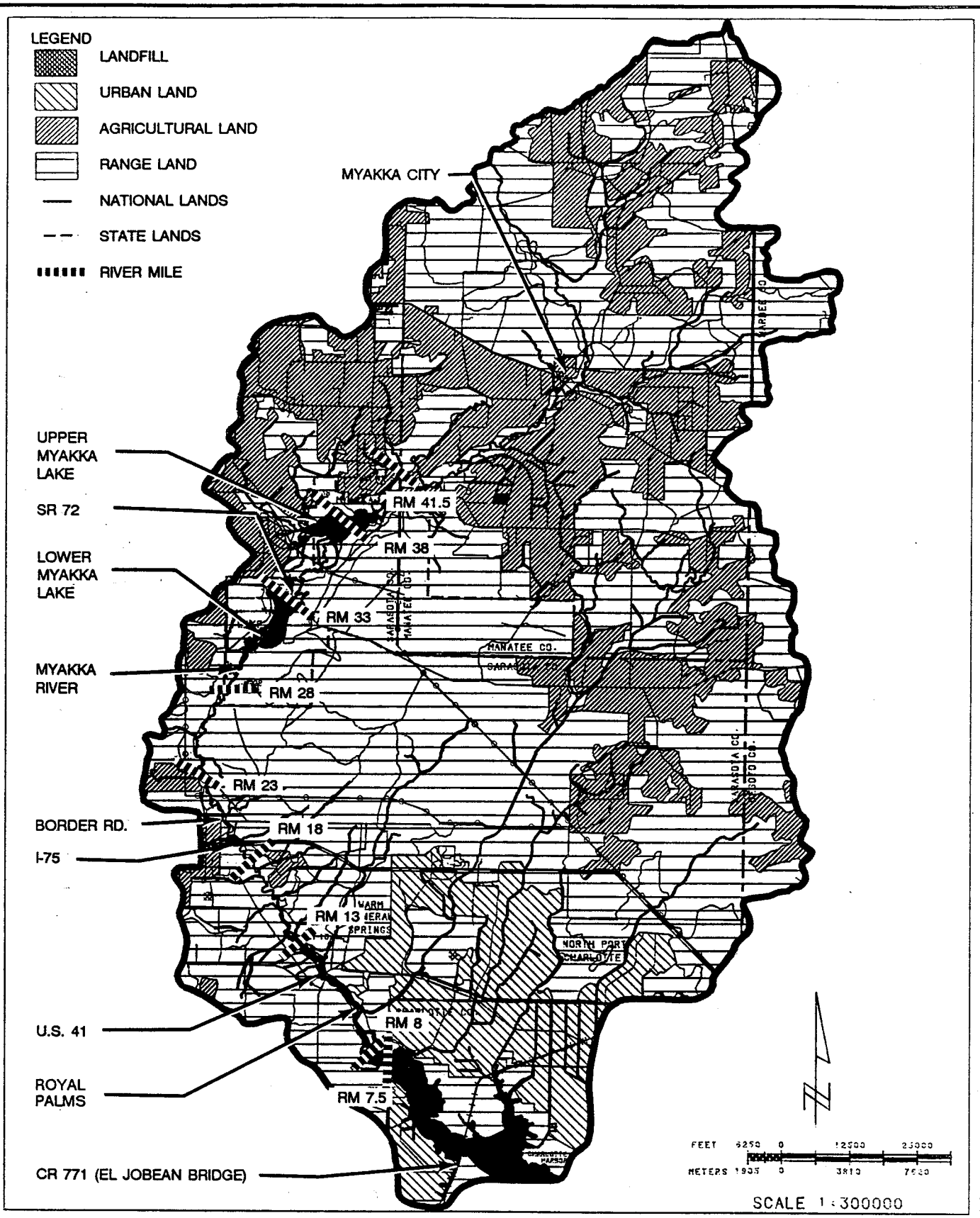


Figure 2-8
EXISTING LAND USE-WATERSHED

SOURCES: SARASOTA COUNTY, 1989; USGS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

FLORIDA DEPARTMENT OF NATURAL RESOURCES

2.8.3 Future Land Use

The future land use elements of the various relevant comprehensive plans designate the area within the Myakka River watershed for varying land uses. The majority of the land within the watershed is planned for public resource lands and rural land uses. The central portion of the watershed is dominated by public resource lands. The Myakka River State Park, the Carlton Reserve, and the Walton Tract comprise the public resource lands. The designation of these areas as public resource lands precludes any residential and commercial development in these areas. Within the Manatee County portion of the watershed, land is designated AG/R (Agricultural/Rural), which allows agriculture, agricultural-related uses, varying numbers of dwelling units (net) per gross acre, and mining. RES-1 and RES-3 designations allow 1 and 3 dwelling units per gross acre, respectively, in areas confined to Myakka City. In addition, the R/OS designation (Major Recreation/Open Space) is found within the confines of Myakka River State Park.

The southern half of the watershed within Sarasota County is planned for rural and future urban (rural) land uses. The rural designation is located north and east of I-75 and along the Myakka River from West River Road to a point 1 mile east of West River Road. The designation allows a maximum of 1 dwelling per 5 acres. The future urban (rural) designation is located south of I-75 and allows for the same density as rural until such a time as those areas are designated urban.

The function of these rural areas according to APOXSEE is the protection of agriculture, maintenance of large expanses of open space, and the conservation of native habitats. Additionally, APOXSEE designates areas from I-75 south as preservation habitat areas to provide further protection.

Within the City of North Port, the future land use designation along the river is conservation restricted area. Recreation/open space areas or agricultural land use designations buffer the river. Most of the land within North Port and the watershed is designated for low density residential use, including Myakka Estates portions, which are to be developed at approximately 1 unit per acre.

2.8.4 Future Land Use Impacts

The coastline of Florida is one of the state's most attractive features and draws people to both vacation and live in Florida. The tourist industry of Florida is a major economic factor in the state. The tremendous population growth which Florida is experiencing has been well-publicized, and the Florida legislature as well as the state's regional agencies and local governments are addressing growth management issues. Accommodating increasing seasonal and resident populations will necessitate future residential and commercial land development along with the attendant infrastructure, development of public water supply, agricultural development, and the need for recreational space. The potential for development to accommodate increased populations within the Myakka watershed as described in Section 2.8.3 also has the potential to impact resource values of the Myakka River.

The State of Florida recognizes the increase of nutrients in the state's waters as one of the most pressing issues. The federal government also considers nonpoint source pollution a primary factor in degradation of surface waters. Future development may potentially result in increases of these sources of pollution. Development, both agricultural and nonagricultural, results in increased use of fertilizers, pesticides, and herbicides and an increased need for wastewater and solid waste disposal. Increased impervious surfaces, from roads and parking lots, results in increased stormwater runoff and loss of rainfall infiltration into the land surface to replenish ground water aquifers. Runoff may contain sediments, nutrients, chemicals, oil and grease, petroleum hydrocarbons, and litter. Development generally will also result in modification to the natural hydrologic regime of the land surface through increased impervious surface, clearing of vegetation, and drainage modifications. Effects of development may potentially be manifested in degraded water quality and alteration of freshwater flow to the Myakka River and downstream estuarine area.

Future land development will potentially result in the loss of fish and wildlife habitat and extirpation of threatened and endangered species. Important habitat may be lost through the development of both uplands and wetlands. However, much stricter controls are in place for development and

loss of wetlands than exist for upland habitat protection. Development may also result in habitat fragmentation and the disruption of wildlife corridors.

With increased population comes the need for additional outdoor recreational space. The increased use of recreational space may result in the degradation of the resources upon which the use is based.

Future development within the Myakka watershed may also include the development of new mines for phosphate and other resources such as dolomite. Phosphate mining disturbs large tracts of land for extended periods of time, and results in loss of habitat, discharges to surface waters, pumping of ground water, and alterations in surface land forms and flow patterns. Finally, wastewater treatment and disposal and brine disposal from both public and private desalinization water treatment systems are additional factors that may adversely affect water quality in the watershed.

2.8.5 Land Use Planning and Regulation

Figures 2-1 and 2-2 depict the political jurisdictions within the Myakka River watershed and the river area and vicinity, respectively. The majority of the watershed lies within unincorporated Sarasota County. A significant portion of the upper reaches of the river, including headwaters, lies within unincorporated Manatee County. The extreme eastern portions of the watershed lie in unincorporated portions of Hardee and DeSoto Counties. The mouth of the Myakka River as it enters Charlotte Harbor lies in unincorporated Charlotte County. Portions of the watershed near the river mouth are also located in the City of North Port.

The Florida Wild and Scenic River segment is confined to portions of unincorporated Sarasota County, with the exception of an area south of U.S. Highway 41, which is located in the City of North Port. Land use regulations are adopted and enforced by the respective county commissions in Sarasota, Manatee, Hardee, DeSoto and Charlotte Counties as well as the City of North Port City Commission.

Sarasota County Regulations--Sarasota County regulates land development through its comprehensive plan and through other codes and ordinances. The

Sarasota County Comprehensive Plan, APOXSEE, as adopted by the Board of County Commissioners in March 1989, identifies public resource lands, including the Carlton Reserve and the Walton Tract, as areas of special designation that are to be preserved. In addition to preservation of native habitat, a portion of the Walton Tract (also known as the Central County Complex) is intended for use as a county landfill. The plan also designates the majority of the watershed east of the river as a rural land use classification. This classification is part of Sarasota County's urban containment policy which consolidates growth. The rural land use classification provides for the protection of agriculture, the maintenance of large expanses of open space, and the conservation of native habitat.

APOXSEE's Chapter 2, Environment, also provides for the regulation of land development. The section entitled "Guiding Principles" provides guidelines which pertain to native habitats in Sarasota County. These guidelines are applied by the county in the evaluation of land development proposals. The guidelines, which are divided into two parts, list the major natural values and functions of the specific habitat and show how the values and functions listed in the first part can be maintained and/or conserved.

The Myakka River is listed as a specific habitat in that section. Specific management guidelines for the river are as follows:

1. Prohibit dredging and filling in the Myakka River.
2. Adopt a shoreline protection ordinance establishing a requirement for vegetation buffers for all new construction and prohibiting additional artificial shoreline stabilization and channelization of watercourses.
3. Strive to reduce pollution entering the Myakka River.
4. Closely monitor the effects of phosphate mining and other potentially detrimental land uses.
5. Establish a special conservation management area that includes the Myakka River and appropriate lands adjacent to the river to ensure the future conservation of the Myakka River and its watershed.

Additionally, freshwater wetlands with specific habitats (swamps, marshes, sloughs, wet prairies and heads) are listed in the Guiding Principles section.

There are several important management guidelines within that section which apply to the Myakka River watershed.

Swamps and bay heads, due to their high degree of environmental importance and their relative rarity in Sarasota County, shall be preserved and should be restored where practicable. Guidelines applying to marshes, sloughs, and wet prairies include: protection of vegetation in areas subject to seasonal water level fluctuations; protection from impediments to water flow in contiguous wetlands; provision for mitigation of lost wetlands; pretreatment of stormwater runoff; and buffers around wetlands. Additionally, these guidelines regulate buffers and the developable areas within mesic hammocks. The environment plan chapter of the comprehensive plan provides goals, objectives and policies through which the county may implement land development regulations. Goal 5 of the plan states endeavors to conserve, protect, maintain, and restore the natural resources of the county. Several policies have been created to reach this goal. Policies 5.2.2 and 5.2.4 enjoin the county to implement ordinances that will provide shoreline protection from encroaching development and protect the Myakka River. Policy 5.2.5 designates the watersheds of the Cow Pen Slough and the Myakka River as areas of special environmental significance and also prohibits mining activities in these areas. Policy 5.2.6 requires the county to continue to monitor and assess any variations in the hydroperiod of wetlands and impacts to aquifers, flora, and fauna located on the Carlton Reserve.

Other Codes and Ordinances--The county has also adopted policies that will affect the county's Land Development Regulations. Policy 5.4.1 states that the county shall adopt a site development review section within the Land Development Regulations. This review section shall include a comprehensive review of the natural environment for land development proposals.

Policy 5.5.8 states that the county shall establish guidelines in the Land Development Regulations, Zoning Ordinance, and/or other existing regulations that regulate development in environmentally significant/ sensitive areas.

Additionally, subdivision regulations and site and development plan regulations also provide measures to regulate land development. These

subdivision regulations require that all development be in conformance with the comprehensive plan and show that it is to be developed in an environmentally sound manner. The county may also require that an applicant meet certain performance criteria (such as standard setbacks in areas that are environmentally sensitive) as a condition of approval. This process, along with appropriate land use designations, directs land development activities out of sensitive areas in the watershed.

Current county regulations include County Ordinance 83-44, which affords some regulation on the clearing and trimming of mangroves in the county. However, a new mangrove protection ordinance may be adopted in the immediate future. Provisions of the Earthmoving Ordinance (No. 81-60, soon to be amended) and the Water and Navigation Control Authority Ordinanace (No. 72-84, as amended) both regulate dredge and fill activities along the Myakka River. The location and use of pits, lakes, excavations and fills is controlled by Sarasota County Ordinance No. 81-60, to be amended by Ordinance 89-112.

I-75 Corridor Plan--Another policy which regulates development in the watershed is the Sarasota County I-75 Corridor Plan. The policies in the corridor plan are consistent with the environmental plan element of APOXSEE and, therefore, provide similar land use regulations for the I-75 corridor within the Myakka River watershed.

The corridor plan requires vegetative buffers of 200 feet to be developed along the Myakka River where the interstate crosses the river. Additionally, the plan calls for a special conservation management area for the Myakka River. This management area would require the mesic hammock habitat along the river to serve as the primary buffer area. The slough systems, located on both sides of River Road, would also be conserved to protect the environmental integrity of the river. Buffers would also be established along the tributaries of the Myakka River.

City of North Port Regulations--The City of North Port regulates future development by means of the Comprehensive Plan, Zoning Ordinance, Land Development Regulations, Subdivision Regulations and a site development review procedure. Although all of the above are essential to regulate future growth

in the City of North Port, the Comprehensive Plan is the guiding framework for the City's future development. The Future Land Use Element (Element 1) sets the tone for future development activities. This element's primary goal requires land development regulations that will manage the development through the preparation, adoption, implementation, and enforcement of land development regulations.

Within the conservation and coastal zone management element (Element 9), the following areas have been identified for continued conservation and enhancement due to their value as a significant natural resource, their natural beauty and aesthetic value, along with their immeasurable significance as recreational resources for the City's population:

- Those coastal marsh areas along the Myakkahatchee Creek and Myakka River that are within the confines of the City of North Port.
- The Outstanding Florida Water (OFW) and Wild-and-Scenic-designated portions of the Myakka River that flows through the City of North Port.

Objective 1.4 in Element 9 requires that a wetland ordinance be written and adopted by the year 1991. This ordinance will be designed to protect, conserve, or restore water resource systems and attendant biological functions within the city.

Manatee County Regulations--Manatee County submitted its Comprehensive Plan pursuant to Chapter 163, Florida Statutes, on November 16, 1988. The plan contains specific chapters on Future Land Use and Conservation Elements. The Future Land Use Element contains specific objectives for wetlands, rivers, lakes, streams, and watershed protection. The Conservation Element addresses water quality, water conservation, mineral resource extraction and wildlife protection.

The County also has a Comprehensive Zoning and Land Development Code (Ordinance 81-4, as amended). The Code regulates development by establishing zoning district regulations, special regulations pertaining to cluster development, and environmental and open space regulations. Requirements for subdivisions and site plans are specified. Manatee County has a mining

ordinance which requires state-of-the-art mining facilities to reduce environmental impacts and stringent mitigation requirements.

Hardee County Regulations--Currently, Hardee County regulates development by its comprehensive plan, land development code, and subdivision regulations. Environmentally sensitive areas are not specifically addressed in the regulations at this time; however, environmentally sensitive areas and developmental policies will be included in its updated Comprehensive Plan due to the Department of Community Affairs on September 1, 1990. Until the adoption of Hardee County's updated comprehensive plan, future development will be regulated by a site plan review conducted by the building and zoning board and the county commission special exception is required to develop a parcel of land.

DeSoto County Regulations--DeSoto County controls development by the use of a countywide zoning code, comprehensive plan, subdivision regulations and a site plan review conducted by the zoning director and code enforcement officer. The county's updated comprehensive plan is due to the Department of Community Affairs by August 1, 1990. This new plan will set forth policies regulating development throughout the county and future land use designations in that portion of the county located within the Myakka watershed.

2.9 LAND OWNERSHIP

Land ownership in the vicinity of the river area consists of several categories: public land (state and county), privately owned large tracts, and privately owned small tracts (see Figure 2-9). Beginning at County Road 780 and traveling south, approximately 16 river miles are in public ownership. This public ownership includes large tracts of the Myakka River State Park, the Carlton Reserve, and the Walton Tract. Additionally, SWFWMD has recently proposed to purchase, through voluntary acquisition, an additional 2,400 acres along a portion of the Myakka River south of the Walton Tract. This acquisition would include six river miles and be conducted under the State of Florida's Save Our Rivers program, which may acquire land only on a willing-seller basis.

Downriver from the large publicly owned tracts, the ownership patterns change; tracts ranging from 5 to 50 acres occur along the river as well as several smaller lots around river mile 22. The eastern bank of the river is characterized by large privately owned tracts with generally less intensive uses except for land immediately south of Border Road, which has numerous small residential lots. In the vicinity of North Port, small tracts and lots are present on both sides of the river to the county line.

Land ownership patterns will likely change in two ways. Large tract ownership will likely be subdivided as suburban development spreads eastward from coastal areas. In addition, public ownership will likely increase, due to the Save Our Rivers program (Myakka River and Upper Myakka River Save Our Rivers projects) and DNR's interest in purchasing a portion of Tatum Sawgrass.

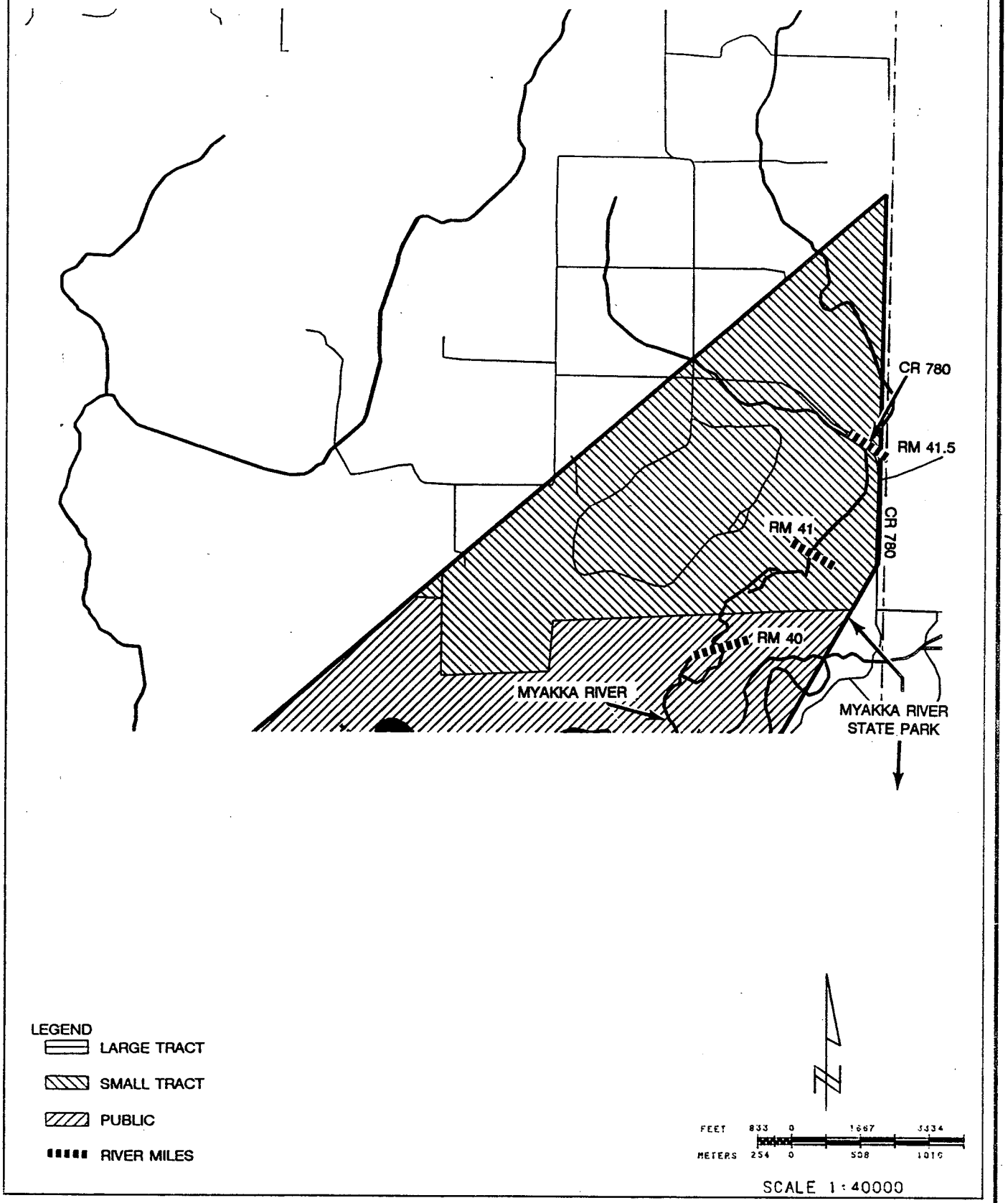


Figure 2-9
OWNERSHIP PATTERN (1 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER
MANAGEMENT PLAN

FLORIDA DEPARTMENT OF NATURAL RESOURCES

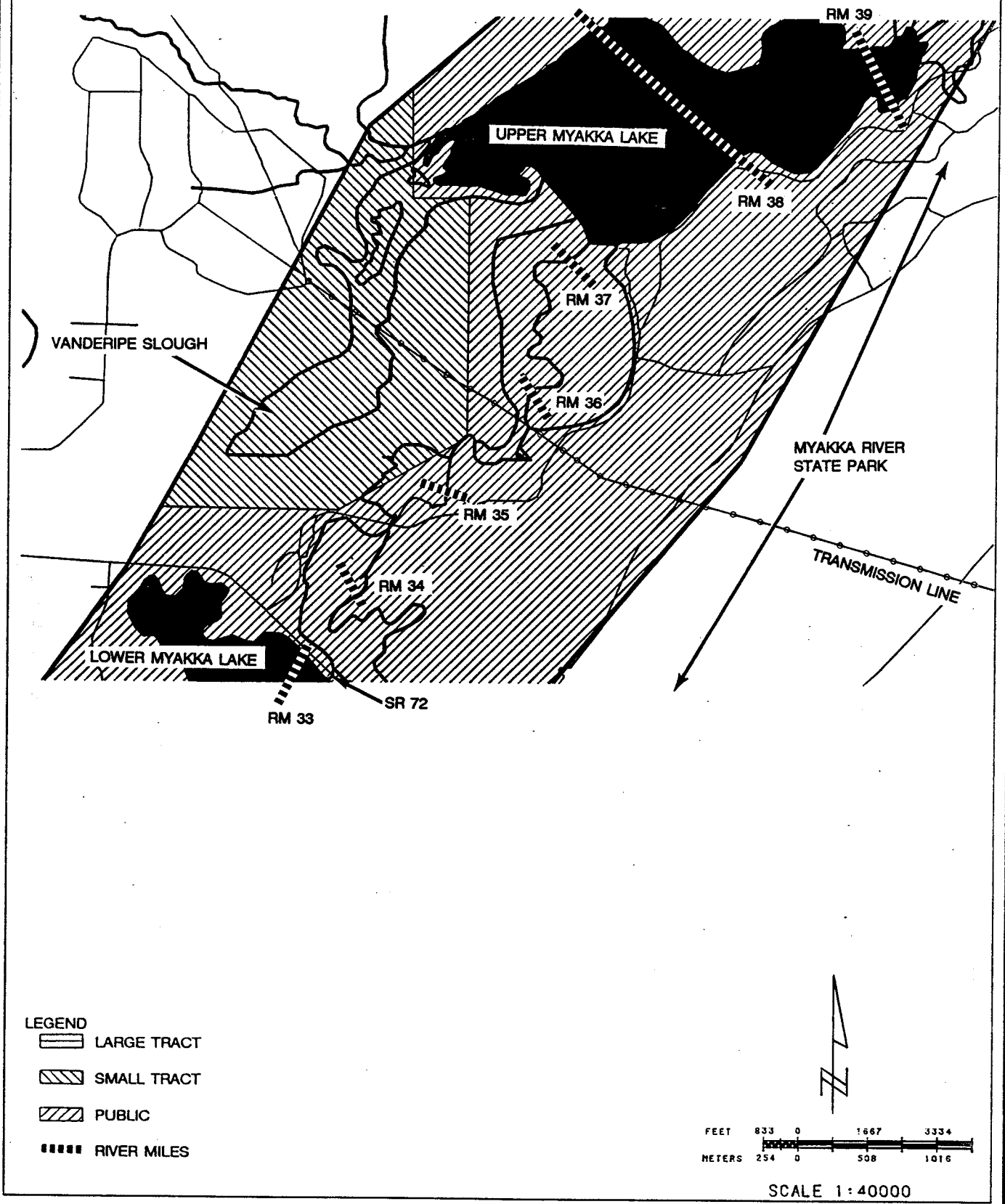
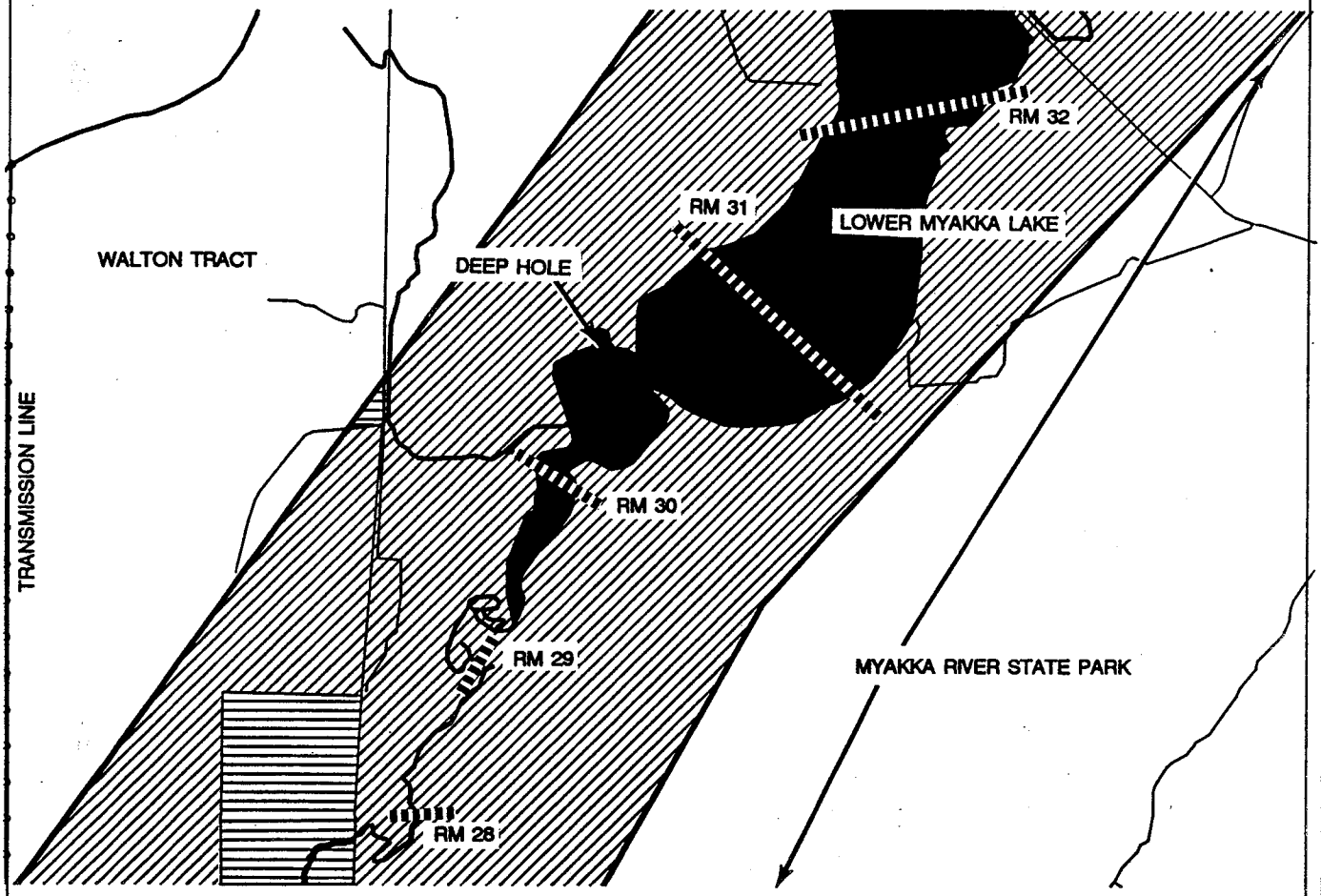


Figure 2-9
OWNERSHIP PATTERN (2 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

FLORIDA DEPARTMENT OF NATURAL RESOURCES



LEGEND
- LARGE TRACT
- SMALL TRACT
- PUBLIC
- RIVER MILES

FEET 833 0 1667 3334
METERS 254 0 508 1016

SCALE 1:40000

Figure 2-9
OWNERSHIP PATTERN (3 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

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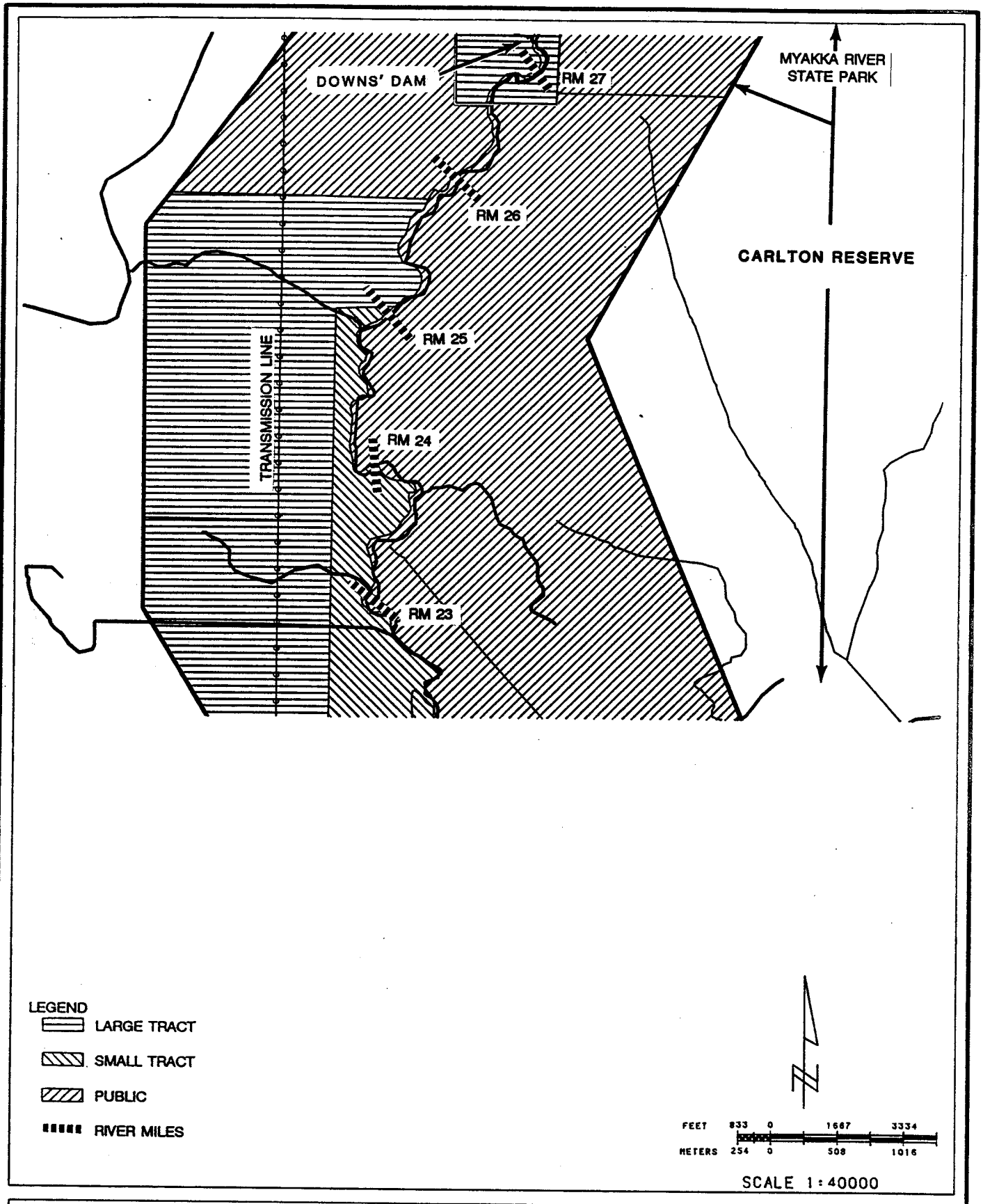


Figure 2-9
OWNERSHIP PATTERN (4 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

FLORIDA DEPARTMENT OF NATURAL RESOURCES

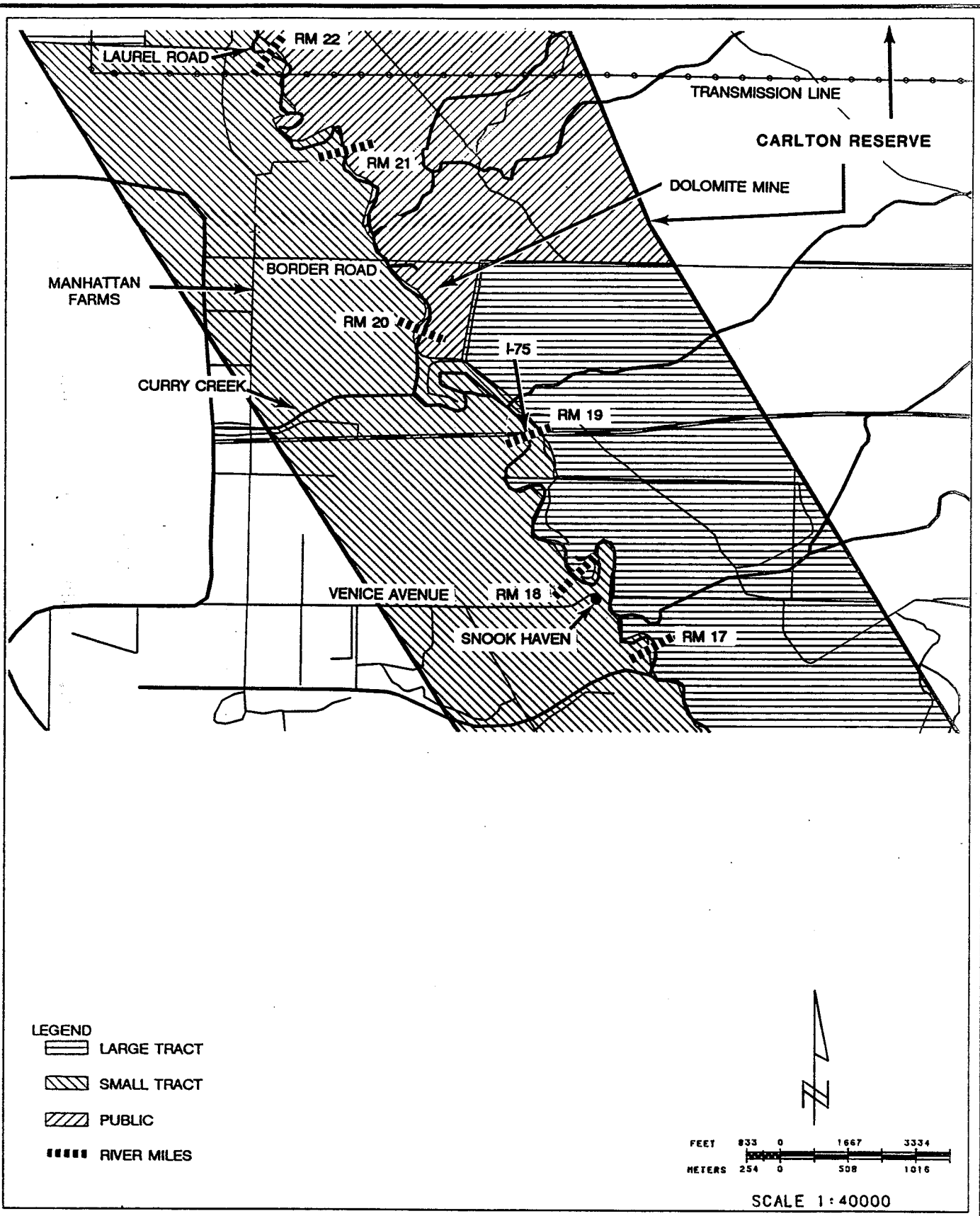
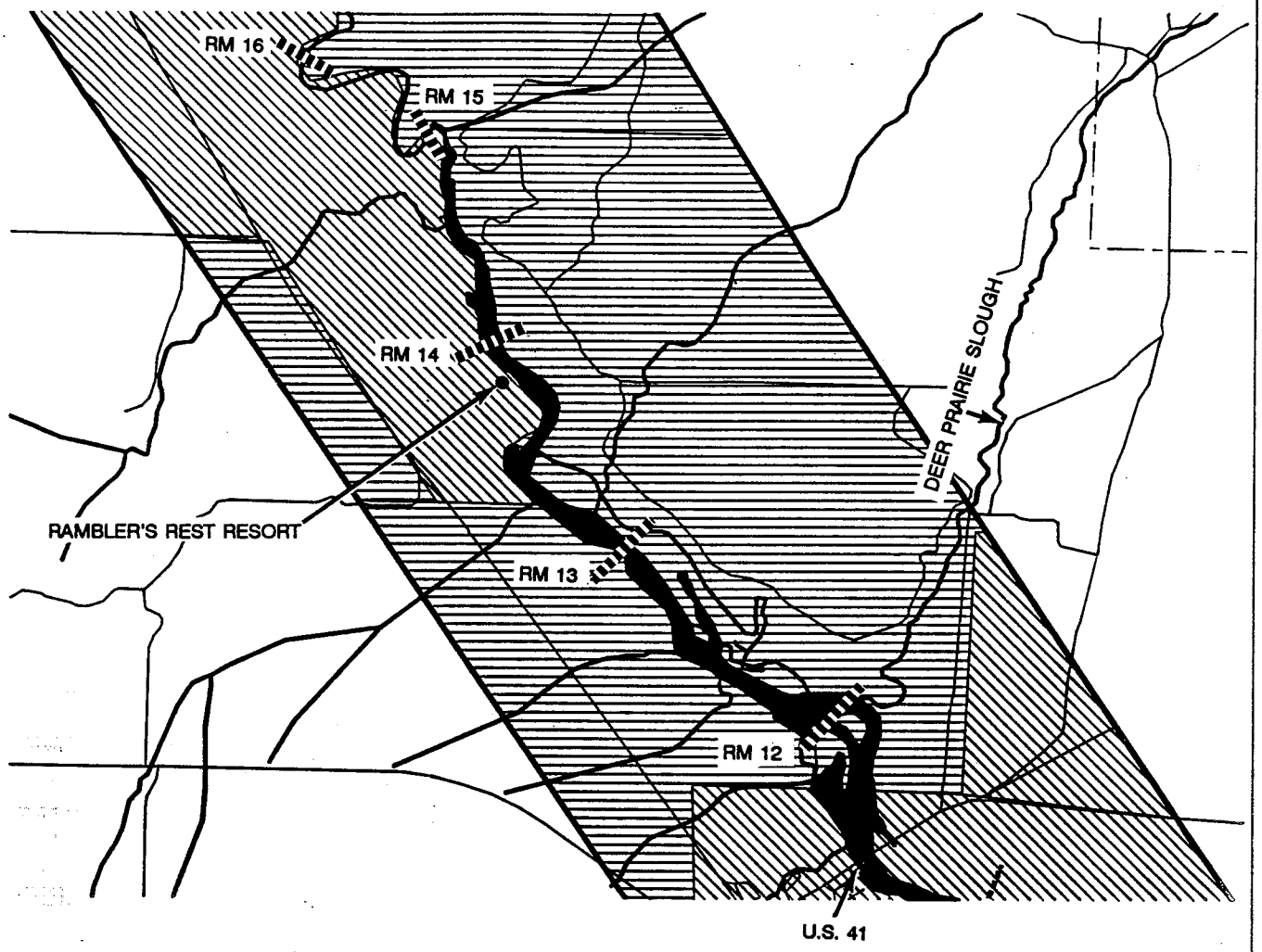


Figure 2-9
OWNERSHIP PATTERN (5 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

FLORIDA DEPARTMENT OF NATURAL RESOURCES



LEGEND
- LARGE TRACT
- SMALL TRACT
- PUBLIC
- RIVER MILES

FEET 833 0 1667 3334
METERS 254 0 508 1016

SCALE 1:40000

Figure 2-9
OWNERSHIP PATTERN (6 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

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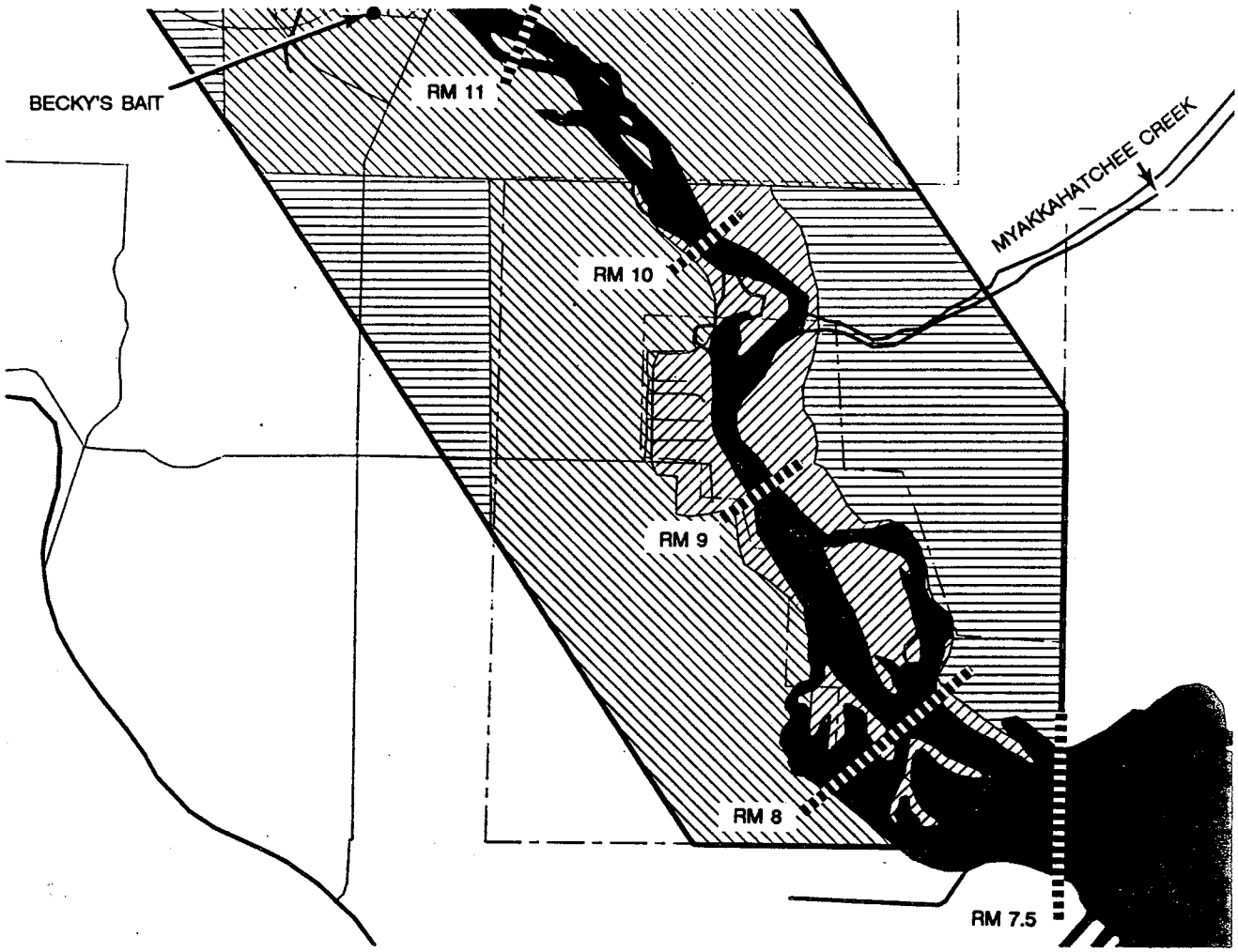

LEGEND
- LARGE TRACT
- SMALL TRACT
- PUBLIC
- RIVER MILES

SCALE 1:40000

Figure 2-9
OWNERSHIP PATTERN (7 OF 7)

SOURCE: FLORIDA PLATS, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

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3.0 PUBLIC ACCESS AND RECREATIONAL USE

The Myakka River, like many rivers in Florida, is a popular destination for outdoor recreation activities. Existing access and support facilities are clustered in two areas: the Upper Myakka Lake and Lower Myakka Lake areas of the Myakka River State Park and the southern portion of the river near U.S. Highway 41. This section describes the existing access and support facilities that exist within the river area and describes current use.

3.1 EXISTING ACCESS FACILITIES

The Myakka River State Park is the primary public access point to the Myakka River. The park, which covers almost 29,000 acres, is located in Manatee and Sarasota Counties approximately 12 miles east of Sarasota. Access to the park is via State Road 72 to the southern entrance and via State Road 70 and County Road 780 to the northern entrance.

The park offers scenic natural features and facilities for both active and passive recreational activities. The park contains Upper Myakka Lake; Lower Myakka Lake; and diverse natural communities including marshes, sloughs, and unique upland communities as some of the significant natural features. Visitors can enjoy viewing a virtually unchanged Florida landscape. Deer, alligators and many species of wading birds are abundant, as well as thousands of waterfowl in the winter months. In addition, ospreys, bald eagles, sandhill cranes, and other threatened and endangered species are commonly seen in the park. Approximately 7,500 acres of the park is designated as a wilderness preserve. The preserve resembles a Florida undisturbed by man's activities. Limited public access is permitted for such activities as hiking, fishing, sightseeing, canoeing, nature study, and research.

The park offers many environmental educational facilities, beginning with an interpretive center with exhibits of wildlife and plant communities and a video presentation. Park rangers provide guided walks and campfire programs seasonally and offer birdwatching education during the winter season. Concessionaire-run airboat and land tours are also available at the park. A 70-passenger airboat offers a tour of the Upper Myakka Lake. Conducted year around except during the month of September, the tour operates three times per day every day, seasonally four times daily, except on Tuesday. The tour

provides a panoramic view of the lake while narrators describe the ecology of the shoreline, streams, flora and fauna. A 50-passenger tour train offers a land tour of the park. The tour operates seasonally (winter and spring) two times per day and provides a view of remote areas of subtropical forests and marshlands while a guide explains the native habitat and history of the area.

The park also offers a wide range of recreational uses. Among the activities offered are hiking trails (39 miles), photography, fishing, shoreline access (3 miles), picnicking, canoeing, equestrian trails (15 miles), bicycling, camping (both full facility and primitive), and overnight cabins. The Myakka River State Park boat ramp is the main launching point for canoeing, fishing, and other river and lake-related activities for the north portion of the park. Several other public access points exist north of the park, including State Road 70, State Road 64, and Myakka City-Wauchula Road. However, these are highway/road crossings and only provide an opportunity to fish from the roadside or bridge.

The Carlton Reserve is an undeveloped 25,000-acre tract located east of the south portion of the state park and on the east side of the Myakka River. There are currently no public recreational facilities in the reserve. Sarasota County has plans to provide limited public access to the river in the vicinity of Border Road for such activities as canoeing and hiking. However, the reserve will have few structural facilities. The City of North Port's Butler Memorial Park is located adjacent to Price Boulevard and contains a canoe launch, hiking path, and other nonresource-based recreational facilities. The 40-acre park is located on Myakkahatchee Creek, several miles north of its confluence with the Myakka River. Crane Park, a small community park operated by Manatee County in Myakka City, borders the Myakka River. The park has limited facilities, including picnic tables and rest rooms, but no river access for boating.

There are three private recreational facilities for public use located along the southern portion of the Myakka River. These facilities include Snook Haven, Ramblers Rest Resort, and Becky's Bait. North Port Yacht Club and Harbor Cove Boat Basin are also located nearby on Myakkahatchee Creek.

3.2 CURRENT RECREATIONAL USE PATTERNS

The Myakka River's unique natural features and its proximity to the urban areas of West Central Florida make it a popular outdoor recreation area. The river supports many types of recreational activities. Some of the activities include fishing, canoeing, swimming, birding, nature study, photography, camping, hiking, motor boating, picnicking, and hunting. Motor boating is restricted by physical limitations in the portion of the river north of Upper Myakka Lake and from Lower Myakka Lake downstream to Downs' Dam, which is 0.5 mile south of the southern boundary of the state park. Activities such as hiking and camping are restricted to public use lands within the state park.

APOXSEE, Sarasota County's Comprehensive Plan, indicates that in terms of regional recreational facilities (i.e., Myakka River State Park) the area has sufficient facilities to accommodate the population it serves. With the anticipated opening of the Carlton Reserve for limited public-use facilities, public recreation lands will extend from the northern boundary of the Myakka River State Park at County Road 780 to the vicinity of Border Road.

To determine actual usage of the river, an informational survey was conducted on Saturday, March 18, 1989. Survey locations were the Myakka River State Park boat ramp, Snook Haven, and Becky's Bait. Observations of boat traffic and occassional surveys were also made at the Myakka River State Park bridge and the Border Road bridge. The surveying was conducted between 10:00 AM and 6:00 PM. Additionally, interviews were conducted with employees of the facilities at the survey locations.

The survey confirmed that the Myakka River is a major recreational resource of the region. On the day of the survey, 112 watercraft were observed on the river. These watercraft were at different locations along the river and varied in boat type and activity observed. Figure 3-1 provides a breakdown of the type and location of watercraft observed on the Myakka River.

On the day of the survey, boats utilized for fishing accounted for approximately 50 percent of all watercraft and were the most popular type of boat at every location. This is primarily due to the fact that the Myakka River, Upper Myakka Lake, and Lower Myakka Lake provide a majority of the freshwater fishing resources of the region. Shallow draft fishing boats and

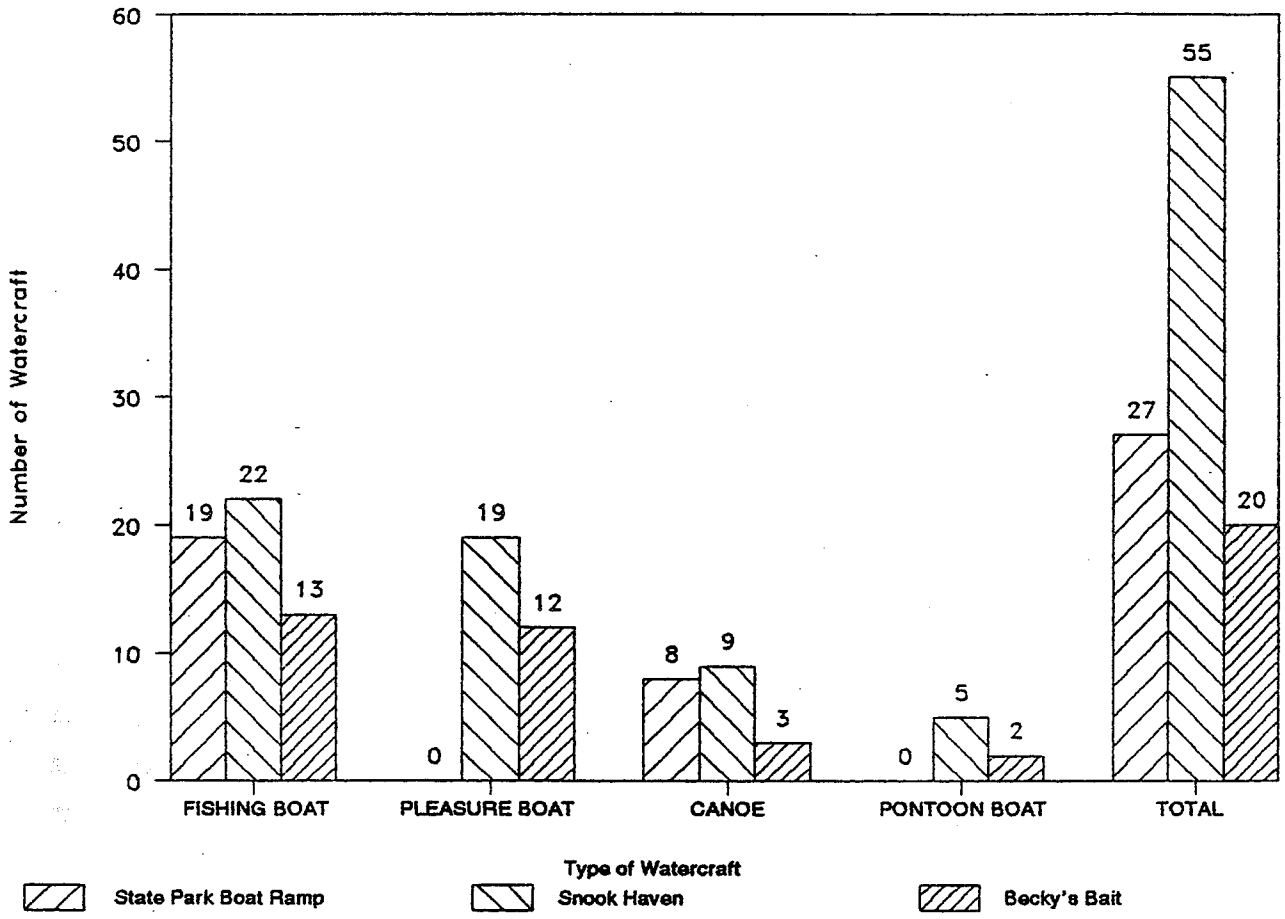

Figure 3-1
TYPES AND LOCATIONS OF WATERCRAFT OBSERVED (MARCH 18, 1989) RECREATION INFORMATION SURVEY

SOURCE: HUNTER, 1989.

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canoes accounted for all of the watercraft observed at the state park boat ramp primarily due to the natural features of the river and lake (i.e., generally shallow). Snook Haven had the most boating activity of the areas observed. This may be due to two reasons: the easy access from I-75 and U.S. Highway 41 and the existing facilities, including a restaurant and bar, make it a well known and popular spot for users of the river.

In lower areas of the river, the facilities at Snook Haven and Becky's Bait are utilized by pleasure craft; whereas, pleasure craft are generally unable to use the state park boat ramp or the lake is not a favored area for use by larger pleasure craft owners, in the northern portion of the river. The ability of larger boats to use the lower Myakka River is primarily due to the natural widening and deepening of the river as it approaches its confluence with Charlotte Harbor.

Those people surveyed were also asked which areas of the river they use during the year. Table 3-1 presents information on the areas of the river that those people surveyed frequent. The southern third of the river is the most frequently used. This area of the river is more heavily populated than any other section of the river and includes several communities including Myakka Shores, Charlotte Beach, North Port, Port Charlotte, and El Jobean, which are located near the southern end of the river. All have increasing populations and relatively easy access to the river. Additionally, this part of the river is sufficiently wide and deep to accommodate larger, more powerful watercraft.

Boats from the Charlotte Harbor communities of Punta Gorda, South Punta Gorda, and Port Charlotte are able to travel up the river to use the facilities such as those available at Snook Haven; however, people who frequently use the lower areas of the river do not usually use the upper areas of the river. Few people in any location frequently use the upper reaches (north of Upper Myakka Lake) of the river because of the lack of a readily distinguishable channel and related physical restrictions and navigation problems.

The survey's main objective was to provide information on the level of recreational activity on the river and the types and locations of these activities along the river. Table 3-2 provides a detailed breakdown of recreational activities by activity type and location that those surveyed participate in throughout the year.

Table 3-1. Boating Activity by Segment--March 18, 1989

River Segment	Number of Boats
Upper Reaches North of CR 780	5
Upper Myakka Lake Area	29
Lower Myakka Lake Area	16
Southern Boundary of Lower Myakka Lake to Snook Haven	28
Snook Haven to U.S. 41	40
U.S. 41 to Charlotte Harbor	35

Source: Hunter, 1989.

The two most popular activities of those surveyed were boat fishing and pleasure boating. Nearly three-fourths of those people surveyed river-wide boat fish on the river. More than 90 percent of those people surveyed at the state park boat ramp participate in boat fishing. Fifty percent of those surveyed pleasure boat on the river; however, this activity is more popular in the southern reaches of the river. Only one-third of those surveyed at the state park boat ramp pleasure boat on the river.

Since boat fishing and pleasure boating are the two most popular activities, it seems logical that boat ramp use would also be popular. Forty-eight percent of those surveyed use boat ramp facilities on the river. Over 80 percent of those surveyed at the state park boat ramp use such ramps. A lower amount of boat ramp use occurs in the southern areas of the river due to aforementioned reasons, such as the boater's use of other facilities farther south in Charlotte Harbor.

Nature watching, picnicking, and nonboat fishing are other popular activities. Approximately 43 percent of those people surveyed participate in each of these activities. These activities are undertaken by a majority of those surveyed at the state park boat ramp. Additionally, hiking, tent camping, and RV/trailer camping are much more popular activities of those surveyed at the state park boat ramp than at other locations since the state park also offers facilities for these activities. The state park offers an abundance of opportunities to participate in these activities since it is the only public area where participants do not need to be on or immediately adjacent to the river.

Information in addition to the recreational information survey was obtained from employees of the facilities at the survey locations. On the day of the survey, attendance at the state park was 1,191 people. Many of these people went on the guided airboat tour of the Upper Myakka Lake. Park employees indicated that recreational activity in the park on the day of the survey was typical of weekend usage during the busy season. Park personnel also indicated that weekend mornings from January to May are the most popular times for recreational activity in the park.

Table 3-2. Participation in Recreational Activities on the Myakka River by Type and Location (March 18, 1989 Recreation Information Survey Results)

Activity	State Park Boat Ramp (27 Surveys)		Snook Haven (41 Surveys)		Becky's Bait (34 Surveys)		Total (102 Surveys)	
	Number of Participants	Percent of Total Respondents	Number of Participants	Percent of Total Respondents	Number of Participants	Percent of Total Respondents	Number of Participants	Percent of Total Respondents
Swimming	4	14.8	10	24.4	5	14.7	19	18.6
Nonboat Fishing	14	51.2	17	41.5	13	38.2	44	43.1
Boat Fishing	25	92.6	26	63.4	23	67.7	74	72.5
Pleasure Boating	9	33.3	25	61.0	17	50.0	51	50.0
Boat Ramp Use	22	81.5	14	34.1	13	38.2	49	48.0
Canoeing	13	48.1	16	39.0	6	17.6	35	34.3
Picnicking	22	81.5	12	29.3	11	32.4	45	44.1
RV/Trailer Camping	7	25.9	5	12.2	2	5.9	14	13.7
Tent Camping	12	44.4	8	19.5	1	2.9	21	20.6
Hiking	15	55.5	5	12.2	2	5.9	22	21.6
Nature Watching/ Photography	23	85.2	14	34.1	7	20.6	44	43.1
Hunting	1	3.7	3	7.3	0	0.0	4	3.9
Other	0	0.0	0	0.0	1*	2.9	1	1.0

* Crabbing

Source: Hunter, 1989.

Interviews were also conducted with employees of the other two survey locations, Snook Haven and Becky's Bait. Employees at Snook Haven indicated that the period of most activity at their location generally occurs Saturday mornings from January to June. The ramp is closed on Sunday's during weekly barbeque events. Fishing and pleasure cruising are the major activities observed by employees at Snook Haven. Employees estimate about 10 boats per day use the boat ramp during the week and 20 to 30 boats during weekends. The rental canoes and fishing boats at Snook Haven are booked most weekends throughout the year.

Becky's Bait employees indicate that the period of most activity at their facility is Sundays from January to June. Approximately 25 to 30 boats use the fuel and ramp facilities on weekends in the winter and spring, but activity decreases to 10 to 20 boats in the summer and fall months. Fishing and pleasure boating are the major recreational activities at Becky's Bait.

Using the information gathered from the survey, observations, and interviews with private facility operators and those knowledgeable about the river, certain recreational patterns are apparent. The majority of people who frequently use the river tend to participate in various types of recreation. Although people may participate in one or two recreational activities more frequently, many take advantage of the other recreational activities that the river offers. Approximately 45 percent of those surveyed participate in at least four different recreational activities.

People who have smaller fishing boats and canoes tend to use the upper part of the Myakka River, while larger more powerful pleasure craft tend to stay in the downstream area of the river. The reasons for this seem to be due primarily to the natural features and resultant physical limitations of the river. As described in Section 2.0, the northern portion of the river is narrow and shallow with large marsh areas, except for Upper Myakka Lake and Lower Myakka Lake, which is wide but shallow with floating vegetation. The southern portion of the river tends to be wider and deeper with more open water.

The Myakka River State Park is the only public recreational area along the river that offers non-river-dependent recreational activities. People who participate in activities such as hiking, camping, and picnicking use the state park facilities. These same people also tend to participate in river-related recreational activities in the northern portions of the river.

To summarize the analysis of the informational survey, several important conclusions are apparent. The river has three distinct segments: the state park area of lakes, the midstream area, and the downstream southern area. The frequency of use and types of use vary significantly between segments. The segments have different facilities available and, accordingly, are used differently.

The northern segment of the river lacks the private river-related facilities that the southern segment has. This is due in large part to lack of access and natural restrictions to varied boating use. The southern segment has adequate private river-related facilities and considerable boat traffic, but does not have any public river- and non river-dependent facilities.

4.0 RESOURCE VALUES, ISSUES, AND PROBLEMS

The Myakka River Wild and Scenic Designation and Preservation Act defines resource value as "any one or more of the specific economic, scenic, recreational, geologic, fish and wildlife, historic, cultural, or ecological features associated with the river area as determined by the coordinating Council". To ensure that resource values and associated features were fully described and all issues identified, the Council members were assigned to work groups to develop lists of resource values and issues. These activities, in addition to the resource descriptions, management authority and direction, and management principles, served as the foundation for developing specific management objectives and actions.

Three work groups were established to develop lists of resource values and issues. These work groups were based on major environmental disciplines and included aquatic ecology/water resources, terrestrial ecology, and cultural/land use.

The specific features defined in the Act were also reorganized to facilitate discussion on a discipline basis. Economic, scenic, recreational, and geologic features were identified as specific resource values. Historic and cultural features were combined into one specific resource value. Fish and wildlife and ecological features were redefined into aquatic ecology, terrestrial ecology, and water resources values.

The work groups defined resource values and issues as follows:

Aquatic Ecology/Water Resource Work Group

- Geologic resource,
- Aquatic ecology resource, and
- Water resources.

Terrestrial Ecology Work Group

- Terrestrial ecology resource.

Cultural/Land Use Work Group

- Economic resource,
- Scenic resource,

- Recreational resource, and
- Historic and cultural resource.

Each work group met three times independently and then together as the Council to discuss individual resource values, and features and issues which were prevalent in more than one work group or resource value. The resource value elements listed in Table 4-1 depicts a summary of results of the work group's efforts with additional input from the Division.

The following sections describe each resource values, issues, problems, and resultant priority concerns. The listing of resource values, issues, problems, and priority concerns in the following sections does not represent a designated ranking of importance.

4.1 ECONOMIC RESOURCE VALUE

4.1.1 Description

The economic resource value of the Myakka River watershed is significant and is growing in size and diversity as Sarasota County and west-central Florida expand their economic base. The most significant and extensive element of the resource value is agricultural activity. Other components include land development, transportation, and mining activity.

Agricultural activity is prevalent throughout many areas of the watershed, but is more concentrated northwest and southwest of Myakka River State Park, and east of the Carlton Reserve. Agricultural activities include field crops, row crops, citrus, sod farms, and plant nurseries. Currently, livestock grazing is the most significant economic resource element and includes improved and unimproved pasture and rangeland. Silvicultural activities are also prevalent within the watershed and will continue to occur. Generally, livestock grazing is the only agricultural activity physically located along the river.

The economic resource elements most closely related to the river itself are commercial fishing, sport fishing, and commercial boat touring. Commercial boat fishing activity is generally limited to the lower reaches of the Myakka River, primarily south of U.S. Highway 41. Sport fishing is a popular activity throughout the entire length of the river south of Upper Myakka Lake.

Table 4-1. Resource Values

Economic	Scenic	Recreational	Cultural and Historical	Geologic	Water Resources	Terrestrial Ecology	Aquatic Ecology
AGRICULTURE o Field Crops o Row Crops o Citrus o Sod Farms o Plant Nurseries	VISTAS o Forested Areas o Nonforested Areas o Open Water o Cultural Features o Towers/Navigational Aids o Artificial Light	FISHING SPOTS (PUBLIC AND PRIVATE, ON AND OFFSHORE)	NATIONAL REGISTER SITES	SPRINGS o Little Salt Spring o Warm Mineral Spring	QUALITY o Outstanding Florida Water (Ecological Value) o Potable Water Supply (Class 1) o Irrigation o Livestock o Headwater Areas o Tributaries and Sub-basins o Class II	PLANT COMMUNITIES/ WILDLIFE HABITATS o Pine Flatwoods/Pine Prairies o Scrubby Flatwoods/ Oak Scrub o Mesic-Hydric Hammock o Xeric Hammock o Coastal Hammock o Dry Prairie o Freshwater Wooded Wetlands o Freshwater Herbaceous Wetlands o Brackish-Saltwater Marsh o Mangrove Swamp o Agricultural Areas o Developed Land	FISHERIES o Freshwater (Largemouth Bass, Panfish, Black Crappie, Catfish, Etc.) o Saltwater -Recreational (Snook, Tarpon, Redfish, Trout, Mullet, Sheepshead) Snook) -Commercial (Crabbing, Mullet) o Nongame Fish -American Eel -Sawfish
LIVESTOCK GRAZING o Improved Pasture o Unimproved Pasture/ Rangeland	GEOLOGIC FEATURES o Bluffs/Soil Profiles o Springs o Sand Banks/Bottoms/ Ford	FISHING	SIGNIFICANT ARCHAEOLOGIC/HISTORIC SITES	SINKHOLES o Lower Myakka Lake's Deep Hole	QUANTITY o Outstanding Florida Water (Ecological Value) o Potable Water Supply o Agricultural Irrigation o Livestock o Headwater Areas o Tributaries and Sub-basins o Water Control	LISTED SPECIES o Plants o Animals	BENTHIC COMMUNITIES o Freshwater o Marine/Estuarine o Clams, Oysters others
SILVICULTURE	WILDERNESS CORRIDORS	BOAT RAMPS	OTHER ARCHAEOLOGIC/ HISTORIC SITES	BLUFFS			WETLANDS o Emergent
COMMERCIAL FISHING	VIEWSHED	BOAT DOCKS	HOMESTEADS/FARMSTEADS	AQUIFERS o Surficial o Intermediate o Floridan			
COMMERCIAL BOAT TOURING	WATER CLARITY	YACHT CLUBS	HISTORIC MARKERS	OXBOWS/MEANDERS			
LAND DEVELOPMENT o Residential o Commercial o Tourism o Industrial o Recreational o Institutional	SKYWATCHING/STARGAZING	CAMPING RESORTS (TENT AND RV)	WETLAND/UNDERWATER SITES	LIMESTONE/DOLOMITE/ MARL OUTCROPPINGS			
		PICNICKING	HISTORIC DEVELOPMENT MARKERS o Forts o Benchmarks	FOSSILS			
		HIKING		SOILS			
		BICYCLING	PATHWAYS	SILTS			
		CANOEING	RAILROADS				
		POWER BOATING					

Table 4-1. Resource Value (Continued, Page 2 of 3)

Economic	Scenic	Recreational	Cultural and Historical	Geologic	Water Resources	Terrestrial Ecology	Aquatic Ecology
o Infrastructure (landfills, water transmission, wastewater treatment and disposal facilities, disposal wells, electrical transmission and distribution)		WATER AND JET SKIING	WRITTEN DOCUMENTS	SEEPS	o Wastewater Treatment/ Recycling	NONGAME ANIMALS	o Submergent
		SAILING				HOG AND GAME ANIMALS	MAMMALS
TRANSPORTATION		SWIMMING			TIMING	o Hog	o Bottlenose Dolphin
o Highways					o Seasonal Low Flow/ Zero Flow	o Waterfowl	o West Indian Manatee (Endangered)
o Bridges		DIVING			o Flood Stage and High Flow During Rainy Season	o Dove and Quail	
o Marked Channel						o Deer and Gray Squirrel	REPTILES AND AMPHIBIANS
o Airfield		NATURE STUDY			o Floodplain	o Other Game and/or Hunted Animals (e.g., Frog, Alligator, Rattlesnake, Armadillo, Opossum)	
		PHOTOGRAPHY			o Ecological Value		AQUATIC HABITAT
MINING/MATERIALS					o Water Control		o River
o Dolomite		BIRD WATCHING			o Recycling/Wastewater Treatment		o Lakes
o Phosphate							o Marshes
o Shell and Marl Pits		SIGHTSEEING (FOOT, BOAT, AND VEHICLE)					-Freshwater
o Sands							-Tidal Freshwater
o Fill		SHOOTING				SPECIAL ECOLOGICAL FEATURES	-Estuarine/Marine
						o Sawgrass	o Tributaries
		HUNTING				o Longleaf Pine	o River Debris
						o Lack of Cypress	
		HORSEBACK RIDING				o Double-Headed Cabbage Palm	CRITICAL WEST INDIAN MANATEE HABITAT
						o Coastal Hammock	
		PUBLIC LANDS					FISHERY NURSERY AREA
		o Myakka River State Park				SPECIES DIVERSITY/ DENSITY	

Table 4-1. Resource Values (Continued, Page 3 of 3)

Economic	Scenic	Recreational	Cultural and Historical	Geologic	Water Resources	Terrestrial Ecology	Aquatic Ecology
		o Carlton Reserve o Walton Tract ACCESS POINTS				WILDLIFE CORRIDOR WATERFOWL FLYWAY NESTING/DEN SITES o Wading Bird Rookeries o Eagle, Osprey and Owl Nests o Alligator Holes o Sandhill Crane Nesting Sites o River Otter Dens REGIONALLY SIGNIFICANT RESOURCES o Myakka River o Upper Myakka Lake o Lower Myakka Lake o Flatford Swamp o Vanderipe Slough o Warm Mineral Springs o Tatum Sawgrass	

Sources: Myakka River, Management Coordinating Council, 1989.
FDNR, 1989.
Hunter, 1989.

Popular fishing spots include both Upper Myakka Lake and Lower Myakka Lake, in the vicinity of Snook Haven, and where tributaries discharge into the Myakka River. Commercial boat touring is limited to tours provided by Myakka River State Park in Upper Myakka Lake and at Snook Haven.

Land development in the watershed for other-than-agricultural interests has historically been limited to very low residential estate-type development in areas such as Myakka Valley and Manhattan Farms. Suburban-type densities exist in Myakka City, located adjacent to the river on State Road 64 in Manatee County, and Warm Mineral Springs, an established community east of the river adjacent to U.S. Highway 41. The City of North Port is a relatively young community located east and south of Warm Mineral Springs and with relatively high residential densities. Growth of the coastal communities in southwest Florida has been significant and is anticipated to increase because of the recent completion of I-75. Development trends in Sarasota and Venice indicate an eastward expansion in the vicinity of I-75. This expansion has begun to impact the western fringe of the drainage watershed, particularly in the vicinity of Laurel Road, Jacaranda Boulevard, and River Road where significant urban-intensities of commercial and mixed-use developments are proposed. Significant residential development is also planned for North Port.

Infrastructure to support existing and proposed developments are also located in the watershed, including landfills (existing and proposed), water and wastewater treatment facilities, transmission and/or disposal facilities, and electrical power transmission and distribution lines. Transportation infrastructure is also prevalent, including highways, bridges, marked river channels, and an airfield. Highways and bridges, the marked river channel, and electric transmission and distribution facilities are specific facilities located within the river corridor. Sarasota County water transmission facilities are proposed to cross the Myakka River north of Border Road, and additional facilities are likely as urban and suburban expansion intrudes into the watershed.

Mining resources are also located within the watershed and corridor. These resources consist of dolomite, phosphate, shell, marl, sand, and fill. The most extensive mineral resource in the watershed is phosphate, which exists

throughout the Manatee County portion of the watershed, the extreme eastern Sarasota County part of the watershed, and the Hardee and DeSoto County portions of the watershed. Phosphate mining has historically occurred north of the Myakka River watershed; however, due to resource depletion in these areas and a relatively healthy market for phosphate products, phosphate mining activities are increasing in the watershed and expected to continue. The only mining activity which occurs within the river corridor is occasional dolomite mining which takes place east of the Myakka River in the area south of Border Road.

4.1.2 Issues and Problems

Agricultural and Fishing--Agricultural issues and problems are varied but are generally related to existing or potential adverse impacts to the natural resource values. Agricultural expansion into the watershed and river vicinity will result in increased use of fertilizers, pesticides, and herbicides that are likely to degrade water quality through nonpoint discharge of stormwater runoff into tributaries, wetlands, and the river itself. Water table fluctuations due to irrigation are also important with regard to water quantity effects on the river (see Section 4.6 for more detailed water resource issues and problems). Additional impacts occur to the natural resource values from conversion of wetlands to pasture and accelerated erosion of sediments into the river.

Consumption of natural communities for agricultural purposes may displace wildlife habitat and feeding and breeding grounds, although certain agricultural areas are recognized for providing these grounds.

With regard to the river, commercial and recreational netting was identified as a problem by several persons who responded to the recreational study conducted in April 1989, as well as by the work groups. Spear and bow fishing is also a concern with respect to depletion of fish populations in the river.

Land Development--The projected expansion of urban and suburban levels of land development in the watershed and particularly along the river corridor generates a number of issues and problems. The increase of impervious surface and resultant increases in stormwater runoff are important issues with respect

to flooding and water quality. An increase in development will bring an increase in traffic, which will result in increased contamination of stormwater by vehicular-generated hydrocarbons, as well as degradation of existing air quality. The practice of allowing septic tanks at high densities or in floodprone areas is a problem that will grow with development activity. The effectiveness of retention/detention ponds has also been questioned with regard to water quality treatment capability.

Other specific issues that have been raised are the presence or likelihood of underground storage tanks in the vicinity of the river, outdoor storage as it relates to flooding, and interaction of pets with wildlife. Issues that have been raised as potential solutions to adverse land development impacts include clustering of development and/or transfer of density and land use type and density restrictions. The maintenance of property rights of land owners, particularly adjacent to the river and within the river corridor, are also very important.

Transportation and Infrastructure--An increase in access to the Myakka River is an important issue in that access has the potential to open the river to levels of recreational use that burdens the river's resource values, as well as provides the opportunity for development in proximity to the river. Existing and future bridges can have significant impacts on the river's floodplain. Utility corridors not aligned with highways and bridge crossings also provide the opportunity for future highway development and can have adverse impacts on visual and water resource values. Other utility issues include the presence of sanitary landfills and wastewater treatment and disposal facilities in proximity to the river, and surface and ground water withdrawal.

Mining/Mineral Resources--Mining issues are based on dewatering and water quality and quantity impacts, and destruction of wildlife habitat. The anticipated increase in phosphate mining activity in the watershed will likely result in the impacts described above. Since mining is an intense activity, impacts can be substantial and mitigation difficult to achieve. Closer to the wild and scenic portion of the Myakka River, mining for other mineral resources will likely be on a much smaller scale. However, due to the

proximity of these activities to the river, the consequences of mining can be significant.

4.1.3 Priority Concerns

The highest priority concerns associated with the economic resource value consist of the following:

- The increase and intensity of agricultural activity including livestock grazing and associated stormwater runoff/water quality problems;
- The demand for irrigation for agricultural use as well as for land development activities (irrigation and potable consumption);
- Overfishing of the Myakka River by commercial and recreational interests;
- The types and intensity of future land use, particularly along the river corridor;
- Pollution impacts from land development, especially stormwater runoff; floodplain displacement; septic tank system and underground storage tank contamination; and sanitary landfill, wastewater treatment/disposals, corroded well casings, and filling contamination of ground water and surface water;
- Access to the river by highways or utility corridors;
- Mining and excavations activities and associated water resource impacts; and
- Property rights for land owners adjacent to the river and within the river corridor.

4.2 SCENIC RESOURCE VALUE

4.2.1 Description

The most prominent scenic resource value associated with the Myakka River is its vista as seen from the river and its bank. The river offers a wide variety of scenic views from the intimate closeness associated with hardwood forests situated along the narrow river reaches to the wide open spaces of the lakes and the broad lower river.

Portions of the river north of County Road 780 have limited access and navigability and vistas are confined to forested swamps. Forested areas adjacent to or near the river are also prominent from the outlet of Lower

Myakka Lake to the vicinity of Ramblers Rest Resort. Panoramic views are provided from the vicinity of County Road 780 to the outlet of Lower Myakka Lake. Visual components consist of open water and broad marshes set against an almost continuous forested horizon. The scenic resource features south of Ramblers Rest Resort are similar to the lakes area, with broad expanses of open water, marsh and mangrove swamp, and forested horizon features. The marsh component of these features is comprised of halophytic species and is quite distinct in comparison to the open views associated with the lakes segment of the river.

Additional scenic resource components consist of bluffs, sand banks and bars, and river bottom. Bluffs and associated soil profiles are an important feature to the river and unique in southwest Florida. These features exist intermittently from an area near Downs' Dam to Border Road. Sand banks and bars are prevalent from the vicinity of Downs' Dam to Ramblers Rest Resort, and bottom characteristics vary from rocky-bottom composition south of Lower Myakka Lake to sandy bottoms south of Ramblers Rest Resort.

Two additional features that provide unique scenic value to the Myakka River are its water quality and clarity, especially in the middle sections of the river, and air quality, which due to a lack of intense development north of North Port provides significant opportunity for skywatching during the day and stargazing at night.

These natural components of the scenic resource value exist despite cultural features in and adjacent to the river and within the river vicinity. These cultural features include bridges and highway approaches, electric power transmission and distribution towers and lines, fences, water control structures, boat ramps, and picnic areas within Myakka River State Park. From the vicinity of Border Road to the south, most of the features are also within view, as well as residential dwellings, docks and other yard improvements and several commercial businesses. Radio towers and navigational aids and light poles are also visible in certain areas because of their height above the tree line.

4.2.2 Issues and Problems

Pristine Views--The scenic resource value of the Myakka River is critical to the foundation of the Wild and Scenic River designation. Scenic views along portions of the river are unobstructed by structures and improvements by man, and the maintenance of this characteristic is desirable. Wilderness characteristics are also desirable in protecting wildlife habitat. The fauna of the river corridor as well as migrating species are an important feature of the scenic river value.

Litter and Structural Features--Litter, primarily in the form of plastics, bottles, and aluminum cans, is often observed along the river. Outdoor storage and dilapidated or unmaintained structures are a problem along developed portions of the river from an aesthetic viewpoint. Geologic features are recognized as being dynamic scenic resources, and concern centers around impacts to these features by boats and land development activities.

Artificial Light--The issue of artificial light is a recent problem which will grow in importance as land development activity increases. The interchange lighting facilities at I-75 and West River Bend impact a significant portion of the river corridor both during the day when the towers are visible and during the night when highway light is diffused throughout the entire area.

4.2.3 Priority Concerns

The highest priority concerns associated with the scenic resource value consist of the following:

- Increased development within the viewshed, particularly in areas that are presently pristine;
- The quality of existing development and related improvements along the river;
- The intrusion of tall structures which impact substantial portions of the river corridor; and
- Artificial light as it relates to the disruption of stargazing, wilderness experiences, and plant and animal life.

4.3 RECREATIONAL RESOURCE VALUE

4.3.1 Description

The recreational resource value centers upon resource-based recreational activity and opportunity. Unlike economic and water resource values, which have significant implications throughout the watershed, the recreational features are concentrated for the most part along the river and its banks. Notable exceptions include certain activities associated with Myakka River State Park and several parks and recreational facilities along tributaries to the Myakka River in North Port. However, most of the recreational activity in the watershed is centered on the river.

Fishing, boating, and canoeing are the primary recreational activities on and adjacent to the Myakka River. Fishing occurs throughout the river, from Upper Myakka Lake south to the mouth of the river and at the County Road 780, State Road 70, and State Road 64 access points. Fishing occurs both on and offshore and includes commercial fishing, primarily south of U.S. Highway 41.

Recreational facilities to support fishing include boat docks located primarily from the vicinity of Border Road to Snook Haven and south of U.S. Highway 41. Several public and private boat ramps are located in these areas as well as in the state park and along tributaries to the Myakka River south of U.S. Highway 41. These facilities support powerboating and canoeing in Upper Myakka Lake and, to a lesser extent, Lower Myakka Lake; canoeing south of Lower Myakka Lake to north of Border Road; and a mixture of boating activity south of this area to approximately U.S. Highway 41, where powerboating becomes almost exclusive.

Picnicking, nature study, photography, birding, and sightseeing are additional activities associated with boating. These activities are also experienced by foot, bicycle, and vehicle at public access points and within the Myakka River State Park.

Additional recreational resource value elements include hiking, bicycling, horseback riding, camping, shooting, and hunting. With the exception of shooting and hunting, these additional activities occur primarily within the

state park and may also be occurring in the future on other public lands, especially Carlton Reserve.

4.3.2 Issues and Problems

The primary issue associated with the recreational resource value is the utilization of the Myakka River and its impact on the terrestrial and aquatic resource values. The problem consists of overuse, which degrades natural resources and limits the use of the river for the most sensitive recreational activities such as nature study and birding.

Other user-related issues include noise, odor, and water pollution problems associated with powerboat motors, boat speed and resultant wakes and erosion, and user limitations due to water-control structures. Potential conflicts between boaters and the manatee are also a particular concern, due in part to inadequate signage in the natural channel.

Safety--As the popularity of the Myakka River for boating activity increases, the concern for safety on the river also increases. Water related accidents are becoming an increasing problem in Florida as well as the Myakka River. The river is patrolled by the Florida Marine Patrol (District 4), the Florida Game and Fresh Water Fish Commission, the Sarasota County Sheriff's Department and park rangers within Myakka River State Park. All four agencies have expressed concern regarding boating safety on the Myakka River.

The Florida Marine Patrol's primary responsibilities are the protection of marine resources and boating safety. The patrol indicated that the river was infrequently patrolled in 1988, but that boating safety was, in their opinion, becoming an increasing problem.

The Florida Game and Fresh Water Fish Commission's primary responsibility is the enforcement of the wildlife code of the state. However, the agency has been increasingly called to investigate complaints of excessive boat speeds and wakes. In the opinion of the agency, boating safety was becoming an increasing problem on the river.

The Sarasota County Sheriff's Department has a four-man team to patrol the rural and remote areas of the county including the Myakka River vicinity. In 1988 the following cases were reported between the southern boundary of the Myakka River State Park and U.S. Highway 41: 9 illegal deer harvests, 14 armed trespasses, 27 misdemeanor trespasses, 4 grand thefts, 2 burglaries, and 2 alcohol-related deaths. The department indicated that a steady decrease in safety seems to be occurring along the river as recreational activity has increased.

Park rangers are responsible for law enforcement within the state park and indicated that other than some wildlife poaching, safety problems have not increased significantly.

The agencies unofficially recommended that legislative or local restrictions of boat speeds (and/or maximum boat engine size) be established.

Access points and boat ramps and docks are issues that concern the need to provide additional opportunity for use of the river. In addition, the intrusion of boat docks into the river and the structural integrity of older docks and riverbank stabilization features are of particular concern.

Unauthorized use of private land for hunting, hiking, portaging, and camping has been a historical problem and is associated with vandalism, theft, noise, littering, poaching, and trespassing.

4.3.3 Priority Concerns

The highest priority concerns associated with the recreational resource value consist of the following:

- Overuse of the Myakka River and resultant impacts to the natural resources, including fish populations and manatees;
- The provision of access to the river and resultant opportunity to increase use of the river; and
- Unauthorized use of private lands and illegal activity within public lands.

4.4 CULTURAL AND HISTORICAL RESOURCE VALUES

4.4.1 Description

The significant cultural and historical sites of the Myakka River watershed are valuable because they provide the present and future residents and visitors tangible monuments to their distant and immediate predecessors and provide a sense of place by showing links to earlier peoples and groups. As educational or tourist destinations, these sites can emphasize the unique character of communities through preservation and restoration of historic structures. These sites also represent scarce, nonrenewable repositories of scientific information on the economic, biological, social, and ceremonial aspects of 12,000 years of human occupation in the watershed. In addition, research information about previous climatic conditions of the watershed and the response to these changing conditions made by humans, animals, and plants are an important resource. The sites within the watershed give scientists studying human remains at prehistoric cemeteries the opportunity to see the health consequences of various diets, lifestyles, and diseases. These prehistoric human interments are protected from vandalism and development by Chapter 872, Florida Statutes, the Human Unmarked Burial Law.

4.4.2 Issues and Problems

The primary issue concerning the cultural and historic aspects of the Myakka River watershed is the incomplete knowledge of the resource base. Because of the small amount of systematic field research, both the location and distribution of the cultural/historical sites of the watershed are severely limited. Even for those few sites that are recorded on the Florida Master Site File, in most cases, insufficient information is available to determine the site's potential significance or present condition.

Protection of prehistoric wetland, mound, or cemetery burials and historic cemeteries is necessary to enable qualified archaeologists to complete research of this area. Both prehistoric and unmarked early historic interments can easily be overlooked and impacted during construction or vandalized by artifact collectors. These burials should be protected under Chapter 872, Florida Statutes. Small historic cemeteries also need to be protected.

It is also important to protect significant cultural and historical sites from development, collection, erosion, vandalism, and mining. These resources are viewed as scarce, irreplaceable monuments to earlier inhabitants that add a unique distinction to the watershed. The cultural resources of the watershed are exposed to impacts through intentional and unintentional human factors and by natural erosional processes. Artifact collecting on the river bottom is also a problem.

There is also a need for recognition of, and education on, the contributions made by pioneer settlers in the watershed. Early homesteads, farmsteads, dams, fords, and trails provide tangible monuments to the determination and courage of the early settlers.

4.4.3 Priority Concerns

The highest priority concerns with respect to the cultural resource value consist of the following:

- The protection of important archaeological and historical sites from several major potential impacts including development, vandalism, artifact collecting, and erosion;
- Further cultural resource studies to better understand the real extent of the archaeological record in the watershed; and
- A need to better educate the public about American Indians and early pioneers to the Myakka River watershed and the early development of the area.

4.5 GEOLOGIC RESOURCE VALUES

4.5.1 Description

The Myakka River corridor contains two springs, Little Salt Spring and Warm Mineral Springs. Warm Mineral Springs is a second-order-magnitude spring and flows into the Myakka River through Warm Mineral Springs Creek at an average rate of about 10 cubic feet per second. Based on water quality parameters of this spring, the water is derived from the deep aquifer. Warm Mineral Springs has a constant temperature of about 90 degrees Fahrenheit, and as such is probably attractive to manatees and fish during cold weather. In addition to its potential ecologic value, Warm Mineral Springs has archaeologic and

cultural/historic value as well. Little Salt Spring discharges at a rate of 0.89 to 1.53 cubic feet per second.

A sinkhole, known as Deep Hole, is present in the southwest corner of Lower Myakka Lake. Water flow from Deep Hole probably ceases when the stage of the Myakka River is exceptionally high and during low flow periods. However, flows as high as 1.5 cubic feet per second have been measured from Deep Hole. It may serve as habitat particularly when lake levels are low.

A conspicuous aspect of the Myakka River are the bluffs which form the river banks in a number of areas. These bluffs may be 10 to 15 feet high. When they occur on the outside of river bends, the bluffs show the effects of erosion from river flows. The inside of the bends generally show accretion in the form of sand bars. The bluffs are interesting and of scenic value in that they may show the different soil horizons of the near surface soils. They also tend to provide a feeling of isolation along the river inherent in the Wild and Scenic designation. Limestone outcroppings may occur with some of the bluffs, as well as along additional segments of the river.

In several places, layers of relic marine shells are also visible along the banks of the river. In certain segments of the river, particularly just downstream of Downs' Dam, at low water these relic marine shells can be viewed along the river bottom.

Additional geologic resources of the Myakka River corridor are the dolomite and marl deposits. A reserve of dolomite with intermediate potential for development is centered on the Myakka River within Sarasota County (DNR, 1979). A presently inactive dolomite mine exists just south of Border Road.

A sill is present near the confluence of the Myakka River and Deer Prairie Creek. This feature may serve to inhibit the upstream penetration of saline water into the river during periods of low flow.

A line of seeps exists in the upper river just downstream of Myakka City. These seeps are the result of a hardpan layer which cause surficial water to discharge to the river. The discharge of these seeps is minimal.

The primary geologic resource of the Myakka River is the subsurface geologic lithology and stratigraphy which results in the hydrogeologic framework of the Myakka River watershed. The subsurface geology results in the aquifers of the area: the surficial aquifer, intermediate aquifers, and the Floridan Aquifer. The surficial and intermediate aquifers are generally suitable as potable water, but often require treatment to reduce mineralization. The Floridan Aquifer provides the majority of water which is used as an irrigation source during the dry season.

4.5.2 Issues and Problems

Bluffs--Protection of the bluffs along the Myakka River is a primary concern. These bluffs provide a scenic quality to the river. Several are located along the outside bends of meanders, and as such are subject to long term erosion and migration and may be unsuitable for stream side development.

Aquifers--Aquifer water levels should be protected from potential drawdown. Significant drawdown could affect surficial water levels and water levels in wetlands and tributaries which contribute to surface flow of the Myakka River. Contamination of aquifiers due to improperly constructed or deteriorating artesian wells is a problem, especially in Sarasota County. Uncontrolled wells can artificially recharge and contaminate the surficial aquifer with poor quality water. Poor quality water may also contaminate surface waters.

Mining--The river area should be protected from potential mining of resources such as dolomite, sand and gravel, and marl. Phosphate reserves are mainly in the upper watershed in Manatee County and not within the Wild and Scenic River segment. The only dolomite reserve of potential commercial significance in Sarasota County is centered on the Myakka River.

4.5.3 Priority Concerns

The primary concern with respect to the geologic resource value consists of the following:

- The protection of the ground water aquifers from significant drawdown which might potentially affect the surface water levels and result in a reduction of flow within the river;

- The protection of bluffs which occur along the river. Several of these bluffs are subject to long-term erosion and may be unsuitable for stream side development;
- The protection of the Myakka River from potential adverse effects of mining, excavations, and fill within the river area; and
- The contamination of aquifers due to improperly constructed or deteriorating artesian wells.

4.6 WATER RESOURCE VALUES

4.6.1 Description

The three key elements of the water resource value of the Myakka River are the quality of the water, the quantity of the freshwater discharge, and the time distribution of the discharge. The Myakka River is designated in Chapter 17-3, FAC, as Class I waters (potable water supplies) from the Manatee County line through the Upper Myakka Lake and Lower Myakka Lake to Manhattan Farms. The Florida Wild and Scenic River segment is an Outstanding Florida Water and the area from the western line of Section 35, Township 39S, Range 20E, south to the Charlotte Harbor is designated as Class II water (shellfish propagation or harvesting). From State Road 771 (El Jobean Bridge) to the Sarasota/Charlotte County line the lower Myakka River is an Outstanding Florida Water by virtue of the fact that this area is a designated Special Water, which are waters demonstrated to be of exceptional recreational or ecological value. Charlotte Harbor and associated aquatic preserves are Outstanding Florida Waters. Myakkahatchee Creek is Class I waters down to the dam at U.S. Highway 41. All other surface waters are designated Class III (recreation; propagation and management of fish and wildlife). The Outstanding Florida Water designation of the Wild and Scenic River segment and additional segments down through Charlotte Harbor provides these waters with the highest level of protection under Florida State law. That the State of Florida has designated the Sarasota County portion of the Myakka River as a Florida Wild And Scenic River and assigned the high level protection designations to additional waters of the river and Charlotte Harbor is testimony to the fact that these waters possess high values to the citizens of the area.

The high water quality of the Myakka River is important to maintain healthy fish and wildlife populations that inhabit the area and healthy vegetative communities along the river. Good water quality is dependent upon both the quantity of water discharge and the time distribution of the discharge. Biotic communities and the resultant ecosystem structure have evolved with and adapted to the seasonal cycles of the water resource. This is particularly true with respect to the functioning of the lower Myakka River as a fishery nursery area. The Myakka River is unusual in having periods of no flow within the river and tributaries. During these periods available space for nursery areas expands.

The Myakka River is also a potential source of potable water for public supply, and a large segment of the river, as well as Myakkahatchee Creek, are designated Class I waters. Critical to maintaining this value of the resource is the protection of the high water quality in sufficient quantities. The water resource to some extent is also utilized for irrigation and livestock watering.

The water resource of the Myakka River provides a valuable source of recreation. Recreational activities may be both consumptive or nonconsumptive, both of which are highly dependent upon the integrity of the water resource values of the river. Commercial uses are also dependent upon maintenance of the water resource.

The water quality, quantity, and time distribution of discharge are primarily dependent upon seasonal rainfall cycles. The characteristics of the Myakka River watershed largely control the water resource through filtration, storage, and discharge to the river system. Water is distributed to the river through runoff from the land surface and the contribution of the cumulative inputs from tributaries and associated subbasins which form headwater areas.

4.6.2 Issues and Problems

Myakka River Wild and Scenic River Boundaries--Protection of the Myakka River water resources including water quality, water quantity, and time distribution of discharge can only be accomplished through a holistic approach of watershed management. The Myakka River Wild and Scenic segment extends for 34 miles

within Sarasota County, and only includes the river corridor up to the landward extent of wetlands. However, there are a number of significant features of the river that are critical to the protection of the Myakka River water resource that do not fall within the designated Wild and Scenic River boundaries. The Wild and Scenic designation does not include tributaries and the majority of the floodplain. Floodplain protection is critical to management of the river's water resources. The floodplain serves as a storage detention and conveyance area for the river's waters and is a major governing factor in water quality, water quantity, and time distribution of discharge. Management of these features in addition to those within the designated boundaries are essential to implement the legislative intent of the Myakka River Wild and Scenic Designation and Preservation Act.

Nonpoint Source Pollution--The U.S. Environmental Protection Agency has identified nonpoint source pollution as the dominant factor of the nation's remaining water pollution problem. The EPA estimates that greater than 64 percent of the nonpoint source pollution in the nation's rivers is from agricultural operations within the rivers' watersheds. DER [Subsection 17-3.011(11), Florida Administrative Code] finds that excessive nutrients constitute one of the most severe water quality problems facing the state. Nonpoint loading of nutrients into waters of the state may result from runoff from agricultural lands, septic tanks, and general stormwater runoff. Nonpoint sources may also result in the loading of pesticides, herbicides, fungicides, sediments, bacterial contamination, oil and grease, metals, and petroleum hydrocarbons. Landfills are also a potential source of nonpoint pollution via discharge through underlying ground water.

Loss and Alteration of Wetlands--The loss of wetlands results in the loss of a critical buffer zone between uplands and open waters. With the loss of this buffer, pollutants contained in upland runoff may enter the water resource directly without being filtered by wetlands. The loss of shoreline wetlands may also result in an increase in shoreline erosion and introduction of sediments into the water and an increase of turbidity. The ditching and connection of isolated wetlands and the channelization of tributary creeks and sloughs within the river's floodplain and watershed may also cause a loss of the filtration and storage capacity of these wetlands resulting in the more

rapid discharge of pollutants to the riverine system. Clear-cutting to the water's edge as part of shoreline development, including construction of docks and bulkheads, results in the loss of the vegetative buffer and its associated water filtration functions and results in bank destabilization and an increase in erosion potential.

A large number of acres of land within the Myakka River watershed are under the control of phosphate mining companies. Many of these areas comprise the headwaters of the Myakka River. Recent newspaper articles indicate the economic climate has improved in the phosphate industry and that the future mining of phosphate will be expanded from the historic mining areas towards the south into Manatee County. Phosphate mining operations resumed in the Wingate Creek area in April 1989.

The diking of Tatum Sawgrass and Vanderipe Slough has resulted in a rerouting of water flow and the loss of their historic storage capacity. As a result, flooding potential has increased, and water discharge quantity and timing of discharge have been altered. The loss of storage and purification functions may partially contribute to water quality problems in the Upper Myakka Lake and Lower Myakka Lake.

Alterations in Hydrologic Characteristics--The natural hydrologic characteristics (i.e., water quantity and time distribution of discharge) of the river in large part determine the quality of the water resource. Biotic communities of the river and downstream areas have evolved with and are adapted to the river flow regime and are dependent upon the seasonal cycles of flow, including the optimum quantity of discharge delivered at the appropriate time.

A number of alterations have occurred in the Myakka River area which have served to alter the natural hydrologic characteristics of the river. These alterations may also affect water quality of the water resource. These alterations may be generally divided into two categories, although they are not mutually exclusive. These include water diversions and water control structures.

Water diversions include the Clay Gully diversion, Canal R-36, Blackburn Canal, dikes in Tatum Sawgrass and Vanderipe Slough, and channelizations of tributaries and wetlands for agriculture and stormwater conveyance. Also, fire control plow lines alter natural drainage patterns. Potential diversions for the development of public water supply are also being considered. Potential development within the river floodplain may also act to divert water through alterations in floodplain storage and conveyance. Water control structures include Downs' Dam, the structure at the outlet to Upper Myakka Lake, salinity barriers on Deer Prairie Creek and Myakkahatchee Creek, State Road 72, and elevated backcountry access roads.

Point Source Pollution--The Myakka River Wild and Scenic segment has few point sources which discharge to the river. Phosphate mining resumed in the upper river in April 1989. Permitted point sources are regulated through the NPDES program. The designations assigned the Myakka River waters generally protect the river from point source degradation. Potential phosphate mines in the upper Myakka River watershed may result in additional point sources to the river or its tributaries. An old dolomite mine just south of Border Road connects to the Myakka River, with discharge from the connecting drainage evident during ebb tide. No data exists to determine whether this negatively impacts water quality in this segment of the river.

Infestations by Exotic Aquatic Plants--The two principal aquatic nuisance plant species are hydrilla and water hyacinth. These plants affect water quality and also affect the flow of water through the system. Attempts at their control result in changes in water quality parameters and result in the introduction of herbicides into the environment.

4.6.3 Priority Concerns

The highest priority concerns associated with the water resource value consist of the following:

- Expansion of Myakka River Wild And Scenic River boundaries to include a river protection zone beyond the landward extent of wetlands and utilization of a holistic approach to watershed management;
- Development of a Myakka River watershed master plan;

- A need to protect good water quality and designated uses of the Myakka River and enhance areas where the Myakka River does not completely meet designated use through control of both nonpoint source and point source pollution;
- A need to preserve wetlands and restore damaged or lost wetlands and their functions relating to water quality purification and storage;
- A need to preserve and restore, to the extent feasible, the natural hydrologic regime of the river; and
- Protection of the Myakka River floodplain.

4.7 TERRESTRIAL ECOLOGY RESOURCE VALUE

4.7.1 Description

The terrestrial ecology resource value comprises all of the plants and animals associated with the uplands and wetlands of the Myakka River corridor. The terrestrial ecology resource value deals with these plants and animals at individual, species community and ecosystem levels. Table 4-1 identifies the 10 resource value elements and 36 corresponding subelements of terrestrial ecology. Under the resource value element of plant communities/wildlife habitats, 12 separate subelements or plant community/wildlife habitat types were identified. These upland and wetland plant community/wildlife habitats occur along the Myakka River corridor and are described in detail within Section 2.5, Plant Communities, Section 2.6, Fish and Wildlife, and Appendix B.

The next resource value element, listed species, includes all of the recorded or potentially occurring listed plant and animal species of the Myakka River corridor. A listed species can include any species of plant or animal that has been officially listed or is under review for listing by federal, state, or local government agencies and/or conservation groups as species that are threatened with extinction or extirpation. A discussion of the listed species that either inhabit or could potentially occur along the Myakka River corridor is provided in Sections 2.5.3, Listed Plant Species, and 2.6.3, Listed Animal Species. The list of listed animals is provided in Appendix C-2.

The resource value elements of hog and game animals and nongame animals include all vertebrate species that are either hunted or not hunted,

respectively. Animals that could be potentially hunted along the Myakka River include hog, waterfowl, dove and quail, deer and gray squirrel, and other vertebrates to a more limited degree, such as frog, alligator, rattlesnake, armadillo and opossum.

Special ecological features refer to any specific area, species or individual plants and/or animals along the Myakka River corridor that deserve some special recognition and/or protection. The lack of naturally growing cypress within the Myakka River corridor is a special ecological feature of scientific interest since local conditions are conducive to the growth of this aquatic conifer (i.e., cypress were planted and are growing vigorously within Myakka River State Park). Another special ecological feature is sawgrass, which apparently is only growing naturally in a limited area of the Wild and Scenic segment of the river in the vicinity of Deer Prairie Slough. Like cypress, it is rather odd that this fresh-to-brackish-water species is not growing throughout the Myakka River corridor. Another interesting species occurrence within the Myakka River corridor is longleaf pine. Longleaf pine in Sarasota and DeSoto counties is at its southernmost distribution in the State of Florida, except for extremely small disjunct colonies as far south as Hendry County. Thus, a special ecological feature is the small stands of longleaf pine that occurs in well-drained flatwoods near the Myakka River. In addition to particular species, certain plant communities or groupings of plant species can be considered to be of special ecological significance. The coastal hammock community is considered to be an important depository of rare and interesting plant species, which are at their most southern (e.g., southern red cedar) or northern (e.g., stoppers) limits. This special ecological plant community is typically small in size and isolated with larger associations along the Myakka River. The occurrence of individual biological oddities is also worthy of special consideration as an ecological feature of the Myakka River. For example, a rare two-headed cabbage palm occurs on the Myakka River bank near Ramblers Rest Resort.

Species diversity/density can be considered to be a resource value element and a measure of the value of other resources such as individual communities and/or community mosaics. High plant and animal species diversity is considered to be an important value of upland and wetland habitats.

Two other resource value elements, wildlife corridor and waterfowl flyway, are both considered to be important wildlife uses of the Myakka River. Large and small mammals, songbirds, raptors, snakes, turtles, and other animals use the contiguous upland and wetland habitats along the Myakka River for a number of functions important to their survival such as travel, shelter, resting, and feeding. As a waterfowl flyway, the surface waters and wetlands of the Myakka River are utilized by migratory ducks as an overwintering area.

The nesting/den sites resource value element refers to all the recorded or future sites along the Myakka River that wildlife uses to procreate and rear their young. This resource value element pertains more specifically to those nesting and den sites of species considered to be especially important such as listed or otherwise protected species. Examples of important nest sites include wading bird rookeries, eagle, osprey, and owl nests, alligator holes, sandhill crane nesting sites and river otter dens. Noteworthy nest sites along the Myakka River include two large wading bird rookeries located in proximity to the Sarasota/Charlotte County line in mangrove swamp islands within the Myakka River and two eagle nests located along the Lower Myakka Lake and Upper Myakka Lake in the Myakka River State Park.

The regionally significant resource value element was provided as an index of major environmentally sensitive land tracts of the Myakka River drainage watershed. Eight specifically named areas identified as regionally significant resources of the Myakka River watershed include the Myakka River, Upper Myakka Lake, Lower Myakka Lake, Flatford's Swamp, Vanderipe Slough, Warm Mineral Springs, Tatum Sawgrass, and Myakkahatchee Creek.

4.7.2 Issues and Problems

Conversion Practices--Destruction/alteration of natural upland and wetland habitats through conversion practices such as development, intensive agriculture, mining, rangeland, and forestry.

Prescribed Burning--A properly designed and implemented burning program is necessary to maintain a fire-dependent plant community in a subclimactic condition. Appropriate fire frequency must be maintained to permit healthy,

fire to dependent communities to exist. If fire is excluded for long periods of at least three years or more or used improperly, destructive hot or crown fires and/or undesirable changes in habitat diversity could result.

Exotic and Nuisance Species--Invasion by exotic or nuisance species can violate the integrity of plant communities by outcompeting the native flora for growth space and nutrients. Exotic plant species in uplands/wetlands include woody plants such as Brazilian pepper, Melaleuca and Australian pine. Exotic or nuisance plant species that are the most serious or potential threat to the aquatic habitats of the Myakka River include hydrilla, paragrass, parrotfeather, alligator weed, water hyacinth, and cattail. Farm or feral animals such as feral pigs and cattle also threaten native vegetation and wildlife.

Boat Traffic--Disturbance to the natural environment through uncontrolled boat traffic (e.g., boaters coming too close to rookeries frighten wading birds during breeding, erosion of shorelines via wakes, etc.).

Exploitation--Exploitation of natural resources (e.g., collection of rare plant species for personal or commercial gain, timber harvest, excavation of Indian mounds and/or middens within hammocks by "amateur archaeologists," etc.).

Habitat Fragmentation--Through various "improvement" activities, man can cause the loss of a particular habitat or habitats, or portions of habitats, within a geographic area and thereby restrict the wildlife use and species diversity/density of that region.

Edge Effect--When a portion of a natural area is altered, the altered area could potentially become habitat for opportunistic species. These opportunistic species can then affect the existence of native species that are still associated with the natural areas situated adjacent to the altered habitat. For example, a road could be built along a relatively pristine wetland area. After clearing and construction, an exotic species such as Melaleuca could become established along the road right-of-way. If not maintained in proper fashion, the Melaleuca could reach maturity and slowly

encroach upon the adjacent wetland. Thus, the invasion of Melaleuca to this previously undisturbed wetland from the road right-of-way is considered to be an edge effect.

Importance of a Habitat Mosaic--The existence of several habitat types within a specific geographic region typically connotes other resources of high value: high species diversity, high species density, a large number of threatened and endangered species populations, etc. Therefore, the disruption of this habitat mosaic through man's intervention, such as development, threatens the survival of Florida's rich and varied fauna and flora.

Off-the-Road Mechanized Traffic--Off-the-road vehicles such as all terrain vehicles (ATVs), four-wheel drive vehicles, and tractors damage natural areas and enhance the potential for invasion of opportunistic species.

Humans and Domesticated Animals--Introduction of humans and domesticated animals such as pets and farm animals into or adjacent to a relatively pristine area will lead to the deterioration of that environment.

Lack of Knowledge/Respect--Ignorance of the importance of natural resources can result in the unintentional or deliberate irreplaceable loss of these resources.

Water Quality--Excess nutrient loads from intensive agricultural and sewage treatment operations, together with other sources of pollution such as phosphate strip mining, dredge and fill operations, golf courses, and aquatic weed control and/or other biological controls (e.g., herbicides, pesticides, fungicides, etc.) can result in a deterioration of water quality within the Myakka River.

Hydrologic Alterations--Impoundment, dredge and fill operations, drainage canals, mosquito ditches, stream channelization, and ground water pumpage or other manmade manipulations of the river's hydroperiod/hydrology could result in detrimental impacts to the natural environmental. As an example, stream channelization provides faster, more silt-laden deliveries of freshwater into the downstream reaches of the Myakka River which could adversely affect the

growth and productivity of brackish-saltwater vegetation that in turn provides habitat to marine organisms, stabilizes shorelines, and functions in nutrient cycling.

Aesthetics--Any manmade or man-induced artifact that provides a visual impact to or impairment of the otherwise natural setting within the viewshed of the Myakka River is considered to be aesthetically offensive including seawalls and riprap, the trimming and cutting of woody vegetation (especially mangroves and oak trees) and the placement of structures in oak and pine trees (e.g., tree houses, unauthorized signs, and deerstands).

Other Wildlife Issues--This category includes all of the direct or indirect impacts to wildlife that have occurred as a result of man's intervention along the Myakka River, including the hinderance of wildlife travel due to fences, roads, ranchettes, transmission lines, etc.; the hunting of game and non-game animals; and the loss of wildlife habitat, wildlife species diversity/density, listed animal species, and wildlife use (e.g., feeding, nesting, travel corridor, shelter, resting, and staging) due primarily to intensive agricultural and development activities.

4.7.3 Priority Concerns

The highest priority concerns associated with the terrestrial ecology resource value consist of the following:

- A need to protect, enhance, and maintain the unique and irreplaceable values, functions, and benefits of the natural upland and wetland plant communities/wildlife habitats and associated resources along the Myakka River;
- A need to preserve the natural species diversity and density associated with the Myakka River through the control of exotic and nuisance species;
- A need to restrict and reverse the harmful effects of hydrologic alterations and water pollution to the Myakka River ecosystem;
- A need to maintain a suitable buffer area along the Myakka River to establish a corridor that can be properly managed to preserve the pristine condition of the river for present and future generations;

- A need to place large tracts of environmentally-sensitive land into public ownership and management within the Myakka River watershed;
- A need to protect listed plant and animal species along the Myakka River; and
- A need to implement a habitat management program to protect the natural resources of the Myakka River using proven, accepted techniques.

4.8 AQUATIC ECOLOGY RESOURCE VALUE

4.8.1 Description

Aquatic resources of the Myakka River provide ecological, recreational, and commercial values. These values are embodied in the biotic communities and aquatic habitats of the river.

The river encompasses fresh and saltwater fishery resources which are used both recreationally and commercially. Freshwater fisheries are primarily recreational and include species such as largemouth bass, bluegill, warmouth, black crappie, and catfish. Saltwater fisheries provide both recreational and commercial value. Species such as snook, tarpon, redfish, sea trout, whiting, mullet, black drum, and sheepshead are commonly pursued recreational fish. Blue crabs are fished both commercially and recreationally, as are mullet. Species such as tarpon, snook, mullet, and blue crabs also penetrate well into freshwater portions of the river and are known to occur into Lower Myakka Lake. Nongame species such as sawfish and the American eel also occur in the Myakka River.

Benthic communities of the Myakka River form a continuum from fresh to salt water. These communities provide food for organisms at higher trophic levels within the food web: invertebrates, such as blue crabs and shrimp; fish; birds; and mammals feed on benthic organisms. Benthic communities also function within the ecosystem through their interaction with the sediments in and on which they live. Through their activities, benthic organisms may stabilize or destabilize sediments, aid in the oxygenation of surface sediments, and affect the recycling of nutrients. Oyster bars create habitat that increases the diversity of the associated community.

Well developed oyster bars do not occur within the Wild and Scenic River segment of the Myakka River, but do occur in the lower river. Oyster bars are well known as areas which provide good fishing. The lower Myakka River is also a conditionally approved shellfish harvesting area.

The Myakka River is valuable as habitat to a variety of aquatic species. Aquatic habitat consists of the river, lakes, tributaries, swamps and marshes. Marshes of the Myakka River that encompass freshwater, tidal freshwater, and estuarine/marine marshes are particularly important in providing both emergent and submergent niches. The diversity of habitat types within the Myakka River corridor serves to provide a great diversity of fish and wildlife. These wetland communities/aquatic habitats serve to provide important fish and wildlife habitat, stabilize shorelines, and provide functions critical to the preservation of water quality, water quantity, and the time distribution of water discharge.

One of the greatest values of the Myakka River is its function as a fishery nursery area. The vast majority of recreationally and commercially important fish and shellfish species are dependent upon the estuarine zone at some point in their life cycle. The combination of the water resource and the available aquatic habitats serves to maintain this important function of the river.

The Myakka River is a designated critical habitat for the West Indian manatee. This marine mammal is considered endangered by both the FGFWFC and USFWS. Bottlenose dolphins also use the lower river.

The American alligator, a protected species, is common in the Myakka River. Alligators occur in great numbers within Lower Myakka Lake and Upper Myakka Lake. They can also be observed in the lower river down into brackish waters. Large numbers of turtles, primarily peninsular cooter, occur along the river and may be observed in great numbers as one travels down the river.

4.8.2 Issues and Problems

Loss of Fish and Wildlife Habitat--Loss of aquatic habitat is generally cited as one of the key factors resulting in declining species populations. A large majority of recreationally and commercially important fish species are

dependent upon the estuarine area at some point in their life cycle. The lower Myakka River serves as a nursery area for a number of these species. Important habitat consists of submerged grass beds, marshes, and mangroves. Protection of existing habitats and restoration of damaged habitats is of paramount importance for the protection of fish and wildlife populations. Loss of habitat occurs through shoreline development including dredging and filling of wetlands, bulkheading of shorelines, clearcutting to the water's edge, and construction of residential canals. Cutting of submerged grass beds by boat propellers and sedimentation from either in-stream or upland construction activities may result in the loss of these important habitats. Infestations of exotic plants may also result in the loss of fish and wildlife habitat. Invasions of marshes and mangroves by Brazilian pepper, if left unchecked, can completely alter the functions of these habitats by crowding out the natural vegetation. Invasion of the Upper and Lower Myakka Lakes by hydrilla has resulted in the alteration of lake fisheries populations through habitat changes affected by this nuisance plant.

Protection of Listed Species--Aquatic species occurring in the Myakka River which are listed include the West Indian manatee (endangered), American alligator (threatened due to similarity of appearance), and snook (species of special concern). The West Indian manatee population of Florida is estimated at 1,200 animals and is in danger of decreasing to levels unable to sustain the population. One of the greatest threats to manatees is collisions with boats. Nabor and Patton (1989) have reported that manatees occur in the Myakka River year around, and that the Myakka River may be a natural refuge utilized by a small number of manatees in December, January, and February. They also reported that manatee counts in the Myakka River are high throughout the summer, possibly coinciding with the peak of manatee exploratory activity. The snook is a highly prized sport fish, which has experienced population declines. Regulations govern the size of fish, the number of fish, and the season in which snook may be taken. Although listed as threatened due to the similarity of appearance with the American crocodile, the American alligator population in Florida has risen from once dangerously low levels. Recently, limited special permit hunting seasons have been instituted for alligators in selected waters of the state.

Protection of Nonlisted Species--Numerous nonlisted aquatic species occur within the Myakka River, many of which are of recreational and commercial importance. As previously mentioned, the lower Myakka River serves as a nursery area for many important fish species. Recently, the low levels of stocks of redfish within Florida have become a major concern, and regulations have been instituted by the Marine Fisheries Commission governing the taking of this species. The same concerns exist for a number of other species as well. Relatively rare occurrences of sawfish have been witnessed in the Myakka River by Mote Marine Laboratory personnel. The American eel is known to occur in the lakes and upper river. This fish migrates to the ocean to spawn, and as such requires free passage of the river to complete its life cycle.

Lack of a Database--A database on the aquatic communities of the lower Myakka River between the lakes and Border Road is essentially lacking. Informed management decisions regarding the river and its uses can be better made with more detailed data on which to base these decisions.

4.8.3 Priority Concerns

The highest priority concerns associated with aquatic ecology resource value consist of the following:

- Protection and restoration of the water resource upon which aquatic floral and faunal populations and communities are dependent for their continued healthy existence (i.e., water quality, water quantity, and the timing of flow);
- Preservation and restoration of aquatic habitat, particularly emergent and submergent aquatic habitat;
- Protection of the fishery nursery function of the lower Myakka River;
- Protection of listed species which may be experiencing population decline and/or which may be relatively rare to the Myakka River;
- Protection of nonlisted species which may be experiencing population decline and/or may be relatively unique to the Myakka River; and
- Development of an adequate database on river water quality and aquatic resources on which to better base decisions regarding uses of the river.

5.0 RIVER MANAGEMENT PROGRAM

Section 5.1 identifies the general management principles that will guide the management program. Section 5.2 describes the geographic areas that are the subject of the management program. Specific management objectives and actions are described in Section 5.3. Objectives are organized into two general thematic areas: natural resources, which include terrestrial and aquatic ecology and geologic and water resources; and human resources, which include economic, scenic, recreational, and cultural and historic resources. Finally, Section 5.4 describes factors affecting recreational carrying capacity along the Wild and Scenic River segment.

5.1 GENERAL MANAGEMENT PRINCIPLES

The recommendations for the day-to-day management of the river are based on principles derived from the management program's statutory and policy directives. For the purpose of this plan, principles are general statements that guide the development of specific management objectives and actions. The following principles, together with subsequent policy direction, legislation, and public input, will direct the river management program and the implementation of this plan.

- The permanent preservation, enhancement, and management of the river's resource values are the primary purpose of the management program.
- Effective management of the river requires effective management of uplands along the river and in the river's watershed. Management of the watershed will be in accordance with existing authorities.
- When the utilization of the river and its resource values conflicts with the protection and enhancement of these values, the protection and enhancement of resource values should prevail.
- The intensity of management may vary on different segments of the river area. Management activities will be developed for specific portions of the river area based on management needs in the immediate locale.
- Existing management authorities will not be curtailed or limited by any action of the management program. The management plan may recommend establishment of additional authorities or modification to existing authorities to accomplish the purposes of the management program.

- Land uses and developments on private lands within the river area, in existence on January 1, 1986, will continue.
- Management will be a continuing effort. Management actions will be evaluated and revised as necessary for best management results.
- Coordination and cooperation between local, regional, state, and federal agencies and the public is crucial to the success of the management program. The plan's management actions are intended to be implemented to the fullest extent possible under each management agency's statutory authority.
- Maintaining the cooperation and support of affected landowners and river users is essential to long-range understanding and support of the program.

5.2 OVERVIEW OF RIVER MANAGEMENT PROGRAM

The river management program is aimed at bringing existing governmental authorities to bear on protecting the river's resource values. In order to accomplish this, the multiplicity of management agencies and authorities must be coordinated. New authorities will be sought only as they are needed to correct management deficiencies identified in the planning process.

The program recommended in this plan for protecting the Myakka River's resource values will focus on three geographical areas: the river and adjoining wetlands ("river area"), a contiguous protective zone ("wild and scenic protection zone"), and the watershed ("watershed"). Each geographical area will require different levels of management by different combinations of agencies and authorities in order to accomplish the most effective overall management results.

The river area is identified in the Myakka River Wild and Scenic Designation and Preservation Act as consisting of the river and its adjoining wetlands. Of the three management areas, the river area is the zone of maximum protection. Section 258.501, Florida Statutes, authorizes DNR to adopt and enforce regulations addressing any activity that would adversely affect resource values in the river area. The boundaries of the river area will be delineated after approval of this plan and after adoption of subsequent management rules by the Governor and Cabinet.

A wild and scenic protection zone is proposed to be established as a corridor of uplands surrounding the river area. Such a zone is required to buffer the river area from manmade physical and visual intrusions. The wild and scenic protection zone is intended as an area of intermediate management protection. Management should be aimed at ensuring the compatibility of land development within the zone. Many uses and activities could be permitted in the protection zone consistent with maintaining the resource values of the river area. Establishment of the protection zone would require additional legislation.

The watershed is proposed as the zone of least intensive management. Watershed management is aimed primarily at minimizing hydrological impacts on the river from development activities in the watershed. Typical uses in the watershed that can have a direct or indirect adverse impact on the river include intensive agricultural, residential, and commercial development; mining; and construction of urban infrastructure facilities.

5.2.1 River Area

The river area is defined in Subsection 258.501(3)(g) as ". . . that corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor extending from the center of the river to the maximum upland extent of wetlands vegetation." The river area is further defined in this plan as the upland extent of wetlands vegetation established by DER, pursuant to Chapter 403, Florida Statutes, and Chapters 17-3 and 17-312, Florida Administrative Code (see Appendix E for excerpts from these rules). The line is generally represented by the river and contiguous marshes and hardwood swamps which extend either to the river bank or to an adjacent tree line. In certain areas along the river, DER may also establish portions of mesic-hydric hammocks as waters of the state (see Appendix B for a description of the mesic-hydric hammock).

DNR will be the primary agency responsible for the management of the river area. The river area will be the zone of most intensive management and over which maximum protection will be achieved. Immediately after approval of the plan, DNR will promulgate rules to establish a process for reviewing

activities in the river area which have an adverse impact on the river's resource values. The rule will establish a permit program, including application procedures, forms, review and approval processes, and specific criteria for reviewing applications for proposed activities within the river area. This program will be administered by DNR in the local area if staff and funds are available for this purpose. The program will apply only to activities proposed to occur in the river area. No other geographic area will be affected by this program.

The rule will identify three specific types of activities in the river area: activities which are prohibited, activities which may be conducted after obtaining a permit, and activities which are allowed without a permit.

Activities that are recommended to be prohibited in the river area include the following:

- Point discharge of wastes or effluents;
- Sale, lease, or transfer of sovereignty submerged lands except where determined to be in the public interest;
- Dredge and fill except when determined to be clearly in the public interest;
- New road crossings in unimpacted areas;
- Relocation or setting of bulkhead lines waterward of mean high water except where determined to be in the public interest;
- Major new activities that would alter natural or historic hydrologic conditions unless determined to be beneficial for the protection, management, and preservation of the river area;
- Excavation of minerals except for dredging of dead oyster shells as approved by DNR;
- Structures not related to water-dependent activities;
- Use of lands for providing public or private road access and utilities to islands where such access did not previously exist;
- Disruption of native vegetation except for riparian ingress and egress;
- Airboat use north of U.S. 41 except for uses officially allowed by government agencies; and
- Construction of new marinas.

It is recommended that the following activities be allowed in the river area after permit review and a finding that such activities will not have an adverse impact on resource values in the river area:

- Creation or maintenance of shore protection structures;
- Maintenance of existing navigational channels and aids;
- Creation and maintenance of public and private landings, docks, decks, or piers;
- Maintenance or expansion of existing marinas;
- Maintenance, replacement, or expansion of existing facilities for utilities or roads;
- Relocation or setting of bulkhead lines waterward of mean high water where determined to be in the public interest;
- Disruption of native vegetation resulting from riparian ingress and egress only;
- Stormwater management facilities or other drainage discharges;
- New utility crossings;
- New road crossings in impacted areas;
- Other activities or structures, which are a public necessity or are necessary to enhance the quality or utility of the river area, that are consistent with the Act and rule; and
- Resource-based recreational facilities on publicly owned lands and waters consistent with applicable rules and regulations.

It is recommended that the following activities be allowed in the river area without requiring a permit:

- Resource-based recreational activities on publicly owned lands and waters consistent with applicable rules and regulations;
- Commercial fishing;
- Agricultural and forestry activities similar in nature to those in existence on January 1, 1986;
- Resource management practices for the protection, conservation, rehabilitation, or restoration of resource values;
- Continuation of existing drainage and water management practices, unless such existing practices adversely affect, degrade or diminish existing water quality; and

- New water resource management practices which will have no adverse impact on resource values in the river area.

5.2.2 Wild and Scenic Protection Zone

During the development of this plan, DNR and the Council determined that management of the river area, as defined in subsection 258.501(3)(g), alone would not be adequate for the permanent protection of the resource values that were identified by the Council in the management planning process. Therefore, to meet the legislative intent of providing "permanent protection and enhancement" of these resource values, adequate management and protection of an upland buffer adjacent to the river area is needed. The act, subsection 258.501 (5)(d), states that the management plan may also include such provisions as deemed necessary by the DNR to be necessary or advisable for the permanent protection of the river as a wild and scenic designated river. It is recommended that section 258.501, Florida Statutes, be amended to establish a "wild and scenic protection zone" surrounding the river area to buffer the river area and its resource values against impacts from adjoining land uses.

In establishing the protection zone along the river, three considerations should be paramount:

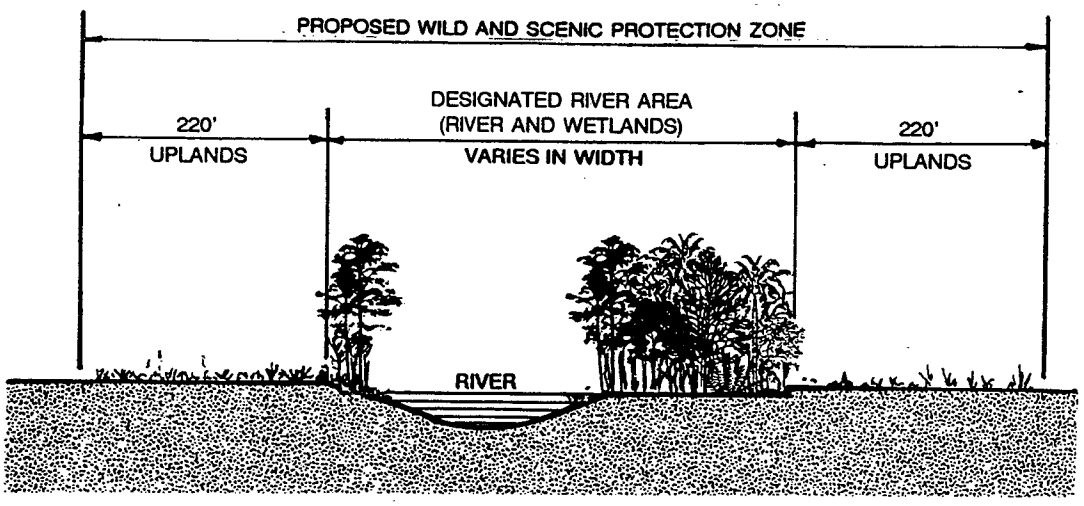
1) Ensure an adequate width along the river area to minimize potential adverse physical and visual impacts on resource values,
2) Provide a uniform boundary configuration to facilitate management, and
3) Minimize potential adverse impacts on private landowners.

Based upon the research conducted in the development of this plan, the river's visual corridor--the area along the river that is visible from the river--was estimated. This distance varies significantly based on season, time of day, river stage, successional stage, and other factors. Generally, the visual corridor ranges from as wide as 2,200 feet in nonforested communities, to as narrow as 150 feet in the denser hammock areas. These distances were determined as a result of onsite observations taken along the river. Observations were recorded for a range of different vegetative communities

including oak hammock (35 observations), pine flatwoods (35 observations), palm hammock (15 observations), scrub (15 observations), and nonforested communities. Over the entire length of the wild and scenic segment of the river, the average width of the visual corridor was determined to be 220 feet landward from the edge of the river area. Based on these factors, it is recommended that a "wild and scenic protection zone" be created as a supplemental buffer area extending 220 feet on each side of the river, measured from the landward edge of the river area (see Figure 5-1 for a conceptual diagram).

Additional legislation would be required to create the wild and scenic protection zone. To this end, Section 258.501, Florida Statutes, should be amended to formally establish the zone and to provide policy direction for its management. DNR, with the Department of Community Affairs, should be directed to develop guidelines and performance standards for local governments to apply in managing the wild and scenic protection zone. Such guidelines and performance standards should be adopted in state-local agency agreements between DNR and the Department of Community Affairs and the local governments. Local governments should be directed to amend their comprehensive plans as may be neccessary to be in conformance with, or more stringent than, the act, this plan and the management guidelines and performance standards. Local governments should also be required to adopt any necessary ordinances and regulations to carry out the purposes of the act, this plan and the guidelines and performance standards.

In developing management guidelines and performance standards for the wild and scenic protection zone, consideration should be given to the numerous single-family residences along the river. The intent of the wild and scenic protection zone is to provide for such residential use along the river while instituting appropriate safeguards to reduce the threat of adverse impacts to the resource values in the river area. To effectively manage the wild and scenic protection zone, consideration should be given to those activities which should be prohibited altogether, or must undergo review and either be denied, or permitted with or without conditions, so as to minimize potential adverse environmental and visual impacts to the resource values in the river area, and to minimize adverse impacts on private landowners' use of land for



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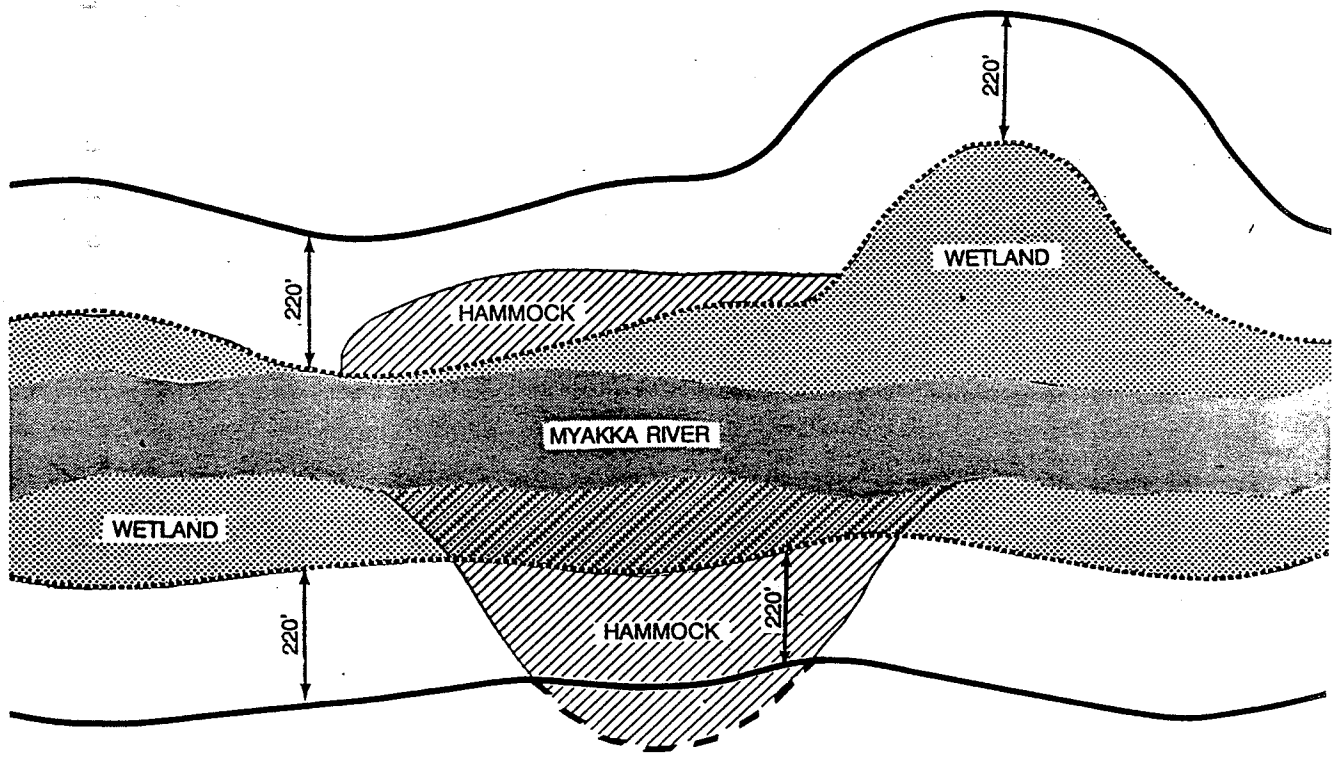

PLAN VIEW

..... DESIGNATED RIVER AREA

——— PROPOSED WILD AND SCENIC PROTECTION ZONE

N.T.S.

Figure 5-1
RIVER AREA AND WILD AND SCENIC PROTECTION ZONE CONCEPT

SOURCE: HUNTER, 1989.

MYAKKA WILD AND SCENIC RIVER MANAGEMENT PLAN

FLORIDA DEPARTMENT OF NATURAL RESOURCES

residential purposes. Activities that should be prohibited, except their appurtenant structures which may be permitted if they have no adverse visual or measureable adverse impacts to resource values in the river area, include, but are not limited to, the following:

- Landfills,
- Clear-cutting,
- Major new infrastructure facilities,
- Major activities that would alter historic water or flood flows,
- Multifamily residential construction,
- Commercial and industrial development, and
- Mining and major excavations.

5.2.3 Watershed

The permanent protection and enhancement of the wild and scenic segment of the Myakka River cannot be completely achieved without effective management of the river's watershed. Covering approximately 550 square miles in Sarasota, Manatee, Hardee, and DeSoto Counties, the watershed is managed by an array of federal, state, and local agencies; special districts; and private landowners. The main objective of managing the watershed, insofar as this plan is concerned, is to bring all existing management authorities to bear on preventing future adverse impacts on water quality, water quantity and timing of flow in the river.

Existing management and regulatory authorities are adequate for accomplishing this objective. No new authorities are required. In some cases, however, existing regulatory programs need to be strengthened or improved to increase the level of protection the river receives.

Specifically, Sarasota County should adopt strict performance standards for reviewing new subdivisions, developments, and changes in zoning densities in the basin to prevent adverse impacts on water quality, water quantity, and timing of flow in the river. The County should avoid placing new infrastructure facilities in a way that would encourage development east of the Myakka River. The County should examine the possibility of providing tax incentives to landowners in the watershed to maintain land in agricultural and other non-urban uses. Manatee County should also adopt these provisions, as

well as amend its mining and reclamation ordinance (No. 81-22) to minimize mining and mining impacts in the watershed.

The SWFWMD should adopt special basin water management rules for the Myakka watershed to strengthen criteria for reviewing applications for surface water management permits. The District should also adopt a goal of willing-seller purchasing as much of the river's headwaters as possible.

Better coordination between the many management and regulatory agencies in the watershed is urgently needed. Many land use and water management decisions are presently made without adequate coordination. As a result, potential impacts on the river's water resources are not always considered adequately in these decisions. Section 258.501 should be amended to require all state and local agencies to provide DNR with notification of requests for approval of activities which may adversely affect the river area.

5.3 SPECIFIC MANAGEMENT OBJECTIVES AND ACTIONS

Objectives are specific long- or short-term conditions toward which management actions are directed. Actions are the specific measures and procedures that are implemented by management agencies to protect and enhance the river's resource values and to resolve priority concerns.

DNR shall implement those actions for which it is primarily responsible, subject to the availability of staff and funds for those purposes. Other agencies are expected to implement the actions assigned to them, within their funding and staff capabilities. DNR and the Council shall coordinate and encourage each agency to implement specific actions to achieve the management objectives.

Table 5-1 summarizes each of the management program's objectives and corresponding actions. Each action contains a responsible agency, geographic area subject to management actions, estimates of funding requirements based on available information, and implementation/completion dates. The ability of agencies to perform many of the actions listed below and summarized in Table 5-1 is contingent upon the availability of funding.

OBJECTIVE 1

To protect, enhance and maintain the unique and irreplaceable values, functions, diversity and benefits of the natural resources along the Myakka River.

Action 1.1

DNR shall adopt a rule to establish standards for regulating activities in the river area.

Action 1.2

The Legislature should amend 258.501, Florida Statutes, to: 1) establish the wild and scenic protection zone, 2) require local governments to amend their comprehensive plans as may be necessary to be in conformance with or more stringent than the act, this plan and management guidelines and performance standards to be developed and adopted by State-local agreements involving DNR and DCA with Sarasota County and with the City of North Port, and 3) require local governments to adopt any necessary ordinances and regulations to carry out the purposes of the act, this plan, and the guidelines and performance standards.

Action 1.3

DNR, DCA, and other appropriate agencies should monitor and review Sarasota County's land use, zoning, and all pertinent regulatory activities to ensure that policies contained in APOXSEE are carried out consistently with the management plan guidelines and criteria.

Action 1.4

DER should determine the boundaries of the river area by delineating the landward extent of wetlands vegetation as provided in Chapter 403, Florida Statutes, and Chapters 17-3 and 17-312, Florida Administrative Code.

Action 1.5

DNR and FGFWFC should conduct a study to determine the use of the river area and wild and scenic protection zone by wildlife and to determine measures that may be necessary to better protect and manage wildlife in the river area and the wild and scenic protection zone.

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 1							
To protect, enhance and maintain the unique and irreplaceable values, functions, diversity and benefits of the natural resources along the Myakka River.							
ACTIONS							
Action 1.1	Adopt a rule to establish standards for regulating activities in the river area.	DNR	X	--	--	$30,000 (funded)	12-89/12-90
Action 1.2	The Legislature should amend 258.501, Florida Statutes to: 1) establish the wild and scenic protection zone, 2) require local governments to amend their comprehensive plans as may be necessary to be in conformance with or more stringent than the act, this plan and management guidelines and performance standards to be developed and adopted by state-local agreements involving DNR and DCA with Sarasota County and the City of North Port, and 3) require local governments to adopt any necessary ordinances and regulations to carry out the purposes of the act, this plan and the guidelines and performance standards.	Legislature DNR Sarasota County North Port	X	X	--	--	4-90/12-90
Action 1.3	Appropriate agencies should monitor and review Sarasota County's land use, zoning, and all pertinent regulatory activities to ensure that policies contained in APOXSEE are carried out consistently with the management plan guidelines and criteria.	DNR DCA	X	X	X	Staff Assignment	7-90/ongoing
Action 1.4	Determine the boundaries of in the river area by delineating the landward extent of wetlands vegetation as provided in Chapter 403, Florida Statutes and Chapters 17-3 and 17-312, Florida Administrative Code.	DER	X	--	--	$60,000	1-91/7-92
Action 1.5	Conduct a study to determine the use of the river area and wild and scenic protection zone by wildlife and to determine measures that may be necessary to better protect and manage wildlife in the river area and the wild and scenic protection protection zone.	DNR FGFWFC	X	X	--	$30,000	1-91/12-91

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 1							
To protect, enhance and maintain the unique and irreplaceable values, functions, diversity and benefits of the natural resources along the Myakka River.							
Action 1.6	Aquire through willing-seller purchase, donation, or exchange, headwater wetlands, tributaries, and land bordering the Myakka River.	Applicable Management and Acquisition Agencies	X	X	X	Variable	7-90/Ongoing
Action 1.7	Establish a local land trust to facilitate willing-seller/ donor land and easement acquisition of environmentally sensitive lands in the Myakka River watershed.	Applicable Management and Acquisition Agencies	X	X	X	Staff Assignment	7-90/Ongoing
Action 1.8	Revise habitat-based regulatory programs to maximize protection of wetlands and hammock vegetation along the Myakka River.	Sarasota County	X	X	X	Staff Assignment	7-90/7-91
Action 1.9	Implement a prescribed burning and fuel reduction program involving landowners along the Myakka River.	DNR Division of Forestry Sarasota County	X	X	X	Staff Assignment	7-90/Ongoing
Action 1.10	Implement an integrated program of exotic and nuisance species management for the river area and the wild and scenic protection zone.	DNR FGFWFC Division of Forestry	X	X	--	Staff Assignment	1-91/Ongoing
Action 1.11	Develop and implement a plan to locate, catalog, and protect listed plant and animal species and species of local concern within the river area and the wild and scenic protection zone.	DNR FGFWFC	X	X	--	$10,000	1-91/Ongoing
Action 1.12	Recommend legislative amendments which would make it unlawful to harvest or destroy any endangered or threatened plant species within the river area and the wild and scenic protection zone.	DNR DACS FGFWFC	X	X	--	Staff Assignment	1-91/7-91
Action 1.13	Compile an inventory of special ecological features along the Myakka River.	DNR Sarasota County FNAI Appropriate Management Agencies	X	X	--	Staff Assignment	1-91/1-92

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 1							
To protect, enhance and maintain the unique and irreplaceable values, functions, diversity and benefits of the natural resources along the Myakka River.							
Action 1.14	Inventory and monitor changes to animal and plant communities in the river area and wild and scenic protection zone.	FGFWFC DNR Sarasota County	X	X	--	$30,000 biennual	1-91/Ongoing
Action 1.15	Develop an inventory program to monitor and prioritize the important nesting, roosting, and breeding sites along the Myakka River corridor in order to protect these sites from any actions that may disrupt cause their discontinued use.	DNR FGFWFC Sarasota County	X	X	--	Staff Assignment	7-90/6-91
Action 1.16	Distribute warning signs around the two wading bird rookeries in the Myakka River near the Sarasota/Charlotte County line.	DNR FGFWFC Sarasota County	X	--	--	Staff Assignment	7-90/12-90
Action 1.17	Develop and implement a habitat and restoration plan for the river area and wild and scenic river protection zone.	Applicable Management Agencies	X	X	--	Staff Assignment	1-91/Ongoing
Action 1.18	Develop guidelines for fence placement and educate landowners on how fences that border the Myakka River can be modified or newly constructed to facilitate easier crossing by wildlife.	DNR Sarasota County	X	X	--	Staff Assignment	1-91/Ongoing
OBJECTIVE 2							
To protect and/or enhance the surface and ground water resource values of the Myakka River, including protection and enhancement of water quality and designated uses, and protection and restoration of optimal quantity and timing of freshwater discharge.							
ACTIONS							
Action 2.1	Strictly enforce regulations relating to water resources.	Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic River Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 2							
To protect and/or enhance the surface and ground water resource values of the Myakka River, including protection and enhancement of water quality and designated uses, and protection and restoration of optimal quantity and timing of freshwater discharge.							
Action 2.2	Identify and seek funding sources to develop and institute programs for best management practices to control and reduce nonpoint source pollution within the Myakka River watershed.	Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing
Action 2.3	Revise Manatee County Ordinance No. 81-22, Mining and Reclamation, to include language similar to that for the Myakka River watershed.	Manatee County	--	--	X	Staff Assignment	7-90/7-91
Action 2.4	Evaluate existing water quality monitoring programs where needed to determine whether to continue and/or expand these programs to include: a. Better coordinated and more comprehensive monitoring efforts, b. Linkage to regulatory actions and programs, c. Landfill and borrow pit monitoring, and d. Monitoring of tributaries; for example, Howard Creek and Big Slough.	Applicable Management Agencies	X	X	X	To be Determined	7-90/Ongoing
Action 2.5	Remove trash and debris within the river and along the river shoreline and sponsor a "Myakka River Cleanup Day" at least once per year.	DNR Sarasota County	X	--	--	Staff Assignment	7-90/Ongoing
Action 2.6	Conduct a hydrologic study that considers all existing and potential water control structures and diversions of river water.	SWFWMD Applicable Management Agencies	X	X	X	$250,000	7-90/7-91
Action 2.7	Petition the Environmental Regulatory Commission to amend Chapter 17-3, FAC, to designate the entire Myakka River as an Outstanding Florida Water.	DER Management Agencies	X	--	--	Staff Assignment	7-90/12-91
Action 2.8	Seek an exemption from the exotic aquatic plant control program within Myakka River State Park to allow the limitation or prohibition of power boats on Upper Myakka Lake and Lower Myakka Lake.	DNR SWFWMD	X	--	--	Staff Assignment	7-90/1-91

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 2							
To protect and/or enhance the surface and ground water resource values of the Myakka River, including protection and enhancement of water quality and designated uses, and protection and restoration of optimal quantity and timing of freshwater discharge.							
Action 2.9	Investigate alternatives to the chemical control of aquatic weeds, and effective and environmentally sound management and control practices for chemical, mechanical, biological, and/or physical weed control.	DNR SWFWMD	X	--	--	$60,000	7-90/Ongoing
Action 2.10	Develop emergency action procedures to include timely monitoring response and remediation of spills of contaminants which could potentially affect the Myakka River.	DNR SWFWMD TBRPC SWFRPC Sarasota County	X	X	X	Staff Assignment	1-91/1-92
Action 2.11	Maintain and coordinate monitoring programs for the consumptive use of ground water within the Myakka River watershed. Particular emphasis should be placed on the maintenance of wetland hydroperiods.	SWFWMD	X	X	X	Staff Assignment	1-91/Ongoing
Action 2.12	Prohibit mining of resources in the river area. Establish recommended guidelines and design criteria for regulating mining discharges in the wild and scenic protection zone to ensure post mining runoff meets pre-mining runoff for water quality and quantity.	DNR Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing
Action 2.13	Conduct a master watershed study to allow for comprehensive stormwater master planning.	SWFWMD Sarasota County North Port Venice DNR DER	X	X	X	$180,000	1-91/7-92

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic River Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 3							
To preserve, protect and restore natural aquatic habitat necessary for the continued healthy existence of aquatic populations and communities within the Myakka River.							
ACTIONS							
Action 3.1	Identify, prioritize and implement feasible aquatic habitat restoration projects upon completion of the hydrologic study.	DNR Applicable Management Agencies	X	X	X	Staff Assignment	1-92/Ongoing
Action 3.2	Continue monitoring programs and baseline studies with respect to major potential water withdrawals including consumptive use permits and potable water withdrawals from the Myakka River.	Sarasota County SWFWMD USGS	X	X	X	Staff Assignment	7-90/Ongoing
Action 3.3	Post significant submerged aquatic vegetation beds in the lower Myakka River to reduce the incidences of prop cuts caused by boat traffic in these shallow and sensitive areas.	DNR Sarasota County	X	--	--	Staff Assignment	7-90/12-90
Action 3.4	Periodically remove derelict crab traps and fishing gear from the river to enhance aquatic resources.	DNR	X	--	--	Staff Assignment	7-90/Ongoing
Action 3.5	Implement a manatee management plan that incorporates the appropriate findings and recommendations of the Nabor and Patton study (1989) and newly proposed boat speed limits.	DNR	X	--	--	Staff Assignment	7-90/Ongoing
OBJECTIVE 4							
To coordinate with local, regional, state, and federal agencies in the use and regulation of land management practices that protect the quality of the Myakka River and its tributaries.							
ACTIONS							
Action 4.1	Evaluate the function and composition of the Council as a management coordination body and implement any necessary modifications.	DNR Myakka River Management Coordinating Council North Port Sarasota County	X	X	X	Staff Assignment	7-90/Ongoing

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 4							
To coordinate with local, regional, state, and federal agencies in the use and regulation of land management practices that protect the quality of the Myakka River and its tributaries.							
Action 4.2	Designate officers who will be in charge of reviewing significant permits/development applications within the Myakka River watershed.	DNR Applicable Management Agencies	X	X	X		7-90/1-91
Action 4.3	Permitting agencies at the federal, state, regional, and local levels should notify DNR's designated permit review officer of all permits/development applications within the Myakka River watershed and enter into memorandums of understanding or similar agreements to facilitate coordination of review of such applications.	Applicable Management Agencies	X	X	X	Staff Assignment	7-90/1-92
Action 4.4	Encourage consistent land use planning and regulations in the watershed among all local governments and regional and state agencies.	Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing
Action 4.5	Monitor local codes and review and comment on proposed land development controls that regulate development within environmentally sensitive areas of the Myakka River watershed.	DNR DCA	X	X	X	Staff Assignment	7-90/Ongoing
Action 4.6	Develop and implement land use design standards for development within the river and and wild and scenic protection zone.	DNR DCA	X	X	--	Staff Assignment	7-90/7-91
OJECTIVE 5							
To minimize urban and suburban encroachment and resultant adverse impacts upon the river and allow appropriate land uses within the watershed.							
ACTIONS							
Action 5.1	Continue to ensure through comprehensive plans, land development regulations and/or appropriate ordinances, that urban and suburban land uses are minimized with the river area, wild and scenic protection zone, and the watershed.	Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OJECTIVE 5							
To minimize urban and suburban encroachment and resultant adverse impacts upon the river and allow appropriate land uses within the watershed.							
Action 5.2	River crossings shall be regulated by DNR. New infrastructure crossings shall be discouraged in undeveloped areas. Improvements should be made to existing facilities and new facilities should be collocated along existing facilities which cross the river to minimize the demand for new facilities that must cross the river. Regulatory agencies should ensure that adequate protection is given to wild and scenic values in all river crossing permits.	DNR Sarasota County North Port	X	X	--	Staff Assignment	7-90/Ongoing
Action 5.3	Require that land development review and approval consider sea-level rise, subsequent landward migration of wetlands, and resultant need for an upland buffer.	DCA DNR SWFWMD SWFRPC TBRPC North Port Sarasota County Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing
Action 5.4	Modify existing lighting to significantly reduce the spill of light into the Myakka River from the I-75/West River Road Interchange.	FDOT	--	X	X	Staff Assignment	7-90/7-91
Action 5.5	Relocate the rest area located at the I-75/West River Road Interchange.	FDOT	--	X	X	Staff Assignment	7-90/7-92

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 6							
To provide for the regulation, control, and distribution of public access to the Myakka River where necessary to protect and enhance the resource values of the river area.							
ACTIONS							
Action 6.1	Limit uncontrolled public access to the Myakka River on the Carlton Reserve to the extent allowed by the rivers' carrying capacity, and include toilets, designated campfire areas, and refuse containers with a suitable vegetated buffer from the river area.	DNR Sarasota County	X	X	--	$25,000	7-90/12-91
Action 6.2	Restrict additional public access on the Myakka River until a recreational carrying capacity is established and enforceable.	DNR Sarasota County	X	--	--	Staff Assignment	7-90/12-91
Action 6.3	Establish pedestrian-only nature trails on publicly-owned land in an area of the wild and scenic protection zone to promote nature study and research.	DNR Sarasota County	X	X	--	$5,000	7-90/12-91
OBJECTIVE 7							
To minimize the disturbances to natural resources of the Myakka River from river-related recreational uses.							
ACTIONS							
Action 7.1	Conduct a comprehensive boat utilization study to quantify recreational carrying capacities by river segment and enforce recreational activity levels after carrying capacities are determined.	DNR	X	X	--	$40,000	7-90/12-91
Action 7.2	Enact by rule a slow/minimum wake speed for the Myakka River from the Sarasota/Manatee County line to the Sarasota/Charlotte County line except in the main channel downstream of U.S. Highway 41 and except for the official government agency use of watercraft.	DNR	X	--	--	Staff Assignment	7-91/7-92

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 7							
To minimize the disturbances to natural resources of the Myakka River from river-related recreational uses.							
Action 7.3	Enact a nuisance noise ordinance, if warranted by the boat utilization study, to minimize noise impacts on the Myakka River.	DNR Sarasota County North Port	X	--	--	Staff Assignment	7-91/7-92
Action 7.4	Prohibit airboats except for official permitted use by agencies operating in the wild and scenic portion of the Myakka River.	DNR	X	--	--	Staff Assignment	7-90/Ongoing
Action 7.5	Establish idle speed/no-wake zones in the vicinity of marinas, boat ramps, structures near navigable channels and in other locations where the river is too narrow to safely accommodate two-way traffic.	DNR Sarasota County	X	--	--	Staff Assignment	7-91/7-92
Action 7.6	Assign additional law enforcement personnel to enforce existing and adopted regulations on and adjacent to the Myakka River.	Applicable Law Enforcement Agencies	X	X	--		7-90/Ongoing
Action 7.7	Educate the public through a sign placement program, at river access points which describes the resource values and regulations of the wild and scenic designated portion of the river.	DNR Sarasota County	X	X	--	$8,000	7-90/Ongoing
Action 7.8	Signs indicating river miles should be placed at suitable intervals to establish common reference points for describing locations.	DNR	X	--	--	$2,000	7-90/7-91
OBJECTIVE 8							
To protect archaeological/historical sites from adverse impacts associated with development, vandalism, and artifact collecting.							
ACTIONS							
Action 8.1	Support a policy on the preservation of archaeological/ historical sites on public lands in the watershed.	DNR DHR Applicable Management Agencies	X	X	X	Staff Assignment	7-90/Ongoing

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Wild and Scenic Protection Zone	Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 8							
To protect archaeological/historical sites from adverse impacts associated with development, vandalism, and artifact collecting.							
Action 8.2	Develop management guidelines to facilitate the preservation or conservation of cultural resources, including development review of project impacts on cultural resources in the watershed.	DHR SWFRPC Sarasota County North Port Applicable Management Agencies	X	X	X	Staff Assignment	1-91/Ongoing
Action 8.3	Enforce existing laws and coordinate with state and local police authorities to protect archaeological/historical sites and educate law enforcement officials and the general public of these laws and regulations.	DHR Applicable Management and Law Enforcement Agencies	X	X	X	Staff Assignment	7-90/Ongoing
OBJECTIVE 9							
To expand the knowledge and data base of the archaeological/historical resources in the Myakka River vicinity and in the watershed.							
ACTIONS							
Action 9.1	Commission a cultural resource assessment survey of the watershed and the wild and scenic protection zone to acquire a greater knowledge and understanding of the watershed's archaeological/historical resources. The surveyors shall consult existing sources of information retained by DHR and Sarasota County Division of Historical Resources.	DHR DHR Sarasota County	X	X	X	$40,000	1-91/1-92

Table 5-1 Myakka River Management Program Objectives and Actions.

		Agency Responsibility	Program Focus: River Area	Program Focus: Wild and Scenic River Protection Zone	Program Focus: Watershed	Estimated Funding Requirements	Implementation/ Completion Date
OBJECTIVE 9							
To expand the knowledge and data base of the archaeological/historical resources in the Myakka River vicinity and in the watershed.							
Action 9.2	Develop a cultural resource sensitivity map that would locate areas of relatively high probability of cultural resource distribution.	DNR DHR Sarasota County	X	X	X	$15,000	1-91/1-92
Action 9.3	Designate a local museum in the Myakka River vicinity as an educational and curatorial facility to receive artifacts collected within the Myakka River watershed.	Applicable Management Agencies	--	--	X	Staff Assignment	1-91/1-92
Action 9.4	Develop a monitored public access site to an interpretive exhibit at one of the prehistoric Indian mounds/middens near the river in the Myakka River State Park or Carlton Reserve.	DNR DHR Sarasota County	--	--	X	$10,000	1-91/1-92
Action 9.5	Sponsor an annual Myakka River Pioneer Festival at a restored homestead, farmstead or the Miakka School House with demonstration of pioneer crafts, music, storytelling, exhibits, and costumes.	DNR DHR Sarasota County	--	--	X	Staff Assignment	1-91/Ongoing
Action 9.6	Design markers to indicate historic features of the river area.	DNR DHR	X	--	--	Staff Assignment	1-91/1-92

USCOE - U.S. Army Corps of Engineers
DER - Department of Environmental Regulation
SWFWMD - South West Florida Water Management District
DNR - Department of Natural Resources
FDOT - Florida Department of Transportation
FGFWFC - Florida Game and Fresh Water Fish Commission
USGS - United States Geological Survey
DCA - Department of Community Affairs
SWFRPC - Southwest Florida Regional Planning Council
TBRPC - Tampa Bay Regional Planning Council
DHR - Division of Historical Records
Council - Myakka River Management Coordinating Council

Source: Hunter, 1989.

Action 1.6

The applicable management and acquisition authorities should acquire headwater wetlands, tributaries, and lands bordering the Myakka River through willing-seller purchase, donation, or exchange. Areas that should be considered include the following: the wild and scenic protection zone, lands adjacent to Myakka River State Park, the Walton Tract, the Carlton Reserve, Tatum Sawgrass, portions of Vanderipe Slough, Flatford's Swamp, and Myakkahatchee Creek. DNR shall coordinate with applicable management agencies to identify the proposed land area boundaries for acquisition. The applicable management agencies should attempt acquiring these areas through fee-simple purchase and through purchase of easements or development rights. The efforts of others, such as Sarasota County, Manatee County, the Nature Conservancy and the Trust for Public Land, will also be needed to accomplish these acquisitions.

Action 1.7

Applicable management and acquisition agencies should coordinate to establish a local land trust to facilitate willing-seller/donor land and easement acquisition of environmentally sensitive lands in the Myakka River watershed.

Action 1.8

Sarasota County should revise its habitat-based regulatory programs to include protection of wetlands and hammock vegetation specifically along the Myakka River. The county should revise language in APOXSEE to provide for regulation of existing upland vegetation at a minimum of 220 feet wide to be required around all wetlands/surface waters that are contiguous to the designated Myakka River area. APOXSEE should also be revised with language that provides for special protection to wetland-fringing hammocks that are contiguous to the wetlands and/or surface waters along the designated Myakka River area from river mile 7.5 to river mile 41.5.

Action 1.9

DNR shall coordinate with all landowners along the Myakka River to implement a prescribed burning and fuel reduction program. Ecological burning should be utilized where appropriate to control the encroachment of hardwood vegetation into the river marsh, restore and perpetuate pine flatwoods, reduce fuel levels, increase species diversity and reduce the threat of wildfire along the

Myakka River. A long-range program should be established to identify the timing, location, and extent of ecological burning needed to restore and enhance vegetation within the river area and the wild and scenic protection zone, where practicable. The burn plan should be implemented by a series of annual work programs to be conducted by the Division of Forestry and DNR, and should provide for periodic reviews of progress made toward implementing the program. The plan should also provide for restoration of fire breaks and plow lines. A program for controlling wildfire along the river should also be established.

Action 1.10

DNR shall implement an integrated program of exotic and nuisance species management for the river area and the wild and scenic protection zone to eradicate or control exotic and nuisance species of plants and animals. Procedures should be devised for locating exotic plant species and removing them to the maximum extent possible. Priority consideration will be given to the river area and to those portions of the wild and scenic protection zone which are in public ownership.

Action 1.11

DNR shall coordinate with the Game and Fresh Water Fish Commission (GFWFC) and develop and implement a plan to locate, catalog and protect listed plant and animal species and species of local concern within the river area and the wild and scenic protection zone. The study should include all native animals and plants that are of interest and worthy of protection. This listing of animals and plants will be proposed by GFWFC and then be reviewed by the Council.

Action 1.12

DNR shall coordinate with the Florida Department of Agriculture and Consumer Services (DACS) and the GFWFC to recommend legislative amendments which would make it unlawful to harvest or destroy any plant species within the river area and the wild and scenic protection zone that are listed under the state's regulated plant index (the Native Flora of Florida Act, Chapter 581, Florida Statutes) as endangered or threatened.

Action 1.13

DNR shall compile an inventory of special ecological features along the Myakka River. These features should be protected to the maximum extent possible by law or public ownership. A program for public education should be implemented to inform the public of the special attributes these features possess that should be protected.

Action 1.14

DNR shall inventory and monitor changes to animal populations and plant communities in the river area and the wild and scenic protection zone. DNR, in conjunction with appropriate state agencies and local governments should inventory and monitor changes to animals and plants in these areas to manage these resources properly.

Plants--A periodic inventory should be conducted through the use of long-term aerial photography to document the changes to the flora.

Animals--Research should be conducted by interested agencies on topics concerning local animal life for later use in wildlife management activities and public education programs. Animal populations will be cataloged and monitored thereafter on a regular basis to provide data on which detailed biological carrying capacities and management criteria can be evaluated. A particular emphasis of these activities should be to monitor the effects of public recreational use of the river. The development of this environmental database should be coordinated with other appropriate agencies to maximize utilization of the information collected (e.g., current studies being conducted by the Sarasota County Ecological Monitoring Division and cooperative United States Geological Survey programs).

Action 1.15

DNR shall develop an inventory program to monitor and prioritize the important nesting, roosting, and breeding sites along the Myakka River corridor in order to protect these sites from actions that may cause their discontinued use.

Action 1.16

DNR shall coordinate with the GFWFC and Sarasota County to distribute warning signs around the two wading bird rookeries in the Myakka River near the Sarasota/Charlotte County line. DNR shall nominate these two rookeries for designation as critical wildlife habitat areas by the GFWFC.

Action 1.17

DNR will coordinate with applicable management agencies and develop and implement a program of habitat restoration in the river area and wild and scenic protection zone. In conjunction with GFWFC, Sarasota County, the City of North Port, and other appropriate agencies, DNR will implement a voluntary program of habitat restoration. The program should provide for replanting and other restoration actions in areas that have been historically altered. Reforestation of areas on the upland fringes of the wild and scenic protection zone will be accomplished where past lumbering and agricultural land clearing have eliminated large areas of woody shrubs and trees, such as slash pine and oaks. Disturbed wetlands should also be restored where practical through manipulation of water levels, replanting native aquatic vegetation, and other management methods. The vegetation plan should determine priority habitat restoration needs within the wild and scenic protection zone and establish a schedule for meeting them.

Action 1.18

DNR shall develop guidelines for fence placement and educate landowners on how fences that border the Myakka River can be modified or newly constructed to facilitate easier crossing by wildlife.

OBJECTIVE 2

To protect and/or enhance the surface and ground water resource values of the Myakka River, including protection and enhancement of water quality and designated uses, and protection and restoration of optimal quantity and timing of freshwater discharge.

Action 2.1

Applicable management authorities should strictly enforce regulations relating to water resources.

Action 2.2

Applicable management authorities should identify and seek funding sources to develop, institute, and monitor programs for best management practices to control nonpoint source pollution within the Myakka watershed.

Action 2.3

Manatee County should revise Ordinance No. 81-22, Mining and Reclamation, to include language for the Myakka River watershed similar to that for the Manatee River watershed. This language requires best possible technology for mining in the watershed.

Action 2.4

Applicable management agencies should evaluate existing water quality monitoring programs to determine whether to continue and/or expand these programs to include:

a. Better coordinated and more comprehensive monitoring efforts,
b. Linkage to regulatory actions and programs,
c. Landfill and borrow pit monitoring, and
d. Monitoring of tributaries; for example, Howard Creek and Big Slough.

Action 2.5

DNR shall coordinate the removal of trash and debris within the river and along the river shoreline and sponsor a "Myakka River Cleanup Day" at least once per year.

Action 2.6

Applicable management agencies should conduct a hydrologic study that considers all existing and potential water control structures and diversions of river water. The study should evaluate all aspects of the water resource, including net benefits, as well as the living resources of the river, and develop guidelines for preserving, enhancing, and restoring the hydrologic regime of the river. The study should specifically include, but not be limited to:

1. Downs' Dam,

2. Blackburn Canal (Curry Creek),
3. The restoration of the Clay Gully diversion,
4. The restoration of Tatum Sawgrass,
5. The restoration of Vanderipe Slough,
6. The restoration of Deer Prairie Creek and Slough,
7. The water control structure at the lower end of Upper Myakka Lake,
8. The shoal area at Deer Prairie Creek,
9. The proposed Sarasota County potable water reservoir project, and
10. The existing dolomite mine discharge.

The study should assess potential effects of these areas and provide recommendations to mitigate negative impacts where indicated. The study should also be coordinated with Sarasota County's river modeling efforts and the results of the U.S. Geological Survey's (USGS) study. Efforts should be coordinated with agencies and organizations that are presently evaluating individual aspects or projects referenced above.

Action 2.7

DNR shall coordinate with applicable management agencies and petition the Environmental Regulatory Commission to amend Chapter 17-3, FAC, to designate the entire Myakka River as an Outstanding Florida Water.

Action 2.8

DNR should seek a U.S. Corps of Engineers exemption from the exotic aquatic plant control program within Myakka River State Park to allow the limitation or prohibition of recreationally used power boats on the Upper Myakka Lake and Lower Myakka Lake.

Action 2.9

DNR shall investigate possible alternatives to the chemical control of aquatic weeds and encourage effective and environmentally sound management and control practices for chemical, mechanical, biological, or physical weed control.

Action 2.10

Sarasota County, in conjunction with the applicable regional planning councils, should develop emergency action procedures to include timely monitoring, response and remediation of spills of contaminants which could potentially affect the Myakka River.

Action 2.11

SWFWMD should maintain and coordinate monitoring programs for the consumptive use of ground water within the Myakka River watershed. Particular emphasis should be placed on the maintenance of wetland hydroperiods.

Action 2.12

DNR shall prohibit mining of resources in the river area. DNR and applicable management agencies shall establish recommended guidelines and design criteria for prohibiting mining in the wild and scenic protection zone and regulate mining discharges to ensure post mining runoff meets premining runoff for water quality and quantity. Mining permitting should place particular emphasis on protection of the Myakka River and mine reclamation plans should enhance the ecological resources adjacent to the river protection zone.

Action 2.13

DNR shall petition applicable management agencies to conduct a master watershed study to allow for comprehensive stormwater master planning.

OBJECTIVE 3

To preserve, protect and restore natural aquatic habitat necessary for the continued healthy existence of aquatic populations and communities within the Myakka River.

Action 3.1

DNR shall identify, prioritize and implement feasible aquatic habitat restoration projects upon completion of the hydrologic study.

Action 3.2

Sarasota County, SWFWMD and USGS should continue monitoring programs and baseline studies with respect to major potential water withdrawals, including Consumptive Use Permit and potable water withdrawals from the Myakka River.

Action 3.3

DNR shall post significant submerged aquatic vegetation beds in the Lower Myakka River to reduce the incidence of prop cuts caused by boat traffic in these shallow and sensitive areas.

Action 3.4

DNR shall periodically remove derelict crab traps and fishing gear from the river to enhance aquatic resources.

Action 3.5

DNR shall implement a manatee management plan that incorporates the appropriate findings and recommendations of the Nabor and Patton study (1989) and newly proposed boat speed limits. The plan should include idle speed zones as well as no-wake zones upriver of the Interstate 75 bridge to Downs' Dam.

OBJECTIVE 4

To coordinate with local, regional, state, and federal agencies in the use and regulation of land management practices that protect the quality of the Myakka River and its tributaries.

Action 4.1

After adoption of this plan, DNR and the Council shall jointly evaluate the function and composition of the Council as a management coordination body and implement any necessary modifications.

Action 4.2

DNR shall designate an officer who will be in charge of reviewing significant permits/development applications within the Myakka River watershed, including but not limited to Department of Environmental Regulation (DER) and Army Corps of Engineers' (COE) dredge and fill permits; SWFWMD Consumptive Use Permits; SWFWMD Stormwater and Surface Water Management permits; Coast Guard Bridge Permits, Development of Regional Impact/Applications for Development Approval documents; and, Sarasota County, City of North Port, Manatee County, Hardee County, Charlotte County, and DeSoto County development applications. It will be the DNR officer's responsibility to determine whether any adverse effects

to the Myakka River's resources will result from the issuance of a permit/development approval and provide comment to the permitting/approval agency. On substantial issues, the Department's officer shall elicit the assistance of the Myakka River Management Coordinating Council in an advisory capacity. After adoption of this plan, the Department and Council will develop procedures for keeping the Council informed.

The DNR officer shall be located in a field office along the Myakka River. The field office should be established on public land adjacent to or within the Myakka River Wild and Scenic River segment. DNR shall seek funding for staff to operate the permit program and will establish reasonable fees to help defray the cost of processing applications.

In addition to the review of permits/development applications of the Myakka watershed, the onsite field officer shall be responsible for coordination of DNR permits necessary for activities within the river area. In accordance with Section 258.501(12), Florida Statutes, the DNR officer is also responsible for providing field reviews of the Myakka River area and enforcing the Act.

Action 4.3

Permitting agencies including the Department of Environmental Regulation, USCOE, SWFWMD, U.S. Coast Guard, each county's planning, natural resources, building and zoning, and transportation departments, and the City of North Port, should notify the DNR's designated permit review officer of all permits/development applications within the Myakka River watershed and enter into memorandums of understanding or similar agreements to facilitate coordination of review of such applications.

Action 4.4

DNR shall encourage consistent land use planning and regulations in the watershed among all local governments and regional and state agencies.

Action 4.5

DNR shall monitor local codes and review and comment on proposed land development controls that regulate development within environmentally sensitive areas of the Myakka River watershed.

Action 4.6

Sarasota County and the City of North Port should develop and implement land use design standards for development within the wild and scenic protection zone. These regulations should include setbacks behind bluffs and native landscaping and xeriscaping to provide for visual uniformity, a screen from the river and a habitat for wildlife. The regulations should provide for transfer of density, agricultural bonuses, or tax abatements to compensate landowners for wild and scenic protection zone buffer requirements. Landowners along the river should be encouraged to plant appropriate native trees and shrubs within and adjacent to the protection zone.

OBJECTIVE 5

To minimize urban and suburban encroachment and resultant adverse impacts upon the river and allow appropriate land uses within the watershed.

Action 5.1

DCA and local governments should continue to ensure through comprehensive plans, land development regulations and/or appropriate ordinances, that urban and suburban land uses are minimized within the river area, the wild and scenic protection zone and the watershed.

Action 5.2

DNR shall regulate river crossings. New infrastructure crossings shall be discouraged in undeveloped areas. Improvements should be made to existing facilities which cross the river to minimize the demand for new facilities that must cross the river. Regulatory agencies should ensure that adequate protection is given to wild and scenic values in all river crossing permits.

Action 5.3

DCA, DNR, the water management district, the applicable regional planning councils, and local governments should require that land development review and approval consider sea-level rise, subsequent landward migration of wetlands, and resultant need for an upland buffer.

Action 5.4

FDOT should modify existing lighting to significantly reduce the spill of light into the Myakka River from the Interstate 75/West River Road interchange.

Action 5.5

FDOT should relocate the rest area located at the Interstate 75/West River Road Interchange.

OBJECTIVE 6

To provide for the regulation, control and distribution of public access to the Myakka River where necessary to protect and enhance the resource values of the river area.

Action 6.1

DNR and Sarasota County should limit uncontrolled public access to the Myakka River on the Carlton Reserve to the extent allowed by the river's carrying capacity, and include toilets, designated campfire areas, and refuse containers with a suitable vegetated buffer from the river area.

Action 6.2

DNR shall restrict additional public access on the Myakka River until a recreational carrying capacity is established and enforced. Also, DNR shall monitor and regulate boat traffic in that portion of the Myakka River from State Road 72 to Border Road to study recreational/natural systems carrying capacity, as proposed for further research.

Action 6.3

DNR and Sarasota County should establish pedestrian-only nature trails on publicly owned land in an area of the wild and scenic protection zone to promote nature study and research.

OBJECTIVE 7

To minimize the disturbances to natural resources of the Myakka River from river-related recreational uses.

Action 7.1

DNR shall undertake a comprehensive boat utilization study to quantify recreational carrying capacity by river segment and enforce recreational activity levels after carrying capacity is determined.

Action 7.2

DNR shall enact by rule, a slow/minimum wake speed for the Myakka River from the Sarasota/Manatee County line to the Sarasota/Charlotte County line except in the main channel downstream of U.S. Highway 41 and except for the official government agency use of watercraft.

Action 7.3

Applicable management agencies should enact a nuisance noise ordinance, if warranted by the boat utilization study, to minimize noise impacts on the Myakka River.

Action 7.4

DNR shall prohibit the operation of airboats, except for official, permitted use by agencies in the designated area of the wild and scenic Myakka River.

Action 7.5

DNR shall establish idle speed/no-wake zones in the vicinity of marinas, boat ramps, structures near navigable channels and in other locations where the river is too narrow to safely accommodate two-way traffic.

Action 7.6

Applicable management agencies should assign additional law enforcement personnel to enforce existing and adopted regulations on and adjacent to the Myakka River. Personnel should be assigned from the Division of Recreation and Parks, Florida Marine Patrol, FGFWFC, Sarasota County, and City of North Port.

Action 7.7

DNR shall educate the public through a sign program at river access points briefly describing resources values and regulations in the designated river area.

Action 7.8

Signs indicating river miles should be placed at suitable intervals to establish common reference points for describing locations.

OBJECTIVE 8

To protect archaeological/historical sites from adverse impacts associated with development, vandalism, and artifact collecting.

Action 8.1

DNR shall support a policy for the preservation of archaeological/historical sites on public lands in the watershed.

Action 8.2

DNR shall coordinate with the Division of Historical Resources (DHR), Sarasota County, and the City of North Port to develop management guidelines to facilitate the preservation or conservation of cultural resources. A uniform process for the review and comment of project impacts on cultural resources should also be developed. Reviews will ascertain project impacts to cultural resources and recommend appropriate measures to minimize or mitigate adverse effects of such projects to significant cultural resources in the watershed.

Action 8.3

Applicable management agencies should enforce existing laws and coordinate with state and local police authorities to protect archaeological/historical

sites and educate law enforcement officials and the general public of these laws and regulations.

OBJECTIVE 9

To expand the knowledge and data base of the archaeological/historical resources in the Myakka River vicinity and in the watershed.

Action 9.1

DNR shall commission a cultural resource assessment survey of the watershed or the wild and scenic protection zone to acquire a greater knowledge and understanding of the watershed's archaeological/historical resources. The surveyor shall consult existing sources of information retained by DHR and Sarasota County Division of Historical Resources.

Action 9.2

DNR shall coordinate with DHR and Sarasota County Division of Historical Resources to develop a sensitivity map that would locate areas of relatively high probability of cultural resource distribution.

Action 9.3

Applicable management agencies should designate a local museum in the Myakka River vicinity as an educational and curatorial facility to receive artifacts collected within the Myakka River watershed. Such agenices should develop educational materials on the prehistoric and historic heritage of the watershed to describe the responsibility of all users to be stewards of such resources.

Action 9.4

DNR or Sarasota County should develop monitored public access to an interpretive exhibit at one of the prehistoric Indian mounds/middens located near the river in the Myakka River State Park or Carlton Reserve.

Action 9.5

DNR should sponsor an annual Myakka River Pioneer Festival at a restored homestead, farmstead or the Miakka School House with demonstrations of pioneer crafts, music, storytelling, exhibits, and costumes. The festival should involve or include the media, school, groups, and law makers.

Action 9.6

Design markers to indicate historic features of the river area.

5.4 RECREATIONAL CARRYING CAPACITY

One of the most important functions of the Myakka River management program is to determine and monitor the amount and kinds of recreational uses that are permitted on the river without creating adverse impacts on the resource values of the river area. Although the term "carrying capacity" of rivers is used frequently, there is no definitive methodology for estimating a river's recreational carrying capacity. There are many concepts and factors involved in assessing carrying capacity, and these factors and concepts can differ from river to river and also along different segments of the same river.

In determining the recreational carrying capacity of the Myakka River, an identification of the constraints on recreational use due to the physical characteristics of the river must first be made. The predominant physical constraints are width and depth of the river channel and the water control structures located south of Lower Myakka Lake and at the outfall to Upper Myakka Lake. These constraints limit the type of recreational use (i.e., canoeing or powerboating) and the actual areas where recreational use may occur. For purposes of determining carrying capacity of the Myakka River in this management program, the river should be considered in four segments. The first segment consists of the state park, including Upper Myakka Lake, and the Lower Myakka Lake. The second segment runs from the southern state park boundary to Border Road. The third and fourth segments run from Border Road to U.S. Highway 41 and U.S. Highway 41 to the Sarasota/Charlotte County line, respectively.

5.4.1 Considerations in Determining Recreational Carrying Capacity

After differentiating the river segments by physical constraints, the concept of carrying capacity can be addressed. The two perspectives from which to address carrying capacity are the capacity of natural features, and the demands of the human population. When considered with variables such as seasonal climatic fluctuations, geographic service area, and river water level fluctuations, these perspectives can be further differentiated into four