

13.0 CONSERVATION ELEMENT

In order to appropriately manage native vegetative communities and wildlife habitats, campus expansion must be in accordance with local, state and federal regulations and when practicable, conform with various agency guidelines and policies. Landscape efforts will utilize native vegetation. Avoidance or minimization of wetland impacts and the establishment of upland buffers adjacent to wetlands will be implemented where feasible. Unavoidable wetland impacts will be mitigated. The undeveloped upland habitat will be left in its natural state when possible. Adverse impacts to protected wildlife species will be mitigated in accordance with local, state and federal guidelines.

Natural resources occur at Modesto A. Maidique Campus, Engineering Center and Biscayne Bay Campus of Florida International University (see Figures 13.1 for Modesto A. Maidique Campus, Figure 13.2 for Engineering Campus, and Figure 13.3 for Biscayne Bay Campus). Many of these resources are protected and will remain so throughout the future of each campus and site. There are parcels, however, which need to be assessed as to its viability for native species and vegetation as well as for its suitability for protection versus development. Therefore, a principal challenge of the master planning process is to allow sensitively planned development of these campuses while protecting and enhancing natural resources.

To minimize adverse impacts to local air quality and maintain existing good air quality conditions, FIU will manage its stationary sources of air discharges through an organized preventative maintenance and inspection program. Points of discharges such as boilers and laboratory flues will be inspected regularly to ensure their operations are within applicable regulatory standards. Implementation of preventative maintenance of stationary sources will reduce the probability of unexpected releases of air pollutants as well as establish a reliable management tool.

Where possible, less hazardous materials will be substituted for more hazardous materials. The purpose of such replacement will reduce the potential for more serious accidents affecting the environment, reduce the generation rate of hazardous waste on campus, and reduce the volume of hazardous wastes contributed by the University to landfills elsewhere. It is an objective of the University to minimize hazardous waste accumulation points on campus and implement a system of Best Management Practices to safely manage these locations.

GOAL 1: **Conserve and enhance existing natural resources and natural ecosystems at Modesto A. Maidique Campus and Biscayne Bay Campus.**

Objective 1.1 **Implementation and Management of Natural Resource Policies: Implement and manage natural resource policies through use of appropriate University faculty and staff.**

Policy 1.1.1

The University shall endeavor to develop a resource of knowledgeable FIU experts to oversee issues relating to development and conservation of University natural resources. It shall be the task of the individuals to oversee the implementation of the coastal resource management policies defined in the Conservation Element of this Master Plan. It shall also be the task of those individuals to review these policies and, prepare any necessary additional policies, guidelines, procedures and implementation schedules within one year of the adoption of the Master Plan. The adopted Master Plan shall be amended as necessary to incorporate those guidelines, procedures and implementation schedules.

The University shall provide an administrative staff person of the Environmental Health and Safety Division to serve as Environmental Coordinator to manage these activities. The Environmental Coordinator shall periodically review proposed University improvements and activities to ensure University compliance with the policies defined in the Conservation and Coastal Management Elements of this Master Plan. The Environmental Coordinator shall also periodically review host community, state and federal conservation and coastal management policies to ensure University compliance with these policies.

Objective 1.2

**Maintain, Protect and Enhance Natural Resources:
Maintain and enhance existing values for natural resources on
Modesto A. Maidique Campus and Biscayne Bay Campus.**

Policy 1.2.1

UNIVERSITY-WIDE:

The University shall review, on an annual basis, the state, regional and local regulations and guidelines governing the designation and delineation of environmentally sensitive lands. These regulations and guidelines include, but are not limited to, the Florida Natural Areas Inventory, the Dade County Natural Forest Inventory (Resolution R-1764-84), and other elements of the Miami-Dade County Comprehensive Development Master Plan. Should changes in regulations or guidelines result in the designation of portions of the Modesto A. Maidique Campus and/or Biscayne Bay Campus as environmentally sensitive lands, the University shall modify existing policies or develop new policies to protect these sensitive lands and incorporate those policies into the Master Plan within three months of the identification of the environmentally sensitive land.

Policy 1.2.2

UNIVERSITY-WIDE:

The University shall survey the precise locations of native vegetative associations prior to the construction of any buildings, roadways, pathways or other developments that may impact these vegetative

associations. Prior to final site planning, the University shall identify those areas to be impacted and determine if minor changes in the proposed locations of roads or buildings can minimize impacts on these areas.

Policy 1.2.3

UNIVERSITY-WIDE:

In order to protect native vegetative communities, the University shall endeavor to provide for a development buffer of at least 25 feet between native vegetative communities (Figure 13.1,13.2 and 13.3) and construction projects, including but not limited, to buildings, roadways, pathways and recreation facilities.

Policy 1.2.4

UNIVERSITY-WIDE:

The University shall remove invasive exotic plant species from natural vegetation associations and from landscaped areas. Priority shall be given to removing exotic species from those native vegetation associations indicated in Figures 13.1 and 13.3. Removal of exotic species shall be carried out in a manner that minimizes impacts to native vegetation associations. Where necessary, areas from which exotic plants have been removed shall be replanted with appropriate native plant species. Removal of exotic species from natural vegetation associations and from landscaped areas shall be carried out quarterly during the first year and yearly thereafter, unless monitoring activities indicate that more frequent removal is.

Policy 1.2.5

BISCAYNE BAY CAMPUS:

To help curtail their further spread into mangrove areas and other natural vegetation associations on campus, the University shall continue a program of removing large stands of Australian pines. Removal of Australian pines shall be carried out in a manner that minimizes impacts to native vegetation associations. Areas from which Australian pines have been removed shall be re-vegetated in a manner consistent with the 16.0 Landscape Design Guidelines Element of this Master Plan. The use of native plant species in the landscaping of these areas shall be encouraged. The choice of native plant species shall be consistent with those recommended by FIU Facilities Planning and Construction and Landscape Architect staff. In no case shall those plant species identified in Section 6.8 of the Miami-Dade County Comprehensive Development Master Plan as potentially invasive be in any University landscaping or enhancement planting.

Because the removal of Australian pines may result in soil disturbance and provide colonization opportunities for other invasive exotic plants, replanting of landscape vegetation shall

immediately follow the removal of Australian pines. A timetable for removal of Australian pines shall be determined by Facilities Management .

Policy 1.2.6

UNIVERSITY-WIDE:

An administrative staff person of the Environmental Health and Safety Division shall establish a protocol for monitoring the establishment and spread of invasive exotic plant species. Monitoring activities shall be carried out quarterly. If monitoring activities indicate that invasive exotic species are becoming re-established, exotic plants shall be removed using the methods outlined in Policy 1301.2.4 and 16.0 Landscape Design Guidelines Element Policy 1.2.3.

Policy 1.2.7

UNIVERSITY-WIDE:

The University shall use native plant species in restoration/enhancement planting of native vegetative communities. The use of native plant species in general campus landscaping shall be encouraged. The choice of native plant species shall be consistent with those recommended by the University's Environmental Studies staff, Fairchild Tropical Gardens staff, or other individuals or agencies competent in the selection, use and maintenance of vegetation native to south Florida. Where restoration or enhancement planting is instituted, the species chosen shall be those that are naturally found in the particular vegetative community being restored or enhanced.

Policy 1.2.8

UNIVERSITY-WIDE:

The University shall use native plant species in the 25-foot wide landscape buffer areas that border native vegetative communities.

Objective 1.3

Maintain and Enhance Existing Wetland and Aquatic Natural Resource Values:

Maintain and enhance existing values for current wetland, littoral zone and aquatic natural resources. For Biscayne Bay Campus, also see Goals, Objectives and Policies in the Coastal Management Element.

Policy 1.3.1

UNIVERSITY-WIDE:

The University shall prepare and implement a plan to enhance the ecological and aesthetic values of lakes on campus by grading lake shores to provide littoral zones, by enhancement planting of native littoral vegetation, and by minimizing or eliminating the use of fertilizers on campus to reduce eutrophication.

Policy 1.3.2

BISCAYNE BAY CAMPUS:

Maintain at least a 25-foot buffer zone between future planned buildings, ancillary structures, and access roads and mangrove areas and other natural areas slated for preservation (see Figure 13.3).

Policy 1.3.3 **BISCAYNE BAY CAMPUS:**
Protect and enhance existing shallow-water communities and seagrass beds in the waters of Biscayne Bay fronting Biscayne Bay Campus by reducing the impacts of stormwater runoff to these areas.

Policy 1.3.4 **BISCAYNE BAY CAMPUS:**
Protect the shoreline stabilization project carried out by Dade County Department of Environmental Resources Management (DERM) in 1989 and 1991.

Policy 1.3.5 **BISCAYNE BAY CAMPUS:**
Complete ongoing mitigation programs and protect new and ongoing mitigation programs.

Objective 1.4 Campus Setting and the Natural Environment:
Create an aesthetically pleasing, tropical educational setting through planting of xerophytic vegetation, using native species where possible, which will link natural areas on campus and provide for a harmonious transition from developed to natural areas.

Policy 1.4.1 **MODESTO A. MAIDIQUE CAMPUS:**
Use native vegetation to link natural areas on campus. This should be made consistent with objectives of the 3.0 Urban Design Element.

Policy 1.4.2 **UNIVERSITY-WIDE:**
Strongly encourage the use of native xerophytic plant species for use in general landscaping and in the creation and enhancement of wildlife habitat. Limit the use of exotic species in general campus landscaping. Use of native species will reduce landscape water demands, will reduce seed sources of potentially invasive exotic species, and provide a natural setting that is indicative of a tropical environment.

Policy 1.4.3 The University shall endeavor to prevent any harm to its natural campus environment from construction activities. Any damage occurring will be repaired to its former state by those responsible parties.

Policy 1.4.4 **BISCAYNE BAY CAMPUS:**
The Environmental Coordinator shall, in cooperation with Oleta River State Recreation Area personnel, develop a plan to link mangrove

areas in the northeast portion of campus with the Oleta River State Recreation Area by means of littoral zone vegetation (along the shoreline) or by plantings of strand vegetation immediately behind shoreline stabilization structures (see Figure 13.3). The Environmental Coordinator shall also encourage Oleta River State Recreation Area personnel to develop a plan for removal of Australian pines from the portion of the Oleta River State Recreation Area adjacent to Biscayne Bay Campus.

Objective 1.5 Protection of Listed Species:
Protect federal, state, and local listed species and their habitat from negative impacts of University activities.

Policy 1.5.1 UNIVERSITY-WIDE:
During the initial planning phase of any physical changes to either campus, the University shall perform a census of wildlife and plants in the area to be affected. Plants or animals identified in the "Official Lists of Endangered & Potentially Endangered Fauna and Flora in Florida", which is updated annually by the Florida Fish and Wildlife Conservation Commission, or otherwise afforded protection by the host communities and local, state and federal agencies, shall be noted. Protection plans for listed species shall be formulated consistent with those of the host communities and appropriate local, state and federal agencies.

Policy 1.5.2 UNIVERSITY-WIDE:
University personnel shall, when encountering listed species, follow procedures and seek consultation with the appropriate agencies as identified in the Florida Fish and Wildlife Conservation Commission's Wildlife Methodology Guidelines (1999).

Objective 1.6 Minimize Impacts of Campus Operational and Maintenance Activities:
Establish campus-wide policies to minimize the impacts of campus operational and maintenance activities on the water quality, and to identify hazardous material sources and reduce their negative impacts.

Policy 1.6.1 UNIVERSITY-WIDE:
To limit negative impacts of campus activities on soils, wetlands, hydrology and hydroperiod, the University staff coordinator shall, on an annual basis, review existing and proposed University activities for compliance with the surface water policies of the South Florida Water Management District.

Policy 1.6.2 UNIVERSITY-WIDE:

The University shall continue to test stormwater runoff and groundwater quarterly for compliance with standards set by the State of Florida Department of Environmental Protection, the Dade County Department of Environmental Resources Management, the South Florida Water Management District, and the U.S. Environmental Protection Agency. Failure to meet relevant standards for stormwater runoff shall result in an assessment of probable causes and the production and implementation of a plan to improve the quality of runoff or groundwater.

Policy 1.6.3

BISCAYNE BAY CAMPUS:

The University shall continue monitoring and logging of results of sampling and analysis of petroleum tanks and their associated wells that are housed in the Central Utilities compound.

Policy 1.6.4

UNIVERSITY-WIDE:

The University shall continue to monitor water quality in the lakes, canals and mangrove areas on each campus on a quarterly basis. Should the water quality fall below the standards set by the State of Florida Department of Environmental Protection, the Miami-Dade County Department of Environmental Resources Management, the South Florida Water Management District, and the U.S. Environmental Protection Agency, an assessment of probable causes of pollution shall be performed and a plan developed and implemented to limit the point and non-point sources of pollution.

Policy 1.6.5

UNIVERSITY-WIDE:

The University shall maintain a record of types and amounts of hazardous, toxic and medical wastes that are generated within the University and a record of hazardous, toxic and medical waste that are collected by the Environmental Health and Safety Staff. The University shall also maintain a record of the types and amounts of hazardous, toxic and medical waste that waste disposal companies collect. Records shall be kept of the name of the waste disposal companies and the name of the driver for each pick-up.

Policy 1.6.6

UNIVERSITY-WIDE:

Handling, data records, storage and disposal requirements for radioactive waste generated at Modesto A. Maidique Campus and Biscayne Bay Campus and the Engineer Center shall be in compliance with local, regional, state and federal regulations.

Policy 1.6.7

UNIVERSITY-WIDE:

At present, all hazardous materials for both campuses are handled under four EPA-Hazardous Waste Generator numbers. The University should investigate the possibility of operating under more

than one number to ensure compliance with requirements associated with satellite collection areas.

Policy 1.6.8 UNIVERSITY-WIDE:
The University shall inventory herbicide, pesticide and fertilizer use and evaluate their impacts on water quality. Modify or reduce herbicide, pesticide and fertilizer usage to minimize or eliminate negative impacts on water quality.

Objective 1.7 Maintain and Enhance Air Quality:
Establish a program to maintain high air quality standards on campus, both within and outside of buildings and parking structures.

Policy 1.7.1 UNIVERSITY-WIDE:
The University shall monitor both indoor and outdoor air quality, as necessary. Outdoor sites to be sampled should include parking lots and congested intersections. Failure to meet air quality standards accepted by the State of Florida shall result in an assessment of probable causes and the production and implementation of a plan to improve and maintain air quality.

Policy 1.7.2 UNIVERSITY-WIDE:
Minimize emissions of air pollutants from and within buildings on campus through the installation of appropriate filtering devices on fume hoods and by minimizing the storage and use of volatile and hazardous materials in campus buildings.

Policy 1.7.3 UNIVERSITY-WIDE:
Determine potential impacts on air quality before construction of parking structures. Design parking structures to facilitate rapid ingress and egress of vehicles to minimize idling time, and design such structures to maximize air flow through them and eliminate pockets of stagnation where levels of pollutants can build up.

Policy 1.7.4 UNIVERSITY-WIDE:
Encourage and facilitate non-polluting transportation alternatives on campus including pedestrian and bicycle access. Sidewalks and pedestrian malls should be designed to facilitate and encourage foot traffic between buildings, and to maximize handicap accessibility.

GOAL 2: Minimize resource utilization on campuses.

Objective 2.1 Water Conservation:
Establish measures that reduce water utilization.

Policy 2.1.1 UNIVERSITY-WIDE:
FIU shall conserve water and reduce chemical use through the use of xeriscape design principles, which include but are not limited to:

- Use of drought tolerant and native plant materials;
- Use of low volume delivery fixtures;
- Zoned irrigation systems;
- Moisture sensors and rain switches;
- Use of drought tolerant ground cover;
- Use of canopy trees; and
- Use of soil amendments and mulch to enable soils to retain moisture.

Policy 2.1.2 UNIVERSITY-WIDE:
Retrofit existing campus buildings with water-saving devices. Require that water-efficient (high efficient) fixtures and other water-saving devices be installed in all future buildings.

Policy 2.1.3 UNIVERSITY-WIDE:
If feasible, expand the use of filtered wastewater ("reclaimed water") for landscape irrigation.

Policy 2.1.4 UNIVERSITY-WIDE:
FIU will promote Florida Friendly principles through the use of drought-tolerant landscape species, the use of irrigation systems that conserve the use of potable and non potable water supplies, and restrictions on the amount of lawn areas.

Objective 2.2 Solid Waste Recycling and Resource Conservation:
Establish measures that encourage solid waste recycling.

Policy 2.2.1 UNIVERSITY-WIDE:
A general recycling program for paper, aluminum, glass, etc. shall be instituted and recycling goals for proportions of materials recycled established. All entities on campus (including food vendors/cafeterias, etc.) should be required to subscribe to this program and compliance with the program should be monitored on a regular basis. Work toward establishing this policy at Modesto A. Maidique Campus has been initiated by the Environmental Studies Program, and further efforts in this regard should be coordinated with it.

- Policy 2.2.2 UNIVERSITY-WIDE:
State, regional and local standards for waste management shall be reviewed at least annually. Solid waste management on all campuses shall be in compliance with state, regional and local standards.
- Policy 2.2.3 UNIVERSITY-WIDE:
The University shall contract with a licensed recycling contractor to provide for the collection for recycling, at minimum, of paper, aluminum, plastic, glass and newspapers. Separate refuse containers, as called for by the recycling contractor, shall be made available in all buildings, courtyards, in open space areas, etc. on both campuses. This program should be made compulsory on a campus-wide basis.
- Policy 2.2.4 UNIVERSITY-WIDE:
Where feasible, recycled paper products shall be purchased for University use, including those used in food service.
- Objective 2.3 Energy Conservation and Efficiency:**
Develop a program to conserve and appropriately use energy that includes development of a Climate Action Plan (a responsibility as a signatory of the American College and University Presidents Climate Commitment) and strategies to meet USGBC standards for LEED Silver certification.
- Policy 2.3.1 UNIVERSITY-WIDE:
Retrofit existing buildings with energy-conserving lighting fixtures. Require all new buildings to be equipped with energy efficient lighting devices. Design new buildings to take maximum advantage of available natural lighting.
- Policy 2.3.2 UNIVERSITY-WIDE:
Where feasible, buildings on campus shall be fitted with devices to automatically reduce energy use in rooms and buildings not in use, including programmable thermostats for air conditioners and sensors that automatically turn off lights.
- Policy 2.3.3 UNIVERSITY-WIDE:
Investigate the possibility of using "non-traditional" energy sources on campus. Such alternatives could include the use of solar power for lighting parking lots, etc.
- Policy 2.3.4 UNIVERSITY-WIDE:
Provide energy conservation design in new and renovated buildings

per USGBC LEED Silver criteria as minimum level of performance.



LEGEND

- Lakes & Canals
- Campus Grove
- Existing Trees
- Mangrove Areas
- Hardwood Hammock
- Pine
- Wetland
- Beach Strand Vegetation

KEY MAP

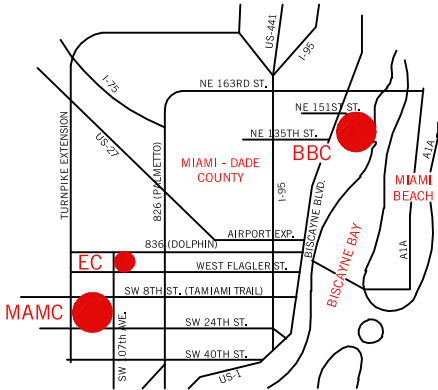
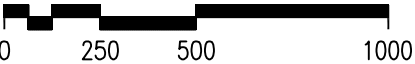


FIGURE 13.1
Modesto A Maidique Campus
Conservation Elements



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LEGEND

- Campus Grove
- Existing Trees
- Campus Park

KEY MAP

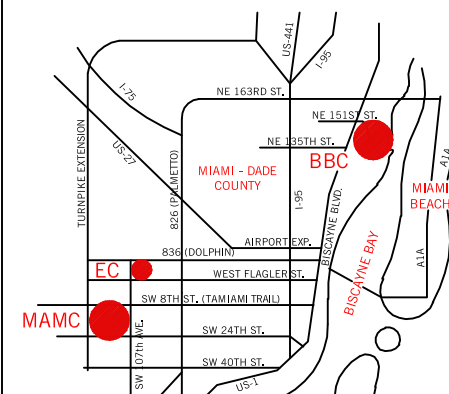


FIGURE 13.2
Engineering Center
Conservation Elements



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LEGEND

- Lakes & Canals
- Campus Grove
- Existing Trees
- Mangrove Areas
- Hardwood Hammock
- Pine
- Wetland
- Beach Strand Vegetation

KEY MAP

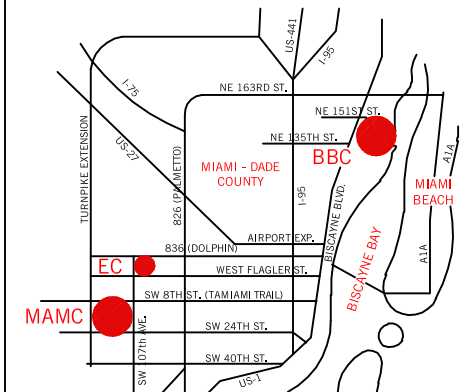


FIGURE 13.3
Biscayne Bay Campus
Conservation Elements



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