

## 18.0 COASTAL MANAGEMENT ELEMENT

Few university campuses nationwide are located in the type of sub-tropical, coastal setting in which Biscayne Bay Campus of Florida International University is found. The coastal environment, however, offers many challenges to the Master Planning process. The challenges include determining how one may take advantage of the amenities offered by the coastal setting, while limiting the vulnerability of the campus to hurricanes, tropical storms and flooding, and at the same time protecting and enhancing important natural resources (see 13.0 Conservation Element Figures 13.1, 13.2 and 13.3).

Legislative changes, however, require the State University System to assess existing facilities to identify the extent to which each campus has public shelter space adequate to house those students, faculty, and employees expected to seek public shelter prior to or during a disaster and those persons for which the campus has agreed with the local emergency management agency or other voluntary organization to provide shelter space. The State University System is also required to survey existing University facilities to determine those that are appropriately designed and located to serve as shelters. The goals, objectives and policies contained in this element are designed to establish the framework for meeting these requirements.

Coordination with DERM is recommended for all aspects of this element. At the Biscayne Bay Campus this coordination is highly recommended, in particular to shoreline and coastal wetlands existing on site. A DERM Class II permit is necessary to construct any outfall that will discharge to any surface in Miami-Dade County and a DERM Class I permit is required for any work in, on, over or upon tidal waters or coastal wetland in Miami-Dade County.

**GOAL 1:**                    **The University shall manage its development activities so as to protect, conserve and maintain coastal and estuarine resources on the University property at Biscayne Bay Campus.**

**Objective 1.1**            **Implementation and Management of Coastal and Estuarine Resource Policies: Implement and manage coastal and estuarine resource policies through the use of appropriate University faculty and staff.**

**Policy 1.1.1**            The University shall endeavor to develop a resource of knowable FIU experts to oversee the implementation of the coastal resource management policies defined in the Conservation and Coastal Management Elements of this Master Plan. It shall also be the task of these individuals to review these policies and, if necessary, 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 a staff

person to serve as Environmental Coordinator to manage the 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      Protection and Maintenance of Coastal and Estuarine Resources: Maintain and protect coastal and estuarine resources on the University property.**

Policy 1.2.1      The University shall undertake a binding jurisdictional determination of those areas identified as potentially jurisdictional wetlands in the Inventory and Analysis Document. Determination of jurisdictional wetlands status should be done prior to the commencement of any clearing or building activities in these areas. FIU will obtain and comply with all required local, state and federal permits prior to any work in wetlands or tidal waters, or prior to trimming or altering mangroves.

Policy 1.2.2      Protect and enhance shallow-water communities and sea grass beds in the waters of Biscayne Bay fronting Biscayne Bay Campus by reducing the impacts of stormwater runoff to these areas.

Policy 1.2.3      The Environmental Coordinator shall evaluate any proposed changes to the siting of buildings or other University improvements to determine whether such changes are in compliance with regulations governing jurisdictional wetlands. The adopted Master Plan shall be amended as necessary to incorporate the findings and recommendations of the Environmental Coordinator. FIU shall not site or plan any non-water dependent fixed or floating structures in coastal wetlands or tidal waters, such facilities will be located on upland areas.

Policy 1.2.4      The University shall monitor the water quality of the lakes, canals and mangrove areas on each campus on a quarterly basis. Should the water quality of the water in the water bodies 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 eliminate the point and

non-point sources of pollution

- Policy 1.2.5 To reduce possible negative impacts on manatees and to limit the effects of wave action on the physical properties of the estuary, FIU will request the Florida Fish and Wildlife Conservation Commission require the current regulation be more restrictive to increase its level of enforcement.
- Policy 1.2.6 Prior to construction of facilities that border the coastal and estuarine habitats, engineering and design analyses shall be performed to ensure that facilities will not contribute polluted run-off into those habitats.
- Policy 1.2.7 To protect the mangroves, designate and post the mangrove-lined canals in the northern and southern portions of campus as restricted-access or no-access areas. FIU will avoid and minimize trimming or alteration of any mangroves and shall obtain required local, state and federal permits prior to trimming or altering mangroves.
- Policy 1.2.8 Future development activity, except for pathways and landscape improvements, shall occur no closer than 100 feet from any Biscayne Bay shoreline.
- Policy 1.2.9 The University shall not engage in water management practices that result in significant or permanent draw-down of the water table.
- Policy 1.2.10 Structures, roadways and paths shall be designed so as not to interfere with the proper drainage of water to estuarine and coastal habitats. Where necessary, structures shall be used to maintain drainage into estuarine and coastal habitats.
- Policy 1.2.11 FIU will comply with recommendations in the state-approved Miami-Dade County Protection Plan where feasible.
- Objective 1.3 Protection and Restoration of Beach, Beach Strand and Dune Systems: Restore beaches, beach strand and dune systems and protect them from the impacts of development.**
- Policy 1.3.1 To ensure that the placement of buildings and infrastructure does not encroach on shoreline areas such as the beach strand, no future buildings or infrastructure shall be built within 100 feet of shoreline areas or beach strand vegetation.
- Policy 1.3.2 Post signs instructing beach visitors not to remove or destroy the beach strand or other native vegetation.

- Policy 1.3.3      The University shall only allow the use of designated areas for boat docking, and shall prohibit such use from the areas with beach strand vegetation.
- Policy 1.3.4      FIU will encourage managed access to the shoreline that is compatible with protection of wetland and aquatic vegetation and sensitive marine resources.
- Policy 1.3.5      Ensure that new construction and operation on campus facilities does not alter the hydrologic regime needed to maintain beaches, beach strand or dunes.
- Policy 1.3.6      As an element of landscape and pedestrian access improvements to open spaces along the Biscayne Bay shoreline, existing native beach strand vegetation shall be protected and enhanced. Native beach strand vegetation shall be used in enhancement plantings in these areas.
- Policy 1.3.7      Monitor existing shoreline stability. As necessary, take the appropriate steps to accomplish the needed stabilization. Native vegetation shall be used to stabilize beaches and dunes.
- Policy 1.3.8      Protect the shoreline stabilization project carried out by Miami-Dade County Department of Environmental Resources Management (DERM) in 1989-1991.
- Objective 1.4      Limiting Specific and Cumulative Impacts on Natural Resources: Restrict University activities so as to limit specific and cumulative impacts of development on natural resources.**
- Policy 1.4.1      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 and any future construction projects, including, but not limited to, the siting of buildings, roadways, pathways and recreation facilities. FIU will endeavor to use visible barriers during construction or maintenance operations to delineate the boundaries of native plant communities and wetlands, where feasible.
- Policy 1.4.2      The University shall endeavor to maintain a 25-foot minimum buffer zone between future buildings, ancillary facilities and infrastructure and those areas determined to be jurisdictional wetlands (including, but not limited to, mangrove areas).
- Policy 1.4.3      The surface water hydrology of on-campus areas determined to be

jurisdictional wetlands shall be monitored on a seasonal basis. Resultant hydrologic data will be used to produce a plan to maintain or improve surface water flow into and out of jurisdictional wetlands. Structures, including roadways and walkways, shall be designed so as not to change the surface water flow to wetland areas. FIU will endeavor to use visible barriers during construction or maintenance operations to delineate the boundaries of native plant communities and wetlands, where feasible.

**Objective 1.5      Restoration and Enhancement of Coastal Natural Resources:  
Restore and enhance the coastal natural resources on  
Biscayne Bay Campus property.**

Policy 1.5.1      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 Figure 13.3. Initially, efforts shall be focused on the removal of Brazilian pepper (*Schinus terebinthifolius*), melaleuca (*Melaleuca quinquenervia*) and Australian pine (*Casuarina equisetifolia*). 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 warranted.

Policy 1.5.2      To help curtail their further spread into mangrove areas and other natural vegetation associations on campus, the University shall remove large stands of Australian pines (see Figure 13.2 Exotic Vegetation to be cleared and replanted). 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 revegetated in a manner consistent with the Landscape Design 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 the Environmental Studies staff at the Modesto A. Maidique Campus, Fairchild Tropical Gardens staff, or other individuals or agencies competent in the selection, use and maintenance of vegetation native to south Florida. 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 1.5.3** The environmental coordinator shall establish a protocol for monitoring the establishment and spread of invasive exotic plant species. If monitoring activities indicate that invasive exotic species are becoming re-established, exotic plants shall be removed using the methods outlined in 13.0 Conservation Element.

**Policy 1.5.4** The University shall use native plant species in restoration and 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 Environmental Studies staff at the Modesto A. Maidique Campus, 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. FIU will not use controlled or invasive plant species in landscaping near wetlands or native plant communities.

**Policy 1.5.5** The University shall use native plant species in the landscape buffer areas that occur within 25 feet of native vegetative communities. The choice of native plant species shall be consistent with those recommended by the Environmental Studies staff at the Modesto A. Maidique Campus, Fairchild Tropical Gardens staff, or other individuals or agencies competent in the selection, use and maintenance of vegetation native to South Florida.

**Policy 1.5.6** Encourage DERM to complete the mangrove mitigation project that involves scraping 1.65 acres to an elevation of +1 foot above mean sea level, excavation of drainage channels to a height of 0 feet above mean sea level, and planting of red and black mangroves on 3-foot centers in the areas between the drainage channels. The University will contact DERM for status and follow-up on this mitigation project.

**Objective 1.6** **Maintain and Enhance Water Quality in Estuarine and Aquatic Areas: Maintain and enhance water quality in estuarine and aquatic areas on Biscayne Bay Campus. Also see 13.0 Conservation Element policies limiting the impacts of campus operational and maintenance activities on the natural environment.**

- Policy 1.6.1 To limit negative impacts of campus activities on soils, wetlands, hydrology and hydroperiod, the environmental coordinator shall review existing and proposed University activities for compliance with the surface water policies of the South Florida Water Management District.
- Policy 1.6.2 The University shall test storm water runoff for compliance with 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. 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.
- Policy 1.6.3 The University shall inventory herbicide, pesticide and fertilizer use and evaluate their impacts on-campus water quality. Modify or reduce herbicide, pesticide and fertilizer usage to minimize or eliminate negative impacts on water quality.
- Objective 1.7 Consistencies with Host Communities' Coastal Policies:**  
**The University's development activities and environmental protection and enhancement policies shall be consistent with the policies of the City of North Miami and Miami-Dade County (the "host communities"), and with all applicable regional, state and federal policies regarding development in the coastal zone.**
- Policy 1.7.1 The University's Environmental Coordinator shall, on regular basis, perform a review of the host communities' natural resources management plans. If necessary, the University shall amend its plans such that they are consistent with the host communities' natural resources management plans.
- Policy 1.7.2 The University's Environmental Coordinator shall, on a regular basis, perform a review of all applicable rules, regulations and policies governing coastal zone development in the host communities during the planning and development of protection, conservation, restoration, enhancement and management activities so as to be in compliance with the host communities rules, regulations and policies governing coastal zone development.
- Policy 1.7.3 All applicable rules, regulations and policies governing coastal zone development in the host communities shall be adhered to in University development activities.

Policy 1.7.4 Plant and animal species and habitats protected by the host communities or regional, state or federal agencies shall be protected on Biscayne Bay Campus (see policies in the 13.0 Conservation Element of this Master Plan).

Policy 1.7.5 Enhancement and restoration activities of coastal resources shall, at a minimum, be consistent with those activities found in the host communities.

**Objective 1.8 Pedestrian and Visual Access to Beach/Shoreline:  
Provide enhanced pedestrian and visual access to beach and shoreline areas for members of the University community.**

Policy 1.8.1 Due to the availability of oceanfront parks and nearby beach areas at Oleta River State Recreation Area, public access to the beach and shoreline at Biscayne Bay Campus is discouraged.

Policy 1.8.2 Improve visual and pedestrian connections along the Biscayne Bay shoreline by constructing a continuous waterfront pedestrian promenade and preserving and enhancing the bayfront edge as open space. The waterfront pedestrian promenade shall be located primarily on uplands and shall be designated to avoid and minimize impacts to coastal wetlands, tidal waters and mangroves.

**GOAL 2: Provide adequate hurricane evacuation procedures and facilities for both Modesto A. Maidique Campus and Biscayne Bay Campus.**

**Objective 2.1 Coastal High Hazard Areas:  
Biscayne Bay Campus contains no Coastal high Hazard areas as defined by FEMA Area "V" zones. Consequently, no expenditures for development will be made in Coastal High Hazard Areas.**

**Objective 2.2 Hurricane Evacuation:  
The University shall coordinate with Miami-Dade County, the NOAA National Hurricane Center and regional emergency management authorities to ensure that adequate hurricane evacuation times for residents of Biscayne Bay Campus are maintained or reduced.**

Policy 2.2.1 The University shall order the evacuation of students and other residents of Biscayne Bay Campus upon issuance of a Category 1 or greater hurricane warning, or 24 hours prior to potential landfall



whichever is greater. The University shall provide transit vehicles as necessary to ensure that all residents are safely evacuated to Modesto A. Maidique Campus no less than 12 hours prior to expected landfall.

Policy 2.2.2      The University shall order the relocation of all residents of Modesto A. Maidique Campus to on-campus shelters upon issuance of a Category 2 or greater hurricane warning. The University shall provide transit vehicles as necessary to ensure that all residents are safely relocated to on-campus shelters no less than 12-18 hours prior to projected landfall.

Policy 2.2.3      In coordination with Miami-Dade County Emergency Management, Florida International University shall survey all students, faculty and staff residing off-campus in coastal or other areas susceptible to storm surge inundation, those residing in structures incapable of withstanding hurricane force winds and others needing to be evacuated. Based on survey results, modify the FIU "Procedures and Control Operations for Hurricanes" to provide evacuation assistance and on-campus shelter space, if necessary, and coordinate with the Miami-Dade Emergency Operations Plan.

**Objective 2.3      Hurricane Shelter Space:**  
**Expand public shelter space at Modesto A. Maidique Campus as necessary to accommodate all students, faculty and staff needing evacuation and double the capacity for evacuating Monroe County residents.**

Policy 2.3.1      Upon the adoption of the Master Plan, FIU will continue to follow construction standards for the construction of University facilities to serve as hurricane shelters.

Policy 2.3.2      Coordinate with Miami-Dade and Monroe County Emergency Operations to refine measures of demand for shelter space on-campus and to determine total additional square footage required, applying a standard of 40 square feet per person, or other acceptable standard, to include the following:

- Student residents of Biscayne Bay Campus and Modesto A. Maidique Campus.
- Students, faculty and staff requiring evacuation from off-campus areas, in areas appropriate for evacuation to the Modesto A. Maidique campus.
- Monroe County evacuees (expected to triple from 5,000 to 15,000 spaces).

Policy 2.3.3 FIU acknowledges the need to strive to provide additional on-campus public hurricane shelter space estimated in the following minimum amounts:

<b><u>Additional Users</u></b>	<b><u>Est. Persons</u></b>	<b><u>Space Std.</u></b>	<b><u>Total S.F.</u></b>
<b>Additional on-campus students</b>	<b>1,610</b>	<b>40 s.f</b>	<b>64,00 s.f</b>
<b>Monroe County* evacuees</b>	<b>10,000</b>	<b>40 s.f</b>	<b>400,000 s.f</b>
<b>Est. Total Additional need at present</b>			<b>464,400 s.f</b>

\* In addition to 5,000 Monroe evacuees for which space is reserved.

Policy 2.3.4 Evaluate and measure the ability to expand shelter space within Primera Casa and the expanded Graham Center. Evaluate the ability to convert additional existing buildings for use as hurricane shelters. Evaluate the ability of projected and planned structures to be utilized as hurricane shelters, applying new construction standards.

Policy 2.3.5 In coordination with Miami-Dade County and Monroe County Emergency Management, develop a phased action plan to establish timing for the retrofitting of designated University facilities for use as public shelters during hurricanes. Preliminary priorities for gaining additional shelter space through retrofitting existing buildings are as follows:

- Priority 1: Expansion of designated shelter areas within Primera Casa.
- Priority 2: Expansion of designated shelter areas with Graham Center with necessary retrofit to protect or replace glass exterior walls.
- Priority 3: Utilization and, if necessary, retrofit of hallway areas in Pharmed Arena.
- Priority 4: Other existing or planned structures.

Policy 2.3.6 Coordinate with American Red Cross for the designation of specific portions of existing parking lots adjacent to the Graham Center and Primera Casa for use in staging emergency management personnel, equipment and resources. Establish a designated emergency helicopter landing pad in coordination with American Red Cross, Federal Aviation Administration and Miami-Dade Emergency Management.

- Policy 2.3.7      Should emergency helicopter landing be needed at Biscayne Bay Campus, existing surface parking lots shall be utilized.
- Policy 2.3.8      Calculate costs to provide expanded shelter space and negotiate a cost sharing formula with Miami-Dade County and Monroe County.
- Policy 2.3.9      In conjunction with its host communities, FIU will continue to update a post-disaster plan to recover from the disruption of University activities.

City of North Miami

Oleta State park

MANGROVE  
RESTORATION

Oleta State Park

Biscayne Bay

WETLAND  
RESTORATION

MANGROVE  
MITIGATION PROJECT

## LEGEND

-  Lakes & Canals
-  Mangrove Areas
-  Wetland
-  Beach Strand Vegetation
-  Beach Rip-Rap Shoreline

## KEY MAP

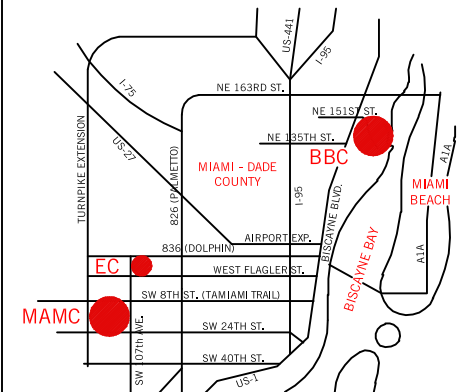


FIGURE 18.1  
Biscayne Bay Campus  
Coastal Management Plan



Campus Master Plan - June 2010



**PERKINS  
+ WILL**