



4. SUSTAINABILITY

sustainability—a search for ecological stability and human progress that can last over the long term.

sustainable development—progress in human well-being that we can extend or prolong over many generations, rather than just a few years.

Principles of Environmental Science: Inquiry & Applications,
Cunningham and Cunningham, Third Edition, 2006

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TAMU—CC is in an important location in geography and in time. This geographic location is both functionally useful and symbolically handy to highlight the University's umbrella mission which includes the research and teaching of the natural systems and resources of the Texas Gulf Coast. This mission also includes the teaching of the limits of the natural systems and resources of coastal life and the careful use of them as guided by those limits. In addition to its fortuitous geographic location, ecology and sustainability are natural to the University's institutional culture.

By reason of its geography the edge of the Island is legally designated as a wetlands by the U.S. Army Corps of Engineers

SYMBOL OF THE UNIVERSITY'S CULTURE

A new building to house the Harte Research Institute for Gulf of Mexico Studies has recently been completed on the most prominent site on the island immediately adjacent to the bridge. The site design for the new Harte Institute building includes swales designed to detain rainwater run-off.

Sustainability appears to be an institutional value at every level and in every area of the University. The University's flag is a rendition of the Texas flag in the school colors of blue, green, and white. The Physical Plant Department has a conceptual plan to capture the moisture condensed from the cooling coils of the buildings to provide perpetual irrigation for the spectacular landscape of the campus core. Another real concept is to use the smaller abandoned waste water line from the water treatment plant across the bridge to pump reclaimed water to the island for irrigation.

FLORA NATIVE

HACKBERRY TREES [*Celis occidentalis*]

The University has authorities on the natural vegetation on the Island. According to them, the only natural vegetation left on the Island is the grove of hackberry trees on the southwest corner on its southwest corner. Refer to *Illustration No. 2.1 WARD ISLAND BEFORE WORLD WAR II*.

WETLANDS

The University's scientists also indicate that the edges of the Island were once native wetlands. Refer to *Illustration No. 2.1 WARD ISLAND BEFORE WORLD WAR II*.

Since the edges of the Island are controlled as wetlands by the Corps of Engineers anyway, the University can develop a plan to redevelop the natural vegetation for these wetlands. A considerable supply of both captured rain water (storm water) and reclaimed water from the waste treatment plant could be directed to perpetuation of these new wetlands.

The existing change in elevation (drop-off) from the filled part of the Island to the riparian zone can be used as the demarcation line for the wetlands. The existing jogging trail's function as a



nature trail, as well, can then be intensified to become a trail through the original native wetlands. A wetlands restoration project on Mustang Island near Port Aransas was funded with a grant, so such funding might be available for this project, as well. Refer to section 9. OPEN SPACE AND LANDSCAPE.

INVASIVE SPECIES

From the Laguna Atascosa Wildlife Refuge on the Laguna Madre to the Sea Rim State Park on Bolivar Peninsula work is ongoing on wherever possible on the restoration of the natural state of the riparian edge of Texas. An important part of this work is the elimination or control of invasive species that are not natural to this ecological zone. This can be part of the University's plan with the ecological zone on the edge of the island being reclaimed as natural utilizing native plants to replace the opportunistic and invasive species now residing in this zone.

FAUNA

BIRDS

FLYWAY

Migratory birds of North America cross the coast line of Texas each year coming and going to their winter grounds in Mexico, Central and South America. Because of these flyways, bird watching is a popular activity on the Texas Coast. The University is in one of the North American flyways. This, too, can be used as part of the University's plan for both teaching and creating a niche campus environment.

ROSEATE SPOONBILL

The spoonbill is a shore bird that because of its size and color is a popular favorite of the birdwatchers.

PIPING PLOVER

The piping plovers nest in the area of the Cayo del Oso. Their habitat on and around the University is being negatively impacted by the invasive species of plants taking up residence in the flora of the "delta" phenomenon being caused by the storm water run-off of major building on the campus. Restoration of the natural environment in the ecological zones of the Island's edge could help the plovers.

GULLS

Sea gulls of several types frequent the riparian zones of the Island.

PELICANS

Both the brown and white pelicans be found around the Island. They are both endangered species and could benefit from habitat restoration.

RENEWABLE ENERGY

Ideally, the University would be a leader in renewable energy. Presently, however, circumstances and conditions limit the possibilities for developing renewable energy for the University because of the effects of the corrosive environment on the needed facilities.

PHOTOVOLTAIC ELECTRICITY

Even though roofs made of photovoltaic panels are possible and highly desirable, especially at universities (even more so at [this](#) University), the very aggressive environment of the Corpus Christi Bay Area makes them a considerable maintenance risk. This situation will improve over time, and each project should include a cost / benefit analysis of the technology in the earliest conceptual phase of programming.

WIND TURBINE ELECTRICITY

There is certainly wind enough for wind turbines at the University, but the cost (\$4,000,000 plus) and size (300 feet tall) of these machines is probably too great for the University. Gradually, the local electric utility provider may develop wind power electricity for the campus. In Europe these



devices are being installed off shore. A nearby site is in the competition for national funding for a wind turbine blade testing facility.

GEOTHERMAL ENERGY

Geothermal energy can be utilized at nearly any geographic location if it is economical to construct the system, or if it is simply acknowledged as the right thing to do in the institution's culture. Generally, this system is economical in areas where volcanic activity exists—where the magma is closer to the surface of the Earth. Probably, this is not a viable source of energy for the University at this time.

WATER CONSERVATION

RAIN WATER

Presently, rain water is the same as storm water or storm drainage. Refer to *STORM WATER below*. Rain water represents a valuable resource that is presently not used. The annual average rainfall in Corpus Christi is 30.4 inches. As storm water, it even has an undesirable environmental effect on the Cayo del Oso when channeled into that body of water, causing invasive species of plants to grow where they would not ordinarily be able to.

Originally, the rain water on the island flowed to the wetlands at the island edges and was gradually mixed into the salt water of the bay. If the wetland edges were reestablished as part of a natural landscape, the storm water could be captured and redirected to the wetlands.

AIR CONDITIONING CONDENSER WATER

The coastal air on the bay is very humid. The Physical Plant Department has made note of the large amount of water from that air that is condensed from the cooling coils for each building. Given the intense spine landscaping around the tightly clustered buildings, a plan is evolving to capture and use this water for irrigation.

RECLAIMED (TREATED) WATER

Treated water from the City's plant flows out a drainage way from the plant to the west side of the Cayo del Oso. This drainage way is just to the north of the Suter Nature Preserve.

When an enlarged waste water pipe line from the University was installed during the construction of the new bridge for Ocean Drive, the smaller old line was kept in place. The plan is to use it to pump a supply of treated water from the treatment plant to the Island for irrigation use. The volume of this water available for irrigation is limited only by the size of the existing pipe retained for this use.

STORM WATER

Storm water (rainwater) is a great potential resource if it were to be collected and stored. The Island has an extraordinary asset that could make such a system possible. It is a rectilinear concrete storage tank on the southwest edge of the Island. The tank has a volume of nearly a quarter of a million gallons. It was the U.S. Navy Engineers designed septic tank for the military facilities on the Island during WW II. To utilize this tank a collection pond and pumping station would be necessary, as would an irrigation system with its own pump from the tank. Refer to Section 6. UTILITIES AND INFRASTRUCTURE. A cost / benefit model of this system should be developed; it should endeavor to include all costs, not just the initial capital cost.

SUMMARY

The University is ideally situated physically and symbolically for its role as researcher and teacher of knowledge concerning how to live on the Ocean's edge while restoring, preserving, and perpetuating the environment. A number of unique resources largely unused to this moment in time exist to help the University in this endeavor.

The University can grow the appearance and function of its size by adopting the entire Cayo del Oso as its laboratory for living on the Ocean's edge.



Recommendations:

1. ***Promote and develop a sustainable campus utilizing native plants wherever possible; promote a school spirit and pride founded on this dedication.***
2. ***Annex through agreement with the City the Hans Suter Wildlife Area as an expansion of its ecological zones for field laboratory work.***
3. ***Mitigate the impact on the Cayo del Oso of fresh water (storm water) runoff from the campus.***
4. ***Adopt as a perpetual project the preservation, reclamation, and restoration of both the flora and fauna of the Cayo del Oso and its riparian edge, as well as the physical entity of the bay itself.***
5. ***Develop both storm water and gray water sources for irrigation looking toward an entire campus lushly landscaped like the spine, except for the ecological zones.***
6. ***On an ongoing and perpetual basis promote and develop alternative energy for the University.***