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LAND LOSS IN LOUISIANA: IS RETREAT THE ANSWER?

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Statement of Problem

Louisiana is losing vast acreages of coastal habitat. At the current rate of loss, 55 square miles per year, an area the size of Rhode Island will be lost in 22 years (Breux, 1986). Several parishes (counties) are slated to be eliminated in less than 100 years, Plaquemines in 47 years and Terrebonne in 98 years (Wicker, 1980). If the nation were to lose these lands to a foreign nation, an act of war would be declared. Yet, the Gulf of Mexico has engaged in a successful campaign which many believe goes unnoticed by most (Landry, 1985).

Louisiana's problems began with the taming of the Mississippi River at the turn of the century, and the take-off of the mineral extraction industries in the 30's. Controlled by guide levees, the Mississippi River now carries its life-sustaining fresh water and sediment to the depths of the Gulf and the delicate balance between land and sea has been critically disrupted. Slowly, the interstripinary basins submerge below the surface of the sea, unable to be replenished with sediment. On another front, the salt waters of the Gulf intrude northward into aquatic habitat along the Louisiana strip access canals and pipeline corridors, stripping the area of vegetative cover before secessions of species can take place (Davis, 1984). These remaining mud flats literally are washed away in months, soil banks thrown up along access canals inond water, which the marsh causing many areas to drown, leaving vast areas of open water in a once unbroken marsh (Louisiana Terrebonne Soil and Water Conservation District 1986).

Accelerated by an estimated Gulf global sea level rise of .09 inches per year and a subsidence rate of .36 inches per year, Louisiana is losing its most valuable land (Ponlana, in Press). Every 49 minutes another hectare becomes open water (Davis, in Press). For the first time in

recent history, the region is experiencing net degradation rather than net progradation. The land lost is not site specific but includes the entire coastal zone, which in certain areas, extends over 60 miles inland. The barrier islands are retreating an average of 50 feet per year and diminishing in size by .20 mi² per year (Penland, 1985). Coastal highways are falling into the Gulf of Mexico, once productive agricultural land and villages have sunk below the surface of the sea and, the regions first line of defense against hurricanes is threatened. Further, community drinking water surface intakes, situated 50 miles inland, have been contaminated by salt in concentrations in excess of 14,000 ppm (Edmonson, 1985).

Over the last 15 years years, these problems have been well documented by the academic community. More recently, state and local government and private industry have begun to engineer and construct wetland protection and restoration projects. However, the financial means to truly protect these vast acreages of valuable wetlands are beyond the capabilities of state and local government. Further, decades of oil and gas subsidies, which negated the tax payers burden to operate and maintain civic services and infrastructure, has resulted in an apathetic public attitude about civic responsibilities. These responsibilities concern the delivery of flood protection measures and community services, erosion and pollution control, and the integral role each citizen plays in the environmental future of a coastal community. Presently, a large gap exists between the progress made by the research and engineering fields and the understanding, support, and funding of protection, conservation and enhancement measures by local, state and federal government. Ultimately, the protection of coastal resources and the communities whose economic base exists because of these resources is a civic responsibility.

With such an acute problem, government officials and coastal scientists are often asked several questions. Are these resources worth protecting? Why should the public pay for the protection of these resources? And, why do coastal Louisianians not just retreat from the coast? The remainder of this paper will address these questions.

Retreat From the Coast

Retreat? Yes indeed, we are retreating. Coastal Louisianians are undoubtedly the most experienced when faced with retreat from the advances of the sea. Since the early 1800's, residents of coastal Louisiana have been forced to vacate areas, such as Fort Beauregard, Last Island and Sea Breeze. Being fishing, farming and trapping folk historically, this retreat is often subtle as the inhabitants of the coastal zone cling to their lifestyles and economic base.

Today, as has been practiced historically in Louisiana, retreat takes the form of both vertical and horizontal movement. Horizontal retreat is the relocation of non-water dependent services to higher ground away from the encroaching Gulf waters or into flood protected fastlands. Vertical retreat is the elevation of structures and flood proofing of same. Retreat in coastal Louisiana is not a sudden occurrence, however. Both vertical and horizontal retreat occur most often and in the greatest frequency subsequent to a major storm event. For instance, the number of building permits issued which addressed the elevation of structures in January of 1985 (Pre-Hurricane Juan) was 67. The number issued in January of 1986 (post Hurricane Juan) was 367 (Foreman, 1986). It is at

these times that the increase in vulnerability caused by the slowly eroding land base becomes most evident and drastic. For several months following these major storm event periods, it has been observed that many residents will relocate further north or towards higher ground by building new homes. Also, the number of existing or newly constructed structures elevated increases. In virtually all cases however, the retreat is minimal and generally contained within the coastal zone.

There are two primary reasons why a major retreat out of the coastal zone will not take place in South Louisiana. First is the location of the primary resource extraction industries within the coastal zone. The second reason is the nature of the existing infrastructure. The delta plain of the Mississippi River is rich in both renewable and nonrenewable resources. The extraction of these resources is a primary industry. The significant resources extracted within the coastal zone include fur and fish as renewable resources and oil and gas as nonrenewable resources. The fur and fish industries are wetland dependent and are also family oriented operations. The oil and gas extraction industries are very site specific and material source dependent.

Because the fishing industry is composed of thousands of independent family owned operations, as a means to reduce costs, the families live on the lower reaches of the natural levee ridges. They park their trawlers in front of their home on the bayous so that access to the marsh and gulf waters is easy and cost effective. In addition, the opportunities to "add-on" costs to pay for increase travel time, commuter services or infrastructure requirements is not presently as feasible, as in other areas of the country. This is because little value is added to the product locally whether it be in the fish and fur industry or the mineral extraction industry. For example, within the fishing industry, 60% of the shrimp catch is not processed at all. Of this amount, 89% is shipped out of state for processing (Weschler, 1986). Although not as drastic, this can also be seen within the mineral extraction industry. Resources are extracted within the wetlands and the outer continental shelf and moved via pipeline to the petro-chemical industries located to the north along the Mississippi River industrial corridor. Therefore, due to the primary nature of these extractive industries and the fact that little value is added on site, laborers of these industries and support services are located as close to the resource to be extracted as possible as a means of cost reduction.

The nature of the existing infrastructure also causes a problem with retreat. Even though Louisianians have been historically accustomed to retreat, they have in fact become more permanently fixed within the coastal zone. Beginning in the 40's and 50's, which some believe began with the influx of petroleum workers from Texas and Oklahoma, there has been a proliferation in the construction of ranch homes on concrete slabs. Prior to this period, the majority of construction was elevated on piers. Once a home is built on a slab, the structure becomes permanently fixed to the landscape and it is not feasible to raise the structure as a means to reduce flood damage. With entire subdivisions of homes built on slabs, it has become necessary to construct forced drainage systems, including protection levees, drainage canals and pump stations.

Residential development is not the only construction that has become fixed within the coastal zone. The extraction industries, by

construction of ice houses, packing plants, pipe yard service supply companies, machine shops, fabrication yards and transportation support services have been located and established well within the coastal zone.

Retreat will be difficult for Louisianians. Although retreat is environmentally induced the call for retreat comes at the same time as the national importance of the resource base has increased.

Value of Resources

Are these resources worth protecting? Yes, these wetlands need to be protected because of their value, not only as an economic resource base, but also for the habitat and recreational values that they provide. In 1984, the value of Louisiana's reported seafood landings were as follows: Shrimp, \$141,740,000.00; other species, which include crab, oysters, drum, trout, snapper, red fish, croaker, mackerel, mullet, pompano and catfish was \$38,945,000.00; and Menhaden was \$196,623,000.00 (Weaschler, 1986). Louisiana's fur industry annually yields between \$2 and \$24 million and the oil and gas industry annually is valued at approximately \$500 million (Davis, 1984). The total of these values is \$1,069,308,000.00. It is obvious that oil and gas is a resource of national concern. The author contends that the fish and fur industries are of national concern also unless we continue to increase the import of these resources from foreign nations.

Cost of Protection

What will it cost to protect these resources? To manage the marsh, maintain the barrier islands and protect the inhabitants within the coastal zone that are responsible for extracting resources of national concern will cost \$873 million. This is based on the following estimated costs for Terrebonne Parish, which is the largest parish by land area within Louisiana. Marsh management, \$10 million; limited hurricane protection, \$165 million; drainage, \$44 million; and barrier islands, \$50 million. This totals \$299 million. Terrebonne's coastline is approximately one-third of the total coast of the Mississippi and Atchafalaya Delta complexes. The extrapolation of Terrebonne's cost results in the aforementioned total for the deltas. As you can see, the cost of protection, although expensive, will rapidly be returned in the value of the resources of which will be protected. A great deal of thought and money has been spent locally which has led to these management decisions to stay within the coastal zone and protect its resources. Although the ultimate destruction of the delta plain may be inevitable, it is felt that any delay which can result through proper management of these resources will be well worth the return economically.

As an example of efforts made by local government concerning this matter, one parish, Terrebonne, has conducted the following studies: Sand Resource Inventory, Marsh Value Study, Oyster Contamination Study, Subsidence Study, Soil Survey, Sea Level Rise Study, Habitat Characterization Study, Barrier Island Reconstruction Study, Use of Dredge Materials and a Drainage Study. In addition, the parish has developed an extensive education program, which utilizes billboards, hand-outs and pamphlets, and the development of an eighth grade school curriculum concerning the parishes resource base and its erosion problems. The parish has also engaged and expended millions of dollars on marsh management facilities, drainage facilities and barrier island

reconstruction projects.

Conclusion

South Louisianians are here to stay and the nation continues to be dependent on her resources. Therefore, I challenge government, educational institutions and citizens with the following recommendations:

Areawide wetland mangement

Coastal Zone Management in Louisiana is a permit processing program which is primarily site impact specific. Although the program is based on environmental management units within parish boundaries, these small units bound within these policial boundaries fail to address areawide wetland basin management. If Louisiana is to ever control land loss and implement enhancement measures, an areawide approach to the wetlands must be established. Drainage basins would be the most appropriate division of areawide wetland management.

Revised land use controls and enforcement

Many problems associated with flooding and flood control are caused directly by inadequate land use controls and/or the enforcement of same. Land use control measures must be revised to prohibit slab foundations, set first floor elevations, and flood proofing. In addition, regulations must address the appropriate delivery of utility services within the coastal zone.

Control oil and gas industry exploration techniques

Louisiana's wetlands can no longer withstand the uncontrolled dredging of access canals throughout the marsh. Even though state and local governments have been successful in reducing the length of new access canals, pressure must be brought to bear on the exploration companies. New drilling techniques such as multiple directional drilling from one access point must be strictly enforced.

Develop national resource extraction impact program

Since the nation is dependent on Louisiana's oil and gas resource and, the extraction of these resources has caused irreplaceable damage to the wetlands, the federal government should establish a resource extraction reclamation program for oil and gas. Reclamation programs presently exist for coal, sulfur, copper and iron ore. It is time that reclamation of oil and gas extraction in wetlands also be addressed.

Expand fisheries resources

Louisiana has been lulled to sleep with the "get rich quick" mentality of oil and gas. This is a non-renewable resource tightly controlled by outside influences. Louisiana must wake-up and explore avenues to expand its valuable renewable fisheries resource. Once the oil and gas is gone, if we haven't destroyed all the wetlands in the process, fisheries, if well managed, will always be here.

Values added and underutilized species

To increase the economic value of the fisheries industries, Louisiana must increase processing of these products within the state. Additionally, the states fishermen must learn how to catch, process and market many species of fish that for years have been considered trash.

Develop limited hurricane protection system

Even with the billions of dollars of resources extracted from coastal

Louisiana, society cannot afford to 100% protect these areas from hurricane impacts. We must instead design protection systems for regular storm events, elevate structures, flood proof, and evacuate for major storm events.

Introduce civics and coastal education programs

The general apathy of the public on government operations and the problems associated with living on a coast is caused primarily by the lack of education in these matters. Civics and coastal education programs must be reintroduced into the classrooms.

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