OVERVIEW

Maritime Industry

The function of the Miami River as a "working waterfront" should be preserved. Scarce waterfront land should be reserved, wherever possible, for use by businesses that are dependent on a waterfront location or are essentially related to the maritime economy of the area.

The river should grow as a shallow draft seaport - a lifeline to the Caribbean Basin - providing good-paying jobs for city residents. New shipping terminals should be located where they will not be detrimental to residential neighborhoods.

The river's role in the regional market for repair, sales and service of boats and marine equipment should be maintained and strengthened.

The marine character embodied by the fishing industry on the river should be preserved.

Management

The river's diversity, vitality and exotic character should be preserved. Improvement efforts should strive to manage it without totally taming it.

Crime and the perception of crime along the river must be reduced. Law enforcement efforts should be enhanced with increased manpower and new laws tailored to curtail the import/export of contraband and stolen merchandise.

Safety should be improved in the navigation and operation of vessels and marine facilities along the river. Problems such as improper loading of cargo, lack of safety equipment, inadequate training of crew members, and substandard maintenance practices need to be addressed with new regulations applicable to foreign flag vessels.

Owners of vessels should be made financially responsible for costs and penalties associated with abandoned or derelict vessels, navigational accidents, mechanical failure, fuel or pollutant spills, and code violations.

Management and enforcement efforts need ongoing funding and coordination among numerous public agencies at the city, county, state and federal levels. An official port organization would be one way to accomplish this, as well as other benefits such as carrying out port-related capital improvement projects, marketing and promotion.

Environmental Quality

The river should have clean water. It should meet all state water quality standards suitable for a major tributary to Biscayne Bay. The river should support a variety of marine plant and animal life, but is not intended to support swimming and other human recreational activity.

Ongoing sources of water pollution must be eliminated with major capital investments in replacement of outmoded sanitary sewer and stormwater drainage systems. Other sources of pollution should be reduced through improved regulations and enforcement.

Contaminated sediments on the river bottom must be removed by environmentally safe dredging. Future sedimentation should be reduced by eliminating direct stormwater runoff and stabilizing the shoreline with riprap and/or bulkhead structures.

The river should be acknowledged as a place suitable for continued use and development of recreational and commercial marine facilities, subject to environmentally sensitive design standards and concentrated code enforcement.

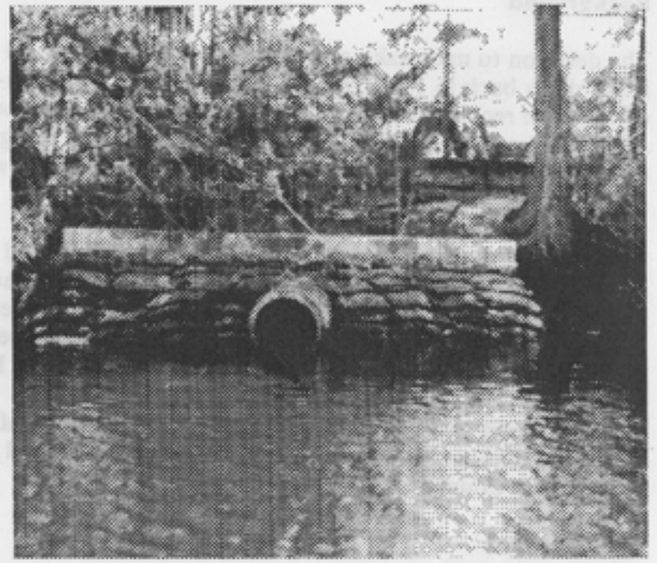
Land Use and Design

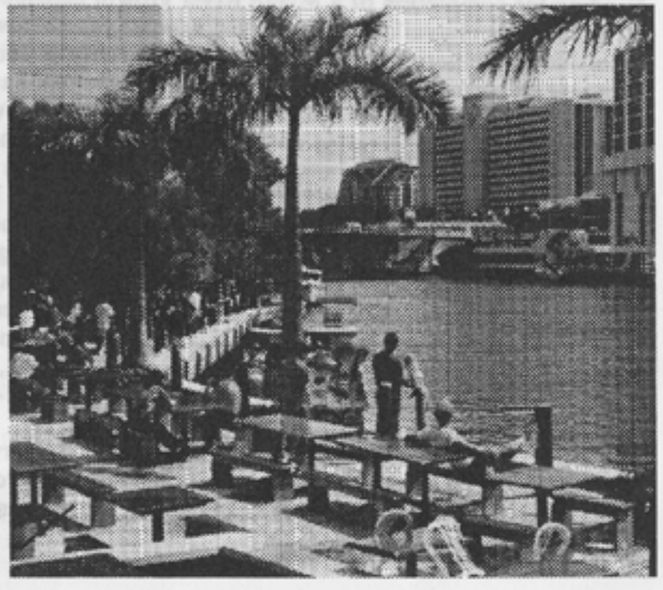
The river should continue to accommodate a wide variety of land uses, including water-dependent marine businesses, private residences, public parks, institutions, offices, and hotels. All future development should maximize its orientation to and beneficial use of the riverfront.

The river's potential as a recreational attraction for residents and visitors should be exploited. Recreational boating, sight-seeing tours, water taxis, charter fishing boats, waterfront restaurants and markets, and parks should draw people and activity to the river. Access and views should be enhanced from bridges and adjacent streets.

A continuous, lively, urban riverwalk should be developed in the downtown area with apartments and hotel rooms rising above ground level restaurants, shops and outdoor cafes.

The amenity of the river should be used as a catalyst for revitalization of the Lummus Park and East Little Havana neighborhoods; blending the existing working waterfront with restaurants, outdoor cafes, seafood and vegetable markets, etc. In contrast to the high-intensity, sophisticated downtown riverwalk, these riverfront districts should achieve a more earthy, neighborhood-scale character.





PLANNING PROCESS

Background

The decision to undertake a planning study for the Miami River dates back to 1985, when the City Commission concurred with recommendations from the Planning Department and the Miami River Management Committee, concerning the need for a comprehensive inventory, analysis and growth management plan.

The first phase of this effort was a detailed inventory and analysis of existing physical and economic conditions, and projections for future growth. The final report from phase one, entitled "Miami River Economic Study," was prepared in 1986 by consultants, Zuchelli, Hunter and Associates, Inc. and Bermello, Kurki and Vera, Inc., with grants from the Florida Department of Environmental Regulation (federal Coastal Zone Management funds), the City of Miami and Metro-Dade County.

Related Plans

Funding for completion of a Miami River growth management plan was unavailable for the next several years. However, during the period from 1986 to 1989, the City of Miami Planning Department completed two related plans that have important implications for the Miami River. The Downtown Master Plan contains detailed policies for land use, urban design, transportation and public improvements for areas adjacent to the Miami River (north bank from the mouth to NW 5th Street bridge; south bank from the mouth to I-95). The Miami Comprehensive Neighborhood Plan 1989-2000 legally establishes the land use pattern and includes numerous goals, objectives and policies relevant to the Miami River, i.e. to encourage water-dependent uses along the shoreline, to reduce water pollution caused by stormwater drainage, to promote dredging of the river, and to protect shipping activity on the river. During the same period, Metro-Dade County completed the draft Biscayne Bay Aquatic Preserve Management Plan (1986), and the current version of the comprehensive plan, which regulates development in the unincorporated area (north of NW 20th Street) and establishes countywide policies for water quality, transportation, etc.

Elements of the Miami River Master Plan

In the spring of 1990, the City of Miami Department of Planning, Building and Zoning (renamed after merger with Building and Zoning) decided to fulfill the City's promise to complete a special plan for the Miami River using in-house staff, equipment and materials, without help from outside grants and consultants. Using the 1986 Economic Study as a data base and the aforementioned adopted plans as a policy framework, this efed on a reexamination of important issues and needs, refinement of objectives and policies, and analysis of potential solutions to problems and opportunities. The purposes of this study are further defined on page one of this report.

Public Involvement

The Miami River Coordinating Committee (MRCC) has served as the client and provided the principal forum for public involvement in this planning study. Presentations have also been made to the Miami River Marine Group, the Miami River Business Association, and the City of Miami Waterfront Advisory Board. Telephone interviews were conducted with fifty-four marine related businesses located in the study area, in addition to survey information concerning shipping terminals provided by the Miami River Marine Group. Information and guidance have been provided by staff from numerous city, county, state and federal agencies.

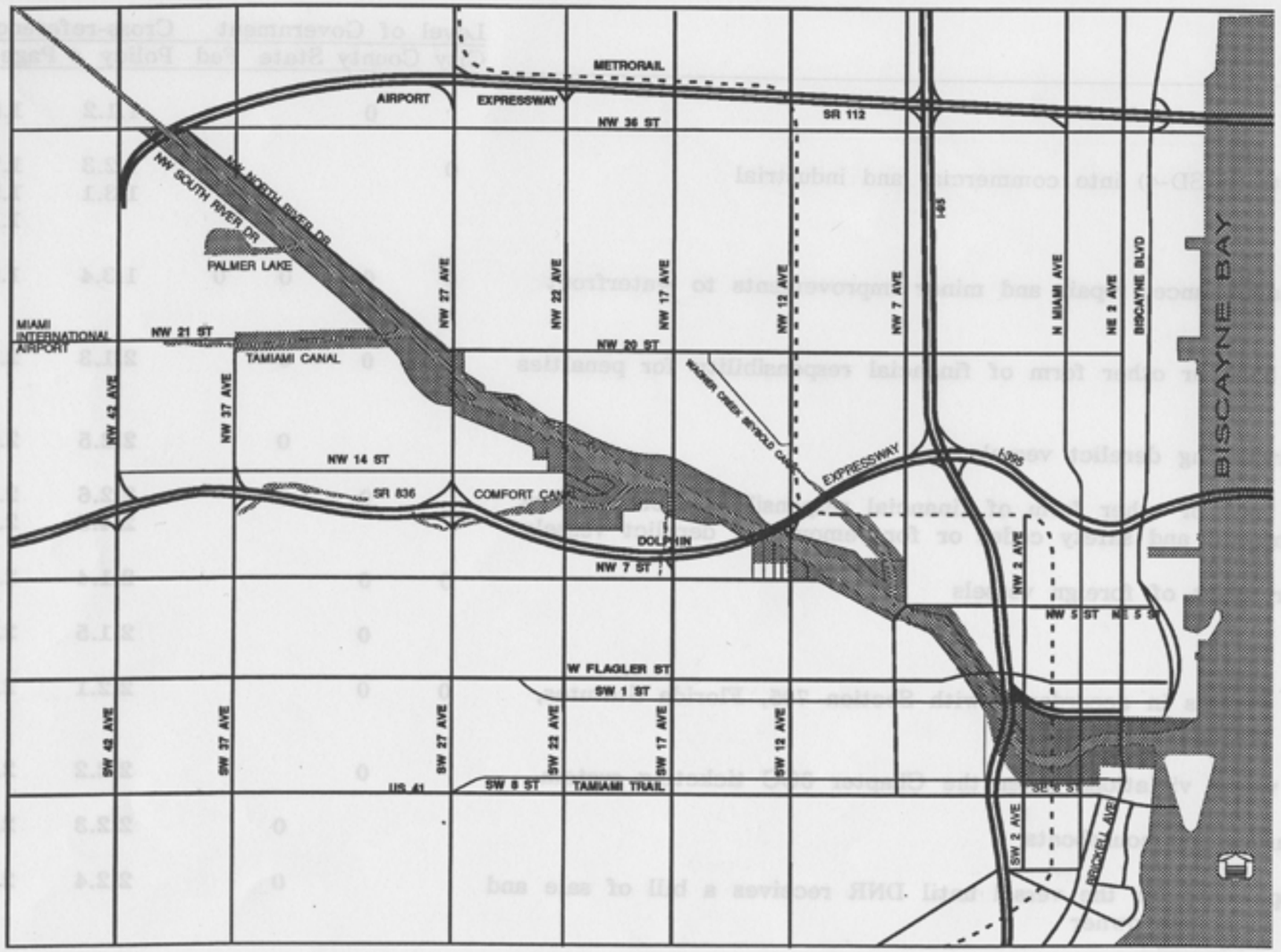
In February, 1991, a series of four public workshops were held in the PB&Z conference room. Each of these well-attended lunchtime sessions covered one of the four subsequent chapters of this plan: Working Waterfront, River Management, Environment, and Urban Design. The staff's preliminary analysis and proposed goals, objectives and policies were discussed in detail, resulting in numerous additions and modifications.

A draft version of this plan, entitled "Miami River Master Plan - Draft Report, October, 1991", was distributed to the MRCC and other interested public agencies and citizens for review and comment. Comments were received until December 15, 1991. The report was then revised to incorporate as much of the public comment as possible. The "Miami River Master Plan - Final Report, January, 1992" is scheduled for public hearings before the Miami Planning Advisory Board and the City Commission.

Approval and Implementation

It is anticipated that the Miami River Master Plan will be adopted by the City Commission in principle (like all other special area studies). It will remain then for the plan to be implemented incrementally. This will include actions by the City of Miami such as amendments to the Miami Comprehensive Neighborhood Plan, zoning ordinance and city code. However, many of the recommendations in this plan will require actions by other governmental entities, especially Metro-Dade County. The MRCC will need to spearhead those changes.

STUDY AREA



The study area for this plan, shown on Map 1.1, includes navigable portions of the Miami River and its major tributaries (Seybold Canal, South Fork/Comfort Canal, North Fork, Tamiami Canal, and Palmer Lake.). The main channel stretches a length of 5.5 miles from the mouth of the river to the salinity dam near NW 36th Street and NW 40th Avenue.

Abutting properties, streets and bridges are included in the study area. The relationship between the study area and adjacent neighborhoods and transportation systems have been carefully considered.

The plan includes portions of the river located in unincorporated Dade County. Activities in these areas are so integrally related to the economic, environmental and regulatory issues in the City of Miami portion of the river, that it would be impossible to separate the two areas. City staff has coordinated this planning study with Metropolitan Dade County through the Miami River Coordinating Committee and direct contact with staff from numerous county agencies, most notably from DERM.

IMPLEMENTATION ACTIONS

PART 1: CODE AMENDMENTS

Brief Identification of Code Amendment	Level of Government				Cross-reference	
	City	County	State	Fed	Policy #	Page #
Create a waterfront industrial zoning district		0			1.1.2	1.5
Subdivide existing waterfront industrial zoning district (SD-4) into commercial and industrial	0				1.2.3 1.3.1	1.7 1.9 1.12
Simplify permit procedures & requirements for maintenance, repair and minor improvements to waterfront structures	0	0	0	0	1.3.4	1.9
Require owners of commercial vessels to post a bond or other form of financial responsibility for penalties resulting from illegal cargo		0	0		2.1.3	2.3
Streamline the existing DNR grant program for removing derelict vessels			0		2.2.5	2.5
Require owners of commercial vessels to post a bond or other form of financial responsibility for the cost of cleanup and/or fines for violations of environmental and safety codes or for removal of derelict vessels		0	0		2.2.6 2.4.5	2.5 2.11
Require a pawn brokers licence for the owner or agent of foreign vessels	0	0			2.1.4	2.3
Require registration of bicycles		0			2.1.5	2.3
Authorize local officials to dispose of abandoned vessels in accordance with Section 705, Florida Statutes, concerning "Lost or Abandoned Property"	0	0			2.2.1	2.5
Authorize enforcement of abandoned or derelict vessel violations under the Chapter 8CC ticketing system		0			2.2.2	2.5
Require all vessels to be registered, including barges and houseboats			0		2.2.3	2.5
Make the registered owner of a boat legally responsible for the vessel until DNR receives a bill of sale and application for transfer of title and registration to a new owner			0		2.2.4	2.5
Participate in the U.S. Coast Guard process of adopting rules governing safety for commercial vessels				0	2.4.1	2.11

PART 1: CODE AMENDMENTS (continued)

Brief Identification of Code Amendment	Level of Government				Cross-reference	
	City	County	State	Fed	Policy #	Page #
Strengthen the qualifications and responsibilities of licensed stevedores		0			2.4.2	2.11
Require all waterfront properties to have the street address posted in a location clearly visible from the water	0	0			2.4.7	2.11
Create a ticketing system for code enforcement	0				2.4.8	2.11
Establish by ordinance a "Port of Miami River" with appropriate staff and self-supporting funding		0			2.2.9	2.13
Require all liveaboard vessels to be connected with onshore waste disposal systems or holding tanks	0	0			3.1.8	3.5
Authorize DERM officials to inspect vessels for on-board sanitation devices, holding tanks, and contaminated bilgewater, and to require pumpout of holding tanks and bilges at authorized facilities		0	0		3.1.9	3.5
Require shoreline stabilization for new development, redevelopment and major renovations	0	0			3.2.3	3.8
Restrict development and coastal construction permits in manatee habitat and resting areas, including Palmer Lake		0			3.3.6	3.11
Require waterfront facilities to be constructed using methods which prevent or minimize injury, entrapment or crushing of manatees	0	0			3.3.8	3.11
Adopt marina siting criteria that permit continued improvement and construction of marine facilities along the Miami River	0	0			3.3.10 3.4.1	3.11 3.13
Modify the Biscayne Bay Aquatic Preserve Management Rules to permit use of state-owned submerged lands in the Miami River, subject to environmentally sensitive design standards		0	0		3.4.1	3.13

IMPLEMENTATION ACTIONS

PART 2: PROGRAMS

Activities and Programs that Require Funding	Leading Agency	Estimated Annual Cost	Potential Funding Sources	Plan Reference Policy #	Page #
Market and promote Miami River shipping terminals within the Caribbean Basin marketplace	Beacon Council and MRMG		Beacon Council User fees	1.2.2	1.7
Provide assistance to small businesses for filing applications for financial assistance and coastal construction permits				1.3.5	1.9
Increase police patrol	City of Miami Police	$ 416,100	Fines and seizures Special taxing district User fees	2.1.1	2.3
Establish an official inspection station to check all incoming and outgoing commercial vessels; or a monitoring/communications station at the Brickell Ave. bridge where the arrival/departure of each cargo vessel would be recorded and the appropriate enforcement agencies notified	Metro-Dade County		User fees	2.1.6	2.3
Develop and promote a program whereby owners of unwanted or derelict vessels consider the donation of suitable vessels to the Dade County Artificial Reef Program	DERM		private FIND grant	2.2.7	2.5
Reduce unnecessary bridge openings by educating boaters and marketing products (outriggers, antennae and other appurtenances) that are easily removed or lowered	Marinas and boatyards		private	2.3.5	2.9
Continue environmental code enforcement	DERM/DER	$330,000	Permit fees SWIM grants Storm Water Utility	2.4.4	2.11
Train and equip marine patrol officers to spot all types of code violations and to intervene or notify the appropriate enforcement agency	City of Miami Police	Included in Policy 2.1.1		2.4.6	2.11
Establish an official "Port of Miami River" with appropriate staff	Metro-Dade County		User fees Special taxing district	2.4.9	2.13

PART 2: PROGRAMS (continued)

Activities and Programs that Require Funding	Leading Agency	Estimated Annual Cost	Potential Funding Sources	Plan Reference Policy #	Page #
Increase maintenance of storm drains to remove obstructions caused by litter, grease, sediments and other debris	Public Works (City & County)	$1,750.000	Storm Water Utility	3.1.3	3.3
Continue monitoring and investigation aimed at detecting leakage and illegal/improper connections in the sanitary sewer and storm drainage systems	DERM	$240,000	Storm Water Utility WASAD SWIM grant	3.1.7	3.5
Conduct a public awareness campaign to discourage discharge of untreated waste from vessels	DERM/DER	$10,000	SWIM grant Boat registration fees DER	3.1.10	3.5
Improve enforcement of vessel speed limits	Florida Marine Patrol		Fines	3.3.3	3.11
Sponsor public education programs, improve informational signage and provide educational brochures for distribution to boaters concerning manatee protection	DERM/DER	$10,000	DER, FIND SFWMD Private foundations	3.3.4	3.11
Create a "manatee watch" program to host guided tours and manatee sightings for school children and the general public	DERM	$10,000	DNR grant Private foundations	3.3.5	3.11
Continue studies of manatee behavior and migration patterns	DERM	$50,000	Boat registration fees Manatee tag revenues	3.3.7	3.11
Investigate the effectiveness of ducted propellors or propellor guards on appropriate vessels for protecting manatees	DERM	$10,000	Boat registration fees Manatee tag revenues	3.3.9	3.11

IMPLEMENTATION ACTIONS

PART 3: CAPITAL IMPROVEMENTS

Project Description	Leading Agency	Estimated Cost	Potential Funding Sources	Plan Reference Policy #	Page #
Dredging: a) Navigational	Corps of Engineers	$8-10,000,000	Federal	3.2.1	3.7
b) Environmental		$18-20,000,000	Federal State grant User fees		
Unfunded roadway improvements from Tables 2-A and 2-B	MPO (Metro-Dade)		Federal, FDOT Miami Airport Fla. Seaport Trust	2.3.1 2.3.2	2.6
Local street improvements - North and South River Drive	City of Miami	$2,500,000	New highway bond	2.3.1	2.6
Complete retrofit of stormwater drainage basins	City of Miami Metro-Dade FDOT	$50,000,000	SWIM Storm Water Utility	3.1.1 3.1.2	3.3 3.3
Replace all aging, deteriorated sanitary sewer pipes	WASAD		State, Federal	3.1.5	3.5
New force main to the Virginia Key Sewage Treatment Plant	WASAD	$50,000,000	State, Federal User fees	3.1.6	3.5
Stabilize all publicly-owned shoreline	DERM	$437,500	State FIND grant SFWMD county, city	3.2.2	3.9
Structural and operational improvements to salinity dams to prevent manatees from being injured or drowned	SFWMD	$30,000 per structure	SFWMD	3.3.1	3.11
Bridge enhancements	FDOT	1.5% of construction	Federal/state bridge replacement	4.1.1 4.2.1	4.3 4.3

CHAPTER 1: THE WORKING WATERFRONT

GOAL: Preserve the working waterfront.

INTRODUCTION

More than one-third of the Miami River corridor is a "working waterfront" of over 100 marine businesses. Location is its most important asset, offering high accessibility to major markets, both domestic and international. Within South Florida, the Miami River has relatively little competition as a center for highly varied maritime activities. Individual sectors such as shipping, marinas, and yacht repair may have competition within the region, but no place boasts the variety and concentration of marine services that is found on the Miami River.

OVERVIEW OF THE MARINE INDUSTRY

Structure of the Marine Industry

In the marine industry, the primary functional classifications of marine activity are water-dependent and water-related. Water-dependent refers to operations that are absolutely linked to the water as a generator of business activity, while water-related activities, which do not depend on the water to bring customers or products to their business, often serve establishments that are water-dependent. Examples:

water-dependent	water- related
commercial shipping	marine sales
marinas	boat manufacturing
fisheries	seafood restaurants
ship and boat yards	maritime services
some boat sales	

Within these classifications certain activities primarily serve the needs of commerce and industry, while others serve the recreational public.

industrial/commercial	recreational
commercial shipping	seafood restaurants
marine wholesale	boatyards
shipyards	retail marine sales
boat manufacturing	
fisheries	

Facts and Figures

The following highlights the importance of recreational and industrial/commercial marine activity in Dade County. It provides the background for placing the economic importance of the Miami River into appropriate perspective.

Recreational Marine Activity - Dade County has the highest number of pleasure craft registered of any county in the state of Florida. These 49,360 vessels represent over 7 percent of the state total (Figure 1.1). Figure 1.2 reveals that for larger craft (26 feet and above) Dade County captured a significantly higher share, 12.6 percent of the state total. Despite a substantially slower growth rate for registrations during the period 1984/85 to 1989/90, Dade County was able to achieve an annual rate of growth of 12.5 percent in retail marine sales, slightly above that for the state. Figure 1.3 shows that retail marine sales in Dade accounted for a healthy 14.2 percent of the state total.

Fig. 1.1 All Registered Pleasure Craft 1989/90

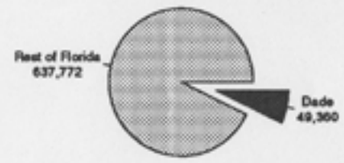


Fig. 1.2 Registered Pleasure Craft over 26 ft. 1989/90

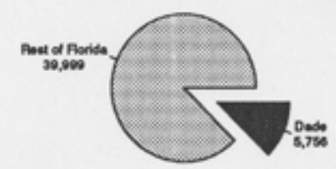


Fig. 1.3 Retail Marine Sales 1989/90

Industrial and Commercial Marine Activity - Miami's shipping industry (including the Port of Miami and the Miami River) was ranked eighth in the nation and second in the state in terms of the value of general cargo in 1990. Commercial shipping in Dade County provides a disproportionately large number of jobs relative to state totals. In 1987, employment in marine cargo handling was 2,063, representing 47 percent of the state total.

Another important sector is ship and boat building and repair. With 2,698 employees, Dade County accounts for 16 percent of statewide employment in this sector. During the period from 1980 to 1987, the county registered a 33 percent increase in such employment, three times that for the state. Much of the county's growth was due to the increased production of racing boats in northeast Dade.

Factors Affecting Demand

The level of marine activity is driven by demand which is three-tiered in nature: local, national, and international. In general, marine businesses in the commercial and industrial sectors respond primarily to national and international economic factors, while the recreational boating sector is more strongly affected by local economic conditions.

Nationwide demand for larger recreational craft has been and will be adversely affected by the imposition in 1991 of a 10 percent luxury tax on the sale of new pleasure craft that cost $100,000 or more. Compounding the negative effects of this luxury tax, the nation officially entered a recession that began in August 1990. There is general agreement that the subsequent upturn will be weak. Together, these factors have resulted in a significant decrease in local demand in the recreational boating market, and consequently to lower sales figures and job layoffs, particularly in boat manufacturing. In fact, first quarter boat sales were down 88 percent from the previous year in South Florida.

At the international level, the recent extension of the Caribbean Basin Initiative along with Title 807 has significantly encouraged twin plant operations (particularly in the apparel industry, in which cutting operations are done locally and more labor intensive work - sewing - is done overseas) and boosted trade prospects for South Florida. In addition, President Bush's Enterprise for the Americas Initiative, which seeks to establish a hemispheric free trade zone, augurs well for a substantial increase in South Florida trade with Latin America throughout the 1990's. Finally, the opening of trade relations with Cuba, consequent to a change in government, remains a possibility that would have very significant ramifications on the South Florida economy. All of these factors that lead to possibilities of increased trade will positively impact commercial shipping and allied industries.

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MARINE INDUSTRIES ON THE MIAMI RIVER

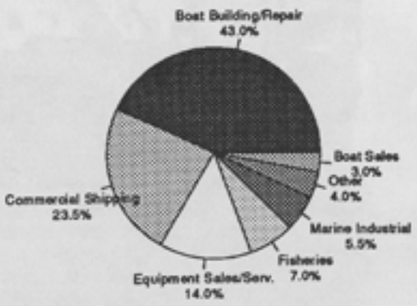
Marine Employment on the Miami River

A conservative estimate of private sector marine employment during the second half of 1990 in the Miami River area is 2,300. While this represents about 25 percent of all marine industry employment in Dade County, the importance of the Miami River to the local economy is far greater than these numbers indicate as:

1. This number does not include the indirect employment effects of the Miami River marine economy on, for example, trucking. If one counted both direct and indirect employment attributable to the Miami River marine economy, the total would be approximately double the 2,300 figure.

2. Certain sectors of the industry, for example, commercial shipping, provide a significant number of jobs for unskilled workers, who are an increasing component of the City of Miami labor force. Further, these jobs in commercial shipping provide wages that are substantially above the minimum wage rate.

Fig.1.4 Miami River Marine Employment



Ship and boat building and repair is the largest source of employment providing just under 1,000 jobs (about half of which are provided by the Bertram yacht manufacturing facility). However, it is commercial shipping with 545 jobs that is the driving force on the river. This is due to the very rapid growth of the industry and the greater degree of linkage with other aspects of the marine economy. For example, an increase in the level of employment in commercial shipping leads to increased business activity and employment in ship repair, sales and service of marine equipment, and other ship's services.

Significant Trends

In order to accurately gauge the economic significance of marine activities in the Miami River area, a survey of 54 marine business firms (exclusive of commercial shippers) in the Miami River corridor was undertaken. Map 1.1 indicates the location of these firms. The following observations should be noted:

1. Four establishments that were in business in 1985 are no longer operating along the Miami River due to relocation, merger, or closing.

2. A downturn in business activity since the spring of 1990 was reported by about 70 percent of marine businesses.

3. Beyond this short-term trend, two distinct long term trends have emerged for Miami River businesses.

   a. Those businesses that tend toward exclusively serving the recreational boating public (not including the large yacht segment) are generally small (under six employees), and many have experienced a contraction in business activity since 1985. In particular, the marinas and small boat yards have, with rare exception, done poorly. Exceptions to this negative tendency are found in those businesses that service a specialized segment of this market and have an established reputation for quality service.

   b. Those establishments that have a significant commercial customer base have done substantially better. In general, these businesses tend to be larger. Fifty percent of the businesses with 6 to 49 employees, that gave an indication of long term trends, stated that the their business has expanded since 1985. The picture for firms with over 50 employees was even brighter. Although expansion referred to sales volume, in many cases employment increased as well, at least through the spring of 1990. An additional factor associated with expansion was significant export activity. Many of the larger firms have the twin advantages of an established reputation and few competitors in the area.

4. In addition to the waterfront location, some establishments cited the transportation advantages of the Miami River area - easy access to the freeways and proximity to the air and sea ports - as a reason for remaining in their current location.

5. In regard to expansion, it should be noted that three businesses (each with at least 25 employees, one of which serves the recreational boating public) have either recently or are in the process of renovating/expanding their facilities. Shipyards, industrial establishments, and businesses involved in the sales and service of marine equipment have generally expanded.

These results are not surprising given the rapid expansion of commercial shipping activity along the Miami River and the greater difficulties that smaller businesses often face in coping with problems such as crime. It would be reasonable to expect that these trends will continue, boding poorly for the existing marinas and small boat yards. Beyond the current recessionary climate, which is likely to continue through much of 1992, the recreational marine business will display weakness as a result of the luxury tax.

Unique Resource

Within Dade County, there is estimated to be only 13.7 acres of undeveloped land with suitable water access and zoning to permit expansion of water-dependent marine businesses. Of that total, 8 acres are located on the Miami River. Given the economic significance of the marine in-

dustry, particularly in terms of the type and number of jobs created, it is important to prevent encroachment upon the limited amount of land available for growth of marine activities in the Miami River area.

Within unincorporated Dade County, there is competition for land by airport-related growth and other non-water-dependent businesses. The existing water-dependent uses along the Miami Canal and the Tamiami Canal should be protected by a waterfront industrial zoning district. Within the City of Miami, the existing "SD-4 Waterfront Industrial" zoning district reserves roughly 32 percent of the linear shoreline of the river for use by marine industries (see pages 1.12 - 1.13).

RECOMMENDATIONS

Objective:

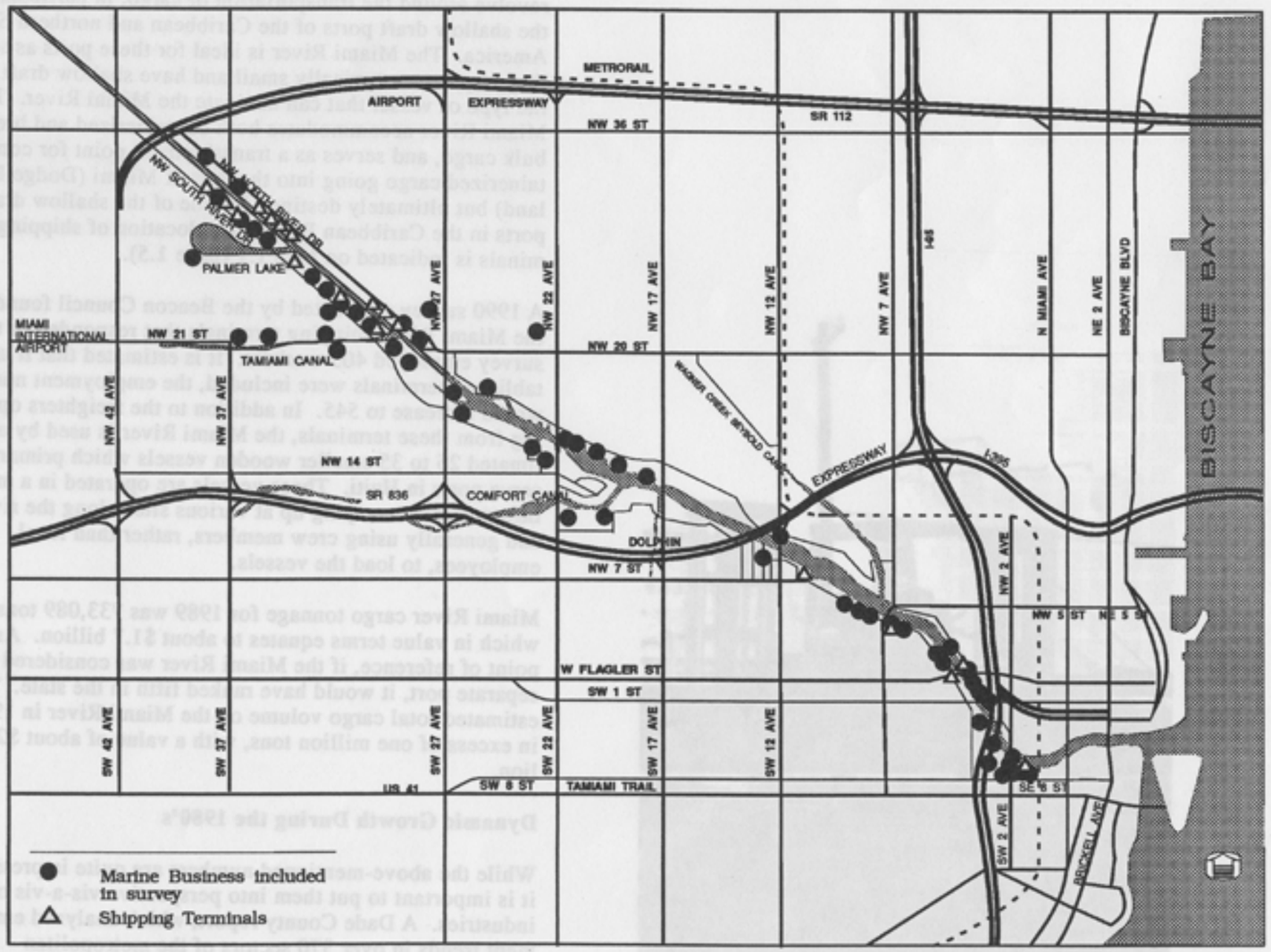
1.1 Reserve the limited amount of waterfront land available for expansion of marine industries.

Policies:

1.1.1 Retain and enforce the requirement for water-dependent and water-related uses within areas currently designated SD-4 in the City of Miami.

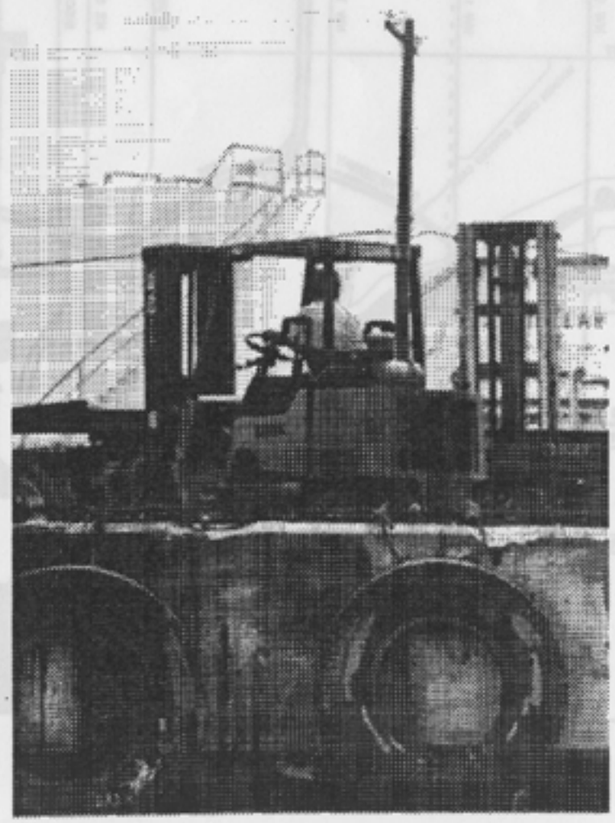
1.1.2 Preserve riverfront land located west of NW 27th Avenue for expansion of shipping terminals and other marine industries by encouraging Metro-Dade County to expeditiously adopt a water-dependent use zoning district along the Miami Canal and Tamiami Canal, consistent with the Metropolitan Dade County Comprehensive Plan.

1.1.3 Encourage use of publicly owned lands along the Miami River for activities that require a waterfront location.



Map 1.1 Location of Marine Industries

COMMERCIAL SHIPPING



Commercial activities on the Miami River essentially revolve around the transportation of cargo, in particular to the shallow draft ports of the Caribbean and northern South America. The Miami River is ideal for these ports as ships they require are typically small and have shallow draft, just the type of vessel that can navigate the Miami River. The Miami River accommodates both containerized and break bulk cargo, and serves as a transshipment point for containerized cargo going into the Port of Miami (Dodge Island) but ultimately destined for one of the shallow draft ports in the Caribbean Basin. The location of shipping terminals is indicated on Map 1.1 (page 1.5).

A 1990 survey conducted by the Beacon Council found that the Miami River shipping terminals that responded to the survey employed 403 workers. It is estimated that if all established terminals were included, the employment number would increase to 545. In addition to the freighters operating from these terminals, the Miami River is used by an estimated 25 to 35 smaller wooden vessels which primarily serve ports in Haiti. These vessels are operated in a more informal manner, tying up at various sites along the river and generally using crew members, rather than local employees, to load the vessels.

Miami River cargo tonnage for 1989 was 733,089 tons, which in value terms equates to about $1.7 billion. As a point of reference, if the Miami River was considered as a separate port, it would have ranked fifth in the state. The estimated total cargo volume on the Miami River in 1990 is in excess of one million tons, with a value of about $2.3 billion.

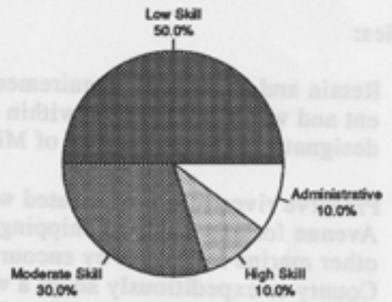
Dynamic Growth During the 1980's

While the above-mentioned numbers are quite impressive, it is important to put them into perspective vis-a-vis other industries. A Dade County report, which analyzed employment trends in over 370 sectors of the metropolitan economy during the 1980-1986 period, concluded that marine cargo handling ranked third in the number of new jobs created after adjusting for the national rate of growth and industrial mix. Interestingly enough, a related sector - trucking - ranked first, while another related sector - bulk petroleum terminals - ranked 39th. While this data pertains to the Dade County economy, it is important to point out that cargo tonnage at the Port of Miami (Dodge Island only) expanded by 13 percent, while tonnage through the Miami River grew by 22 percent. Thus, it appears that the Miami River shippers played a very important role in the dynamic growth of marine cargo handling and related sectors.

Provision of Low Skill Employment

One very important economic aspect of the shipping industry is the provision of low skill employment opportunities with per hour wage rates, in some cases, as high as four times the minimum wage rate. Based on discussion with industry leaders, the occupational structure of commercial shipping on the Miami River is depicted below.

Fig.1.5 Occupational Structure of Commercial Shipping



Approximately 270 low skill jobs (stevedores) are provided by the Miami River shippers. This takes on added importance as the number of workers in the Miami area with limited job skills is increasing (due to such factors as immigration from the Caribbean and Central America) and employment in many other industrial sectors is declining.

Data on the geographic distribution of these jobs by residence of workers, indicate that over 37 percent of the workers resided in the City of Miami from Little Havana to as far north as Liberty City. These workers received on average over $18,500 in annual wages. This equates in hourly wages to more than twice the current minimum wage scale and is almost 25 percent higher than the average hourly earnings of manufacturing workers countywide.

Since shipping on the Miami River is poised for rapid growth during the 1990's, more relatively good paying employment opportunities will be available to the low skill component of the workforce. Also, there is currently a need for trained stevedores to load some of the smaller island freighters (see page 2.10). This presents an opportunity to provide job recruitment and training within City neighborhoods for additional stevedores. Good public transportation service is needed to the terminals west of NW 27th Avenue.

Future Growth Prospects and Constraints

Given the previously mentioned prospects for increased trade with the Caribbean Basin, and that during the 1980's cargo tonnage on the Miami River was doubling every four years, one should expect continued robust performance. However, the Miami River faces certain constraints in regard to expansion of commercial shipping.

Competition from the Port of Dania, the Port of Palm Beach, and Port Manatee (Tampa) has affected the Miami River shippers. In particular, Port Manatee which can accommodate ships with over a 20 foot draft, increasingly poses strong competition for trade with ports west of Cuba, where Miami does not enjoy a locational advantage. A strong marketing and promotion program may help the Miami River terminals increase their share of trade among shallow draft ports.

A binding constraint on the expansion of trade on the Miami River is the sediments which have accumulated in the main shipping channel, making it narrower and shallower. Large vessels can pass only at high tide, limiting the number of trips per day and the amount of cargo that may be loaded to about 80 percent of capacity. More alarming is the U.S. Army Corps of Engineers calculation that vessel maneuvering width will continue to decrease an average of one foot per year throughout the length of the Miami River. Without dredging, larger cargo vessels will be forced to cease operation on the river within the next five to ten years, jeopardizing the economic feasibility of the river's shipping industry.

Although much of the anticipated growth in the shipping industry can be accommodated by more efficient use of existing terminals and cargo vessels, there will inevitably be new entrepreneurs seeking to open additional shipping terminals along the Miami River. There are approximately 8 acres of vacant or undeveloped land along the river that could be converted to terminal use without a change of zoning. Roughly 38 additional acres could be obtained by displacement of existing marginal businesses. However, some of this land is not appropriate for shipping terminals and other industrial uses because it is adjacent to residential neighborhoods. As discussed on pages 1.12 - 1.13, the "SD-4, Waterfront Industrial" zoning district should be subdivided into two categories, allowing expansion of shipping terminals wherever they can operate safely and conveniently without disruption to residential neighborhoods.

Other noteworthy issues affecting future growth of shipping on the river are navigational constraints posed by bridges and highway access for trucks carrying cargo to and from the terminals (see pages 2.6 - 2.9).

RECOMMENDATIONS

Objective:

1.2 Support growth in the shipping industry on the Miami River in terms of increasing employment and value of cargo.

Policies:

1.2.1 Support environmentally safe dredging of the Miami River by the U.S. Army Corps of Engineers by 1994 to remove sediments which impair navigation by cargo vessels.

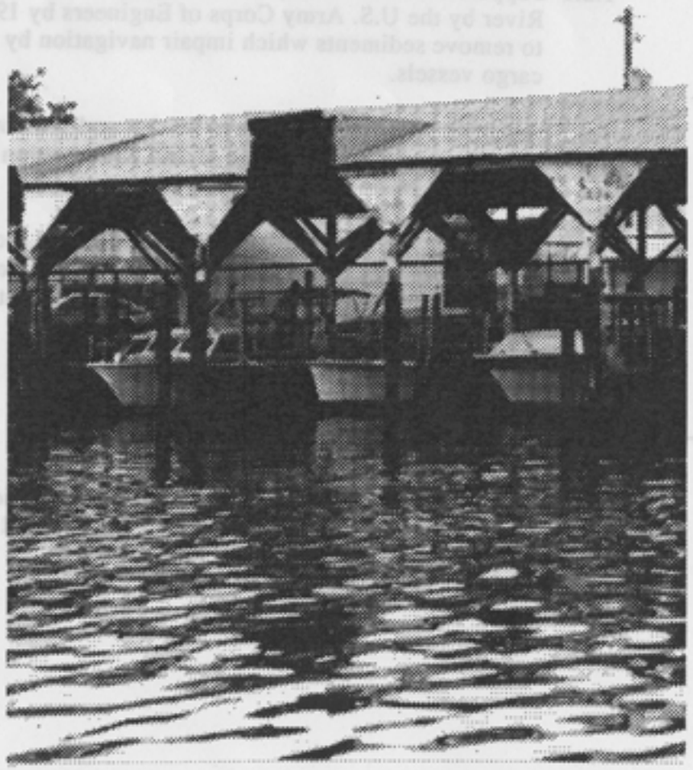
1.2.2 Establish a unified program to market and promote shipping terminals along the Miami River within the Caribbean Basin marketplace.

1.2.3 Encourage expansion of shipping terminals in locations where they can operate safely and conveniently, without negative impacts on adjacent residential neighborhoods.

1.2.4 Provide improved bus or jitney service in the vicinity of shipping terminals to provide accessibility to jobs for City residents.

1.2.5 Provide job recruitment and training opportunities for the additional stevedores that will be needed by Miami River shippers.

MARINAS AND BOATYARDS



In terms of formal marina activity, the Miami River is home to approximately 650 wet slips, of which over 500 are commercial in nature. The remainder are at two condominium complexes. The commercial wet slips are divided almost equally between facilities which provide boat repair services and those which serve exclusively as marinas. On the river there are essentially two types of boat repair establishments. First, there are the larger integrated facilities like Richard Bertram and Allied Marine which provide sales, repair and storage services for yachts. These larger facilities provide about 160 jobs. Secondly, there are the smaller and intermediate-sized boatyards which provide about 140 jobs.

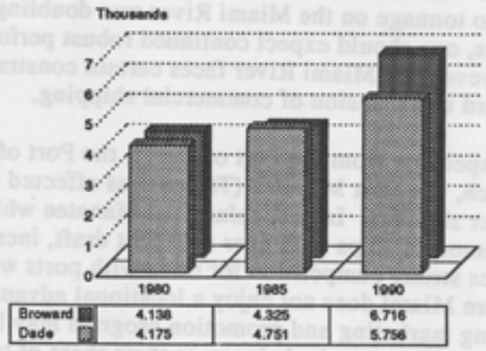
Problems Facing Small Boatyards and Marinas

While there are a number of boat repair facilities that have a growing business, many of the marinas and small boatyards (under 10 employees) on the Miami River have experienced a contraction in business activity since 1985. In fact, four of the 26 small boatyards and marinas identified in 1985 by the draft Biscayne Bay Aquatic Preserve Management Plan, are no longer in business nor have they been replaced by a marine business.

One factor affecting this decline has been the rapid expansion of competing facilities in Broward County. A comparison of boat registration data shows that ownership of larger pleasure craft (26 feet and above) increased much more rapidly in Broward County than in Dade County during the 1980's (Figure 1.6). The 1989/90 retail marine sales in Broward were almost twice that of Dade County. The data are indicative of the trends which began during the 1970's, wherein Ft. Lauderdale developed into a major yachting center with modern boatyards and marinas, as well as marine retail facilities. The widespread opinion among persons in the marine industry is that much of Broward's growth in business came from customers in Dade County.

The owners of establishments that were surveyed for this planning study suggested additional reasons for the decline in marina and smaller boatyard business. Crime and perception of crime are believed to be a major problem. Also, difficulties in the permitting process for repair and small expansions, in particular with DERM; and high cost factors including taxes, insurance and high workman's compensation rates were frequently cited problems. Further, it was mentioned that marinas on the river face competition from more modern facilities which offer greater amenities and do not suffer from a "bad image." The problems for marinas and small boatyards have been deepened by the recessionary climate which has hit the boating industry rather hard. Further, the reputation of the river as a hurricane sanctuary was undermined as a result of statements by the South Florida Water Management District (later retracted) regarding the potential of a wall of flood water being released into the Miami River from the Everglades drainage structures. This resulted in an estimated loss of $46,000 in marina revenue during the 1990 hurricane season. In fact, the Miami River is one of the safer harbors in Dade County for vessels properly moored to withstand storm conditions.

Fig.1.6 Growth in Pleasure Craft Registration (over 26 ft.)



Biscayne National Park (effective December, 1991) will hurt the industry. In addition the lack of mooring space for fishing boats, cost factors (including land price and narrow margins) have negative impacts on future viability. Although the local fishing industry will continue to change, it is important to retain a portion of it on the Miami River, both for the jobs it creates and the authentic character it lends to the working waterfront. In addition to mooring and storage space throughout the entire length of the river, there should be places within the "Riverside Market" district where fishermen could sell directly to the public.

RECOMMENDATIONS

Objective:

1.4 Preserve the fishing industry along the Miami River.

Policies:

1.4.1 Encourage existing fish houses to adapt to urban revitalization efforts in surrounding neighborhoods by opening retail outlets and/or restaurants and outdoor cafes. Permit reduced parking or off-site parking within 600 feet of these business establishments.

1.4.2 Encourage public and private property owners to provide mooring space for fishing vessels. Designate locations where fishermen would be encouraged to sell seafood to the public.

Land Values

One issue which directly affects the continued viability of marinas and small boatyards, as well as other businesses along the Miami River, is that of increasing land values and the concomitant increase in property taxes. Clearly this has been the case in the Downtown portion of the river and has resulted in the displacement of marine businesses with office buildings. From this experience some have suggested that "blue-belting", which involves restricting the assessed value of waterfront property to its value in its present use, would be an appropriate remedy.

In order to accurately assess the potential benefits of blue-belting, an analysis was performed of assessed property values for all riverfront parcels (excluding the Downtown section). Average assessed land valuations per square foot for riverfront parcels increased by 109 percent during the period from 1980 to 1990. While this increase is substantial, it is much less than the 182 percent average increase experienced by all properties in the City of Miami (excluding downtown) for the period 1979 to 1989. This suggests that assessments on riverfront businesses were not artificially inflated by speculation on changes to "higher" uses; therefore, blue-belting would not have been helpful. Furthermore, the existing "SD-4 Waterfront Industrial" zoning district prohibits property from being used for anything other than water-dependent and water-related marine uses. Since state law requires the tax assessor to consider zoning restrictions in determining the value of property, in effect, this acts like blue-belting.

One factor that may lead to disproportionate increases in riverfront land value is the anticipated growth in commercial shipping. If trade with Cuba should open up, the demand for riverfront property could dramatically increase. In order to mitigate the impact of such a situation upon assessed valuations for other businesses, the separation of marine industrial from marine commercial uses is suggested on pages 1.12 - 1.13.

Growth Prospects and Constraints

Demand for marina slips in Dade County is projected to increase by about 700 by the year 2005 (updates from 1984 DNR projection). The location of new slips will be limited by countywide environmental regulations (see pages 3.12 - 3.13), and it is not yet known whether the Miami River will be a place where permits for new slips can be obtained. Since many of the existing commercial slips on the Miami River are in poor condition, a primary issue is under what circumstances would it be economically viable to upgrade these facilities. One possible inducement, as is indicated in Policy 1.3.2, is to permit a limited amount of mixed-use development to supplement the marina income. Another remedy is to overcome the shortage of land available to meet minimum parking requirements by permitting off-site parking.

The available sites for expansion in boatyard services in Dade County are even more limited than marina sites due to zoning restrictions on this type of heavy commercial/industrial use. Thus, it is important to encourage and facilitate the continued operation and expansion of these businesses on the Miami River. The location of new marina slips within easy access to Miami River boatyards is one way to reinforce this industry.

Virtually all of the land along the Miami River is located in a state Enterprise Zone. However, few businesses take advantage of the tax incentives available in the Zone, either because they are not aware of them or because they fear the difficulty of qualifying for tax incentives may outweigh the benefits. Technical assistance should be provided through the Beacon Council or another appropriate agency.

RECOMMENDATIONS

Objective:

1.3 Preserve the marine repair, service, equipment and related industries along the Miami River that are vital to the shipping industry or the recreational boating industry.

Policies:

1.3.1 Protect boatyards and related marine businesses from displacement by higher land value uses by adopting separate "marine industrial" and "marine commercial" zoning district classifications.

1.3.2 Expand the income producing potential of marine commercial properties by modifying the zoning district regulations to permit limited non-water-dependent uses such as restaurants or apartments, while retaining requirements for water-dependent use as a principal use. Permit off-site parking within 600 feet of these business establishments.

1.3.3 Expand the local market for recreational boating services provided by Miami River establishments by supporting plans for a megayacht marina and general marina expansion on Watson Island.

1.3.4 Encourage existing businesses to improve their facilities by simplifying the permit procedures and requirements for maintenance, repair and minor improvements.

1.3.5 Provide assistance to small businesses for filing applications for financial assistance and waterfront construction permits.

b. Existing shipping terminals, marine contractors, commercial shipyards, towing and salvage companies and other industrial-type businesses are recommended for the SD-4.2 classification, except where there is a conflict with other criteria. In the few cases where an existing business would become a nonconforming use, that business would be "grandfathered", i.e. it would be allowed to remain in its location but could not expand.

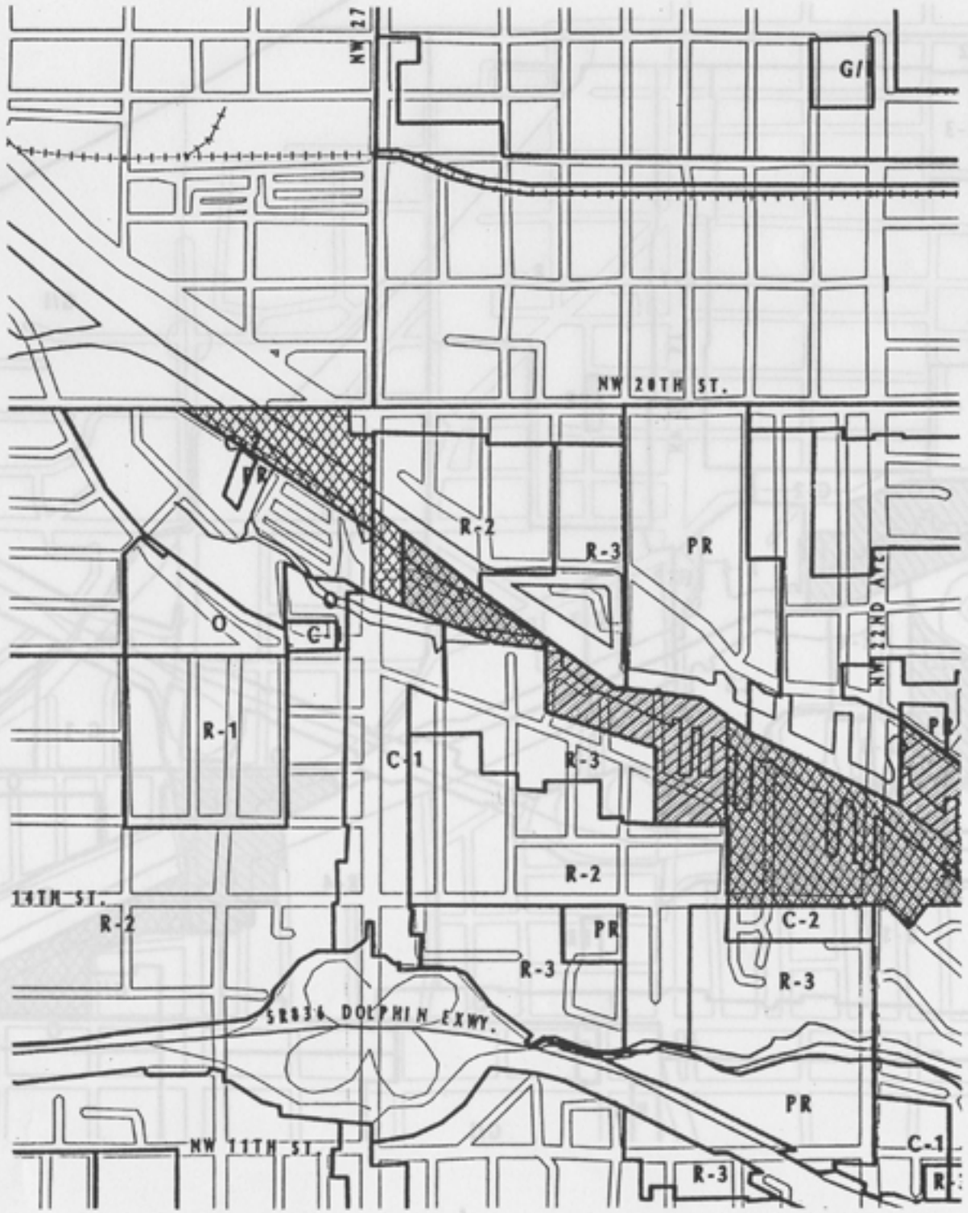
c. Existing marinas, boatyards, fish houses and marine sales and service businesses oriented to fishing and recreational boating are usually recommended to be placed in the commercial category due to the economic considerations discussed in #2 above.

d. The segments of riverfront in East Little Havana and Lummus Park that are priorities for public/private redevelopment are recommended for the commercial classification in order to permit mixed-use development.

In addition to the SD-4.1 and SD-4.2 zoning designations recommended on Maps 1.2 - 1.5, there are a few other areas of the riverfront that could be suitable for shipping terminals or other water-dependent uses, as temporary or "interim" uses until the real estate market can support the intended long-term use. These areas are not shown on the maps because it is not intended for the City to initiate their rezoning. However, if the owner should wish to apply for rezoning, the City should evaluate the potential impacts, especially related to criteria "a" above. One such example is the area between the Miami Avenue bridge and the SW 2nd Avenue bridge. This area is currently industrial in character and is conveniently close to the mouth of the river.

RECOMMENDATIONS

See policies 1.1.1, 1.2.3, 1.3.1, 1.3.2, and 1.4.1.



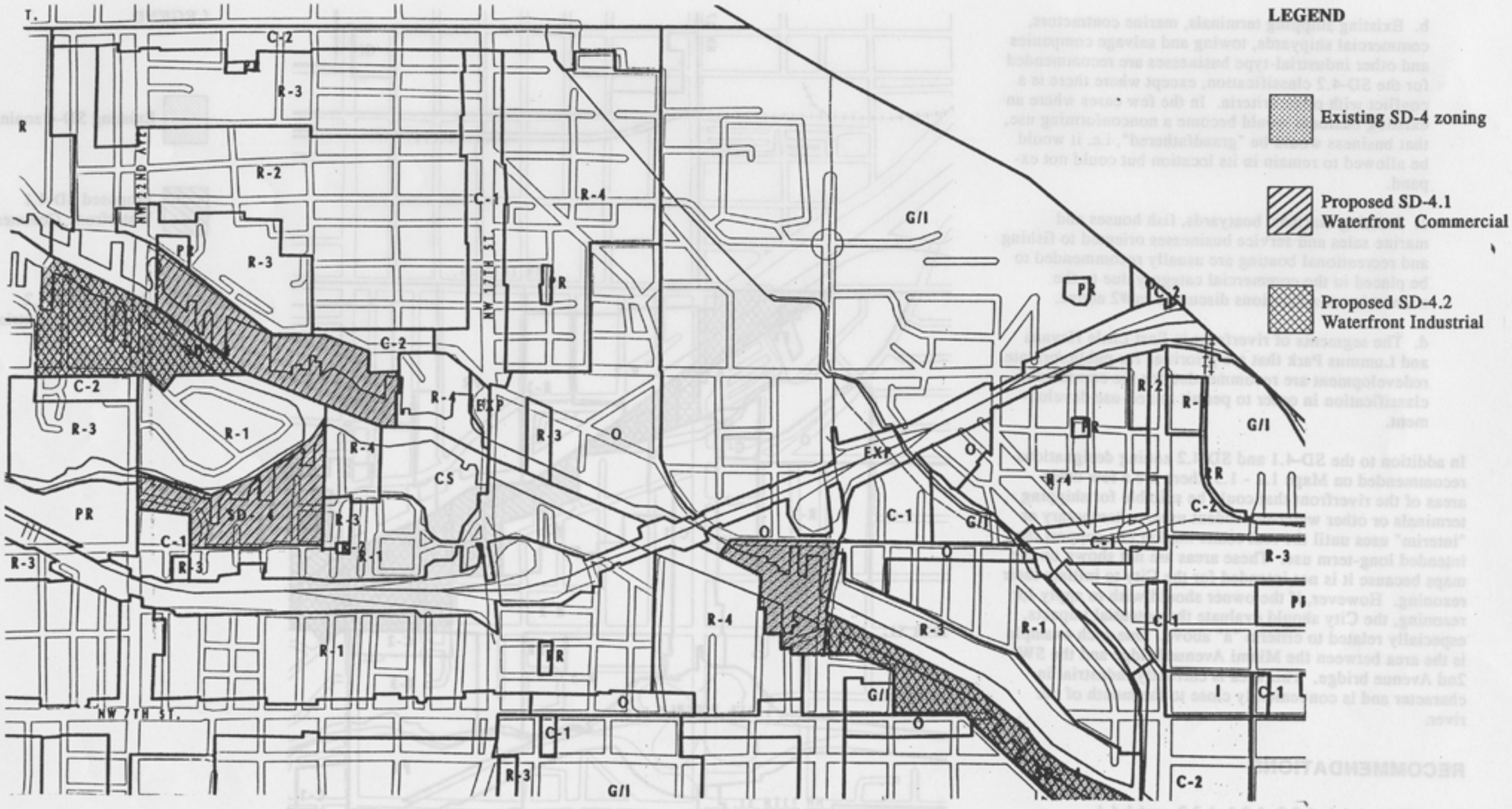
LEGEND

Existing SD-4 zoning

Proposed SD-4.1 Waterfront Commercial

Proposed SD-4.2 Waterfront Industrial

WATER FRONT INDUSTRIAL ZONING



LEGEND

Existing SD-4 zoning

Proposed SD-4.1
Waterfront Commercial

Proposed SD-4.2
Waterfront Industrial

CHAPTER 2: RIVER MANAGEMENT

GOAL: Upgrade the image, safety and security of the river.

INTRODUCTION

The Miami River has been called "lawless", "lusty", "chaotic" and "unruly". To a certain extent, this image has been an asset - allowing the growth of marine industries, discouraging the kind of development that would price marine industries out of the market, and providing an intriguing character to the river that is endearing to those who know it. However, with the growth and maturity of the urban area during the past decade, the need has grown to better manage certain aspects of the river.

Over thirty different agencies of federal, state, county, city and special district government have some element of jurisdiction on the Miami River. Efforts to coordinate these agencies have been successful, but there is room for improvement. Enforcement is the key. An agency with umbrella authority over river enforcement may be the ultimate solution.

SECURITY

Crime - both the perception and the reality - is a high priority concern on the Miami River. There are multiple aspects to the crime problem.

The International Border

Vessels of all types are free to enter and leave the Miami River at will. Law enforcement agencies generally concede that some vessels are able to unload contraband cargo (especially drugs) and illegal aliens without detection, especially during night time hours.

Since 1987, the U.S. Customs Service has increased its Miami River Enforcement Team from 3 to 12 persons; thereby enabling it to check approximately 70% of all inbound vessels and 98% of all targeted inbound vessels for contraband cargo. This has greatly reduced the amount of illegal cargo unloaded on the Miami River.

The export of stolen goods by vessels on the Miami River is a more difficult problem to solve. Bicycles and household goods, which seem to represent the greatest volume of stolen merchandise, cannot be easily documented. Investigating and successfully prosecuting this activity requires a disproportionate amount of manpower from local law enforcement agencies that are already overburdened with more serious crimes. U.S. Customs agents may assist local police to search vessels for stolen merchandise, but cannot enforce state and local laws. An efficient means of identifying stolen bicycles is needed, as well as more effective penalties for dealing in stolen merchandise.

These enforcement efforts should be enhanced by establishing an official inspection station, where all incoming and outgoing cargo vessels would be required to dock temporarily for clearance on cargo (as well as navigational safety and environmental compliance checks). A less effective alternative would be to establish a monitoring station at the mouth of the river, where the movement of vessels into and out of the river would be communicated to all appropriate law enforcement agencies. This responsibility could be assigned to the bridge tender at the Brickell Bridge (with proper training and management) at minimal added cost to the public.

Domestic Crime

Crime along the river is perceived by some businesses to be a major problem and a deterrent to successful business operations. Businesses that are oriented to the recreational boating public are more sensitive to this problem than others. Small businesses are more negatively affected than large businesses which typically employ private security guards.

The type and frequency of crime along the Miami River is largely related to the situation in adjacent neighborhoods, with some neighborhoods (e.g. East Little Havana) having a higher crime rate than others. Typical crimes are burglary, auto theft, drug sales and larceny (includes theft from a vehicle, shop lifting, purse-snatching, etc.). There are some types of crime, however, that are uniquely related to the waterfront, such as theft using a boat as a means of transportation, and theft of bicycles, household goods and motor vehicles from adjacent neighborhoods to supply foreign vessels with goods for export to the Caribbean.

Law Enforcement

The general increase in crime throughout the urban area has forced local government to reallocate police manpower. The frequency of marine patrol service on the Miami River has dropped to less than 2 hours per day by the City of Miami and none by Metro-Dade County. Police service is principally provided by land-side patrol cars that cover entire neighborhoods. The special aspects of crime on the river have been addressed by multi-agency task forces that concentrate on the river for a period of several months, then move on to other duties.

The need for increased police patrol, especially during night time hours, has been identified as a major priority by

a number of businessmen and citizens along the Miami River. The City of Miami Police Department prepared an analysis of the cost and benefits of alternative levels of staffing for a special Miami River police patrol service, over and above the existing level of service provided by the Department. The alternatives were evaluated on criteria of efficiency, visibility, cost, implementation time, ability to enforce environmental laws, and ability to enforce navigation laws. (The complete analysis is contained in Appendix B of this report.) The recommended alternative would provide the following:

- Seven days a week coverage from 9 PM to 7 AM
- 2 Two-officer shore patrol units (north and south river banks)
- 1 Two-officer marine patrol unit
- Annual cost (personnel and equipment): $416,100

The cost of this or any other extra police service would require special funding. Some alternatives include a special taxing district, user fees, and contributions from other governmental entities that would be assisted with manpower (e.g. U.S. Coast Guard). An alternative approach to funding would be to allocate a portion of additional revenue that would likely be generated for the City as a direct result of this increased law enforcement effort, e.g. civil fines and seizures of boats, cargo and other valuable property related to illicit activity.

RECOMMENDATIONS

Objective:

2.1 Reduce crime and the perception of crime along the Miami River.

Policies:

2.1.1 Increase police patrol (marine and shore), especially during night time hours, with a dedicated source of funding.

2.1.2 Increase the frequency of inspections of cargo on outbound vessels by local police units, if available (see Policy 2.1.1 above), with assistance from U.S. Customs agents.

2.1.3 Deter the import/export of contraband and stolen merchandise by requiring the agent or owner of commercial vessels to post a bond (suggested $50,000) that would be forfeited if illegal goods are found on the vessel.

2.1.4 Restrict the sale/purchase of stolen property for export on foreign vessels by requiring such businesses to be licensed as pawn brokers.

2.1.5 Assist law enforcement officials to identify and prosecute stolen bicycle cases by requiring countywide registration of bicycles.

2.1.6 Discourage the importation of drugs, illegal aliens and other contraband and the exportation of stolen merchandise by establishing an inspection station or a monitoring/communications station near the mouth of the river.

DERELICT VESSELS

Vessels of all types and size are sometimes abandoned by their owners in public waterways because the cost of maintenance and storage of an aging vessel frequently exceeds its value. Whether or not these vessels are seaworthy at the time of abandonment, they quickly deteriorate into "derelict" condition, causing a variety of problems including safety and navigation hazards, environmental damage from leaking fuel and other pollutants, infestation of rats, breeding of mosquitoes, and unsightly conditions that degrade scenic resources and property values.

In a 1985 survey of the Miami River and its tributaries, a total of 30 derelict vessels were inventoried. As a result of coordinated efforts of federal, state and local agencies, the number of cases has been dramatically reduced. Both the City and the County adopted vessel mooring codes which added to the already existing state and federal laws. The state initiated a grant program through the Department of Natural Resources (DNR) to assist local governments with the cost of removal of derelict vessels.

However, there is still a need for improvement in the regulations concerning derelict vessels, in order to reduce the time required for public agencies to remove derelict vessels and to shift the financial burden more to the vessel owners than to the taxpayers. To expedite derelict vessel removal, state funds should be increased to $500,000 per year and a trust fund should be established using bonds, penalties or user fees. The existing DNR grant program should be streamlined by providing each participating local government a lump sum grant allocation and blanket authorization to process all derelict vessel cases until the funds are exhausted, rather than requiring individual grant applications for each individual vessel.

Vessel owners occasionally avoid financial liability or criminal charges by removing all identification from a vessel or by arranging a bogus sale to an unidentifiable third party. Foreign flag vessels present special legal hurdles when they are abandoned; and there is no practical way to recover the disposition costs incurred by the public sector.

RECOMMENDATIONS

Objective:

2.2 Expedite the removal of derelict vessels.

Policies:

2.2.1 Amend the county code to authorize local officials to dispose of abandoned vessels in accordance with Section 705, Florida Statutes, entitled "Lost or Abandoned Property".

2.2.2 Amend the county code to permit enforcement of abandoned and derelict vessel violations under the Chapter 8CC Code Enforcement procedures.

2.2.3 Amend state law to require all vessels and barges to be registered, including houseboats.

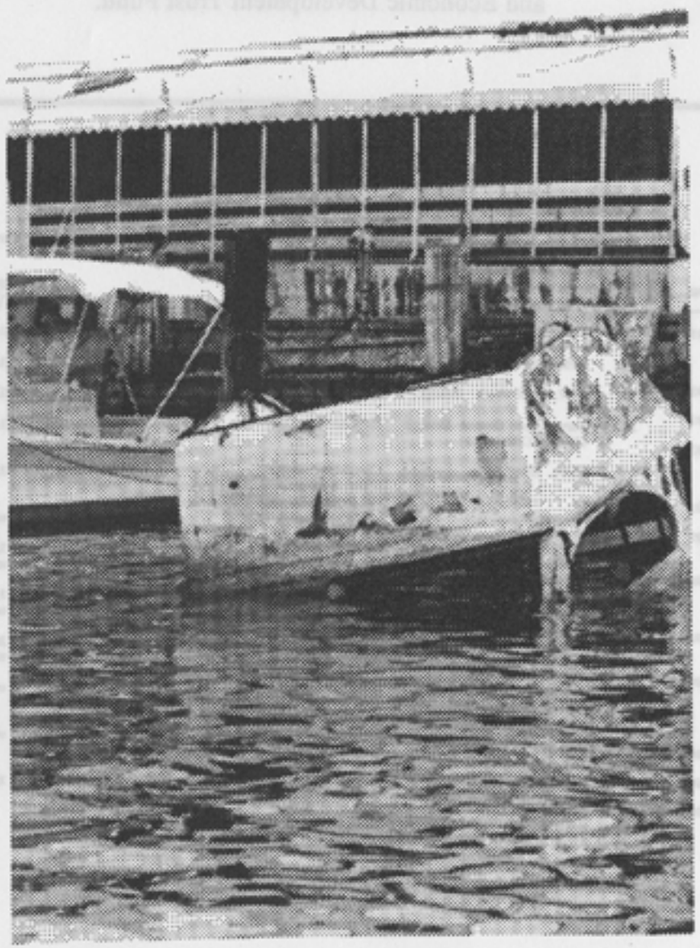
2.2.4 Amend state law to make the registered owner of a boat legally responsible for the vessel until DNR receives a bill of sale and application for transfer of title and registration to a new owner.

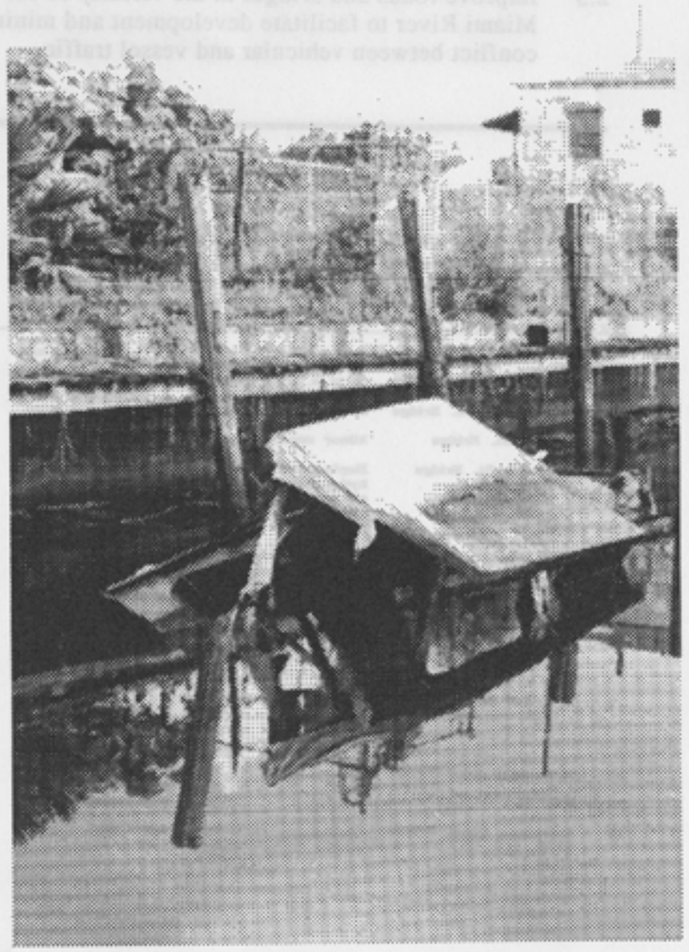
2.2.5 Increase funding and streamline the existing DNR grant program for removing derelict vessels.

2.2.6 Require all foreign flag commercial vessels to post a bond or other form of financial responsibility to cover the cost of removal of the vessel if it becomes derelict or abandoned.

2.2.7 Encourage private owners to donate suitable vessels to the artificial reef program, rather than to abandon vessels at inappropriate locations.

2.2.8 Require mooring facility operators to notify DERM when a vessel is abandoned or becomes derelict at their facility, and authorize operators to remove vessels after proper notice to the owner of record.





TRANSPORTATION

As the metropolitan area grows and matures, there are ever changing demands on roads and bridges. Access to properties along Miami River is vital to the economic survival of many businesses, especially shipping terminals and fisheries which need convenient access to the regional expressway system, the airport and the seaport to transport products by truck.

Approved Projects

The official Dade County Transportation Improvement Plan includes street improvement projects that will affect access to the Miami River, both short-range and long-range (see Tables 2-A and 2-B and Map 2.1). Projects with construction scheduled through 1994 have funding committed. Other future projects may be subject to delay or cancellation if funding is not available.

Within the City of Miami, North and South River Drives (#23) are local streets, not subject to the transportation planning and funding programs of the county and state. In many areas, these streets are in need of reconstruction, but funds are not currently available. The City relies on general obligation bonds for highway improvements, except where Community Development Block Grant funds or redevelopment district funds can be obtained.

Airport Access Plans

A significant group of transportation projects have been conceived for the purpose of improving access to the Miami International Airport (#17 - 22). Without these improvements, projected growth in airport traffic will severely congest expressways and arterial streets used by trucks that carry cargo to the concentration of shipping terminals located west of NW 27th Avenue. The shipping industry should actively support funding and implementation of these projects. If the Miami River shipping terminals are organized into an official seaport (see pages 2.12 - 2.13), funding to assist with these highway access improvements could be obtained from bonding authority or a special state grant program entitled, "Florida Seaport Transportation and Economic Development Trust Fund".

RECOMMENDATIONS

Objective :

2.3 Improve roads and bridges in the vicinity of the Miami River to facilitate development and minimize conflict between vehicular and vessel traffic.

Policies:

2.3.1 Improve expressway and arterial roadway access to the riverfront to facilitate movement of cargo by truck.

2.3.2 Obtain funding for road and bridge improvements that benefit shipping terminals through seaport bonding authority and the Florida Seaport Transportation and Economic Development Trust Fund.

TABLE 2-A: SHORT-RANGE TRANSPORTATION IMPROVEMENTS

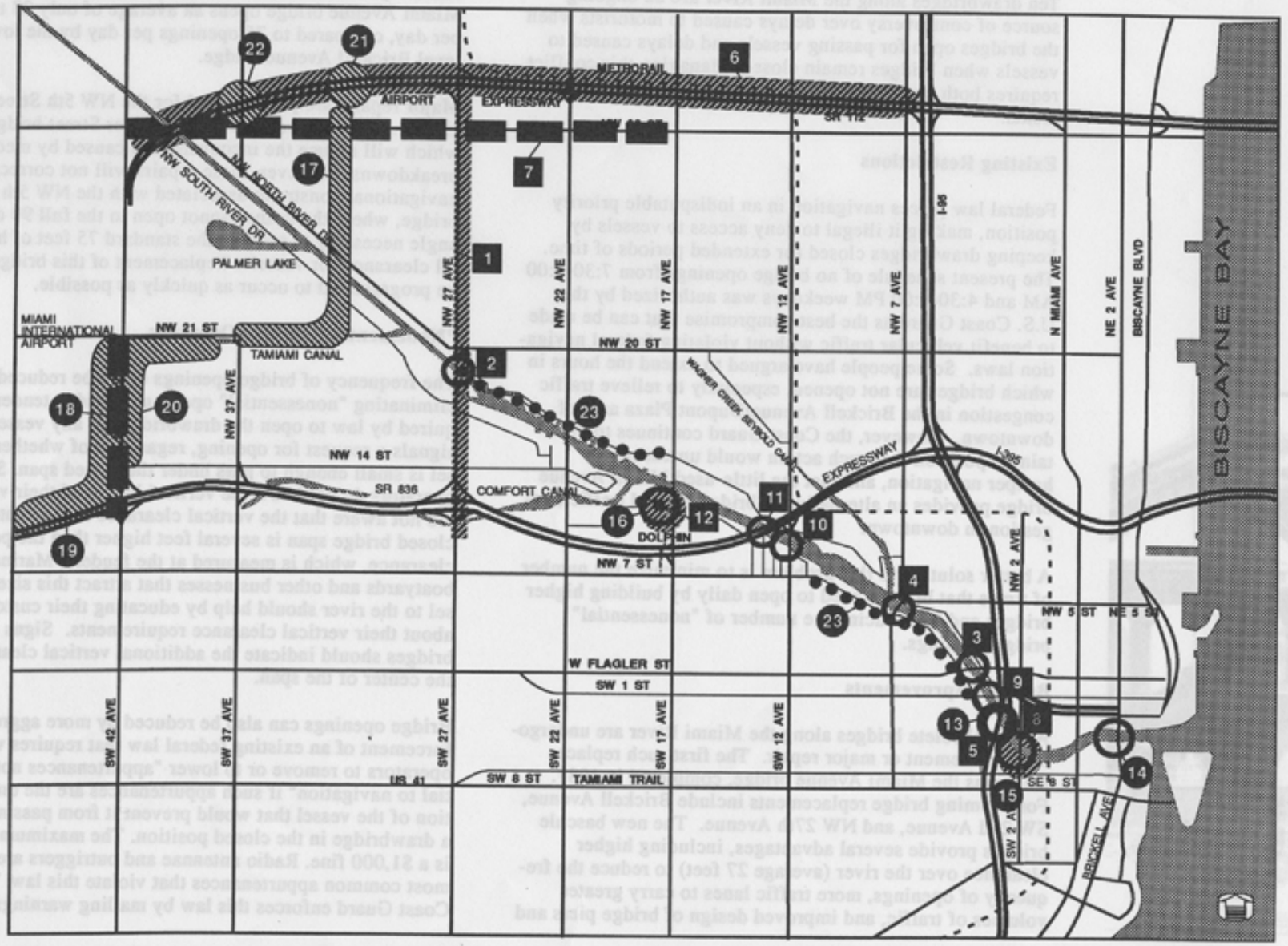
Funding programmed in Transportation Improvement Program (County/State)

Map Key	Project Title	Description	Funding Type	Funding Year
1	N.W. 27th Avenue	Add 2 lanes to existing 4 lanes (N.W. 11th St. to N.W. 42nd St.)	construction	1990-91
2	N.W. 27th Ave. Bridge	Bridge replacement	construction	1990-91
3	Flagler St. Bridge	Minor repair	construction	1990-91
4	N.W. 5th St. Bridge	Replace structural members; hydraulic and electrical systems; lighting; painting	construction	1990-91
5	I-95 Bridge	Minor repair	construction	1990-91
6	S.R. 112/Airport Expy	Corridor study from I-95 to Okeechobee Rd.	PE	1990-92
7	N.W. 36th Street	R/W acquisition (add 1 thru lane from N.W. 17th Ave. to S.R. 112 off-ramp)	PE and R/W	1990-92
8	S.W. 2nd Ave. Bridge	Preliminary engineering; R/W acquisition	PE and R/W	1990-92
9	S.W. 1st St. Bridge	Fender work; replace structural members; hydraulic and electrical systems; lighting; painting	construction	1991-92
10	N.W. 12th Ave. Bridge	Fender work	construction	1991-92
11	S.R. 836 Bridge	Painting	construction	1991-92
12	Lawrence Canal Bridge (N.W. 11th St.)	Preliminary engineering for bridge replacement	PE	1991-92

TABLE 2-B: MID-RANGE AND LONG-RANGE TRANSPORTATION PROJECTS

Proposed in Transportation Improvement Program for funding in FY 1992-93 thru FY 1994-95 or no funding identified

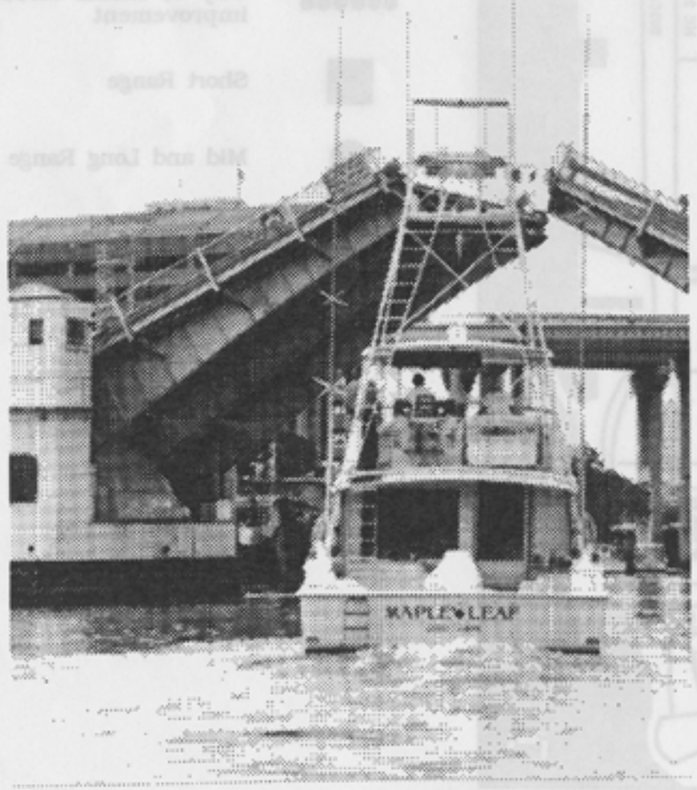
Map Key	Project Title	Description	Funding Type	Funding Year
13	I-95 Bridge	Painting	construction	1992-93
14	Brickell Ave. Bridge	Replace bridge	construction	1993-94
15	S.W. 2nd Ave. Bridge	Replace bridge	construction	1993-94
16	Lawrence Canal Bridge (N.W. 11th St.)	Replace bridge	construction	1994-95
17	N.W. 32nd/37th Avenue	Corridor study	PDE	1993-94
		New 4-lane arterial road and Miami River bridge construction	unfunded	unfunded
18	S.R. 836 connector ramps to Airport	R/W acquisition	R/W	1994-95
		Construction	unfunded	unfunded
19	S.R. 836/Airport Connector	New direct ramp connection	PE	1992-94
		Construction	unfunded	unfunded
20	Lejeune Rd. ramp to N.W. 21 St	New direct ramp connection	PE	1993-94
		Construction	unfunded	unfunded
21	S.R. 112/N.W. 32nd Ave Ramps	New eastbound on-ramp and new westbound off-ramp	unfunded	unfunded
22	S.R. 112/N.W. 37th Ave Ramps	New eastbound on-ramp and new westbound off-ramp	unfunded	unfunded
23	North River Drive/ South River Drive	Reconstruction, reparing and intersection improvements	City of Miami highway bonds	1991-95



Short, Mid and Long Range Transportation Improvements

- Right-of-way acquisition
- Street widening
- Bridge replacement or repair
- City of Miami street improvement
- Short Range
- Mid and Long Range

BRIDGES AND TUNNELS



Ten drawbridges along the Miami River are an ongoing source of controversy over delays caused to motorists when the bridges open for passing vessels and delays caused to vessels when bridges remain closed. Managing this conflict requires both operational and physical facility improvements.

Existing Restrictions

Federal law places navigation in an indisputable priority position, making it illegal to deny access to vessels by keeping drawbridges closed for extended periods of time. The present schedule of no bridge openings from 7:30-9:00 AM and 4:30-6:00 PM weekdays was authorized by the U.S. Coast Guard as the best compromise that can be made to benefit vehicular traffic without violating federal navigation laws. Some people have argued to extend the hours in which bridges are not opened, especially to relieve traffic congestion in the Brickell Avenue/Dupont Plaza area of downtown. However, the Coast Guard continues to maintain its position that such action would unreasonably hamper navigation, and that the little-used Miami Avenue bridge provides an alternative to bridge-related traffic congestion in downtown.

A better solution to this problem is to minimize the number of times that bridges need to open daily by building higher bridges and by reducing the number of "nonessential" bridge openings.

Bridge Improvements

Aging, obsolete bridges along the Miami River are undergoing replacement or major repair. The first such replacement was the Miami Avenue bridge, completed in 1987. Forthcoming bridge replacements include Brickell Avenue, SW 2nd Avenue, and NW 27th Avenue. The new bascule bridges provide several advantages, including higher clearance over the river (average 27 feet) to reduce the frequency of openings, more traffic lanes to carry greater volumes of traffic, and improved design of bridge piers and fender systems to reduce navigational hazards. The new Miami Avenue bridge opens an average of only 23 times per day, compared to 36 openings per day by the lower-level Brickell Avenue bridge.

Major repairs are programmed for the NW 5th Street, NW 12th Avenue, SW 1st Street and Flagler Street bridges, which will reduce the inconvenience caused by mechanical breakdowns. However, these repairs will not correct the navigational constraint associated with the NW 5th Street bridge, where the spans cannot open to the full 90 degree angle necessary to provide the standard 75 feet of horizontal clearance for vessels. Replacement of this bridge should be programmed to occur as quickly as possible.

"Nonessential" Bridge Openings

The frequency of bridge openings could be reduced by eliminating "nonessential" openings. Bridge tenders are required by law to open the drawbridge for any vessel that signals a request for opening, regardless of whether the vessel is small enough to pass under the closed span. Some operators do not know the vertical height of their vessel or are not aware that the vertical clearance at the center of the closed bridge span is several feet higher than the posted clearance, which is measured at the fenders. Marinas, boatyards and other businesses that attract this size of vessel to the river should help by educating their customers about their vertical clearance requirements. Signs on the bridges should indicate the additional vertical clearance at the center of the span.

Bridge openings can also be reduced by more aggressive enforcement of an existing federal law that requires vessel operators to remove or to lower "appurtenances not essential to navigation" if such appurtenances are the only portion of the vessel that would prevent it from passing under a drawbridge in the closed position. The maximum penalty is a $1,000 fine. Radio antennae and outriggers are the most common appurtenances that violate this law. The U.S. Coast Guard enforces this law by mailing warnings and

citations to vessel owners, based upon reports filed by bridge tenders. The effectiveness of enforcement efforts could be greatly enhanced by installing video cameras at one or more bridges to accurately record violations. Another method, used by Ft. Lauderdale, is to authorize local marine patrol officers to issue citations on the spot.

Enforcement of nonessential bridge opening laws may have negative consequences for marinas and boatyards on the Miami River if the inconvenience of removing or lowering nonessential appurtenances causes their customers to move elsewhere. Therefore, tougher enforcement measures are not recommended as a policy at this time. Voluntary compliance should be stressed through education and marketing of products that are easily removed or lowered. In the future, if economic conditions improve for the industry, the enforcement option should be reconsidered.

High-Level Bridges and Tunnels

To eliminate drawbridges would be the ultimate solution to the conflict between vehicles and vessels. Two alterntives to drawbridges are: a) fixed span bridges that are high enough to permit vessels to pass underneath and b) tunnels.

High-level fixed span bridges must provide a minimum of 75 feet of vertical clearance over the river to meet federal navigation standards. To achieve such height, the approaches to the bridge must begin at least 1,700 feet from the river, thereby cutting off access to three to six blocks of land along both sides of the river. Such impacts are unacceptable in a densely developed city along arterial streets that cross the river. However, two limited access expressways, I-95 and S.R. 836, do provide high-level fixed span bridges, as do Metrorail and the future Metromover Stage II.

Tunnels require somewhat shorter approaches than fixed span bridges, but still can cause significant disruption to land use and street circulation patterns around the open cuts needed for their entrances/exits. However, it is the substantially greater cost of constructing and operating a tunnel (typically 4 to 5 times the cost of a drawbridge) that has prevented them from being built along the Miami River. Numerous tunnel feasibility studies were conducted throughout the decades of the '60s, '70s and '80s. Several feasible tunnel routes were identified, but in each case the tunnel alternative failed because a) the community benefits could not be equated with the additional cost, b) lack of additional funding and c) lack of community support to seek additional federal/state funding or to provide local funding.

Currently, the desirability of tunnels is again being considered in the community. The Metropolitan Planning Organization (MPO) has endorsed a proposal to seek state funding for a tunnel feasibility study for the replacement of the SW 2nd Avenue bridge. Interest in the SW 2nd Avenue location is primarily related to the fact that it is the next available opportunity to build a tunnel, being the next drawbridge on the Miami River scheduled to be replaced. Plans for construction of new drawbridges at NW 27th Avenue and Brickell Avenue have advanced too far to reconsider.

A tunnel at SW 2nd Avenue should only be considered in the context of a long term commitment to build several tunnels at strategic locations along the Miami River. If only one tunnel can be justified, SW 2nd Avenue would be a relatively low priority location. A tunnel is not necessary to handle the existing or the projected future traffic over the river on SW 2nd Avenue, if the planned new 4-lane drawbridge is constructed. The new drawbridge will be higher than the existing bridge, thereby reducing the number of openings; and it has been designed to substantially reduce the risk of damage from vessel collisions. Furthermore, the adjacent high-level fixed-span bridge on I-95 provides an alternative means of avoiding a potential drawridge opening for most vehicles traveling in a north-south direction on the western side of downtown. However, if the community decides that a series of tunnels is preferred, and that the overall cost is justified, then a tunnel at SW 2nd Avenue could be considered as a first step.

The most significant advantage of a tunnel at SW 2nd Avenue would be to improve the development potential of adjacent riverfront property. This could be transformed into a community-wide benefit on the north side of the river if it would encourage the Florida Power and Light Company to develop its waterfront with restaurants, retail, entertainment or similar activity-generating uses that would create a continuous, lively urban riverwalk. The south side of the river is proposed to remain as a waterfront industrial area.

RECOMMENDATIONS

Objective:

2.3 Improve roads and bridges in the vicinity of the Miami River to facilitate development and minimize conflict between vehicular and vessel traffic.

Policies:

2.3.3 Complete approved projects involving replacement or major repair of bridges in order to increase traffic capacity, reduce frequency of bridge openings and reduce navigational hazards.

2.3.4 Maintain the existing hours of no bridge openings from 7:30-9:00 AM and 4:30-6:00 PM.

2.3.5 Reduce unnecessary bridge openings by informing boaters about vertical clearances and marketing products (outriggers, antennae and other appurtenances) that are easily removed or lowered.

2.3.6 Reduce navigational constraints caused by the NW 5th Street bridge by replacing it with a new bridge as quickly as possible.

NAVIGATIONAL SAFETY AND CODE ENFORCEMENT

Navigational safety and code enforcement cover a diversity of issues that all relate to the needs for: 1) ongoing coordination between numerous governmental agencies, 2) adequate funding and manpower for enforcement and 3) improved laws to cover the gaps and bottlenecks in existing enforcement efforts.

Navigation

The Miami River presents a rather unique combination of circumstances that make navigational safety a challenge:

a. numerous federal, state and local agencies with discrete areas of jurisdiction, but no one agency having overall authority;

b. a relatively narrow, shallow channel with 12 bridges;

c. an unusual number of cargo vessels under the 79 feet or 150 ton size threshold that federal and international safety rules govern; and

d. not governed by a port agency, so none of the typical regulations and enforcement procedures used in other commercial harbors.

Concerns over safety on the river have grown in recent years with increasing incidents of vessel grounding, capsizing, sinking, mechanical failure, and collisions. Some of the causes are overloading or improper loading of cargo, lack of safety equipment, inadequate training of crew members, substandard maintenance practices, and general undercapitalization of the enterprise. Potential impacts include danger to the lives of the crew, release of fuel or other pollutants into the water, cargo loss, damage to bridges and other property, negative publicity, and costs incurred by the public sector for such things as search and rescue, towing, storage, and environmental cleanup.

The U.S. Coast Guard is generally responsible for navigational and operational safety on the river, which is a federal navigable waterway. It has the authority under existing federal law to adopt and enforce administrative regulations designed to eliminate or reduce the above described problems. Local Coast Guard officials have recently initiated federal rule-making procedures, which include extensive public involvement, and require up to two years to complete. This Coast Guard effort should be supported, and all affected parties should participate in developing a fair and effective set of regulations.

However, it is important to note that there are alternatives to federal Coast Guard regulations that should be considered. Both state and local governments have the authority to adopt and enforce regulations that would accomplish much the same purposes. If adopted, some local regulations could obviate the need for federal involvement; others would enhance and supplement potential Coast Guard regulations.

Local Options

The most commonly used mechanism for local control of navigational and operational safety is a seaport agency (discussed on pages 2.12 - 2.13).

The county should consider strengthening its requirements for and enforcement of stevedoring licenses. Existing laws prohibit all cargo vessels, regardless of size or registration, from being loaded by anyone other than a licensed stevedoring company. However, some vessels on the river, particularly the smaller Haitian vessels, are often loaded by crew members who have little or no training. The stevedoring company should be held responsible for safe loading practices by being subject to losing its license. A job recruitment and training program should be initiated, with the help of the Dade County School System's job training program, to ensure that there is an adequately trained work force.

In cases where vessels are disabled by mechanical failure a county ordinance should authorize local officials to take action to prevent environmental damage.

Financial Responsibility

The owner of every vessel should be held financially responsible for any cleanup, towing, storage, or other costs incurred by government from accidents or code violations, or for any civil penalties attributable to the vessel. Existing laws are usually adequate for recovering costs from vessels registered in the United States, but the time and effort required can be excessive. Existing laws are not effective in dealing with foreign flag vessels.

The system typically used to ensure that commercial vessels comply with federal, state and/or local seaport regulations is to require each vessel to have a registered agent, who must post a bond or other form of surety with the appropriate agency to cover any costs, fees, or civil fines and penalties incurred by the vessel while doing business within the jurisdiction of that agency. Examples of existing laws that require agents to guarantee financial responsibility include U.S. Customs laws, the Florida Pollutant

Discharge Prevention and Removal law (Ch. 376, F.S.), and the Port of Miami Rates, Rules and Regulations (Tariff No. 10). The responsibilities of vessel agents should be expanded by state or county law to include such things as violations of environmental laws.

The landowner or business where foreign flag vessels dock can be made responsible for some of the actions/problems created by the vessels through the county's mooring code or the marina operating permit program. Additional rules and regulations could be adopted and enforced for such things as sanitation facilities on vessels and discharge of pollutants from vessels.

Code Enforcement

Effective code enforcement is the solution to a wide variety of issues and needs of the Miami River, from derelict vessels to unnecessary bridge openings; from illegal dumping of waste to illegal land uses.

Overall, enforcement efforts have dramatically improved on the Miami River during the past decade. This has been achieved, in part, through increased manpower from certain key agencies, notably DERM and U.S. Customs. It is critical to continue funding for enforcement officers. The state should continue to assist local enforcement efforts through the SWIM program and the Florida Marine Patrol.

Coordination among enforcement agencies is another important strategy to increase effectiveness and reduce overall costs. Several agencies have formed the "Miami River Enforcement Group" to provide a framework for such coordination. This group holds monthly meetings to discuss enforcement problems and conducts enforcement team sweeps at individual sites known to have multiple violations. Some of the benefits from this interaction are identification of needed changes in existing codes and sharing access to boats.

One of the principal advantages of inter-agency coordination is cross-fertilization of knowledge about the types of violations that other agencies are looking for. This increases the number of eyes and ears available for enforcement by encouraging agencies to notify each other when they spot a violation or observe that a violation is not being properly corrected. This practice could be expanded to provide better coverage during nighttime and weekend hours with the help of the additional marine patrol service discussed on pages 2.2 - 2.3.

Metropolitan Dade County uses a ticketing process for enforcement of county code violations that seems to be efficient and effective in causing violations to be expeditiously remedied. The City should consider replacing its existing Code Enforcement Board system with a similar ticketing system for appropriate types of violations.

Caution

Effective enforcement is desirable for everyone, to improve safety, water quality and the overall image of the Miami River. However, over-regulation and/or over-zealous enforcement could be counterproductive to the goal of preserving the working waterfront. It is essential for any new regulations to be sensitive to the needs of the business community. Also, enforcement officers should be well-trained in all aspects of the river so that they can fairly and wisely exercise the judgement required to do their jobs. Like the traditional neighborhood cop, enforcement officers should be assigned to the river on a consistent, long-term basis so that they can get to know the people and the activities along the river.

RECOMMENDATIONS

Objective:

2.4 Improve navigational safety and code enforcement.

Policies:

2.4.1 Support the U.S. Coast Guard proposal to impose rules governing safety for towing, loading and mooring of all commercial vessels on the Miami River.

2.4.2 Reduce unsafe loading practices on cargo vessels by strenghtening the requirements for and enforcement of occupational licenses for stevedoring companies.

2.4.3 Continue the Miami River Enforcement Group with federal, state and local agency coordination meetings, code enforcement team site visits and cross-training of enforcement officers.

2.4.4 Secure ongoing sources of funding for code enforcement.

2.4.5 Require all commercial vessels to have a registered agent with financial responsibility (a bond or other form of surety) to cover the cost of cleanup and/or fines for violation of environmental and safety codes.

2.4.6 Utilize increased police patrol (see Policy 2.1.1) to spot code violations and to intervene and/or notify other appropriate agencies for enforcement actions.

2.4.7 Facilitate code enforcement by requiring all waterfront properties to have the street address posted in a location clearly visible from the water.

2.4.8 Consider the use of ticketing for enforcement of appropriate City of Miami codes, similar to the procedures in Section 8CC of the Metropolitan Dade County Code.

2.4.9 Encourage each enforcement agency to assign their officers to the river area on a consistent, long-term basis.

PORT OF MIAMI RIVER

The Miami River is a rare example in the United States of a navigable waterway, used extensively for commercial shipping, that is not officially regulated as a port by state or local government. Although the name "Port of Miami River" was coined in 1986 to satisfy a U.S. Coast Guard regulation governing bilge pumpouts, it has none of the structure, authority or advantages normally associated with ports.

Seaports in General

Under Florida law, a port can be established either by a special charter enacted by the state legislature or by an ordinance adopted by the Board of County Commissioners. The organizational structure of a port may take many forms ranging from an autonomous port authority governed by elected commissioners to a staff function of county government. Port organizations typically provide such services as: planning; land acquisition; development of bridges, tunnels, highways, rail systems, industrial parks and foreign trade zones; obtaining financing for capital projects by bonding or applying for federal grants; acting as the local public assurer for federal navigation projects; and providing security and enforcement of port-enacted rules and regulations.

Applicability to the Miami River

The major difference between the Miami River and other existing seaports is that the commercial shipping operations on the Miami River are 100% owned and operated by private enterprise. Other ports generally have some degree of public ownership. Where the public sector owns the land and/or structures and equipment used for shipping activities, there is an unavoidable need for a formal organization to manage the use of those facilities. Some ports, such as New York City, Tampa and Fort Pierce, include privately and publicly-owned terminals.

Shipping companies have operated on the Miami River since the early history of the City, but until recent years, there has been little cause for public attention. Several factors, including increases in the volume of shipping activity, size of vessels, safety hazards, illegal cargo and environmental violations, are reasons why some type of umbrella management entity should be considered to oversee the estimated 25 to 30 independent shipping companies operating on the Miami River.

In addition to the regulatory benefits that a port management entity would bring to the general community, there are several potential benefits that would accrue primarily to the shipping industry:

1. Plan and promote port-related projects, especially such vital needs as the dredging project.

2. Obtain funding for port-related projects (e.g. dredging, roads, bridges) from sources such as bonding or the newly established Florida Seaport Transportation and Economic Development Trust Fund.

3. Provide marketing and promotion to expand business opportunities in the Caribbean Basin.

4. Improve local public awareness of the economic importance of the Miami River shipping industry.

The Miami River does not require a large, elaborate, or expensive organization to carry out the most important management functions. A manager, which may be called a "river coordinator", with support from a small clerical staff, bridge tenders, local law enforcement agencies, and officially adopted rules and regulations for use of the waterway would be the minimum required.

Private Sector Response

A "private port cooperative" was formed by private shipping-related businesses in January 1991 in an attempt to address many of the needs described above. This cooperative, entitled the "Miami River Marine Group" (MRMG), is

a voluntary organization which currently represents seven shipping terminals, as well as stevedoring companies, tugboat operators and ship repair businesses. It has hired a "river coordinator" to act as a liaison with government agencies and to help devise plans for best management practices and pollution control. The MRMG also intends to create an oil spill containment cooperative; and to work with the Coast Guard and Dade County to design a "Private Port Manual" of voluntary rules and regulations dealing with such issues as cargo loading, river traffic, towing procedures, etc.

RECOMMENDATIONS

Objective:

2.4 Improve navigational safety and code enforcement.

Policy:

2.4.9 Create an official "port" organization with responsibility to assist with enforcement of rules and regulations applicable to commercial shipping activity.

(a) Support the private sector efforts to fulfill the role of a port through a cooperative organization.

(b) If the private port cooperative fails to effectively manage shipping activity, establish a public port agency with legal authority to enforce regulations.

CHAPTER 3: ENVIRONMENT

GOAL: Improve the environmental quality of the river.

INTRODUCTION:

The urbanization of Miami has changed the river from clear, drinkable waters, as late as 1909, to conditions that consistently violate Dade County water quality standards. Problems are caused by pollutants carried in stormwater runoff, leakage and overflow of raw sewage, discharge of bilge and wastewater from vessels, eroding shorelines, deteriorating vessels and shoreline structures, dumping of fish wastes, and suspended sediments that prevent light from penetrating to the river bottom.

As the largest tributary in the Biscayne Bay Aquatic Preserve, the Miami River has been a major focus of study and public expenditure. Much has been accomplished, but even more remains to be done, requiring cooperation and funding from city, county, state and federal agencies.

STORM DRAINAGE

Stormwater runoff has been identified as a major source of pollution in the Miami River by the draft Biscayne Bay Aquatic Preserve Management Plan and the Surface Water Improvement and Management (SWIM) Plan for Biscayne Bay. Major pollutants in urban stormwater are suspended solids, nutrients, oil and grease. Trace metals and synthetic organic chemicals, such as pesticides, herbicides and plasticizers, can also be conveyed in stormwater runoff.

Redirecting the Flow

Prior to 1974, stormwater drainage practices emphasized quick removal of runoff and protection from flooding. This was achieved by "positive drainage" systems, where runoff was collected and discharged through a system of underground pipes into the nearest surface water body.

Most of the stormwater drainage systems in the vicinity of the Miami River were constructed prior to 1974, and now require "retrofitting". This involves modification of the existing positive drainage system with exfiltration systems that direct stormwater to infiltrate into the groundwater. The new drainage structures meet standards of the Metro-Dade Department of Environmental Resources Managenent (DERM) and the South Florida Water Management District (SFWMD), which call for retaining or treating the runoff from the first one-inch of rainfall. Approximately 90% of the total pollutant load in stormwater is carried in this portion of the runoff. The underground outfall pipe remains in place to discharge overflow from heavier rains.

DERM constructed one of the first stormwater outfall retrofitting projects in 1988. Using state and local funds from the Biscayne Bay Restoration and Enhancement Program, a series of deep wells and a settling chamber were installed to provide retention and treatment for the 97-acre Riverview area (basin 53). Subsequently, the City of Miami has undertaken an extensive retrofitting program using funds from two local sources: 1) Storm Sewer General Obligation Bonds and 2) Stormwater Utility Trust Funds (user fees), which are generally matched on a 50-50 basis with SWIM funds. Projects that are completed, underway or proposed using SWIM funds are listed in Table 3-A. The status of DERM's list of top priority drainage basins is shown on Table 3-B.

RECOMMENDATIONS

Objective:

3.1 Eliminate sources of water pollution.

Policies:

3.1.1 Continue the City of Miami program of retrofitting stormwater drainage basins to provide retention of runoff from the first one-inch of rainfall, using local funds matched by Florida Surface Water Improvement and Management (SWIM) funds.

3.1.2 Encourage Metro-Dade County and the Florida Department of Transportation (FDOT) to retrofit drainage basins located within roadways under their jurisdiction.

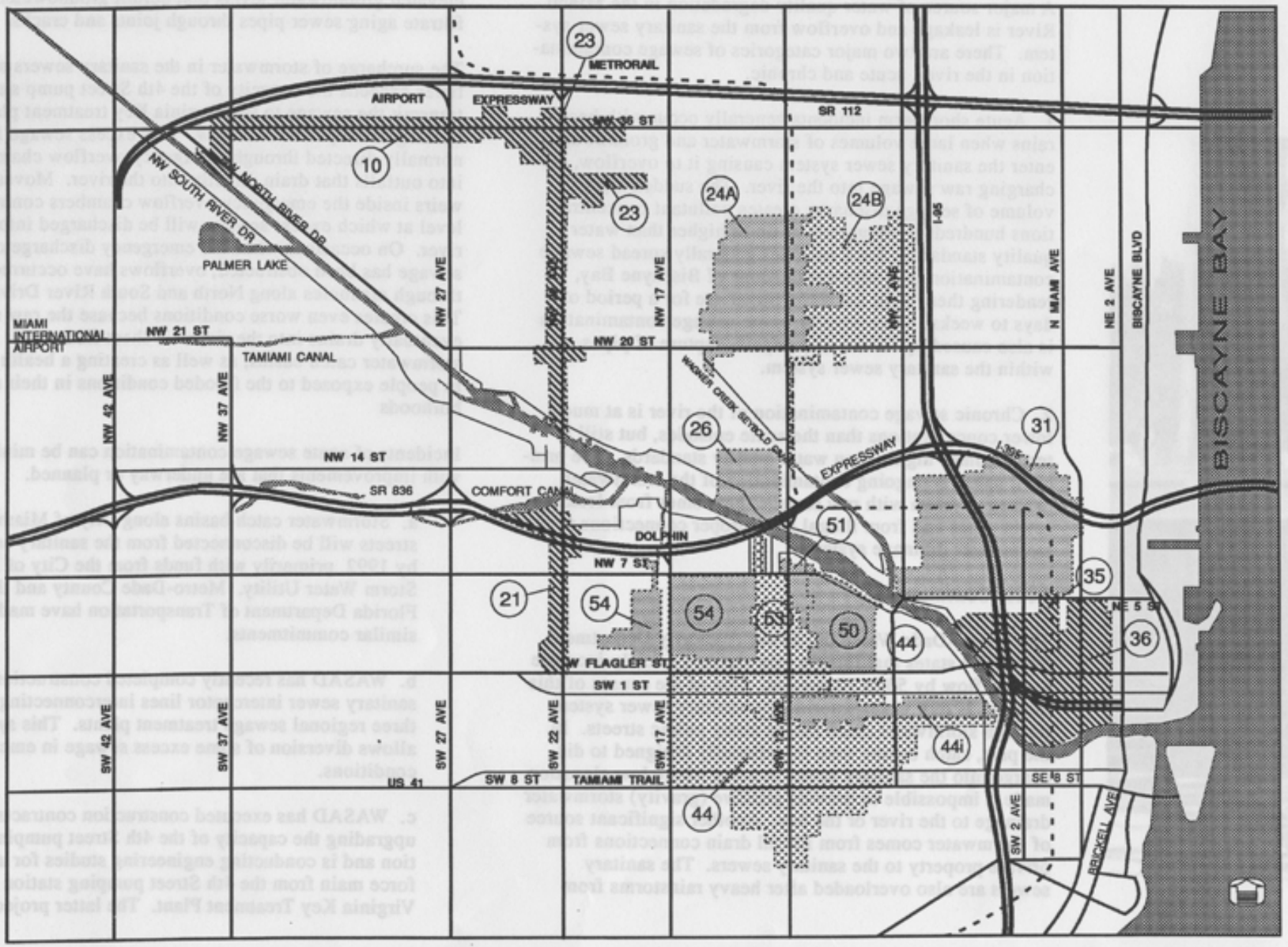
3.1.3 Conduct routine maintenance on storm drains to remove obstructions caused by litter, grease, sediments and other debris.

TABLE 3-A: CITY OF MIAMI STORMWATER DRAINAGE RETROFIT PROJECTS - JUNE 1991

Basin	Project Name	Acres	Cost	Status
44i	East Little Havana	45	$ 380,000	complete
26	Civic Center	45	$ 650,000	complete
50	Riverside - Ph I	69	$ 800,000	complete
51	Riverside - Ph II	22	$ 220,000	complete
24a	Wagner Creek	150	$ 1,013,600	construction
54	Lawrence Waterway	100	$ 500,000	construction
44	Lawrence Pump Station	75	$ 500,000	construction
31	Overtown	150	$ 2,200,000	in design
44	Lawrence - Ph II	335	$ 2,400,000	proposed
53	Riverside - Ph III	107	$ 1,800,000	proposed
24b	Morris Park	215	$ 2,200,000	proposed

TABLE 3-B: DERM 1988 PRIORITY LIST FOR DRAINAGE BASIN RETROFIT

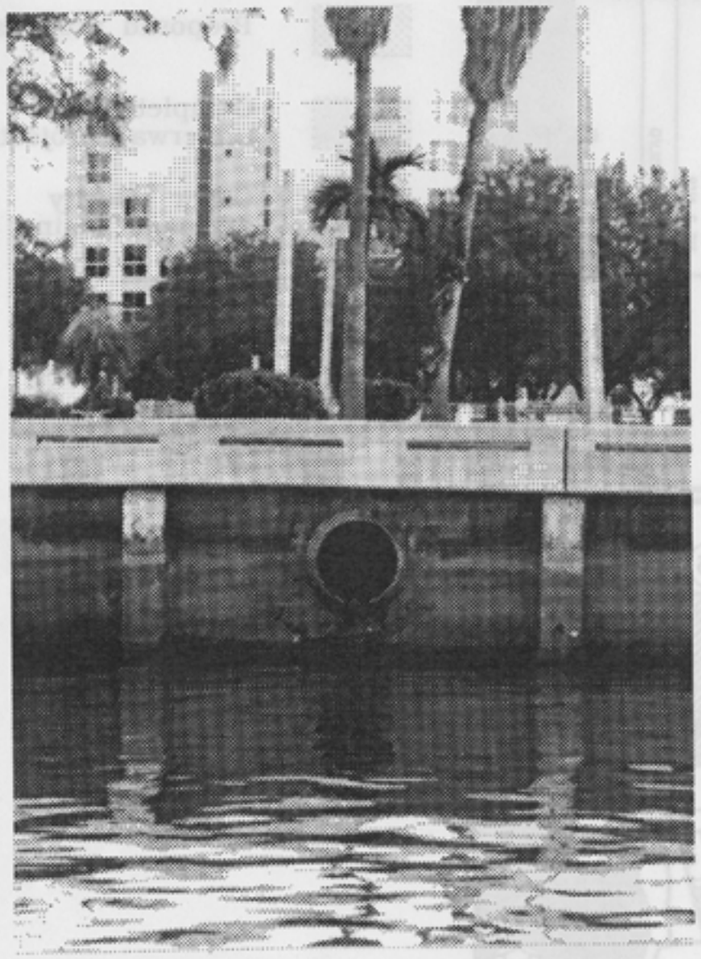
Basin	Name/Location	Acres	Status
23	NW 22nd Ave. (north)	165	Metro-Dade responsibility
44	East Little Havana	336	Partially complete (44i); Remainder proposed next funding cycle
53	Riverview/Riverside Ph III	97	Initial retrofit completed by DERM; Additional work proposed by City for future funding
36	Central Business Dist.	176	City streets mostly done; Primarily Metro-Dade & FDOT responsibility
10	S.R. 112/NW 36th St.	106	FDOT responsibility
35	CBD North/Lummus Park	64	Proposed future funding
21	NW 22nd Ave. (south)	55	Metro-Dade responsibility
24	Wagner Creek/Morris Pk.	395	24a in process; 24b proposed next funding cycle



Stormwater Drainage Retrofit Projects

- Proposed projects
- Completed or underway projects
- Other priority drainage basins

SANITARY SEWERS



A major source of water quality degradation in the Miami River is leakage and overflow from the sanitary sewer system. There are two major categories of sewage contamination in the river, acute and chronic.

1. Acute short-term incidents generally occur with heavy rains when large volumes of stormwater and groundwater enter the sanitary sewer system causing it to overflow, discharging raw sewage into the river. The sudden high volume of sewage discharge creates pollutant concentrations hundreds to thousands of times higher than water quality standards. Such episodes generally spread sewage contamination into adjacent portions of Biscayne Bay, rendering them unfit for recreational use for a period of days to weeks. Occasionally, acute sewage contamination is also caused by failure of pumps or rupture of pipes within the sanitary sewer system.

2. Chronic sewage contamination of the river is at much lower concentrations than the acute episodes, but still is tens of times higher than water quality standards. The principal cause is ongoing contamination of the stormwater drainage system with raw sewage that comes from leaking sewer pipes and from illegal or improper connections to the stormwater drainage system.

Acute Contamination

The Miami-Dade Water and Sewer Authority Department (WASAD) states that intense rain storms typically increase sewage flow by 50 to 70 percent. One of the causes of this increase is rain water entering the sanitary sewer system through stormwater catch basins along public streets. In the past, catch basins were intentionally designed to discharge into the sanitary sewer in areas where low elevation made it impossible to provide positive (gravity) stormwater drainage to the river or the bay. Another significant source of stormwater comes from illegal drain connections from private property to the sanitary sewers. The sanitary sewers are also overloaded after heavy rainstorms from elevated groundwater levels that permit groundwater to infiltrate aging sewer pipes through joints and cracks.

The surcharge of stormwater in the sanitary sewers sometimes exceeds the capacity of the 4th Street pump station to transmit the sewage to the Virginia Key treatment plant, causing backups and overflow. This excess sewage flow is normally directed through emergency overflow chambers into outfalls that drain directly into the river. Moveable weirs inside the emergency overflow chambers control the level at which excess sewage will be discharged into the river. On occasions when the emergency discharge of sewage has been obstructed, overflows have occurred through manholes along North and South River Drive. This creates even worse conditions because the raw sewage eventually drains into the river via sheet flow and stormwater catch basins, as well as creating a health hazard to people exposed to the flooded conditions in their neighborhoods

Incidents of acute sewage contamination can be minimized with improvements that are underway or planned.

a. Stormwater catch basins along City of Miami streets will be disconnected from the sanitary sewers by 1992, primarily with funds from the City of Miami Storm Water Utility. Metro-Dade County and the Florida Department of Transportation have made similar commitments.

b. WASAD has recently completed construction of sanitary sewer interceptor lines interconnecting the three regional sewage treatment plants. This system allows diversion of some excess sewage in emergency conditions.

c. WASAD has executed construction contracts for upgrading the capacity of the 4th Street pumping station and is conducting engineering studies for a new force main from the 4th Street pumping station to the Virginia Key Treatment Plant. The latter project,

which involves sensitive issues of crossing Biscayne Bay with an underground pipeline, is critical. The deteriorated condition of the existing force main poses a serious threat of direct sewage discharge into the bay. This project is tentatively scheduled for completion in 1996.

d. WASAD has recently completed installation of reinforced fiberglass liners inside many of the larger sewage transmission lines. This will reduce groundwater infiltration through joints and cracks, however, additional work remains to install liners in smaller pipes (8" or less).

Chronic Contamination

Although not nearly as severe as the acute, short-term incidents described above, the Miami River is continuously contaminated by raw sewage that enters the stormwater drainage system. Sixteen out of seventeen locations in underground stormwater pipes tested by DERM in 1989 showed elevated coliform bacterial levels indicative of sewage contamination.

The sources of the sewage contamination are varied and widespread, including: illegal or improper connections of toilets, sinks, floor drains, etc. to the stormwater drainage system; leaking, deteriorated or broken sewer pipes; and direct disposal of untreated waste from vessels or shore facilities.

The underground space available to construct sanitary sewer and stormwater drainage pipes is limited due to the high water table. Thus, there are many locations with a dense network of manholes and pipes crisscrossed through one another. The areas near the Miami River were the first to have sanitary sewers installed in the early 1950's. These older sewers are now deteriorating and allowing sewage to escape through joints, cracks or ruptures.

Wherever improper connection or leakage from sanitary sewer pipes is detected, the problem is promptly corrected by WASAD or through enforcement action against private property owners. However, the problems are so widespread that it is difficult and costly to detect and correct all points of contamination. Both DERM and WASAD have programs to inspect the underground pipes using TV cameras, dye and smoke detection techniques. Funding is needed to continue these programs and to carry out enforcement actions.

Existing City and County ordinances prohibit discharge of untreated waste from all vessels, but enforcement is extremely difficult because citations can only be issued based upon water samples collected at the time of discharge. Vessel operators who are aware of this prohibition can easily avoid detection by discharging at night. This is a particularly acute problem in the case of cargo vessels serving foreign countries, which have a strong possibility of carrying communicable diseases in their waste products. Legislation is needed to give DERM officials authority to inspect vessels for on-board treatment devices, holding tanks and contaminated bilge water, and to require pump-out of holding tanks and bilges at authorized facilities. Among recreational boaters, the problem is mostly caused by lack of awareness of local waste discharge regulations because they are more restrictive than state and federal regulations. A public awareness campaign should be directed to registered boat owners and to visitors at local marine facilities.

RECOMMENDATIONS:

Objective:

3.1 Eliminate sources of water pollution.

Policies:

3.1.4 Reduce incidents of backup and overflow of the sanitary sewer system by disconnecting all stormwater catch basins that drain directly into the sanitary sewer system.

3.1.5 Replace all aging, deteriorated sanitary sewer pipes or install reinforced fiberglass liners to reduce leakage.

3.1.6 Reduce leakage, backups and overflow from the sanitary sewer system by supporting WASAD plans to construct a new force main to the Virginia Key Treatment Plant.

3.1.7 Continue programs of monitoring and investigation aimed at detecting leakage from the sanitary sewer system or illegal/improper connections from private waste disposal systems to the storm drainage system.

3.1.8 Require all liveaboard vessels to be connected with onshore waste disposal systems.

3.1.9 Improve enforcement mechanisms for existing regulations concerning treatment and disposal of waste water from all vessels, and seek delegation of authority from the U.S. Coast Guard to DERM to inspect sanitation facilities on foreign flag vessels.

3.1.10 Conduct a public awareness campaign to discourage discharge of untreated waste and contaminated bilge water from vessels.

DREDGING

In 1932-33, the U.S. Army Corps of Engineers dredged a 15-foot deep channel out of the porous limerock over which the shallow Miami River flowed, making the river a federal navigation project. This channel varies from 150 feet wide near the mouth of the river to 90 feet wide in the Miami Canal west of NW 27th Avenue.

Environmental Issues

Stormwater runoff, waste disposal and shoreline erosion have caused sediments to build up in the river since it was first dredged. In addition to impeding navigation (see page 1.7), these sediments are a serious problem for water quality in the river and a threat to the integrity of the Biscayne Bay ecosystem due to turbidity and pollutants in the sediment. Vessel traffic continually resuspends the sediments, which are then carried downstream into fragile Biscayne Bay habitats, including productive seagrass beds and areas that are fished commercially and recreationally. An additional concern is the sudden flushing of river sediments that would result from a major storm.

Suspended sediments, a component of turbidity, may adversely affect seagrass and other shallow water marine organisms by reducing water clarity and light penetration or by contributing to siltation. Furthermore, the Miami River sediments are contaminated with pollutants from urban stormwater runoff and domestic and industrial waste. The pollutants include toxic trace metals, pesticides, and other harmful organic chemicals. Concentrations of these contaminants are generally higher in the Miami River than in other Florida ports that have been tested.

Maintenance vs. Environmental Dredging

The U.S. Army Corps of Engineers (Corps) has recommended maintenance dredging of the federal channel for the purpose of improving navigation. Many local experts believe it is important to dredge the entire width of the river and its major tributaries in order to remove all possible toxic sediments. The Corps has not recommended dredging any areas beyond the federally authorized channel because it does not recognize water quality or environmental benefits as justifications for a federal dredging project. Both the locals and the Corps agree that ongoing sources of pollution should be stopped.

Method of Dredging and Sediment Disposal

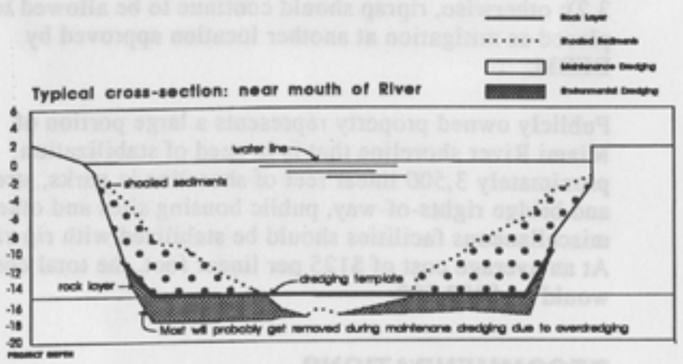
Until recently, the Corps planned to dump the Miami River sediments at an ocean disposal site located approximately 3.6 miles offshore. However, the most recent test results indicate that the sediments are not suitable for disposal at any site in the ocean. These findings may delay the project while acceptable upland disposal sites are identified. The City should assist with site identification and coordination with private property owners.

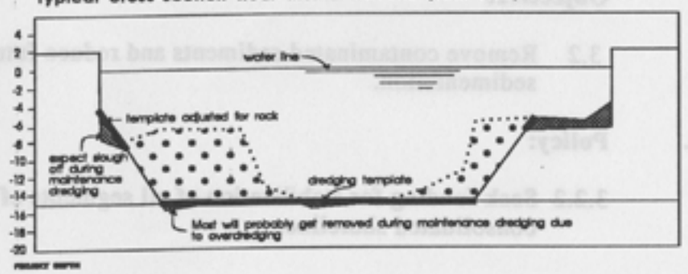
State and local regulatory agencies also believe that the clam shell method of dredging proposed by the Corps may create an unacceptable amount of turbidity during the construction process. More costly methods of dredging may be required to avoid suspension of sediments.

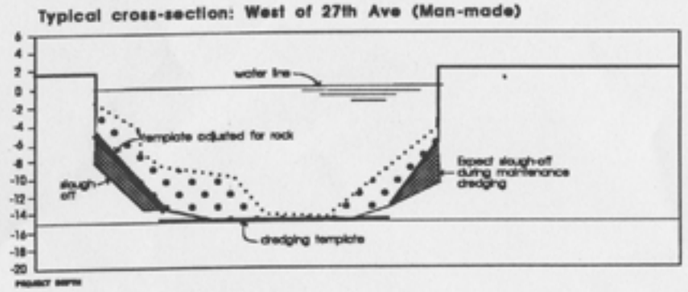
Using the least expensive methods of construction and ocean disposal, the cost of dredging only the federal channel was estimated at $8-10 million. Under this scenario, the Corps was expected to provide full funding for the project. However, given the recent findings of sediment contamination, it is likely that the local project sponsor will be required to provide the additional funds associated with upland disposal of the sediments.

The U.S. Congress could assist in expediting the Miami River dredging project by providing sufficient funds for dredging the entire width of the river and requiring environmentally sound removal and disposal of sediments. This cost cannot be accurately calculated until the environmental permitting process is complete, but could be as much as $20 million.

Fig.3.1 Sample Cross Sections of Dredging.







Private Sector

Property owners who undertake dredging on or adjacent to their property should be aware of the problems associated with disposal of dredged material that is unsuitable for placement as clean fill. In some instances, the dredged material may have to be transported to a landfill, or even treated as hazardous waste. The County may decide to require a bond or other form of financial surety to cover the costs of cleanup and proper spoil disposal.

Long-term Maintenance

The build-up of sediments in the future should be minimized by: a) continuing to improve the stormwater drainage and sanitary sewer systems (see pages 3.2 - 3.5), b) increasing enforcement of existing laws that prohibit direct runoff from private property and discharge of industrial waste to sewers and c) shoreline stabilization (see pages 3.8 - 3.9).

RECOMMENDATIONS:

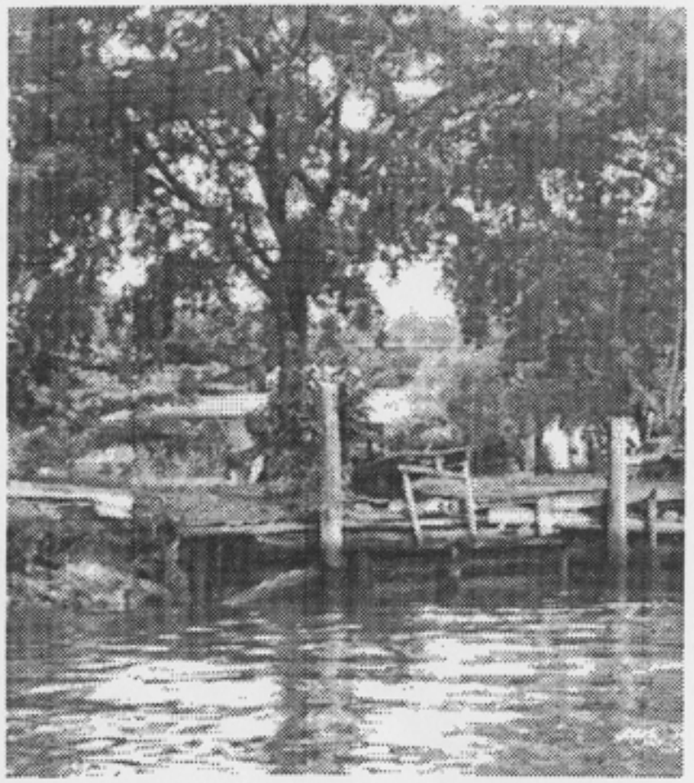
Objective:

3.2 Remove contaminated sediments and reduce future sedimentation.

Policies:

3.2.1 Encourage the U.S. Army Corps of Engineers to undertake dredging of the river and its tributaries as quickly as possible; to minimize suspension of contaminated sediments in the river by utilizing alternatives to the clam shell dredging method; and to dispose of sediments in an environmentally sound manner.

SHORELINE STABILIZATION



Erosion of the shoreline is a natural, ongoing process caused by surface water runoff and the flow of water in the river channel. Along the Miami River this natural process is accelerated by waves, which are created by boats and are often amplified by bouncing off vertical bulkheads.

In addition to the loss of valuable waterfront land and mature trees along the shoreline, erosion creates a problem by degrading water quality (turbidity) and adding to the deposited sediments that impede navigation. An effort to substantially reduce shoreline erosion would be most timely in concert with completion of the Miami River dredging project.

Existing Needs

Approximately 30% of the Miami River shoreline is in need of some degree of stabilization to prevent additional erosion. Deteriorated existing bulkhead structures and natural shoreline area with no erosion control comprise most of this need.

Currently, there are no laws requiring property owners to stabilize their shoreline. Stabilization should be made mandatory in cases where vacant property is being developed, where existing improvements are redeveloped for a new use, or where major renovations are undertaken. However, such requirements should not place an undue financial burden on property owners, especially small water-dependent businesses.

In cases where a property owner chooses to construct (or repair) a bulkhead, rip-rap or other shoreline stabilization device, there is a relatively complex and costly permit process involving five agencies of city, county, state and federal government. This tends to discourage private sector improvements, except where necessary to conduct business. Maintenance and repair of existing bulkhead structures should be encouraged by streamlining the permit process for repairs (see Policy 1.3.4).

New bulkhead structures should be permitted wherever vessel dockage is desired. If possible, limerock boulder riprap should be placed under an overhanging dock (see Figure 3.2); otherwise, riprap should continue to be allowed to be placed as mitigation at another location approved by DERM. .

Publicly owned property represents a large portion of Miami River shoreline that is in need of stabilization. Approximately 3,500 linear feet of shoreline in parks, street and bridge rights-of-way, public housing sites and other miscellaneous facilities should be stabilized with rip-rap. At an average cost of $125 per linear foot, the total cost would be $437,500.

RECOMMENDATIONS

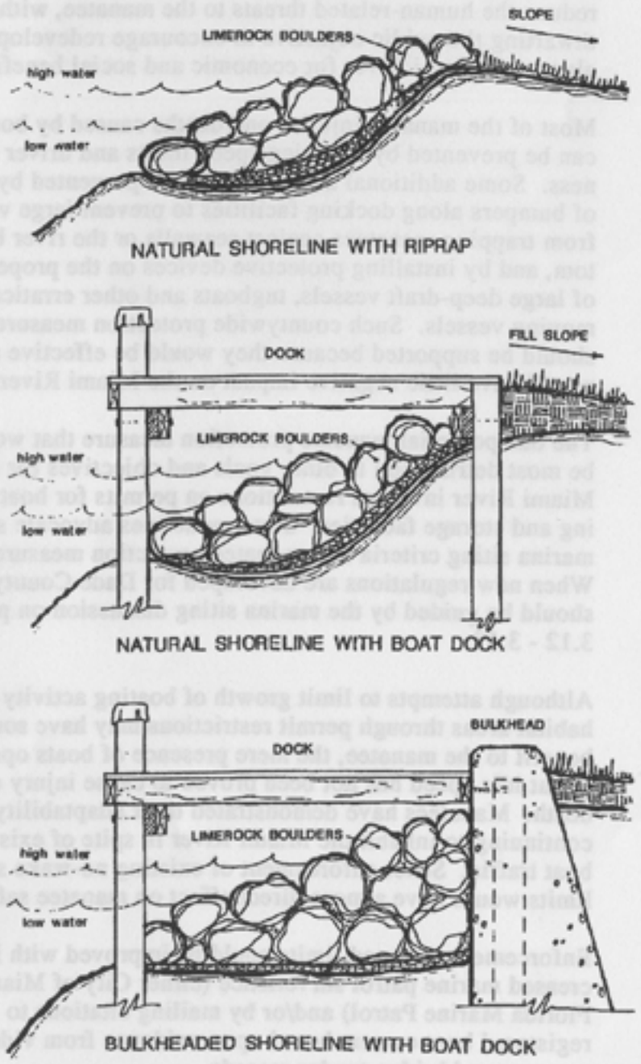
Objective:

3.2 Remove contaminated sediments and reduce future sedimentation.

Policy:

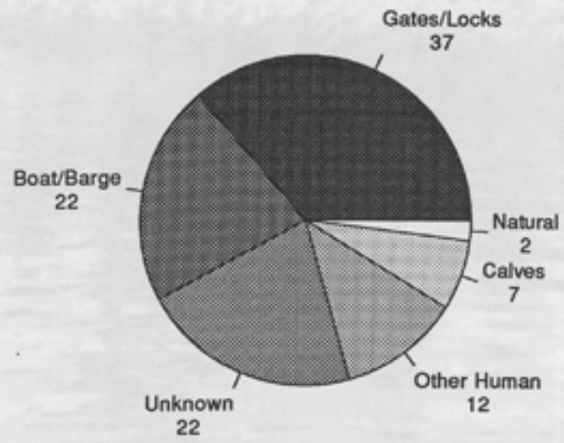
3.2.2 Seek funding for stabilization of all segments of unconsolidated shoreline.

Fig. 3.2 Shoreline Stabilization Alternatives



MANATEE PROTECTION

Fig.3.3 Manatee Deaths in Dade County, 1974-1990



The Florida manatee is a sub-species of West Indian manatee or "sea cow" that is found only in waters of the southeastern United States. Although the manatee has been protected by state law since 1893, a high mortality rate, low reproductive rate and loss of habitat combine to threaten the sub-species' future. Currently, only about 1,500 animals are believed to exist in Florida, and the population is decreasing annually. Statewide, about half of all recorded manatee deaths are human-related.

In an effort to reverse the manatee decline, Florida's governor and cabinet issued a policy in 1989 requiring 13 coastal counties to prepare stringent manatee protection plans. Dade County DERM has conducted a detailed manatee study and is currently developing recommendations for the protection plan.

Manatee sighting data, gathered through numerous aerial surveys and tagging studies, document the Miami River as an important year-around manatee habitat area. It is one of several rivers and canals in Dade County (including Biscayne Canal, Little River and the Coral Gables Waterway) where manatees migrate each winter. Typically the animals swim back and forth each day between resting in the river and feeding on the shallow grass beds in the nearby open waters of Biscayne Bay.

Records of manatee deaths in Dade County, dating back to 1974, indicate that the largest known cause of death is injury or drowning resulting from entrapment in the gates of salinity control structures. The second most common cause of death is collision with vessels.

Protection Measures

The South Florida Water Management District is currently studying alternative ways to prevent manatee deaths related to the salinity control structures. Other potential manatee protection measures involve public education and various forms of restrictions on boating activities.

Some of the possible boating restrictions could have far-reaching effects on the future of the Miami River. The challenge is to forge a balanced plan that will substantially reduce the human-related threats to the manatee, without thwarting the public objective to encourage redevelopment along the Miami River for economic and social benefits.

Most of the manatee injuries and deaths caused by boats can be prevented by lowering speed limits and driver awareness. Some additional accidents may be prevented by use of bumpers along docking facilities to prevent large vessels from trapping manatees against seawalls or the river bottom, and by installing protective devices on the propellors of large deep-draft vessels, tugboats and other erratically-moving vessels. Such countywide protection measures should be supported because they would be effective and would have little negative impact on the Miami River.

The one potential manatee protection measure that would be most detrimental to other goals and objectives for the Miami River involves restrictions on permits for boat docking and storage facilities. State guidelines advocate strict marina siting criteria as a manatee protection measure. When new regulations are developed for Dade County, they should be guided by the marina siting discussion on pages 3.12 - 3.13.

Although attempts to limit growth of boating activity in habitat areas through permit restrictions may have some benefit to the manatee, the mere presence of boats operating at idle speed has not been proven to cause injury or death. Manatees have demonstrated their adaptability by continuing to inhabit the Miami River in spite of existing boat traffic. Strict enforcement of existing no-wake speed limits would have a more direct effect on manatee safety.

Enforcement of speed limits could be improved with increased marine patrol surveilence (either City of Miami or Florida Marine Patrol) and/or by mailing citations to registered boat owners based upon evidence from video cameras and bridge tender records.

RECOMMENDATIONS

Objective:

3.3 Protect the endangered manatee.

Policies:

3.3.1 Urge the South Florida Water Management District to implement structural or operational improvements to salinity dams to prevent manatees from being injured or drowned by flood control gates.

3.3.2 Support the adoption of boat speed limits in manatee habitat areas throughout Biscayne Bay.

3.3.3 Improve enforcement of the vessel speed limits on the Miami River and Biscayne Bay.

3.3.4 Sponsor public education programs, improve informational and regulatory signage along the river and provide educational brochures to owners of marinas, boat ramps and boat repair facilities for distribution to boaters.

3.3.5 Create a "manatee watch" program to host guided tours and manatee sightings for school children and the general public.

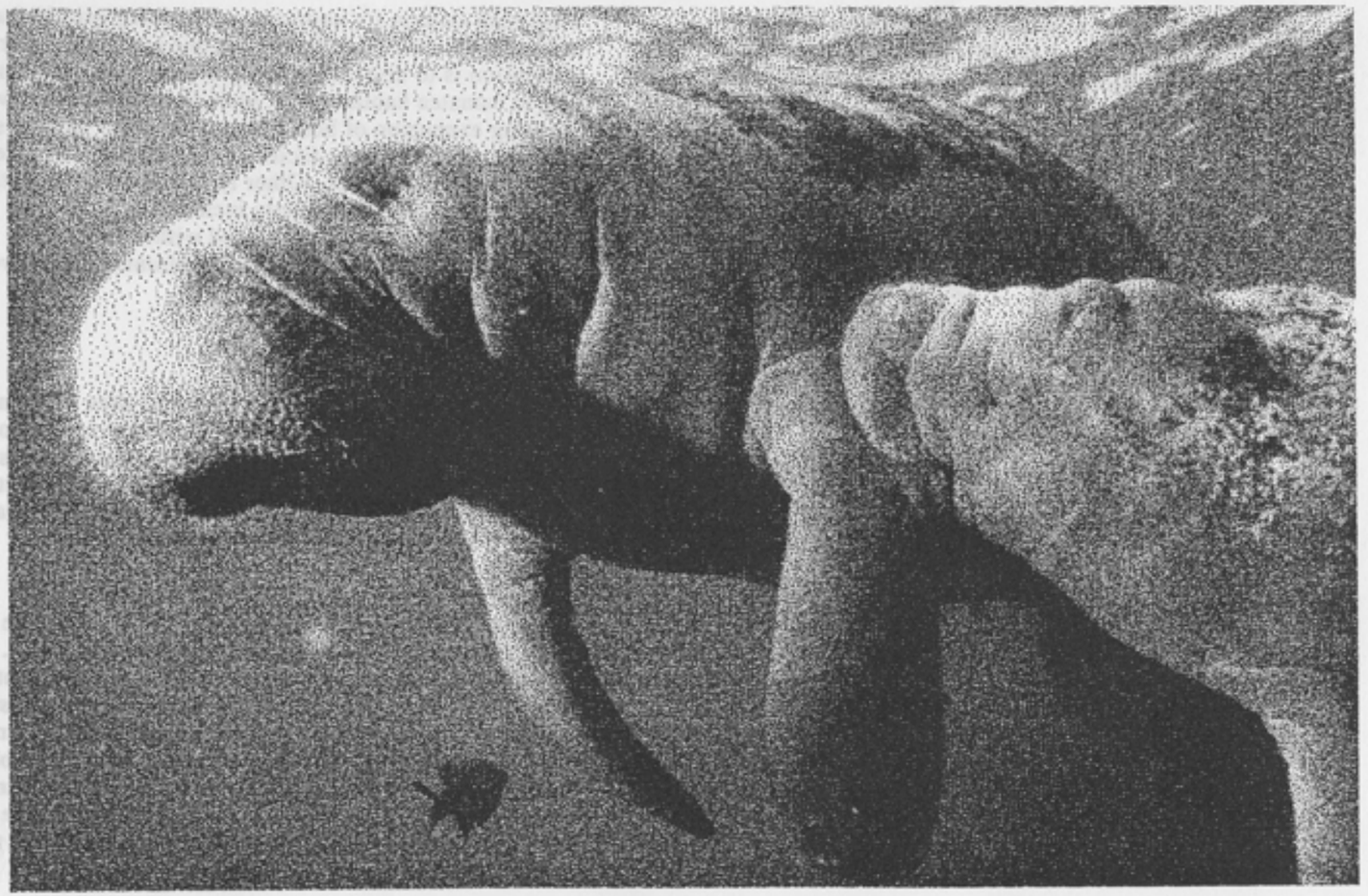
3.3.6 Preserve manatee habitat and resting areas, including Palmer Lake.

3.3.7 Seek funding for continued study of manatee behavior and migration patterns along the Miami River and surrounding bay waters.

3.3.8 Require waterfront facilities to be designed and constructed using methods which prevent or minimize injury, entrapment or crushing of manatees by moored vessels.

3.3.9 Investigate the effectiveness of ducted propellors or propellor guards for tugboats and other appropriate vessels.

3.3.10 Consider limitations on expansion of existing boat docking facilities and siting of new docking and dry storage facilities only as a last resort for protection of manatees, recognizing that important public objectives of encouraging redevelopment and enhancing public use and enjoyment of the river could be severely impeded by such limitations.



MARINA SITING

"Marina Siting" is a term used in the context of environmental and growth management regulations to apply to any type of vessel docking (or dry storage) facility other than private docks for single family residences. Therefore, this topic affects virtually every business, multifamily residential complex, and public or institutional property where alteration, replacement or expansion of existing boat docking facilities is planned or where development of new dockage is proposed.

Two critical issues will have major impacts on future "marina" permits along the Miami River: 1) manatee protection and 2) use of state-owned submerged lands within the Biscayne Bay Aquatic Preserve.

Manatee Protection Measures

One of the methods suggested by existing state regulations to help protect the endangered West Indian Manatee is to limit approval of permits required to expand motor vessel dockage facilities in manatee habitat areas. The objective is to minimize vessel traffic in those areas and to shift growth in boating activity to areas not frequented by manatees.

Although criteria for approving or denying permits have not yet been written and adopted, one approach under consideration is to discourage any increase in recreational boating in manatee habitat areas, including the Miami River, by limiting expansion of boat ramps, wet or dry storage slips, and temporary docking facilities at restaurants or other waterfront destinations. Other types of marine facilities could be directly or indirectly included in permitting restrictions that will be developed within the coming months by Metro-Dade County and ultimately approved by the Governor and Cabinet.

State-Owned Submerged Lands

Most of the existing docks and potential sites for future docks along the Miami River are situated over state-owned submerged lands. State ownership generally includes all of the river bottom below the mean high water line, as it existed in the mid-nineteenth century, and all of the Miami Canal, Tamiami Canal and Seybold Canal.

Prior to the enactment of the Biscayne Bay Aquatic Preserve Act, there was a lenient policy on use of the state's submerged lands for boating-related facilities. However, the Biscayne Bay Aquatic Preserve management rules prohibit the use, sale, lease or transfer of interest in state-owned submerged lands unless an applicant demonstrates an extreme hardship and that the project is in the public interest. Only private docks for single family homes are exempted. Since the rule was adopted (1980), only one private property owner (Fisher Island) has been able to successfully demonstrate extreme hardship in order to obtain a lease for construction of new facilities.

Repair, alteration, expansion or dredging of existing facilities is also affected. Permits cannot be approved for such work unless a lease is first executed through the Department of Natural Resources (DNR). Existing facilities can potentially be denied permits for alterations if the owner cannot prove that it was lawfully constructed prior to the enactment of the rules regarding leasing. In an effort to increase revenue, DNR is initiating a program to require leases from all existing facilities and to collect lease payments retroactively to the time of initial construction.

Conflict With Development Policies

Permit restrictions resulting from either of the above described programs would severely undermine economic development and land use policies established by the City. The Miami River is not a likely location for large new commercial marinas. The potential for conflict more likely involves the ability to improve existing marinas, boatyards, shipping terminals, and fish houses and to use the undeveloped portions of the shoreline for linear dockage.

It is essential to allow repair and/or replacement of existing marine facilities. Expansion of existing marine facilities should be encouraged. It is also important to allow development of new water-dependent business and (in designated areas such as the downtown) to encourage redevelopment with housing, hotels, shops, restaurants and attractions that will encourage people to use the waterfront. Marinas and temporary boat tie-up facilities are a key element of the ambiance and economic vitality of successful urban waterfronts. Conversely, urban waterfronts lacking direct interaction with maritime activities are often sterile.

The following specific regulatory measures are needed to provide an appropriate balance between environmental and developmental interests.

1. The Biscayne Bay Aquatic Preserve management rules (Chapter 18-18, Rules of the Board of Trustees of the Internal Improvement Trust Fund) should be amended to eliminate the "extreme hardship" criteria for use of state-owned submerged lands. This could be limited to an exception for the Miami River; however, an amendment applicable to the entire aquatic preserve should also be considered. An excellent model for such an amendment is the "Florida Aquatic Preserves" management rule that governs most of the other aquatic preserves through the state (Chapter 18-20, Rules of the Board of Trustees of the Internal Improvement Trust Fund). This rule requires the use of "public interest assessment criteria" as a balancing test to determine whether the social, economic and/or environmental benefits clearly exceed the impacts of a proposed project.

2. The City of Miami should be an active partner in the process of developing marina siting criteria for the Biscayne Bay Aquatic Preserve. The marina siting criteria should recognize the following principles:

   a. The Miami River is in the center of the most densely developed portion of the metropolitan area. It is in the public interest to concentrate growth in a centralized area, rather than to disperse growth throughout the region.

   b. The Miami River has already been highly developed and dramatically altered from its natural condition. It is in the public interest to direct future development to an area such as this, rather than to disturb more natural, undeveloped areas of the aquatic preserve.

   c. The Miami River is a relatively small geographic area that lends itself well to concentrated environmental cleanup and enforcement efforts. It is in the public interest to direct future development to an area such as this, rather than to disperse growth throughout the aquatic preserve.

   d. The Miami River is within easy access of many neighborhoods that are experiencing deterioration, blight, unemployment, and poverty. There are important social and economic benefits in directing future waterfront development to such an area to provide public access, jobs and general economic prosperity.

3. The Miami River should not be designated as a manatee "sanctuary," which would preclude further use of state-owned submerged lands. The manatee protection plan should emphasize improved enforcement of existing no-wake speed laws in the river and nearby bay waters, as well as other measures discussed on pages 3.10 - 3.11.

RECOMMENDATIONS

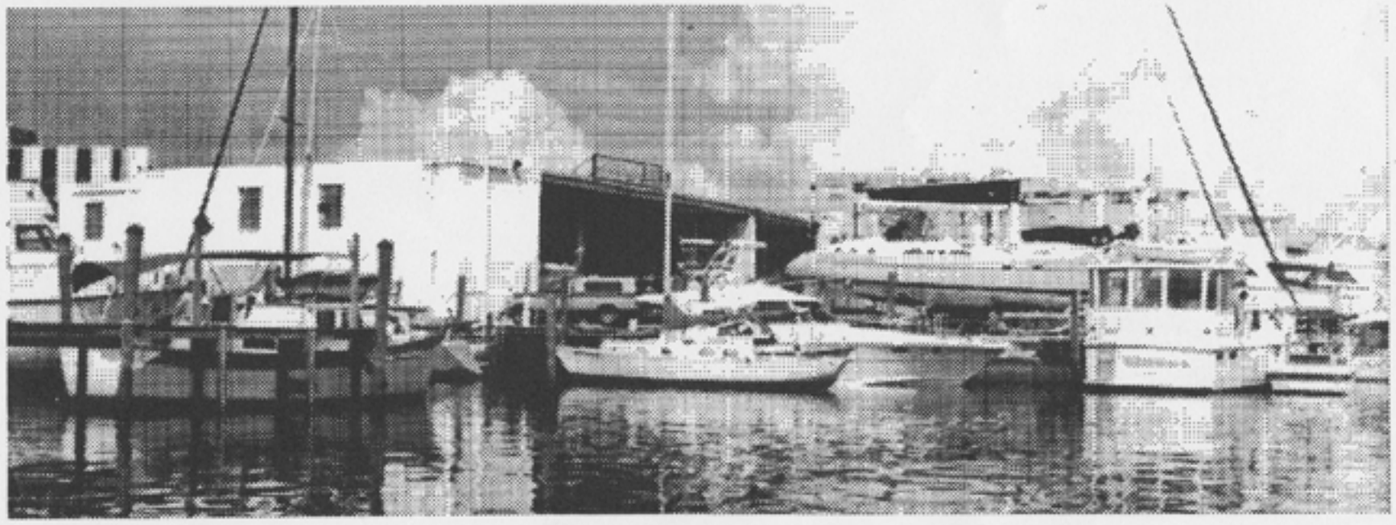
Objective:

3.4 Balance environmental protection interests with development goals.

Policies:

3.4.1 Promote the continued concentration of marine facilities along the Miami River by permitting construction of new facilities and alteration of existing facilities with environmentally sensitive design standards.

3.4.2 Utilize marina operating permits and concentrated code enforcement to ensure that marine facilities are operated and maintained in an environmentally sound manner.



CHAPTER 4: URBAN DESIGN

GOAL: Increase public use of the river.

INTRODUCTION

The Miami River is one of the greatest natural features of the region as well as one of the most underutilized opportunities in the City of Miami.

This plan seeks to open the river to the people, by creating diverse urban waterfront spaces and strong linkages to the city's neighborhoods. By encouraging a mixture of uses to assure the availability of services and amenities, the role and identity of the river will be reinforced for each neighborhood.

The relationship between the river and the surrounding area changes as the river traverses the city, demanding different types of urban design recommendations for each geographic area. However, there are certain issues and opportunities that are common to the entire river area. This chapter begins with these elements of continuity throughout the river; i.e. opportunities for public access, design of bridges, use of public lands, awareness of history, neighborhood connections and travel by water. The second portion of the chapter describes general concepts and specific recommendations for each of three major geographic areas: River Bend, Mid-River and Up-River.

PUBLIC ACCESS AND VISUAL IDENTITY

To achieve greater public use of the river, its image must be transformed to a resource that is easily accessible, interesting and fun for recreation and leisure activities and a source of pride for the community. The following elements of continuity throughout the length of the river are intended to enhance public access and awareness.

Bridges

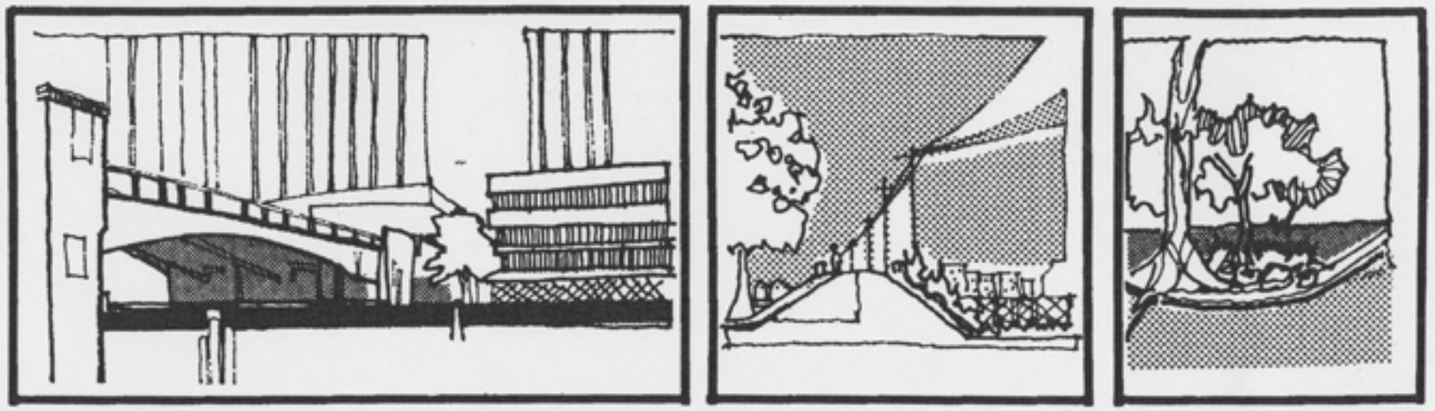
Bridges provide varied opportunities for access, connections and visual identity. They can function as linear open space for pedestrians by providing an inviting platform to view the river from above, as well as providing access to public shoreline below the bridge. To do this, bridges should be designed with pedestrian convenience and safety in mind, with ample sidewalks (minimum 6 feet width) on both sides of the roadway and stairway or ramp access to the shoreline wherever appropriate.

Bridges are powerful visual symbols. For many motorists, they are the only indication that the river exists. For boaters, they are the single most significant repetitive element throughout the length of the river. This presents an opportunity for bridges to be designed to be more than a mechanism for the functional passage of road and river traffic. With architectural enhancements, bridges can become gateways and landmarks for the community, and unifying elements for the river that are creative, fun and unique in identity. Some examples of enhancements are banners and flags, sculpture and other forms of public art, decorative ironwork railings, fenestration on piers and bridge tender houses, paint color, signs and decorative nighttime lighting.

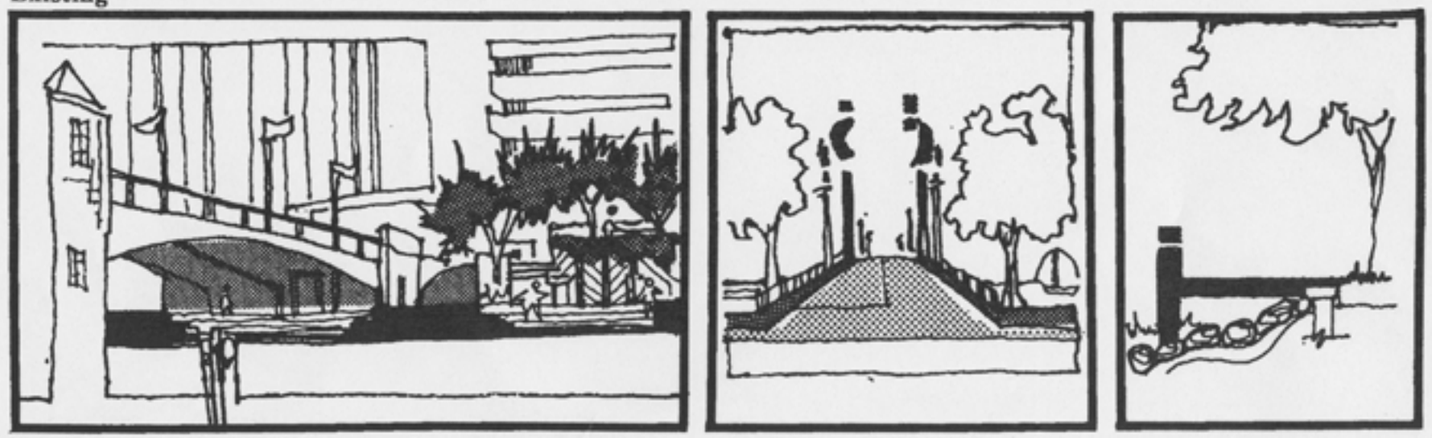
Public Lands and Facilities

Public access to the river should not be limited to the traditional setting of public parks. There are numerous small bits of public land along the river that could be improved for public enjoyment. The leftover rights-of-way adjacent to bridges and streets that dead-end into the river are one type of opportunity. These areas generally should be limited to passive use with grass, shade trees or palms, and riprap boulders to stabilize the shoreline. In some cases, riverfront land is occupied by government facilities, institutions or utilities. Wherever feasible such uses should be moved to an inland location to make scarce waterfront space available for water-dependent activities. Where moving the use is not feasible, development of the water's edge for public use should be considered.

Perception of crime is one reason why public parks and other riverfront spaces are underutilized. Programming of activities in city parks is one way to improve public safety. The recommendations for increased police patrol on pages 2.2 and 2.3 would be the best way to combat this problem throughoùt the length of the river.



Existing



Proposed

RECOMMENDATIONS

Objective:

4.1. Improve public access to and facilities for enjoyment of publicly-owned waterfront spaces such as bridges, street rights-of-way and property occupied by government or institutional uses.

Policies:

4.1.1 Modify existing bridges where necessary to ensure that all bridges serve as linear open space for pedestrians, providing an inviting platform to view the river, as well as providing easy access to public spaces along the shoreline.

4.1.2 Provide landscaping, seating, boat moorings and other appropriate facilities for active and passive recreation along all publicly-owned shoreline.

4.1.3 Increase the visibility of police and/or public service-aides to promote use of the riverwalk and parks.

Objective:

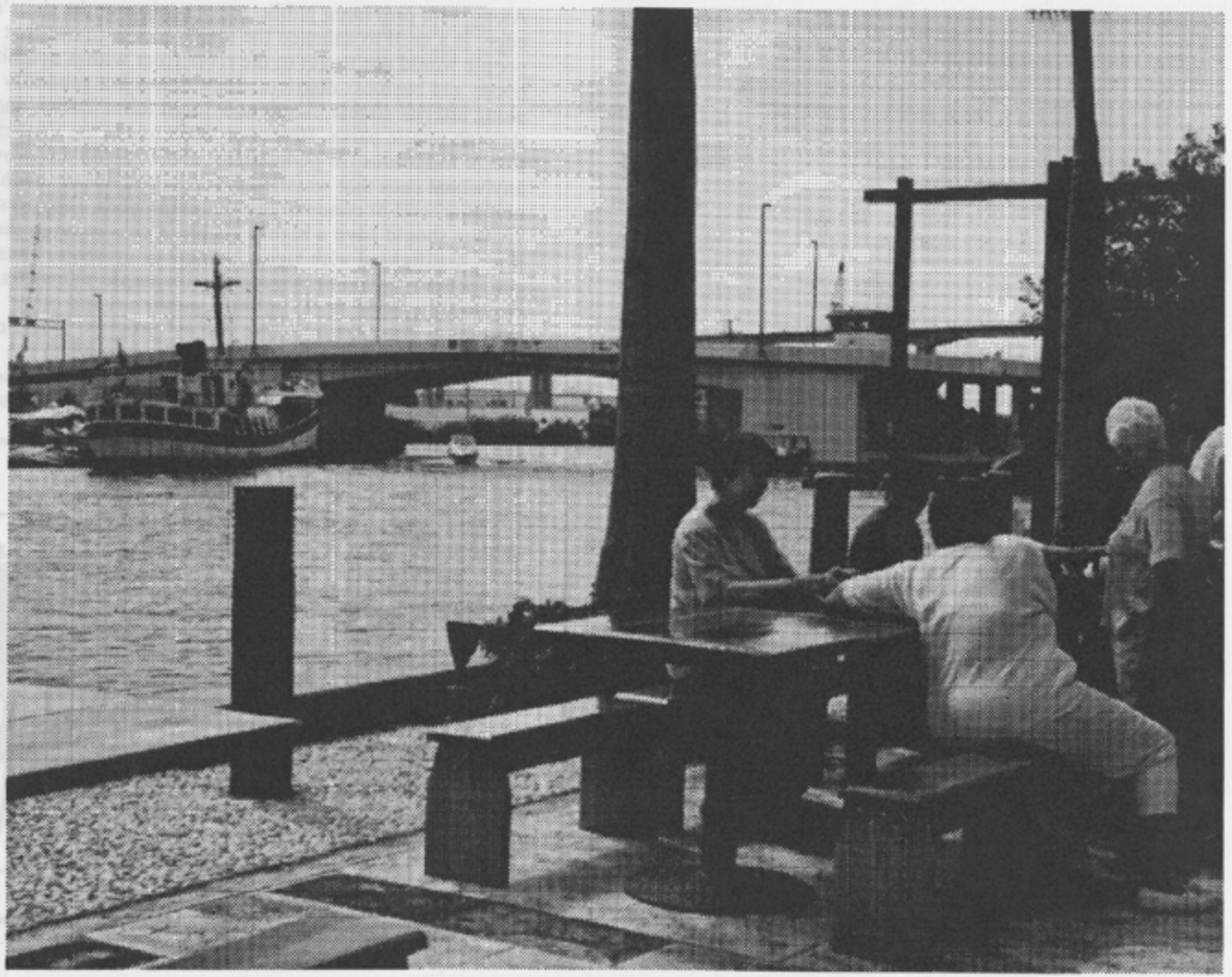
4.2 Improve the visual identity and public awareness of the river.

Policies:

4.2.1 Create design guidelines for all new and rehabilitated bridges that require architectural enhancements, including decorative nighttime lighting.

4.2.2 Utilize Art in Public Places to dramatize gateways and other special features along the waterfront.

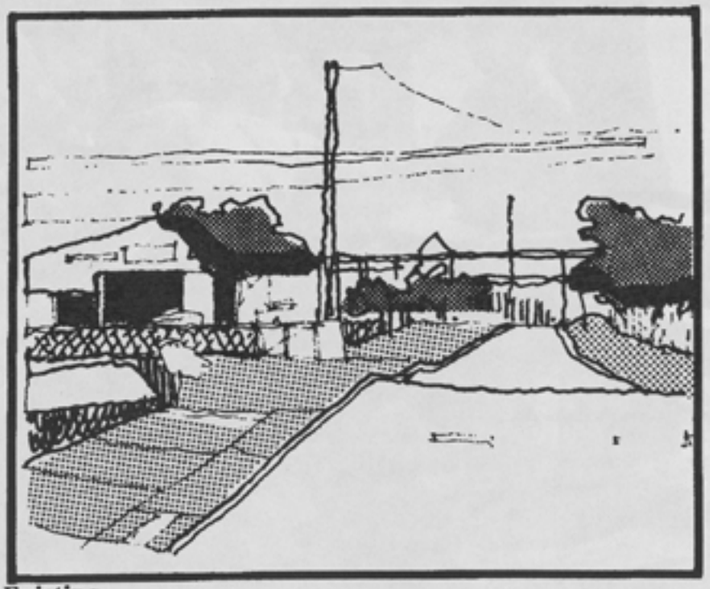
4.2.3 Define North and South River Drive as a scenic corridor with special sidewalk and landscape treatment.



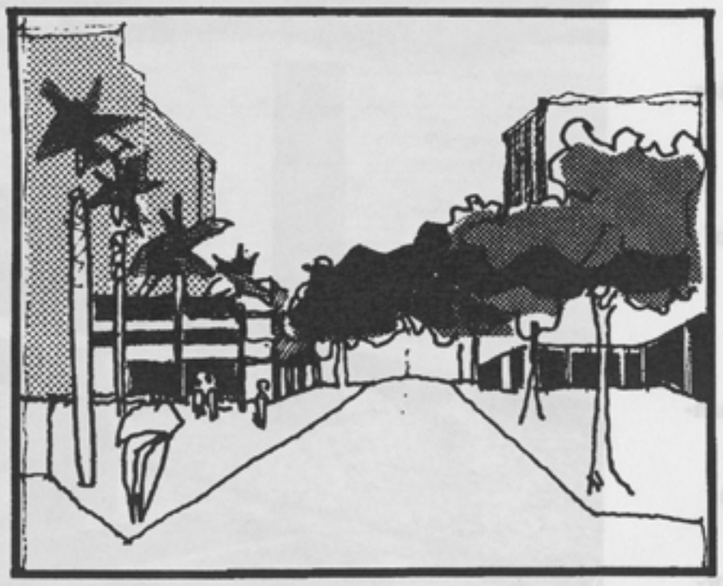
CONNECTIONS

Pedestrian Routes

Along with providing public access points at the river's edge, is a need to enhance the major access routes that people would use to get to the river from within neighborhoods and business districts. Such routes are generally along arterial streets, North and South River Drive, and/or through public parks. However, some routes are unattractive or hazardous for pedestrians, and some do not provide any visual cues that waterfront access lies ahead. Each neighborhood or concentration of employees, shoppers and visitors should have a highly visible access route to the river, highlighted with signs, banners or symbols. These connections should be improved with ample sidewalks, crosswalks, shade trees, lighting, public art and other amenities. The "Art In Public Places" program is an excellent way to highlight connections and gateways to the river. The maps on pages 4.15 and 4.21 indicate locations where pedestrian connections and public art are suggested.



Existing



Proposed

Travel by Water

Plans for diverse waterfront attractions and private developments will significantly expand public activity along the downtown bayfront and riverfront. To be added to the existing attractions of Bayside, Bayfront Park, the Port of Miami, Knight Center, Fort Dallas Park, and several restaurants, are the proposed development of Bicentennial Park/FEC Tract; riverfront hotels, restaurants and shops; and the parks and attractions described on pages 4.9 - 4.11. All these activity centers should include boat docking facilities that invite access from the water.

When a critical mass of waterside destinations is developed, it would be appropriate to encourage privately-owned water taxi services to interconnect them. A water taxi system would provide entertaining rides and spectacular views of the city's waterfront. Vessels should be small, unique and festive. Their operation should be structured like a land taxi system, taking passengers to their individual destinations on demand. The maps on pages 4.15 and 4.21 suggest locations for water taxi stops.

Another means of viewing the river should be provided by regularly scheduled tour boats and dinner cruises. With a good publicity program and colorful narration by knowledgeable tour guides, such a venture should be successful in attracting local residents, as well as tourists and convention guests.

RECOMMENDATIONS

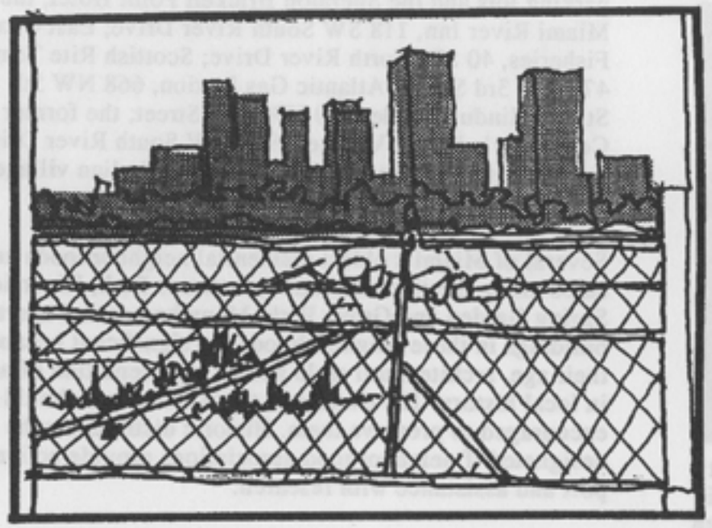
Objective:

4.3 Improve connections between the river and adjacent neighborhoods.

Policies:

4.3.1 Enhance the visibility of public access routes to the waterfront by providing signs, banners or other visual symbols to direct pedestrians to the river.

4.3.2 Enhance the amenity of public access routes to the river with ample sidewalks, street crosswalks, landscaping, lighting, public art and other amenities.



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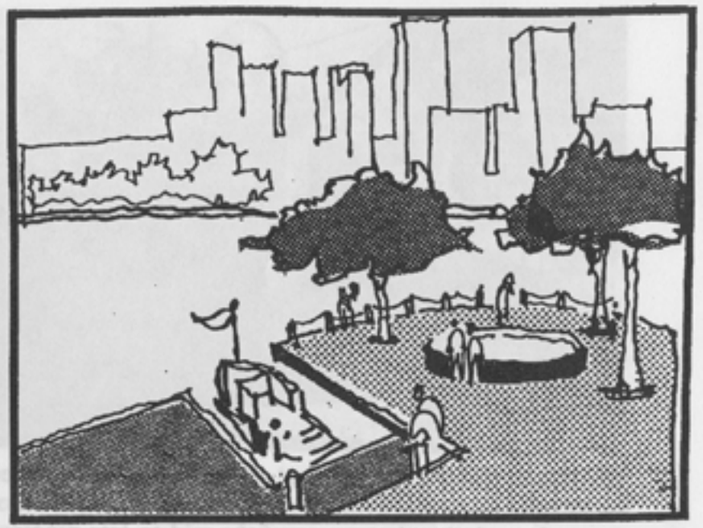


Proposed

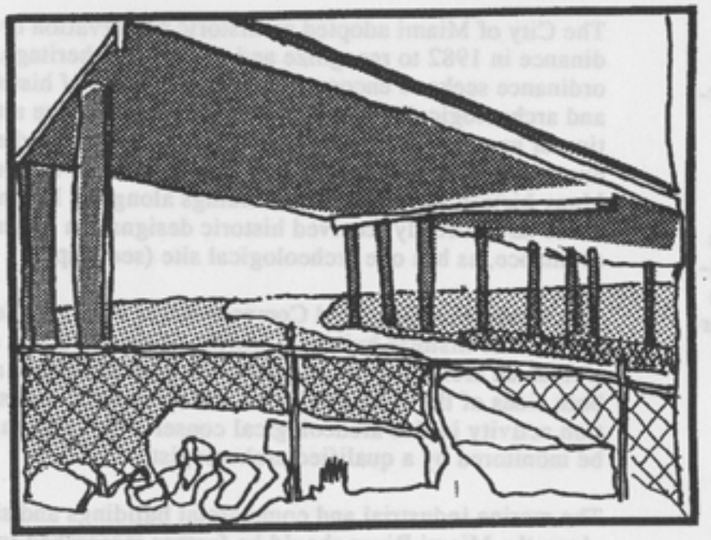
Objective:

4.4 Provide opportunities for the public to view the river's diversity and vitality from the water.

Policies:

4.4.1 Develop a water taxi system to interconnect waterfront activity centers along the river and Biscayne Bay.

4.4.2 Encourage the private sector to operate regularly scheduled passenger tours and dinner cruises on the river.



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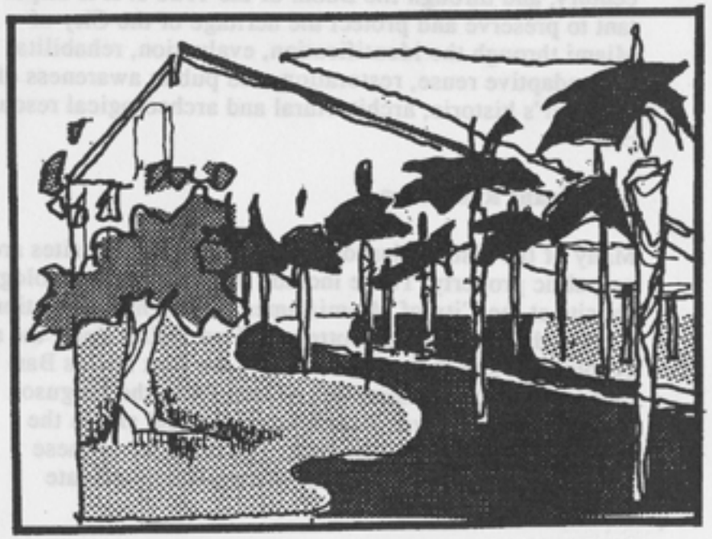


Proposed

HISTORIC PRESERVATION

The Miami River's historic and archeological sites reflect the development and evolution of the City from prehistoric times, through the pioneer era of the mid-to-late nineteenth century, and through the Boom of the 1920's. It is important to preserve and protect the heritage of the City of Miami through the identification, evaluation, rehabilitation, adaptive reuse, restoration, and public awareness of the river's historic, architectural and archeological resources.

Significant Resources

Many of the historic buildings and archeological sites are on public property. These include the Granada archeological site at the City of Miami/James L. Knight Convention Center, the Royal Palm Cottage in Fort Dallas Park, the archeological site in Jose Marti Park, the Fort Dallas Barracks and Wagner House in Lummus Park, the Ferguson Mill and Miami River Rapids archeological site in the Miami River Rapids Mini Park. The majority of these properties are operated and/or maintained by private groups.

Some of the notable privately-owned historic sites include: archeological sites under the present-day Dupont Plaza parking lots and the Sheraton Brickell Point Hotel; the Miami River Inn, 118 SW South River Drive; East Coast Fisheries, 40 SW North River Drive; Scottish Rite Temple, 471 NW 3rd Street; Atlantic Gas Station, 668 NW 5th Street; Hindu Temple, 870 NW 11th Street; the former Coppinger's Indian Village, 1901 NW South River Drive; and the former Musa Isle fruit grove and Indian village, 2501 NW 16th Street Road.

Several of Miami's oldest residential neighborhoods are located along the river, including Lummus Park, Riverside, Spring Garden and Grove Park. Many homes and apartment buildings in these neighborhoods are significant because of their age, architectural style and/or representation of an era in local history. The owners of these structures should be encouraged to preserve them. Historic districts can be designated if neighborhood associations provide active support and assistance with research.

Local Designation

The City of Miami adopted an historic preservation ordinance in 1982 to recognize and preserve its heritage. The ordinance seeks to encourage the preservation of historic and archeological sites by preventing inappropriate alteration or unnecessary destruction of these resources whenever an economically acceptable alternative can be found. Many historically important buildings along the Miami River have already received historic designation under this ordinance, as has one archeological site (see map).

The Miami Neighborhood Comprehensive Plan has identified other historic buildings worthy of preservation, as well as an archeological conservation area stretching along both sides of the river and its natural tributaries. Construction activity in this archeological conservation area must be monitored by a qualified archeologist.

The marine industrial and commercial buildings and sites along the Miami River should be further researched to determine whether any portion of the maritime heritage of the river has been overlooked. State and federal historic preservation grant programs may be applicable to help repair some of the aging waterfront structures and thereby help to preserve the "working waterfront."

Public Awareness

Ten of the significant sites along the river have been provided with historic markers by the Miami River Coordinating Committee. Public awareness of the history of the river should be furthered by adding more of the privately owned historic sites to the marker program and by including narrative history and interesting anecdotes in guided boat tours of the river (see "Travel by Water," p. 4.4). Another important component of this public awareness effort should be an educational center in Lummus Park, dedicated to teaching Miami River history (see page 4.13).

RECOMMENDATIONS

Objective:

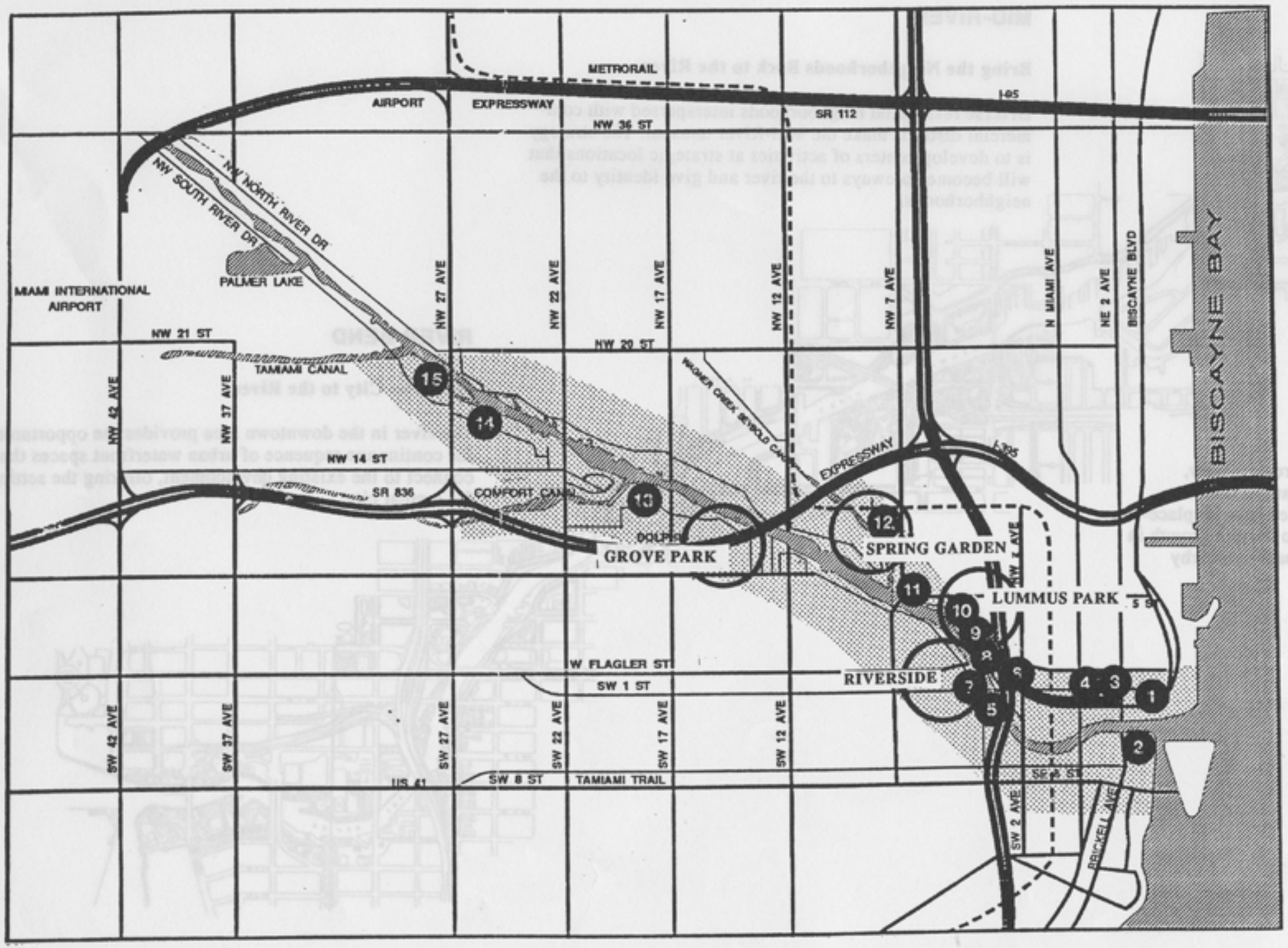
4.5 Preserve and display the rich heritage of the Miami River.

Policies:

4.5.1 Encourage preservation, restoration and, where appropriate, adaptive reuse of historic buildings and neighborhoods.

4.5.2 Continue to enforce the City of Miami's Historic Preservation Ordinance and consider designation of additional historic buildings, sites and districts.

4.5.3 Promote public awareness and use of historic sites with historic markers, narrated tours and interpretive exhibits and programs.



HISTORIC RESOURCES

38 Historic building or site

Historic neighborhood

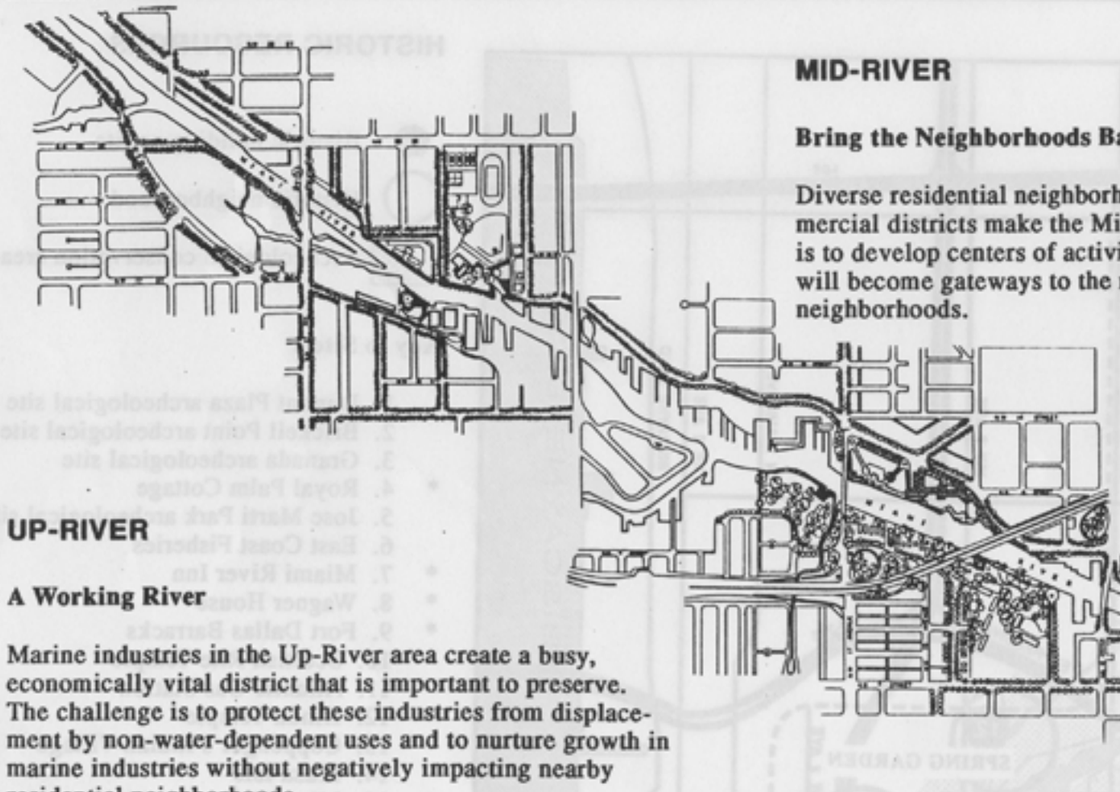
Archeological conservation area

Key to Sites:

1. Dupont Plaza archeological site
2. Brickell Point archeological site
3. Granada archeological site
* 4. Royal Palm Cottage
5. Jose Marti Park archeological site
6. East Coast Fisheries
* 7. Miami River Inn
* 8. Wagner House
* 9. Fort Dallas Barracks
10. Scottish Rite Temple
11. Atlantic Gas Station
* 12. Hindu Temple
13. Coppenger's Indian Village
14. Musa Isle
* 15. Miami River Rapids archeological site

* Denotes sites designated under the City of Miami Historic Preservation Ordinance

NEIGHBORHOOD STRATEGIES



UP-RIVER

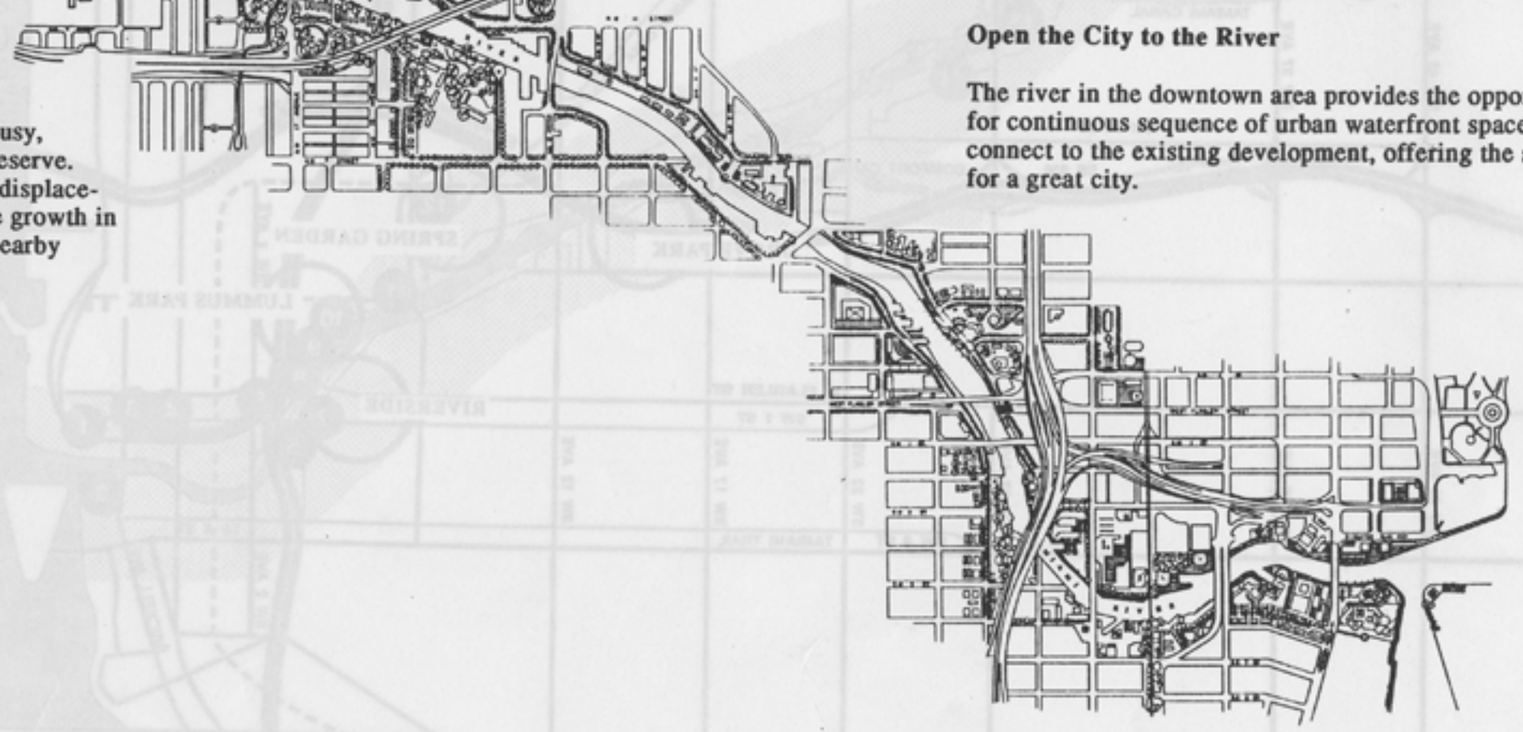
A Working River

Marine industries in the Up-River area create a busy, economically vital district that is important to preserve. The challenge is to protect these industries from displacement by non-water-dependent uses and to nurture growth in marine industries without negatively impacting nearby residential neighborhoods.

MID-RIVER

Bring the Neighborhoods Back to the River

Diverse residential neighborhoods interspersed with commercial districts make the Mid-River unusual. The strategy is to develop centers of activities at strategic locations that will become gateways to the river and give identity to the neighborhoods.



RIVER BEND

Open the City to the River

The river in the downtown area provides the opportunity for continuous sequence of urban waterfront spaces that connect to the existing development, offering the setting for a great city.

Cities throughout the world have been rediscovering and revitalizing their urban waterfronts over the past two decades. Miami has joined in this movement by developing Bayside, rebuilding Bayfront Park, providing space in Fort Dallas Park for an outdoor restaurant, and constructing segments of what will someday be a continuous public walkway along the downtown bayfront and riverfront. But much remains to be accomplished. The following plans and proposals are intended to make the downtown riverfront a major destination for local residents and tourists.

Gateway to the River

The entrance to the Miami River should be a strong visual and functional gateway to the city. This gateway should be framed by major public open spaces/plazas filled with people and activity, and by dramatic works of art or other monumental visual symbols. The principal components of this proposed gateway are as follows:

Dupont Plaza - Redevelopment plans for the Dupont Plaza area include a "Permanent International Trade and Exposition Center" or an exhibition hall to supplement the adjacent convention center, a large convention headquarters hotel, offices, and ground level retail shops and restaurants. If this occurs, it may include demolition of the existing Dupont Plaza Hotel and Apartments. This would provide the opportunity to create a major pedestrian corridor along SE 3rd Avenue, terminating in a public plaza on the river's edge. Alternatively, a gateway feature could be developed at the southern terminus of Biscayne Boulevard.

Riverpoint/Brickell Park - The property on the south shore of the mouth of the Miami River contains more than 600 feet of shoreline and enjoys exceptional views of downtown. This property is very difficult to redevelop for commercial use because vehicular access is constrained by the Brickell Avenue bridge. Public access to the site could be provided easily through pedestrian connections directly from the bridge. The existing Brickell Park, approximately the same area in size, by contrast has virtually no view of the bay (behind Claughton Island and its bridge), less than 200 feet of shoreline and good vehicular access. The City should sell the existing Brickell Park and acquire the riverpoint parcel to develop a new park. The new park should contain activity generating uses, including an outdoor cafe.

Brickell Avenue Bridge - This bridge is scheduled for replacement in 1993. Strong community interest resulted in a design competition to make the bridge an aesthetic landmark as well as a functional gateway. The winning design features vivid symbolism of the history of the river.

RIVER BEND

CBD and Brickell Area Riverfront

The riverfront in the Central Business District (CBD) and Brickell areas should be highly urbanized, sophisticated and active. A variety of uses, public and private, should border the river, providing a critical mass of people and activity to keep the waterfront busy and safe during workdays, evenings and weekends. A sequence of plazas and open spaces should be provided, linked by a continuous riverwalk (see description on the opposite page).

Within the Brickell area, commercial activity should be encouraged and pedestrian access improved along SE 5th Street to link Brickell Avenue employees/residents to the new Metromover station and a proposed activity center, the "Riverbank Plaza" described on page 4.12. Miami Shipyard and other marine commercial uses located to the west of Metrorail should be protected from encroachment by non-water-dependent uses.

The north side of the river is somewhat isolated from the heart of the Central Business District (CBD) by the I-95 distributor ramps. This problem will be helped by the new Metromover station near SE 1st Avenue. Private development of the vacant land west of Miami Avenue should provide a pedestrian corridor linking SW 1st Avenue to the river's edge and a large accessible open space and plaza opening to the river near the Metrorail crossing.

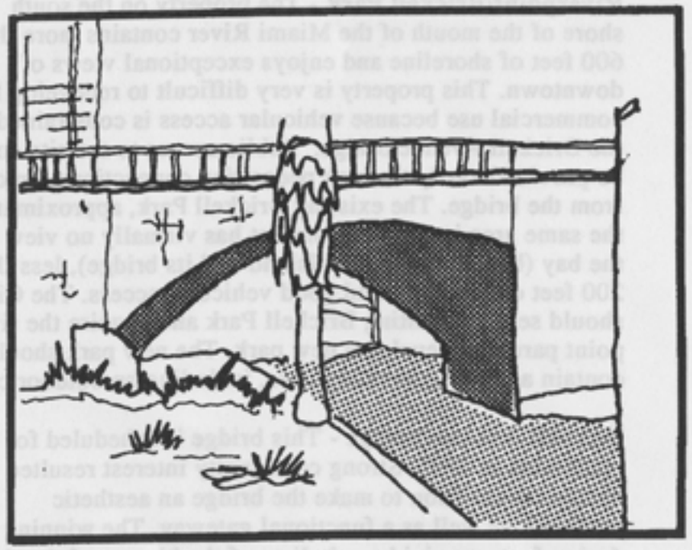
Lummus Park and East Little Havana

The Lummus Park and East Little Havana residential neighborhoods, located to the west of I-95, are each experiencing a decline in average income of the population and an increase in overcrowding and physical deterioration and of the housing units. Concentrated public sector involvement and assistance will be needed to reverse these trends, as well as substantial private sector investment. The river is suggested as a focus around which to begin redevelopment efforts. The name "Riverside Market" has been chosen to provide a theme and an identity.

Stretching along both sides of the river from NW 4th Street on the northwest to I-95 on the southeast, the Riverside Market district should contain a series of riverfront cafes, seafood restaurants, seafood distributors, marinas, docks for tour boats and fishing boats, and a major public market for the sale of fresh produce, meat, specialty foods and seafood. These attractions should be connected by a riverwalk and by the North River Drive sidewalk improvements constructed by the City of Miami in 1987-88. (A similar street/sidewalk improvement should be planned along South River Drive.) New uses should be developed on vacant and underutilized property without displacing established seafood distributors and boat yards that contribute to the economy and character of the working river. This area could develop a character similar to San Francisco's Fisherman's Wharf (prior to the 1970's) that is authentic, historic and fun for residents, visitors and downtown employees alike.

In addition to Riverside Market, revitalization of the Lummus Park neighborhood should include rehabilitation of historic homes and apartment buildings, construction of new housing, and completion of the Lummus Park plans described on page 4.13.

In East Little Havana, increased use of Jose Marti Park should be encouraged by organizing special activities and events and by leasing the existing pavilion for restaurant and/or waterfront-related recreational activities. Public spaces under the West Flagler and SW 1st Street bridges should be improved for public use. Views of Jose Marti Park, the Miami River and the CBD provide the necessary amenities for residential redevelopment to be encouraged west of Jose Marti Park and north of West Flagler Street. To the north of the park along the inland side of South River Drive, mixed-uses should be permitted, including residential, hotel and ground floor commercial. Parking adjacent to the waterfront should be discouraged, but off-site parking should be permitted west of South River Drive.



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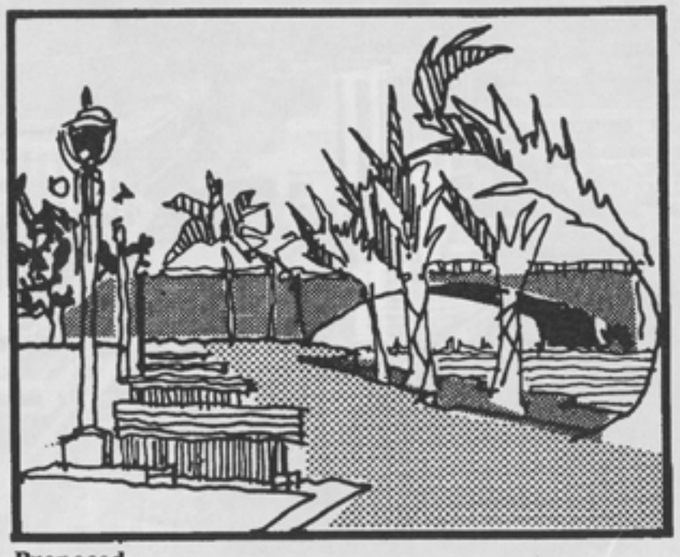


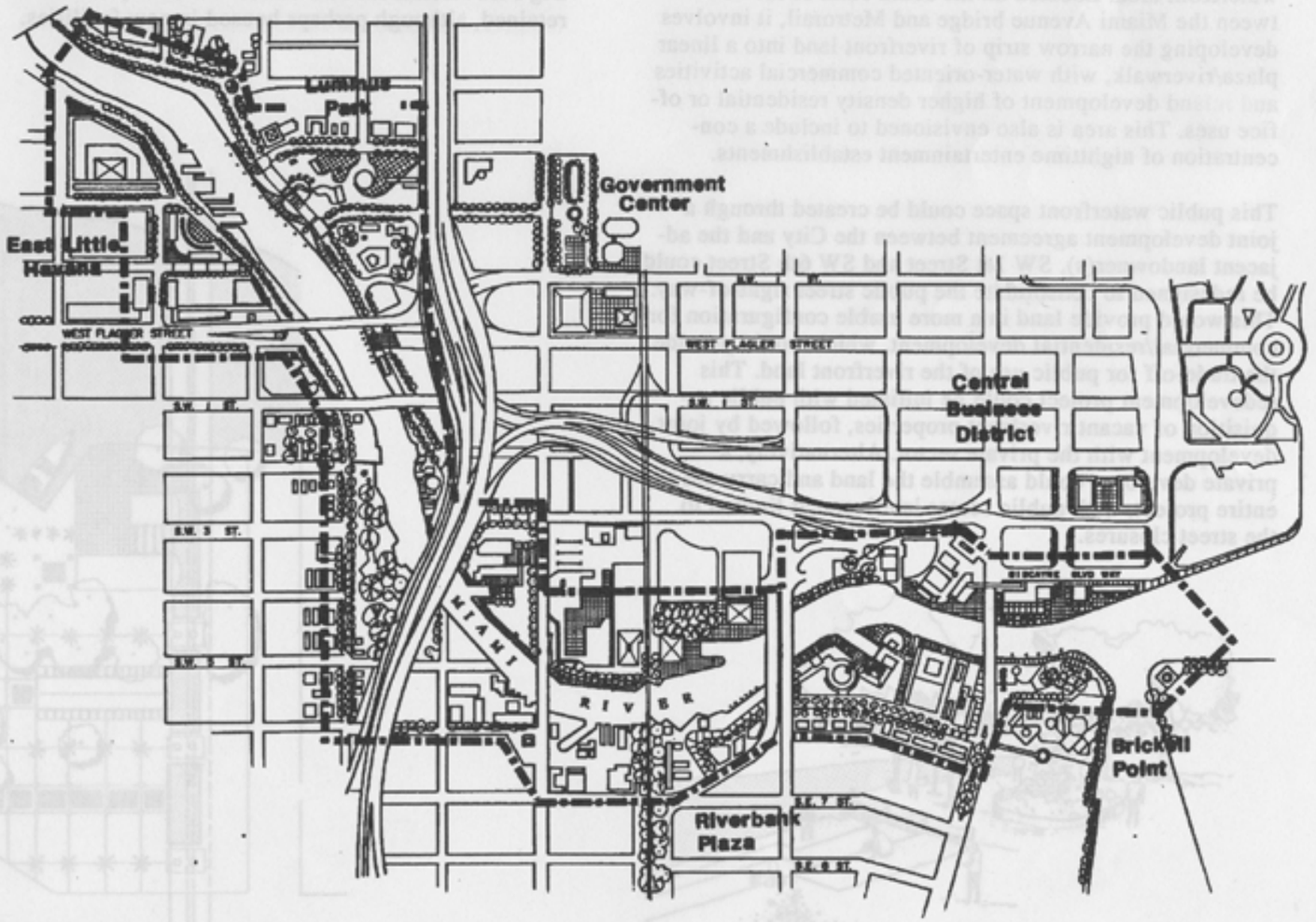
Proposed

Riverwalk

A continuous system of public waterfront walkways along Biscayne Bay and the Miami River is being constructed incrementally as individual public and private waterfront lands are developed or redeveloped. Existing zoning and City Charter requirements assure that privately-owned properties provide waterfront setbacks and improvements. However, if there is to be any continuity in the system, it is important to ensure that individual pieces are built to conform to a uniform design standard. In 1983, the City Commission adopted the "Baywalk/Riverwalk Design Standards," which include general design principles and apecific standards for the layout, landscaping, lighting and signage of a 20-foot-wide public access corridor along the waterfront. The following connections are needed to complete the riverwalk:

CBD/Brickell Area - A riverwalk should follow both shorelines of the Miami River from I-95 (north shore) and Metrorail (south shore) east to the bay. Riverwalk improvements with special lighting should be provided under all bridges; and stairways and ramps should connect the riverwalk to pedestrian walkways on each bridge. A crucial missing link in the riverwalk system must be filled in adjacent to the U.S. Customs Building and Rivergate Center. If U.S. Customs' security needs make it impossible to permit public access at dockside level, an elevated walkway should be constructed to connect with the plaza level at the adjacent Rivergate Center building.

North River Drive - A riverwalk system should be integrated with North River Drive from I-95 to NW 5th Street. A water's edge walkway should follow publicly owned property, but connect to the nearby River Drive sidewalk where privated commercial and industrial marine activities make a waterfront walkway impossible. The City of Miami completed special sidewak paving and landscaping along this segment of North River Drive in 1988.



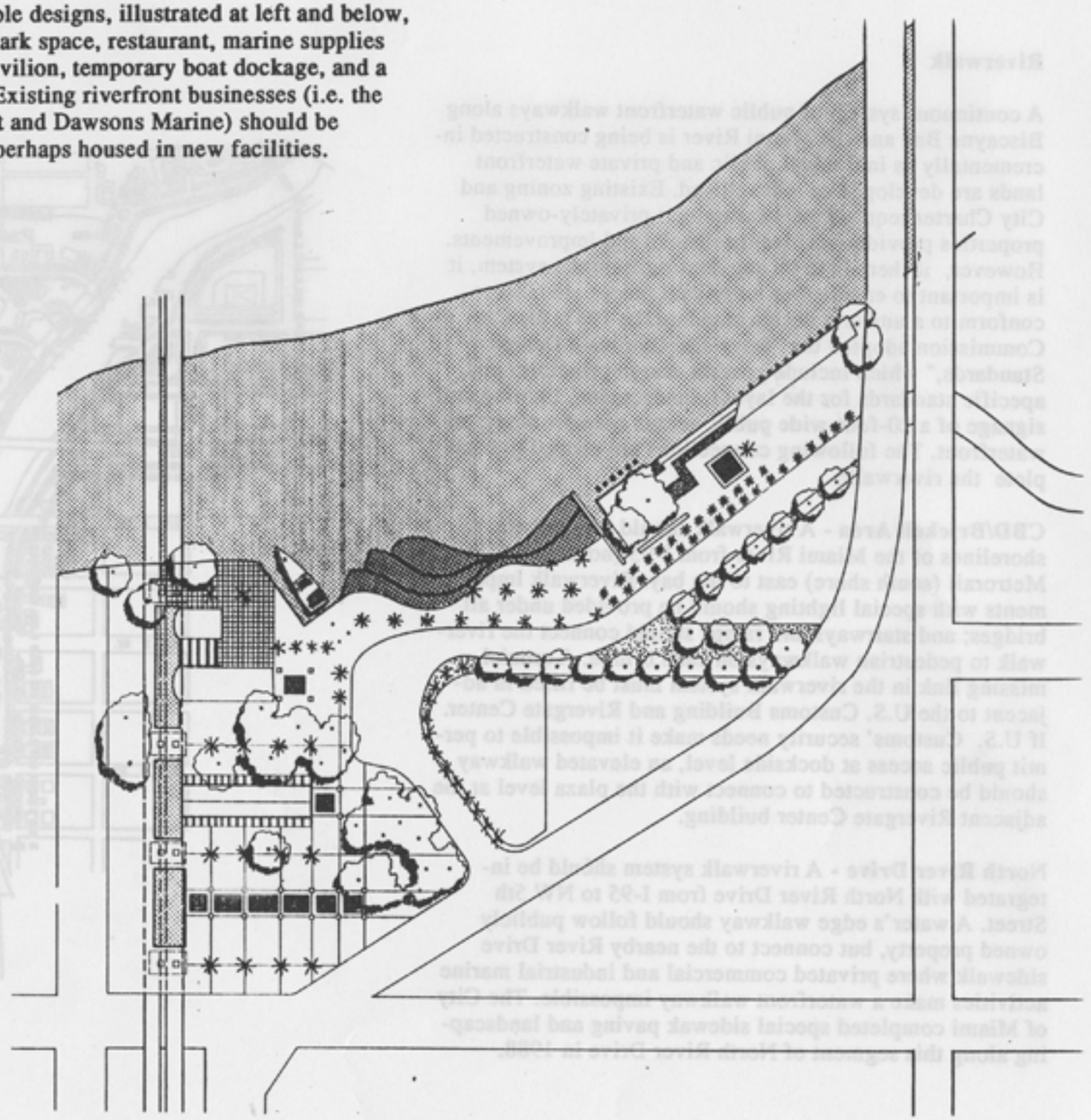
RIVER BEND

Development Opportunities - Riverbank Plaza

Riverbank Plaza is a key element in a strategy to create a more inviting pedestrian environment for the Brickell waterfront area. Located on the south bank of the river between the Miami Avenue bridge and Metrorail, it involves developing the narrow strip of riverfront land into a linear plaza/riverwalk, with water-oriented commercial activities and inland development of higher density residential or office uses. This area is also envisioned to include a concentration of nighttime entertainment establishments.

This public waterfront space could be created through a joint development agreement between the City and the adjacent landowner(s). SW 1st Street and SW 6th Street could be redesigned to consolidate the public street right-of-way. This would provide land in a more usable configuration for commercial/residential development, which would provide the trade-off for public use of the riverfront land. This redevelopment project could be initiated with public acquisition of vacant riverfront properties, followed by joint development with the private sector. Alternatively, a private developer could assemble the land and carry out the entire project, with public sector involvement limited to the street closures.

One of many possible designs, illustrated at left and below, calls for an urban park space, restaurant, marine supplies store, public use pavilion, temporary boat dockage, and a water taxi station. Existing riverfront businesses (i.e. the Big Fish Restaurant and Dawsons Marine) should be retained, although perhaps housed in new facilities.

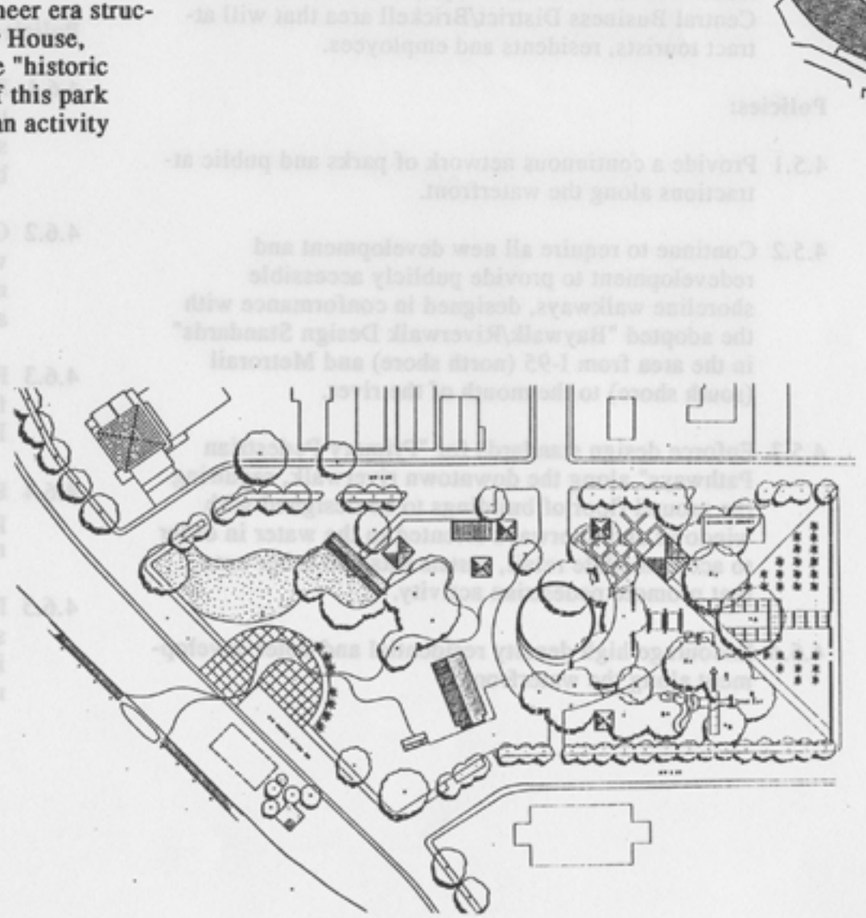


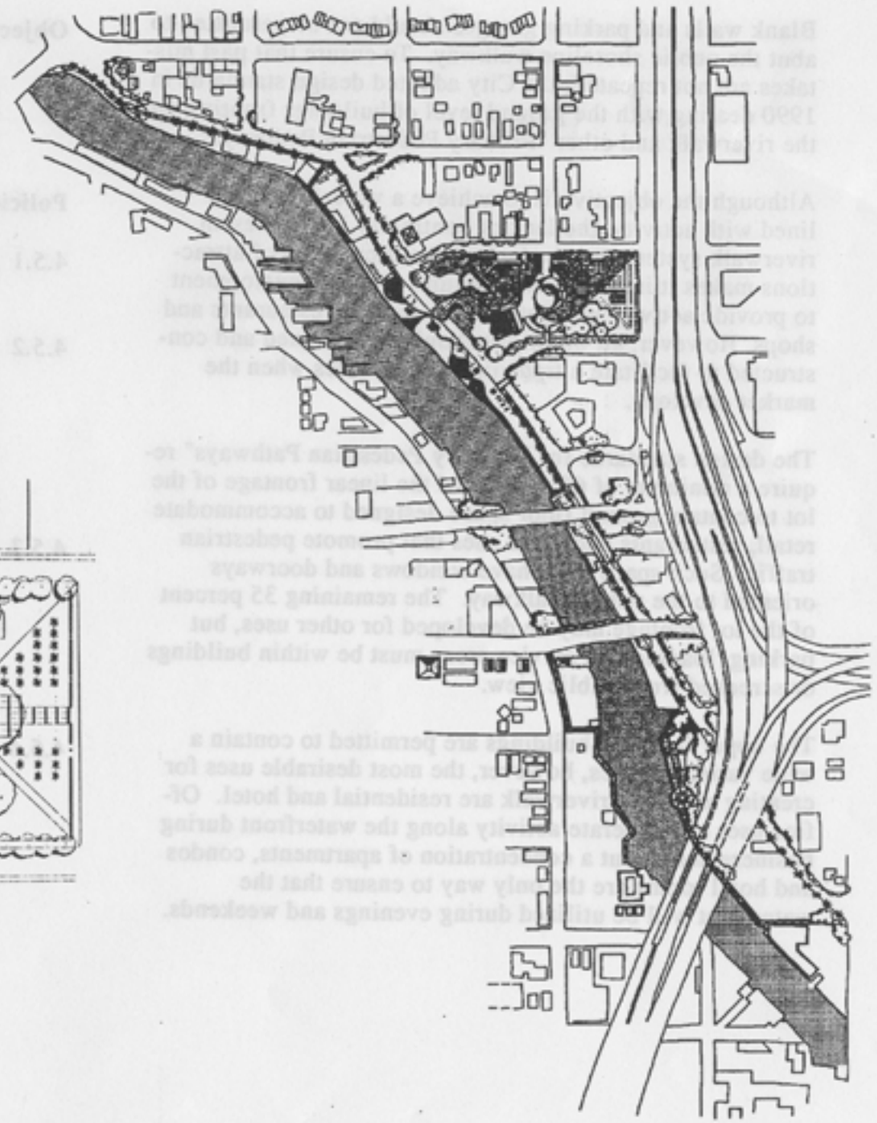
Development Opportunities - Lummus Park

Lummus Park, a seven acre public park and the center of the Lummus Park neighborhood, is one of the oldest neighborhood parks of the city. The presence of pioneer era structures, the Fort Dallas Barracks and the Wagner House, gives Lummus Park a unique importance as the "historic park" for all of Miami. The historical nature of this park should be highlighted through the creation of an activity center that would teach the history of the Miami River. Local historical societies could organize public festivals, crafts programs and educational activities in the park.

The city has a multi-phased plan for reconstructing Lummus Park, which includes moving the Pioneer Club from the riverfront into the interior of the park and developing the river's edge with a new marina and restaurant/boating services. An entrance plaza adjacent to North River Drive has already been completed. A new plaza adjacent to NW 3rd Avenue is planned to define an entrance to the park for the nearly 60,000 downtown employees that work in the adjacent Central Business District.

Lummus Park is a focal point in the concept for redevelopment of a larger area called "Riverside Market", which is illustrated on the left and described on page 4.10.





Waterfront Development Standards

Blank walls and parking garages should not be permitted to abut the public shoreline walkway. To ensure that past mistakes are not repeated, the City adopted design standards in 1990 dealing with the ground level of buildings fronting on the riverwalk and other "Primary Pedestrian Pathways".

Although the objective is to achieve a waterfront edge lined with activity, the lack of continuity in the present riverwalk system and the lack of a critical mass of attractions makes it impractical to require all new development to provide activity generating uses such as restaurants and shops. However, all buildings should be designed and constructed to facilitate a transition to such uses when the market develops.

The design standards for "Primary Pedestrian Pathways" require a minimum of 65 percent of the linear frontage of the lot to contain ground floor space designed to accommodate retail, restaurants and other uses that promote pedestrian traffic. Such space must have windows and doorways oriented to the public walkway. The remaining 35 percent of the lot frontage may be developed for other uses, but parking, loading and service areas must be within buildings or screened from public view.

The upper floors of buildings are permitted to contain a wide variety of uses, however, the most desirable uses for creating an active riverwalk are residential and hotel. Office uses can generate activity along the waterfront during business hours, but a concentration of apartments, condos and hotel rooms are the only way to ensure that the waterfront will be utilized during evenings and weekends.

RECOMMENDATIONS

Objective:

4.5 Achieve a continuous, lively, urban riverwalk in the Central Business District/Brickell area that will attract tourists, residents and employees.

Policies:

4.5.1 Provide a continuous network of parks and public attractions along the waterfront.

4.5.2 Continue to require all new development and redevelopment to provide publicly accessible shoreline walkways, designed in conformance with the adopted "Baywalk/Riverwalk Design Standards" in the area from I-95 (north shore) and Metrorail (south shore) to the mouth of the river.

4.5.3 Enforce design standards for "Primary Pedestrian Pathways" along the downtown riverwalk, requiring the ground floor of buildings to be designed with windows and doorways oriented to the water in order to accommodate retail, restaurants and other uses that promote pedestrian activity.

4.5.4 Encourage high density residential and hotel development along the waterfront.

Objective:

4.6 Use the amenity of the river as a focus for revitalization of the adjacent East Little Havana and Lummus Park neighborhoods.

Policies:

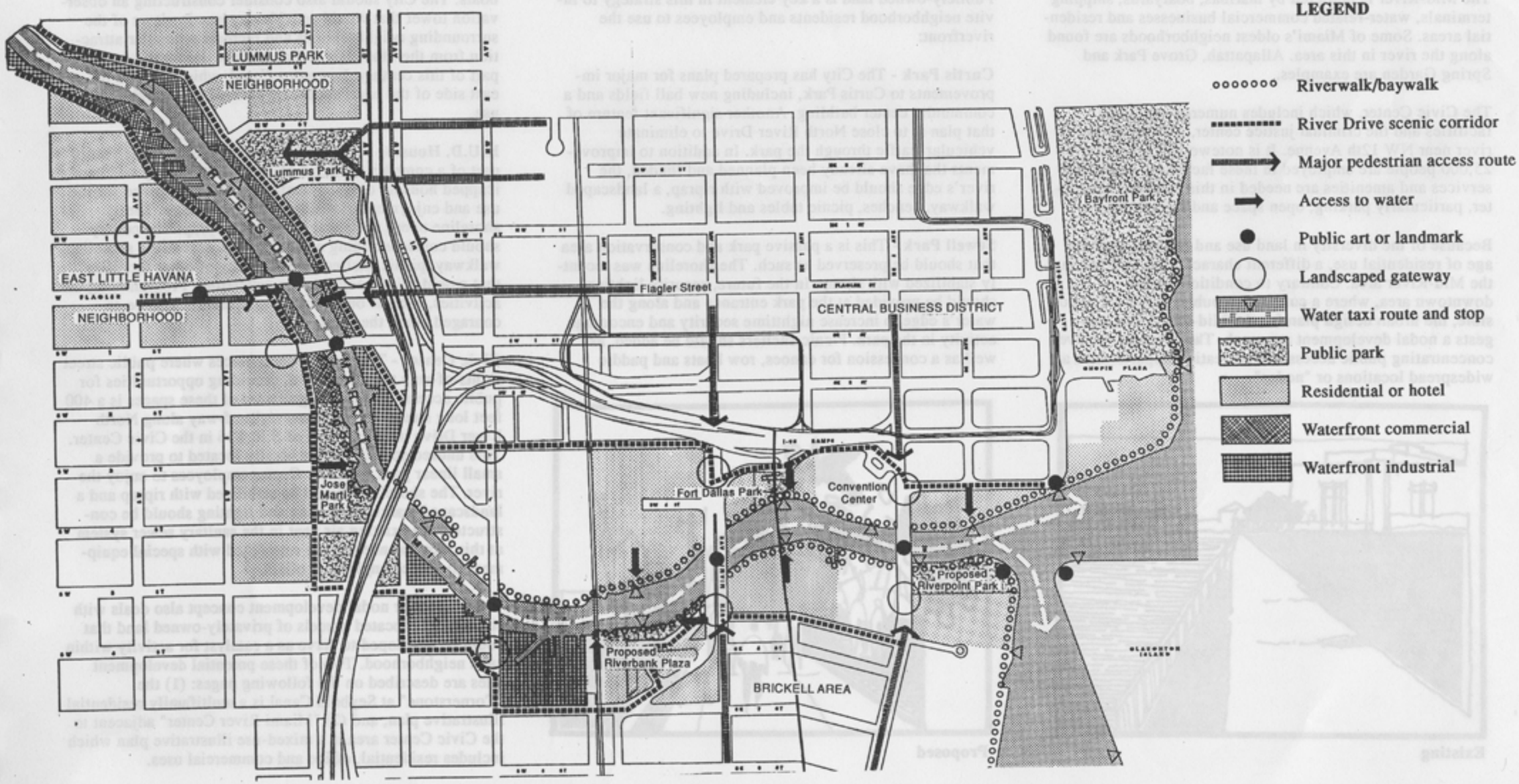
4.6.1 Promote development of a "Riverside Market" district including riverfront cafes, seafood restaurants, seafood distributors, marinas, tour boats, fishing boats and a public market.

4.6.2 Create an identity for the "Riverside Market" district with an historic riverfront motif for sidewalk pavement, lighting, benches, litter receptacles, signage and landscaping.

4.6.3 Promote rehabilitation and new construction of multi-family housing on the inland side of North and South River Drive.

4.6.4 Redevelop Lummus Park and adjacent waterfront property to provide an interpretive history center and riverfront activities.

4.6.5 Increase usage of Jose Marti Park by programming special events and festivals and by leasing the existing pavilion for restaurant and/or waterfront-related recreational activities.


LUMMUS PARK
NEIGHBORHOOD
Lummus Park
RIVERSIDE
EAST LITTLE HAVANA
NEIGHBORHOOD
Flagler Street
CENTRAL BUSINESS DISTRICT
Bayfront Park
MARKET
Jose Marti Park
Fort Dallas Park
Convention Center
Proposed Riverpoint Park
Proposed Riverbank Plaza
BRICKELL AREA
LEGEND
Riverwalk/baywalk
River Drive scenic corridor
Major pedestrian access route
Access to water
Public art or landmark
Landscaped gateway
Water taxi route and stop
Public park
Residential or hotel
Waterfront commercial
Waterfront industrial

MID-RIVER

The Mid-River is bordered by marinas, boatyards, shipping terminals, water-related commercial businesses and residential areas. Some of Miami's oldest neighborhoods are found along the river in this area. Allapattah, Grove Park and Spring Garden are examples.

The Civic Center, which includes numerous medical facilities and the criminal justice center, is close to the river near NW 12th Avenue. It is noteworthy because over 25,000 people are employed in these facilities. Additional services and amenities are needed in this employment center, particularly parking, open space and restaurants.

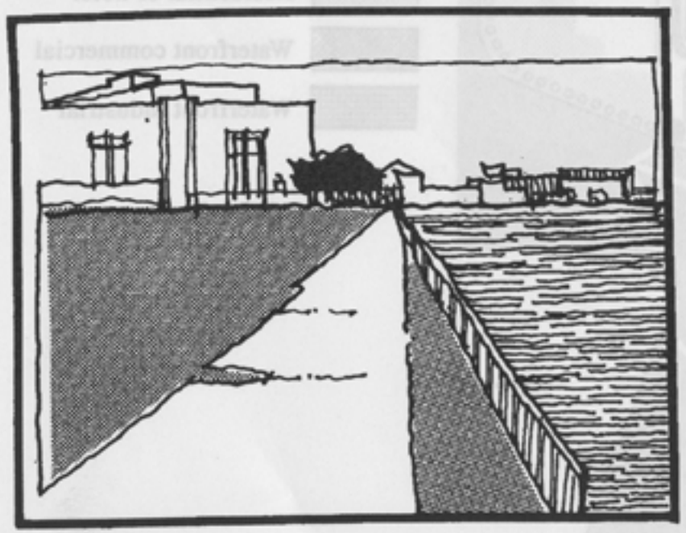
Because of the diversity in land use and the high percentage of residential use, a different character has evolved in the Mid-River area. Contrary to conditions in the downtown area, where a continuous public riverwalk is possible, the urban design plan for the Mid-River area suggests a nodal development approach. This strategy involves concentrating public access and recreation opportunities at widespread locations or "nodes".

Publicly-owned land is a key element in this strategy to invite neighborhood residents and employees to use the riverfront:

Curtis Park - The City has prepared plans for major improvements to Curtis Park, including new ball fields and a community center building. Another significant feature of that plan is to close North River Drive to eliminate vehicular traffic through the park. In addition to improvements that have already been planned and funded, the river's edge should be improved with riprap, a landscaped walkway, benches, picnic tables and lighting.

Sewell Park - This is a passive park and conservation area that should be preserved as such. The shoreline was recently stabilized with riprap. In the future, security lighting should be provided at the park entrance and along the water's edge to increase nighttime security and encourage activity in the park. Picnic shelters should be added, as well as a concession for canoes, row boats and paddle boats. The City should also consider constructing an observation tower that would provide panoramic views of the surrounding neighborhoods and recreate a popular attraction from the Musa Isle Indian Village during the earlier part of this century. Lawrence Canal, which borders the east side of the park, should be cleaned up to invite public use.

H.U.D. Housing - The large riverfront green space that is part of a complex of Metro-Dade County elderly and handicapped housing developments should be improved for the use and enjoyment of residents and neighbors. The shoreline needs to be stabilized with riprap. The county should consider adding a handicapped-accessible shoreline walkway, picnic shelters and a variety of other facilities that would bring people to the waterfront. Programming of activities, such as outdoor concerts, should also be encouraged along the river.

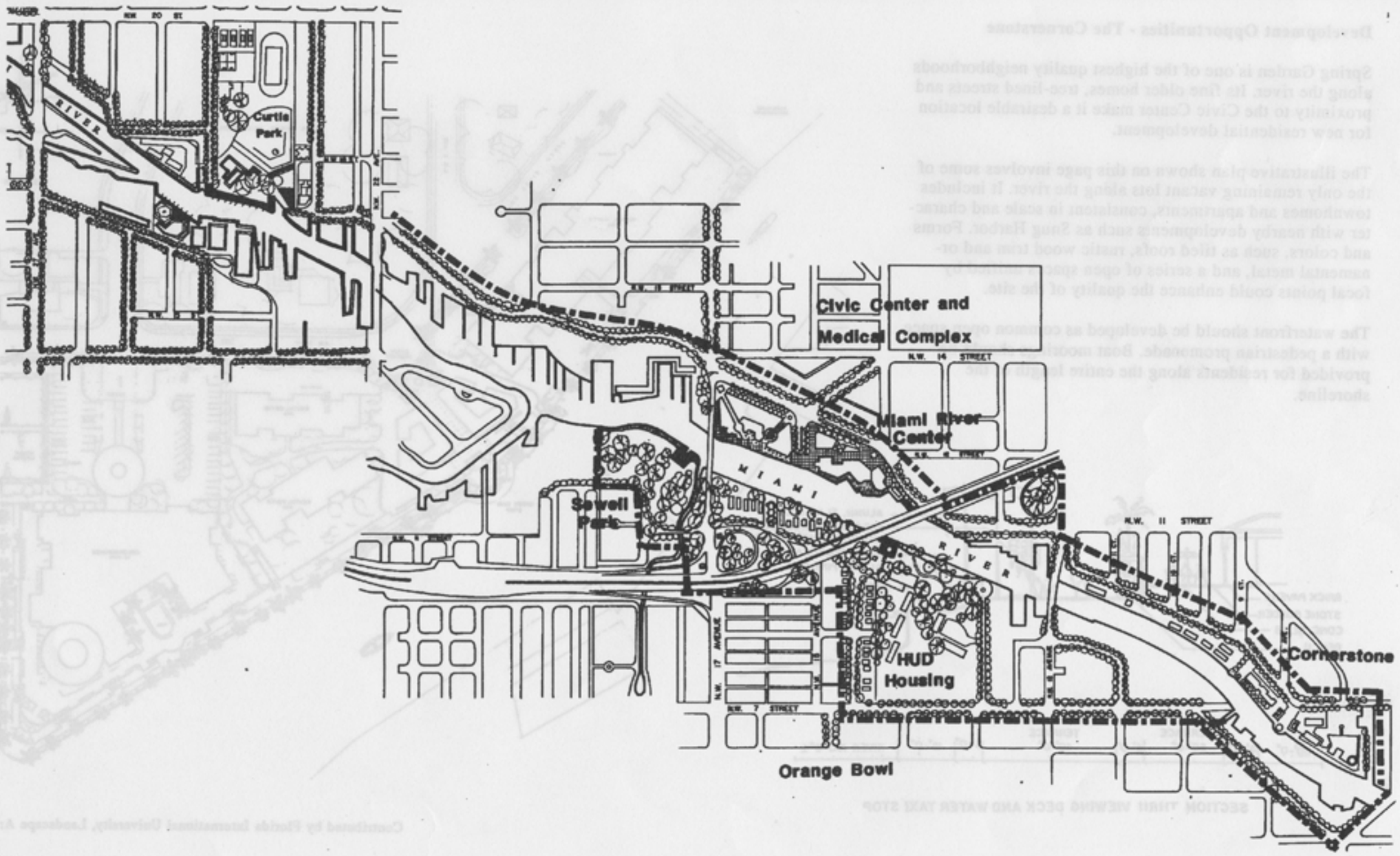


Existing

Proposed

Civic Center - There are several places where public street rights-of-way touch the river, providing opportunities for public access. The most significant of these spaces is a 400 feet long stretch of riverfront right-of-way along North River Drive in the vicinity of S.R. 836 in the Civic Center. This unused strip of land is ideally located to provide a small linear park for Civic Center employees to enjoy the river. The shoreline should be stabilized with riprap and a landscaped walkway, seating and lighting should be constructed. An existing air vent in the sanitary sewer system at this location needs to be retrofitted with special equipment to reduce unpleasant odors.

The Mid-River nodal development concept also deals with strategically located parcels of privately-owned land that could be developed to serve as a catalyst for activity within each neighborhood. Two of these potential development sites are described on the following pages: (1) the "Cornerstone" at Seybold Canal is a multifamily residential illustrative plan, and (2) "Miami River Center" adjacent to the Civic Center area is a mixed-use illustrative plan which includes residential, office and commercial uses.


Curtis Park
Civic Center and Medical Complex
Miami River Center
Sewell Park
HUD Housing
Cornerstone
Orange Bowl
MIAMI RIVER
N.W. 14 STREET
N.W. 11 STREET
N.W. 7 STREET
N.W. 17 AVENUE

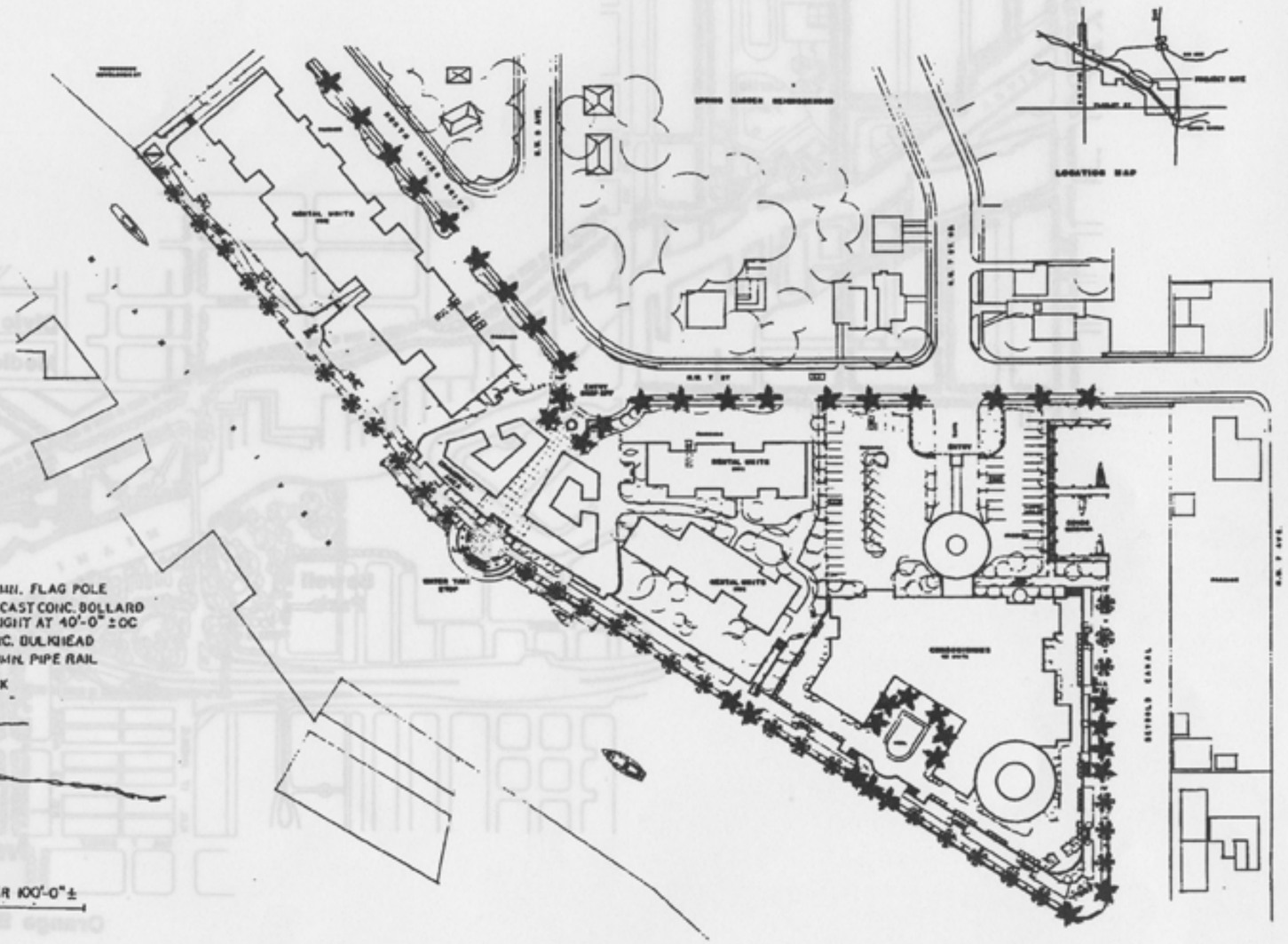
MID-RIVER

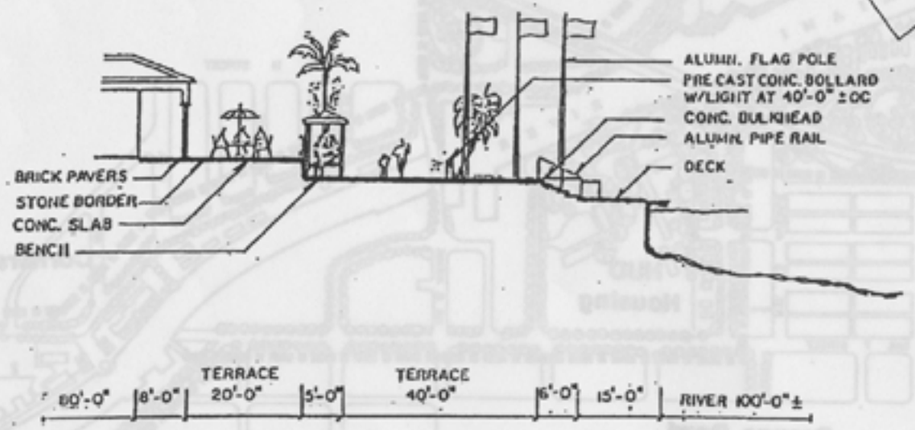
Development Opportunities - The Cornerstone

Spring Garden is one of the highest quality neighborhoods along the river. Its fine older homes, tree-lined streets and proximity to the Civic Center make it a desirable location for new residential development.

The illustrative plan shown on this page involves some of the only remaining vacant lots along the river. It includes townhomes and apartments, consistent in scale and character with nearby developments such as Snug Harbor. Forms and colors, such as tiled roofs, rustic wood trim and ornamental metal, and a series of open spaces unified by focal points could enhance the quality of the site.

The waterfront should be developed as common open space with a pedestrian promenade. Boat moorings should be provided for residents along the entire length of the shoreline.





SECTION THRU VIEWING DECK AND WATER TAXI STOP

Contributed by Florida International University, Landscape Architecture Program.

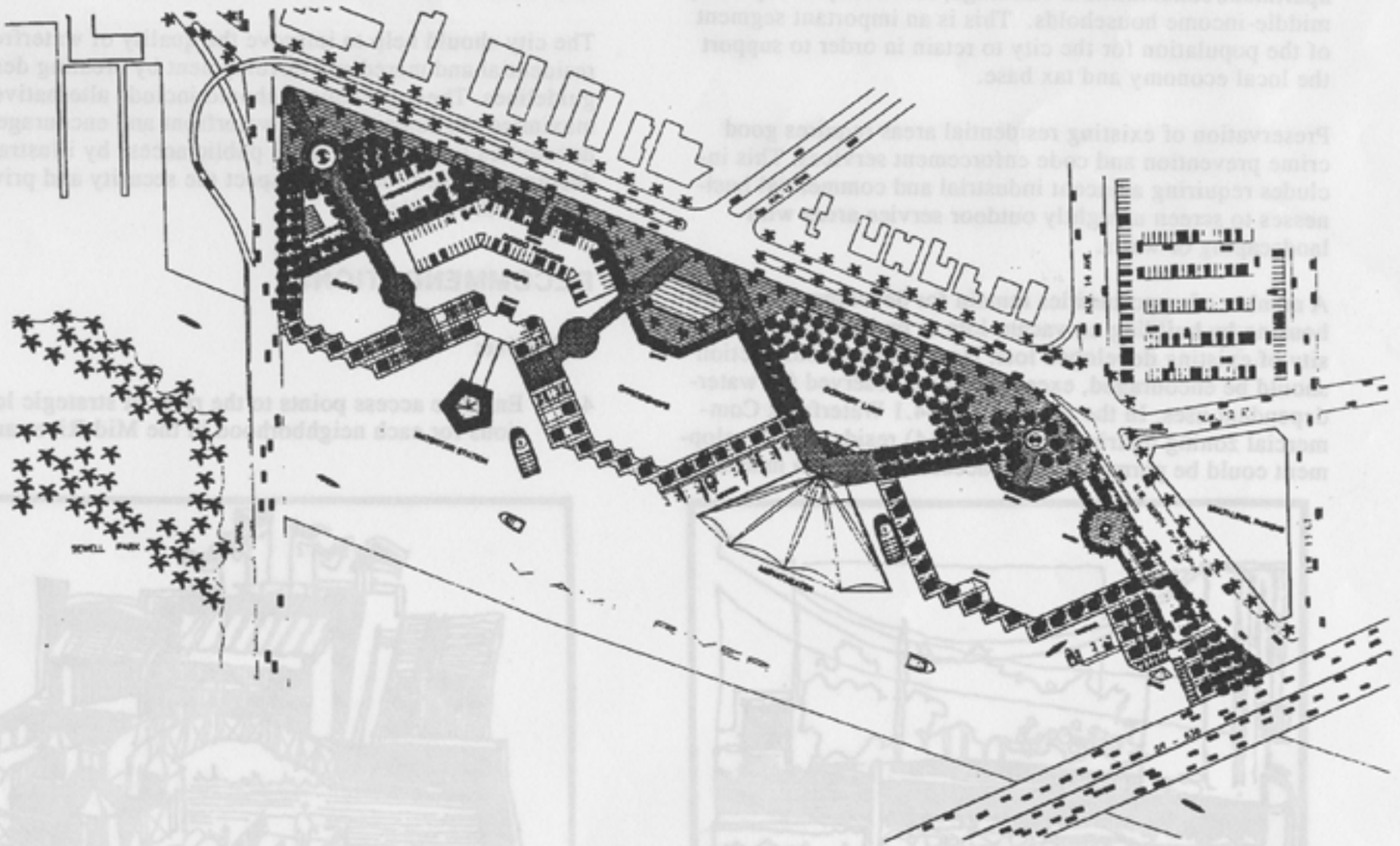
Development Opportunities - Miami River Center

Miami River Center is an illustrative concept for a mixed-use, high-rise complex that includes offices, apartments, retail/service establishments, parking garages and a marina to serve the Civic Center area.

In this plan, commercial use would be confined to the ground and second level and should include restaurants, specialty shops, neighborhood convenience goods and services, and a movie theater. A marina would service residents and visitors traveling by boat and water taxi. These commercial areas would create an inviting environment that would connect the riverfront with surrounding neighborhoods. This type of commercial development is not permitted in the existing office and residential zoning designations; therefore, a zoning change to Restricted Commercial would be needed.

The high-rise apartment and office towers would be surrounded by ample open space. Landscape planting, site furnishings and pavement patterns would complement and unify the project.

Public access to the river should be encouraged with shaded plazas and sidewalks that would direct pedestrian movement toward a riverwalk. Activity should be generated along the riverwalk by outdoor cafes, shops, the marina and water taxi station, and an outdoor amphitheater.



Contributed by Florida International University, Landscape Architecture Program.

MID-RIVER

Residential Development

The Mid-River area contains most of the existing housing located along the Miami River. The wide variety of dwelling types, ranging from single family homes to highrise apartment/condominium buildings, are mostly occupied by middle-income households. This is an important segment of the population for the city to retain in order to support the local economy and tax base.

Preservation of existing residential areas requires good crime prevention and code enforcement services. This includes requiring adjacent industrial and commercial businesses to screen unsightly outdoor service areas with landscaping or walls.

A number of opportunities remain for development of new housing by building on vacant lots or by increasing the density of existing developed lots. New housing construction should be encouraged, except on lands reserved for water-dependent uses. In the proposed SD-4.1 Waterfront Commercial zoning district (see page 1.14) residential development could be permitted as an accessory use to a marina.

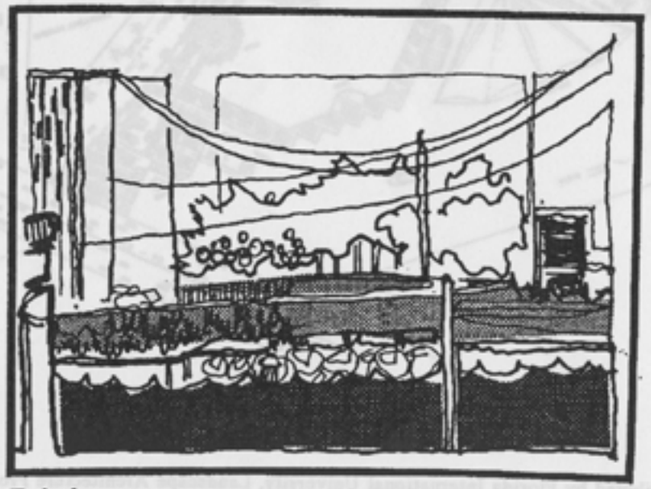
All multifamily development should include boat moorings for private pleasure craft and common open space for residents along the waterfront. Although housebarges and liveaboard vessels are prohibited in residential districts (except for 49 grandfathered vessels) liveaboard vessels may be moved, with permission, in other areas.

The city should help to improve the quality of waterfront residential and mixed-use development by creating design guidelines. These guidelines should include alternatives to maximize the amenity of the waterfront and encourage developers to provide general public access by illustrating design configurations that respect the security and privacy needs of the residents.

RECOMMENDATIONS

Objective:

4.7 Enhance access points to the river at strategic locations for each neighborhood in the Mid-River area.



Existing

Proposed

Policies:

4.7.1 Increase usage at Sewell Park with programmed activities, picnic shelters and canoe rentals. Add security lighting and an observation tower which would offer a panoramic view of the city.

4.7.2 Stabilize the shoreline at Curtis Park and construct a landscaped riverwalk connected to the proposed new community center and ball fields.

4.7.3 Improve the public right-of-way along North River Drive in the Civic Center as a linear riverfront park.

4.7.4 Promote development of riverfront restaurants, commercial services and housing between S.R. 836 and NW 17th Avenue in the Civic Center area.

Objective:

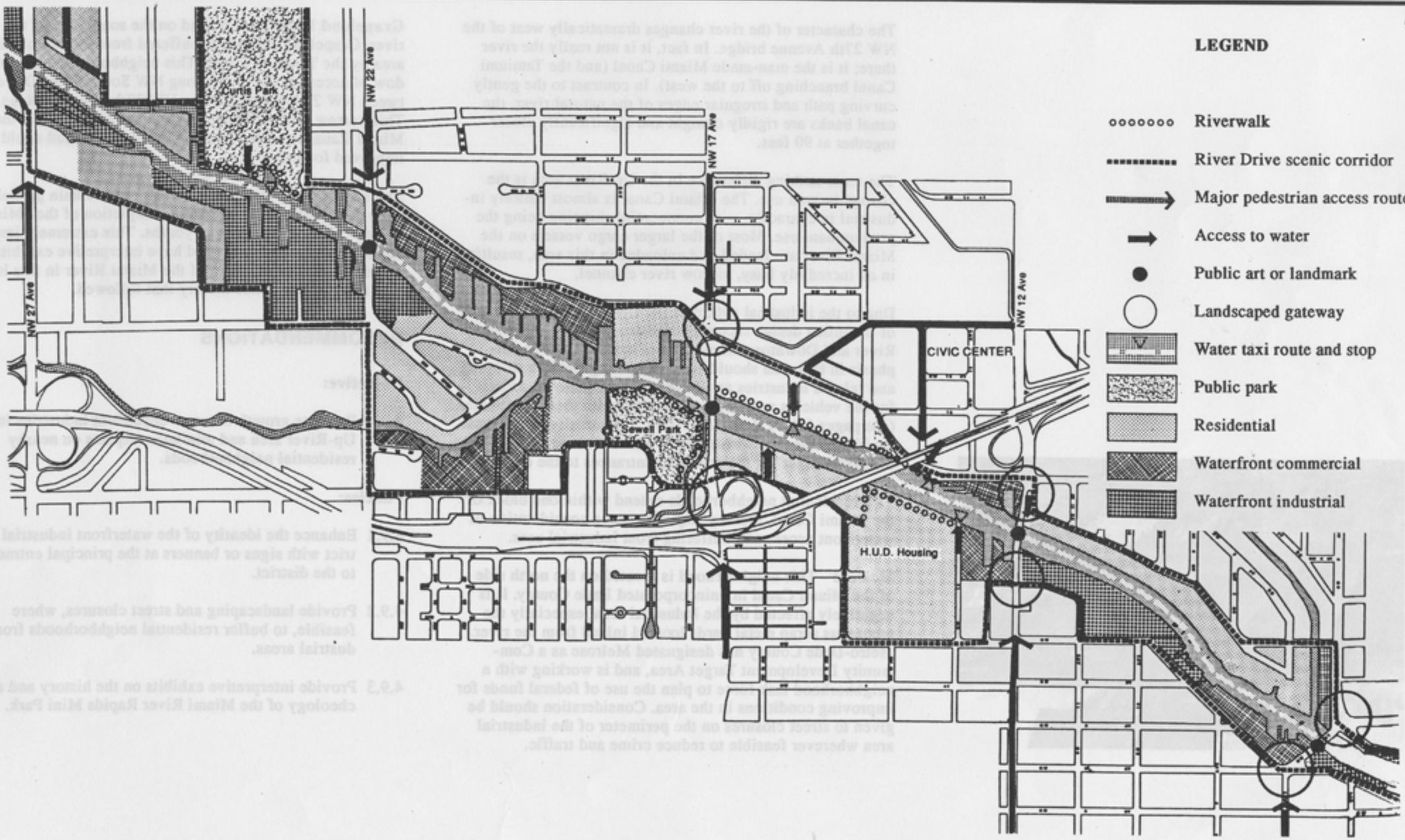
4.8 Encourage residential development on appropriately zoned lands in the Mid-River area.

Policies:

4.8.1 Preserve existing residential neighborhoods and promote infill of vacant residential lots with new housing and recreational boat slips.

4.8.2 Create "Riverwalk Design Guidelines for the Mid-River" to encourage new development and redevelopment to provide public access to the waterfront.

4.8.3 Require businesses to screen outdoor storage, parking and loading areas from view of adjacent residential neighborhoods.


Curtis Park
NW 22 Ave
NW 17 Ave
NW 27 Ave
NW 12 Ave
CIVIC CENTER
Sewell Park
H.U.D. Housing
LEGEND
Riverwalk
River Drive scenic corridor
Major pedestrian access route
Access to water
Public art or landmark
Landscaped gateway
Water taxi route and stop
Public park
Residential
Waterfront commercial
Waterfront industrial

UP-RIVER

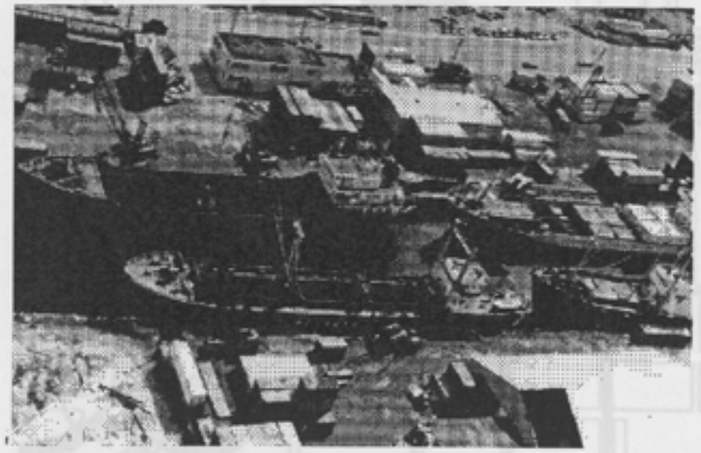
The character of the river changes dramatically west of the NW 27th Avenue bridge. In fact, it is not really the river there; it is the man-made Miami Canal (and the Tamiami Canal branching off to the west). In contrast to the gently curving path and irregular edges of the natural river, the canal banks are rigidly straight and significantly closer together at 90 feet.

The most striking difference in the Up-River area is the change in land use. The Miami Canal is almost entirely industrial in character, with commercial shipping being the predominant use. Most of the larger cargo vessels on the Miami River are loaded and unloaded in this area, resulting in an incredibly busy, narrow river channel.

Due to the industrial nature of the Up-River corridor, many of the urban design recommendations made for the Mid-River and Downtown areas are not applicable. The emphasis in this area should be to promote growth in shipping and related industries and to provide adequate roadways for the vehicles and trucks associated with these businesses (see pages 1.4 - 1.7 and 2.6 - 2.7). The identity of the area could be enhanced with signs or banners announcing "Port of Miami River" at the principal entrances to the district.

Two residential neighborhoods extend within one block of the Miami Canal, thereby requiring some consideration of waterfront access and buffering from industrial uses.

Melrose - This neighborhood is located on the north side of the Miami Canal in unincorporated Dade County. It is negatively affected by the industrial area, especially the numerous scrap metal yards located inland from the river. Metro-Dade County has designated Melrose as a Community Development Target Area, and is working with a neighborhood task force to plan the use of federal funds for improving conditions in the area. Consideration should be given to street closures on the perimeter of the industrial area wherever feasible to reduce crime and traffic.



Grapeland Heights - Located on the south side of the river, Grapeland Heights is buffered from the industrial area by the Tamiami Canal. This neighborhood has a window of access to the river along NW South River Drive between NW 20th Street and the NW 27th Avenue bridge. This narrow sliver of land between the roadway and the Miami Canal is owned by the City of Miami and could be improved for public use.

The Miami River Rapids Mini Park, will remain partially open as a public park following completion of the "Miami Bridge" shelter for runaway youths. This extremely important archeological site should have interpretive exhibits explaining the natural origin of the Miami River in this location and the man-made history that followed.

RECOMMENDATIONS

Objective:

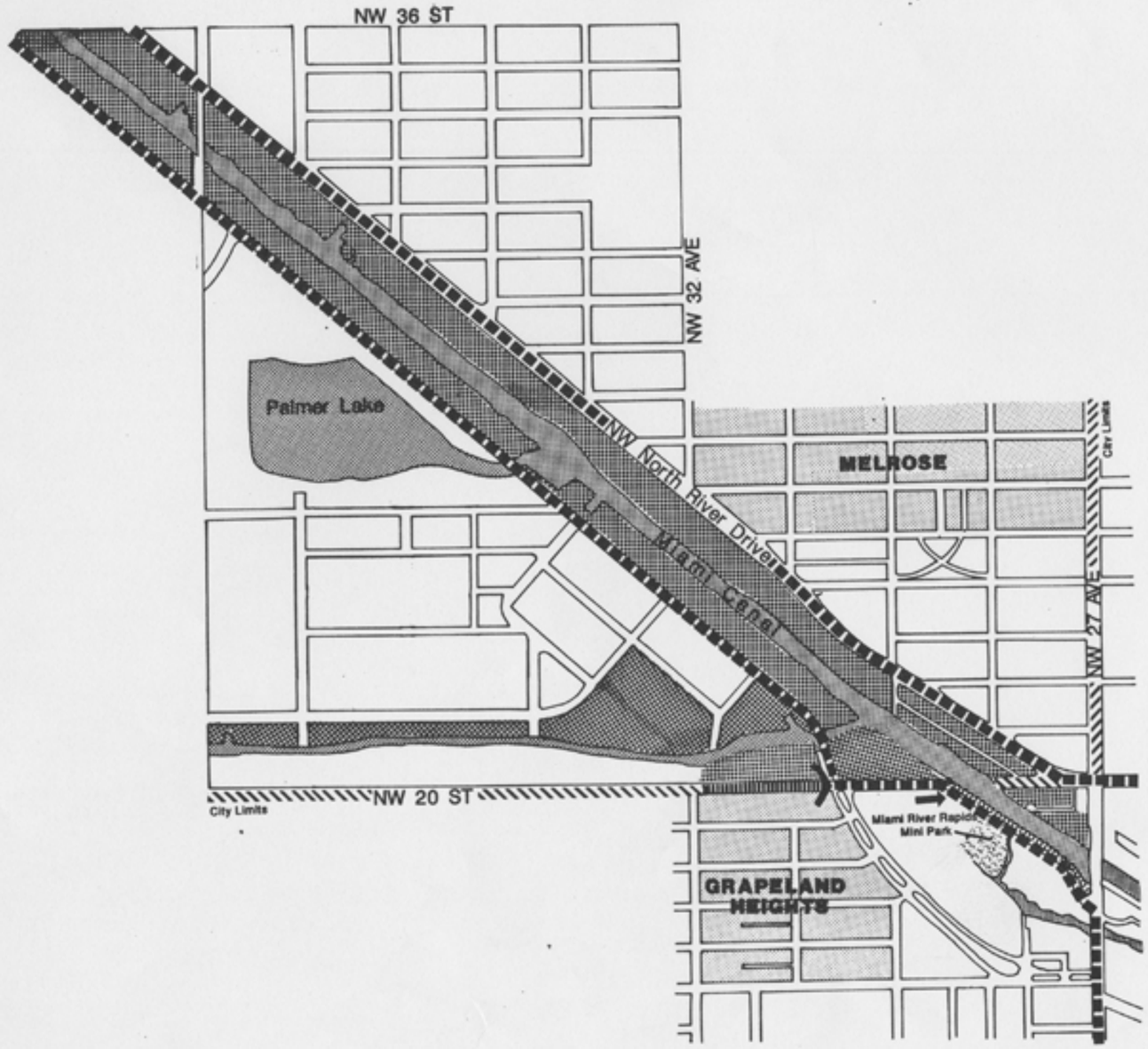
4.9 Promote growth in water-dependent industries in the Up-River area and minimize impacts on nearby residential neighborhoods.

Policies:

4.9.1 Enhance the identity of the waterfront industrial district with signs or banners at the principal entrances to the district.

4.9.2 Provide landscaping and street closures, where feasible, to buffer residential neighborhoods from industrial areas.

4.9.3 Provide interpretive exhibits on the history and archeology of the Miami River Rapids Mini Park.



LEGEND

- Riverwalk
- River Drive scenic corridor
- Major pedestrian access route
- Access to water
- Public art or landmark
- Landscaped gateway
- Water taxi route and stop
- Public park
- Residential
- Waterfront commercial
- Waterfront industrial

APPENDIX A: MIAMI RIVER HISTORY

Natural Condition

The headwaters of the Miami River originated in the Atlantic Coastal Ridge, which formed a broad natural dam impounding the waters of the eastern edge of the Everglades. A small depression in the ridge allowed the freshwater to escape in a natural falls, known as the "Miami River Rapids". These rapids formed the beginning of the north fork of the river, located a few blocks west of the present-day NW 27th Avenue bridge. The south fork of the river originated from the ridge in a similar but less conspicuous manner about one-half mile to the south of the rapids. The river was also fed by numerous underground freshwater springs that bubbled up through the porous limerock. From the ridge, the river meandered in a southeasterly direction some 4.5 miles to Biscayne Bay.

Early Settlements

As early as 2000 B.C. the Tequesta Indians inhabited the South Florida peninsula and established their largest settlement on the north side of the mouth of the Miami River (present site of DuPont Plaza). In the 16th century, a Spanish mission was established adjacent to the Tequesta village, which at the time was populated by about 5,000 Indians. Abandoned after a few years, this first European settlement was followed by a second effort in 1743 at a time when the Indian population had declined for reasons of disease, warfare and emigration to Cuba. During the next twenty years, the Tequesta Indian population totally disappeared from South Florida. However, Bahamians began using the area to fish, hunt and salvage wrecks from the emerging coastal shipping traffic.

In the early 1800's both white settlers and Seminole Indians built along the river. In 1830, Richard Fitzpatrick purchased four square-mile land grants at the mouth of the river and built a plantation growing coconuts, sugar cane, pumpkins, limes, corn, sweet potatoes and tropical trees. By 1836 the plantation was abandoned due to threat of Seminole Indian hostilities. It was used as a military out-

post, "Fort Dallas," throughout the succeeding Seminole Wars.

In the mid-1840's, George and Thomas Ferguson built a comptie starch mill adjacent to the Miami River Rapids. Comptie starch, made from the root of the native cycad plant, Zamia, was sold throughout the United States. A second starch mill was soon opened by Dr. Fletcher on the South Fork of the river. The comptie starch business was the first manufacturing industry in South Florida, thus establishing the river's long impact on area business.

William Brickell built a store and house on the south bank of the river mouth in 1871. The business flourished and was a major focus of Seminole trade until the 1890's. In this period Julia Tuttle arrived from Ohio and purchased the Fort Dallas tract on the north bank of the river mouth. At her urging, Henry Flagler extended his railroad to the river, opening this isolated wilderness to business and tourists throughout the United States.

The Beginning of a City

The City of Miami was incorporated in the same year, 1896, that the railroad arrived. Henry Flagler's opulent Royal Palm Hotel became a destination for tourists, who arrived via the railroad as well as on yachts, which could now cross Biscayne Bay through a channel that Flagler dredged to his hotel docks. In the early 1900's, tourists and residents alike enjoyed tour boat cruises up the 4.5 mile natural course of the river to the rapids at the edge of the Everglades. Musa Isle and Coppinger's Indian Village were popular attractions.

As the region developed, the river changed from a simple transportation route to a trade center with business opportunities created by the Florida East Coast Railroad docks and warehouses. Winter vegetables brought in from the local area by boat were loaded on trains for shipment north. City residents bought seafood, fruits, vegetables and dry goods along the river banks.

Between 1909 and 1933, the natural structure of the river was dramatically altered. In 1909, the a channel was blasted through the ancient coastal ridge for construction of the Miami Canal portion of the Everglades drainage project. The Miami River Rapids dried up as the muddy Everglades water flowed freely through this new canal, which lies about 100 feet north of the natural river bed. In 1931-33, the U.S. Army Corps of Engineers carried out a congressional mandate to make the Miami River a federal navigable waterway by dredging the river bottom to a depth of 15 feet. The navigable portion of the river is limited by a salinity dam located some 5 1/2 miles upstream near NW 36th Street.

River Crossings

During the city's first several years the "Southside" of the river was accessible only by boat and Brickell's ferry service. Although an improvised bridge on Avenue G (SW 2nd Ave.) served for a brief period, the first permanent bridge was constructed in 1902 at Avenue D (Miami Ave.). During the next few years, the only alternative to the Avenue D bridge was the private Tatum bridge at 12th Street (Flagler St.) which could be crossed at a cost of five cents per pedestrian. In 1916 the first West Flagler Street bridge opened. The original Avenue D bridge was replaced in 1919. Six major bridges were completed during the 1920's, including SW 2nd Avenue, NW 5th Street, NW 12th Avenue, Brickell Avenue, SW 1st Street and NW 17th Avenue. In 1938 the NW 27th Avenue bridge opened, and in 1966 the last major drawbridge, NW 22nd Avenue, began to carry traffic across the river. Since the 1960's several high level fixed span bridges have been constructed for expressways and rapid transit, while numerous studies have been conducted concerning the feasibility and cost of tunnels in the downtown area.

Land Use Policy

The City of Miami enacted it's first zoning ordinance in August, 1934. It was based on over two years of committee study and public hearings to determine the best pattern of land uses. There was intense debate between factions of citizens who wanted the river to be reserved for residential and park usage and those who wanted to promote marine industries. Local business and civic leaders had successfully lobbied the federal government to dredge the river, believing that opening the river to navigation would bring business in shipping, yacht storage and boat repair. The approved zoning plan preserved residential subdivisions that were already highly improved, but set aside land for marine businesses wherever possible. This resulted in an irregular pattern of zoning, totalling 42% single family and multifamily residential, 52% business and industrial, and 6% park and public property. The entire Miami Canal frontage in unincorporated Dade County was later zoned industrial.

The river banks continued to develop following the completion of the dredging project and zoning ordinance, while the debate intensified over business/industrial use vs. residential/park use. A May, 1941, poll by the Miami Herald found an overwhelming 80% of respondents preferred further zoning of the riverfront for park purposes rather than for business use. However, the U.S. entry into World War II soon brought a surge of boat building contracts and industrial growth to the river that gradually, over the next decade, solidified its acceptance as a working river intermixed with residential and recreational opportunities. By 1956, city planners were recommending a special "waterfront" zoning classification to protect marine businesses from encroachment by non-water-dependent uses. These recommendations were adopted in the 1961 zoning ordinance and generally remain intact in the present day comprehensive plan and zoning ordinance.

Cleanup Efforts

Public concern over environmental degradation, water pollution, bridge openings, and the generally unkempt appearance of the Miami River have been voiced since the early days of the City.When Flagler laid out the city streets in 1896, he installed water and sewer lines along Avenue D (Miami Ave.) and 14th Street (SE/SW 2nd St.). Raw sewage was discharged into the river from a single outfall under the Avenue D bridge. By 1909 the sewage discharge had become unsightly and unhealthy, thus the outfall line was extended 50 feet farther into the river and lowered to a depth of 9 feet. As the sewer system grew with the city, numerous outfalls were added to the river, as well as a trunk line extending 400 feet into Biscayne Bay. It was not until 1956, when the Virginia Key Sewage Treatment Plant was opened, that public sewer systems ceased to flow directly into the river.

An August 1934 article in the Miami Herald proclaimed that "Miami's new zoning ordinance will remove these river shantytown scenes", referring to a proliferation of derelict houseboats along the river. It reported that the work of cleaning up and beautifying the river banks was started the previous year, including construction of dry rock walls and planting of coconut palms.

Throughout the decades of the 1950's, 60's and 70's, there were repeated cycles of public outcry over pollution, crime and unsightly conditions along the river, followed by cleanup campaigns, beautification committees and/or revitalization plans. These efforts produced short-term improvements, but the basic problems persisted. In 1974, the river was added to state aquatic preserve system as a part of the Biscayne Bay Aquatic Preserve. Progress still lagged behind stated public objectives, in part because of the need for coordination among numerous city, county, state and federal agencies that have discrete types of jurisdiction over functions along the river.

The Miami River Management Committee was created by the governor in 1983 to study the problems of the Miami River and make recommendations for its cleanup and enhancement. Among the many recommendations of the committee that have been implemented is the establishment of a permanent organization to oversee planning and management of the river. That entity, the Miami River Coordinating Committee (MRCC), consists of representatives of the Governor, the County Manager, the City Manager, river businesses and private citizens. It has been an effective force in catalyzing public and private actions to improve the river.

APPENDIX B: POLICE PATROL OPTIONS

Introduction by Chief Arnold Gibbs

As the Miami Police Department's designated representative on the Miami River Coordinating Committee, I have become increasingly aware of the committee's concern over the issues of crime and the environmental condition in and around the Miami River. During a recent meeting, I was questioned as to the possibility of using City Rangers to patrol the river; the purposes of which would be to serve as a deterrent to criminal activity, to establish a direct link with the Police Department (police radio) for reporting suspicious activity and in-progress crimes, and to enforce environmental regulations. In response to this proposal, a feasibility study was conducted and it was determined that the inherent risks associated with the use of unarmed personnel (representing law enforcement) on the Miami River make the proposal infeasible. During a subsequent meeting, I was asked about the use of sworn police personnel for patrol of the river and a new analysis was conducted relative to that request.

Summary of Key Issues

The Miami River is a viable maritime commercial district wherein numerous businesses such as import/export, commercial fisheries, restaurants, boat repair and storage facilities, and marine supply are located. Increasingly over the years, the number of crimes and environmental abuses have contributed to the slow deterioration and decline of commerce in the Miami River district.

The Miami Police Department does not have sufficient manpower or resources to effectively monitor the river on a continual ongoing basis. Although there are other governmental agencies who should provide enforcement services on the river, their involvement is either negligible or nonexistent. Occasionally, the Police Department has marshalled its resources for an attack on the problem. However, this kind of activity has an adverse impact on our ability to provide efficient response to calls for police service in the area from which the manpower is drawn. Additionally, such operations serve only as stopgap measures and have no long term effect on the problem.

Advantages and Disadvantages

For the purpose of this study, six key factors were considered as necessary to the effectiveness of the program; efficiency, visibility, cost, implementation time, the ability to enforce environmental laws, and the ability to enforce navigation laws. The following is a description of the six factors and the desired state for each. The chart provided at the end of this section shows the advantages and disadvantages of each of the eight options by ranking on these factors.

1. **Efficiency** - This factor is measured based upon the ability of the program option to reduce crime and to enforce violations. In order to maximize the achievement of these two major objectives, the following criteria should be met:

   a. The ability to monitor the affected area in a manner which creates a perception of omnipresence.

   b. The ability to maximize objective achievement at the lowest acceptable cost.

   c. The ability to reduce wasted time and effort in the performance of duties.

2. **Visibility** - Although high visibility is viewed as an effective deterrent factor, it is also an important factor in reducing the fear of crime. For these reasons, visibility (police presence) is one of the most important factors to be considered. Obviously, the degree of visibility provided is directly related to the number of uniformed officers and marked police equipment.

3. **Cost** - The desired state for the cost factor is simply stated as maximum benefits at minimum expense. For the purpose of this report, the costs of the eight different options were divided into three separate groups: those options with costs ranging from $100,000 to $225,000 were grouped within the "low" cost range, those with costs ranging from $226,000 to $425,000 were grouped within the "moderate" cost range; and those costing between $426,000 and $625,000 were considered "high" cost.

4. **Implementation Time** - With respect to this factor, the eight options were grouped within the categories of short, moderate, and extended for the time associated with implementation. Those options which recommend the use of "off-duty" police officers for shore patrol only were considered as requiring the shortest time period for implementation, because the necessary personnel and equipment are already available and no additional training is required. Those which recommend the use of "off-duty" personnel for shore patrol plus waterborne river patrol are considered as requiring a moderate time frame for implementation, as those officers desiring to conduct waterborne patrol would require additional training. All of the other options, which would necessitate the hiring of additional police officers, are extended time implementation options, as the recruitment and selection process can take from 3 to 6 months, and the training process (academy and field training) will last for an additional 9 months.

5. **Environmental Enforcement** - The enforcement of environmental laws and regulations would be a cumbersome and difficult task for officers engaged in land based shore patrol. Additionally, any attempt to perform such duties would detract significantly from the time and effectiveness of shore patrol duties. For this reason, those options which recommend shore patrol only are not considered as capable of providing environmental enforcement.

6. **Navigational Enforcement** - Any enforcement of navigational laws would logically necessitate the use of a boat. Obviously, those options which recommend shore patrol only would not offer the capability of navigational law enforcement.

Available Options

In response to the stated problem, the following options are provided for consideration in the selection of a program for providing additional police coverage in the area of the Miami River:

Option #1 - HIRING ADDITIONAL PERSONNEL SHORE PATROL ONLY (1 UNIT)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Single bank patrol (one side at a time)

Logistics:
- 1 Two-person shore patrol unit = 2 officers
- 2 Officers X 2.1 (relief factor) = 4.2 = 5 officers

Cost:
Personnel - $42,660 per officer (yearly salary + fringes)
X 5 = $213,300.00

Total anual cost: $213,300.00

Option #2 - USING OFF-DUTY OFFICERS SHORE PATROL ONLY (1 UNIT)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Single bank patrol

Logistics:
- Two-person shore patrol unit = 2 officers
- 1 Patrol car

Cost:
Personnel - 10 Hours per day X 2 officers = 20 hour X $16.00 per hour (off-duty rate) = $320.00 per day
- Annual cost for personnel - $116,800.00

Vehicles - 1 Patrol car at $15.00 per day (surcharge) = $15.00 per day
- Annual surcharge for vehicle = $5,475.00

Total Annual Cost:

Personnel	$116,800.00
Vehicles	5,475.00
Total	$122,275.00

Option #3 - HIRING ADDITIONAL PERSONNEL SHORE PATROL ONLY (2 UNITS)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Simultaneous shore patrol (north and south river banks)

Logistics:
- 2 Two-person units = 4 officers
- 4 officers X 2.1 (relief factor) = 8.4 = 9 officers

Cost:
Personnel - $42,660.00 per officer (annual salary + fringes)
X 9 = $383,940.00 per year

Total annual cost : $383,940.00

Option #4 - USING OFF-DUTY OFFICERS SHORE PATROL ONLY (2 UNITS)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Simultaneous shore patrol (north and south river banks)

Logistics:
- 2 Two-person shore patrol units = 4 officers
- 2 patrol cars

Cost:
Personnel - 10 Hours per day X 4 officers = 40 hours X $16.00 per hour (off-duty rate) = $640.00 daily
- Annual cost for personnel = $233,600.00

Vehicles - 2 Patrol cars at $15.00 per day (surcharge) = $30.00 daily
- Annual surcharges for vehicles = $10,950.00

Total Annual Cost:

Personnel	$233,600.00
Vehicles	10,950.00
Total	$244,550.00

Option #5 - HIRING ADDITIONAL PERSONNEL/BOAT PLUS SHORE PATROL (2 UNITS)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Single bank patrol (one side at a time)
- Waterborne patrol of waterway

Logistics:
- 1 Two-person shore patrol unit = 2 officers
- 1 Two-person Marine Patrol Unit = 2 officers
- 4 officers X 2.1 (relief factor) = 8.4 = 9 officers

- 1 Marine Patrol boat

Cost:

Personnel - $42,660.00 Per officer (annual salary plus fringes) X 9 = $383,940.00 per year

Boat - $15.00 Per hour (boat surcharge) X 10 hours = $150.00 a day
- Annual boat surcharge = $54,750.00*

Total Annual Cost: Personnel $383,940.00
Boat 54,750.00*
Total $438,690.00

See page recommendation (page 14)

Option #6 - USING OFF-DUTY OFFICES BOAT + SHORE PATROL (2 UNITS)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Single bank coverage
- Waterborne patrol of waterway

Logistics:
- 1 Two person shore patrol unit
- 1 Two person Marine Patrol unit
- 1 Marine Patrol boat
- 1 Patrol car

Cost:

Personnel - 10 Hours per day X 4 officers = 40 hours X $16.00 per hour (off-duty rate) = $640.00daily
- Annual cost for personnel = $233,600.00

Vehicles - Patrol car at $15.00 per day (surcharge) = $15.00 daily
- Annual surcharge for vehicle = $5,475.00

Boat - $15.00 Per hour (boat surcharge) X 10 hours = $150.00 daily
- Annual boat surcharge = $54,750.00*

Total Annual Cost: Personnel $233,600.00
Vehicle 5,475.00
Boat 54,750.00*
Total $293,825.00*

See recommendation (page 14)

Option # 7 - HIRING ADDITIONAL PERSONNEL BOAT PLUS SHORE PATROL (3 UNITS)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Simultaneous shore patrol (north and south banks)
- Waterborne patrol of waterway

Logistics
- 2 Two-person shore patrol units = 4 officers
- 1 Two-person Marine Patrol Unit = 2 officers
- 6 officers X 2.1 (relief factor) = 12.6 = 13 officers
- 1 Marine Patrol boat

Cost:

Personnel - $42,660.00 per officer (annual salary + fringes X 13 = $554,580.00 annuallyBoat
- $15.00 per hour (boat surcharge) X 10 hours = $150.00 daily
- Annual boat surcharge = $54,750.00*

Total Annual Cost: Personnel $554,580.00
Boat 54,750.00*
Total $609,330.00

Option #8 - USING OFF-DUTY OFFICERS BOAT PLUS SHORE PATROL (3 UNITS)

Coverage:
- Seven days a week, from 9 PM to 7 AM
- Simultaneous shore patrol (north and south river banks)
- Waterborne patrol of waterway

Logistics:
- 2 Two-person shore patrol units = 4 officers
- 1 Two-person Marine Patrol Unit = 2 officers
- 1 Marine Patrol Boat- 2 Patrol cars

Cost:

Personnel - 10 hours per day X 6 officers = 60 hours X $16.00 per hour (off-duty rate) = $960.00 daily
- Annual cost for personnel = $350,400.00

Vehicles - 2 Patrol cars at $15.00 per day (surcharge) = $30.00 daily
- Annual surcharge for vehicles = $10,950.00

Boat - $15.00 Per hour (boat surcharge) X 10 hours = $150.00 daily
- Annual boat surcharge = $54,750.00*

Total Annual Cost: Personnel $350,400.00
Vehicles 10,950.00
Boat 54,750.00*
Total $416,100.00*

See recommendation (page 14)

Recommendation

The one option which yields the overall most favorable state for each factor is option eight, which offers high efficiency, high visibility, moderate cost, moderate implementation time, and affords the officers the capability to enforce both environmental and navigational laws.

It is therefore recommended that option eight be pursued as a means of enhancing the police anti-crime initiative on and around the Miami River.

* Concerning the surcharge for the use of Miami Police boats, the fee is applied toward fuel and maintenance of the engines. However, should the committee members provide a vessel for waterborne patrol of the river, there would be a significant reduction in the cost for those options which require the use of a boat. Perhaps a plan could be devised for the provision of fuel and maintenance by those businesses with the capability of so doing. Alternatively, funds from the special tax can be appropriated to cover the cost for fuel and maintenance.

The committee's annual expense for fuel would be approximately $9,000.00. When compared to the annual cost of $54,750.00 for M.P.D. boat surcharges, the savings to the committee would be about $45,750.00 annually. Whether the committee donates a vessel or purchases one for use by M.P.D. personnel, the maintenance could be performed by volunteers who operate businesses for boat repair and maintenance, thus eliminating any expenses for maintenance.

ADVANTAGES/DISADVANTAGES CHART

OPTION	EFFICIENCY	VISIBILITY	COST	IMPLEMENTATION TIME	ENVIRON. ENFOR.	NAVIG. ENFOR.	ANNUAL COST
#1	LOW	LOW	LOW	EXTENDED	NO	NO	$213,300
#2	LOW	LOW	LOW	SHORT	NO	NO	$122,275
#3	MODERATE	MODERATE	MODERATE	EXTENDED	NO	NO	$383,940
#4	MODERATE	MODERATE	MODERATE	SHORT	NO	NO	$244,550
#5	LOW	MODERATE	HIGH	EXTENDED	YES	YES	$438,690
#6	LOW	MODERATE	MODERATE	MODERATE	YES	YES	$293,825
#7	HIGH	HIGH	HIGH	EXTENDED	YES	YES	$609,330
#8	HIGH	HIGH	MODERATE	MODERATE	YES	YES	$416,100