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.