ECONOMIC ANALYSIS
OF ANNA MARIA ISLAND
BEACH NOURISHMENT

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Introduction

Florida's beaches represent a major natural resource of the state. They provide millions of residents with high quality inexpensive recreational opportunities and they attract visitors from around the world who are a source of employment and incomes for the State's population.

Unfortunately, many Florida beaches are subject to erosion. Natural forces redistribute sand from one part of the coastline to another, and in undeveloped beach areas nature can be allowed to run its course. In developed areas, however, the natural redistribution of sand jeopardizes upland development and removes recreational opportunities from the nearby population. As a result, steps are usually undertaken to armor the coastline in order to protect property or to replace sand through a beach nourishment project.

Because of the importance of Florida's beaches to the population, the State of Florida has followed a policy of providing grants to local governments to assist them in undertaking beach nourishment projects. These grants have usually come from general revenues, and the benefits of beach nourishment have not been widely understood across the State. At a time when it is becoming increasingly difficult to compete for scarce general revenue resources, the State has followed a number of approaches in order to ensure adequate funding for the maintenance of Florida's important public beaches.

One part of the State's program has been to undertake economic studies of beach nourishment projects in order to quantify the magnitude of their economic benefits. One of the first projects for which an economic study is being undertaken is the Anna Maria Island Beach Nourishment Project.

This report presents an economic analysis of the Anna Maria Island Beach Nourishment Project. The purpose of the analysis is to quantify the economic benefits of the beach nourishment. These include the value of the prevention of storm damage, the recreational value of the new beaches, and other community benefits including the impact of the new beaches on government revenues and employment and payrolls. It is envisaged that a further analysis will be undertaken after completion of the project in order to determine whether the anticipated benefits are realized or exceeded.

The primary economic data used to generate the estimates presented here were obtained through beach visitor, household, and business surveys conducted on Anna Maria Island during the period March through July 1990. Secondary data sources were the local property appraiser files and tax records. The details on beach use and economic impact are presented in Beach Use and Economic Impact: Anna Maria Island, 1989-90, a report submitted to Manatee County Parks and Recreation in October 1990. A detailed analysis of storm damage prevention benefits is presented in the report submitted by Coastal Planning and Engineering entitled Economic Study Anna Maria Island Beach Restoration Project: Storm Damage Prevention Benefits.

The remainder of this report is divided into five sections. The first section provides an overview of the benefits projected from the beach nourishment project. Storm damage prevention benefits are summarized in a second section, and the third section provides information on recreation benefits. The fourth section estimates tax revenues accruing to state and local government as a result of the beach nourishment and the last section provides employment and payroll impacts of the Anna Maria Island beach project.

Overview of Benefits

The benefits derived from the existence of a beach can be classified into direct benefits accruing from the beach's storm protection characteristics and from the recreational value of beach usage, and as indirect benefits to the community in the form of government tax revenues generated by beach visitors and the employment and income created for local residents.

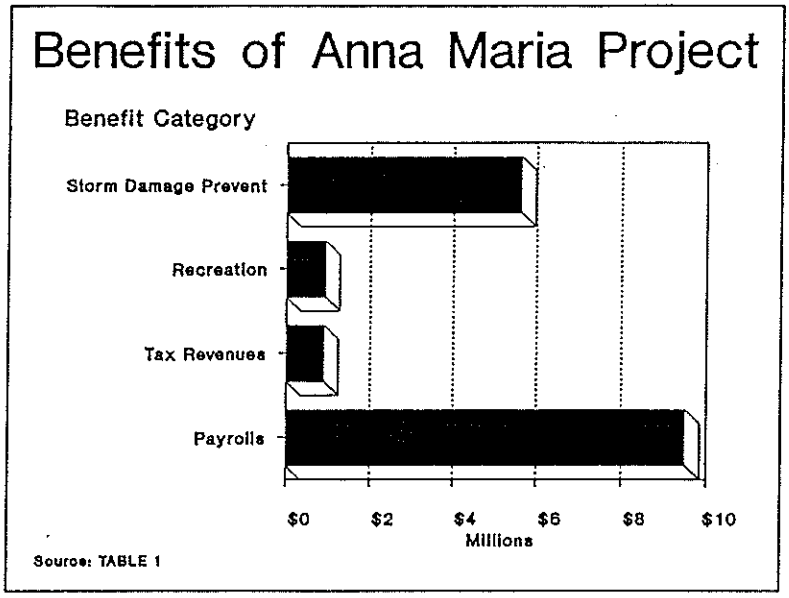
The total direct benefits of the Anna Maria nourishment will average about $6.6 million over the life of the project (TABLE 1). Most of these direct benefits will consist of storm damage prevention which is projected at $5.6 million, with an additional $0.9 million in recreational benefits.

TABLE 1
Benefits of the Anna Maria Project

Benefit Category	Amount
Direct:	
Storm Damage Prevention	$5,625,431
Recreation	$ 932,645
Indirect:	
Tax Revenues	$ 901,128
Employment (Jobs)	428
Payrolls	$9,510,644

The indirect benefits of the Anna Maria Island Nourishment consist of increased tax revenues of state and local governments, and increased employment and payrolls. TABLE 1 shows that the revenues of state and local governments will rise by $901,128 per

year as a result of the project. In addition, there will be an increase of 428 jobs and an increase in payrolls statewide of $9.5 million.



Storm Damage Prevention Benefits

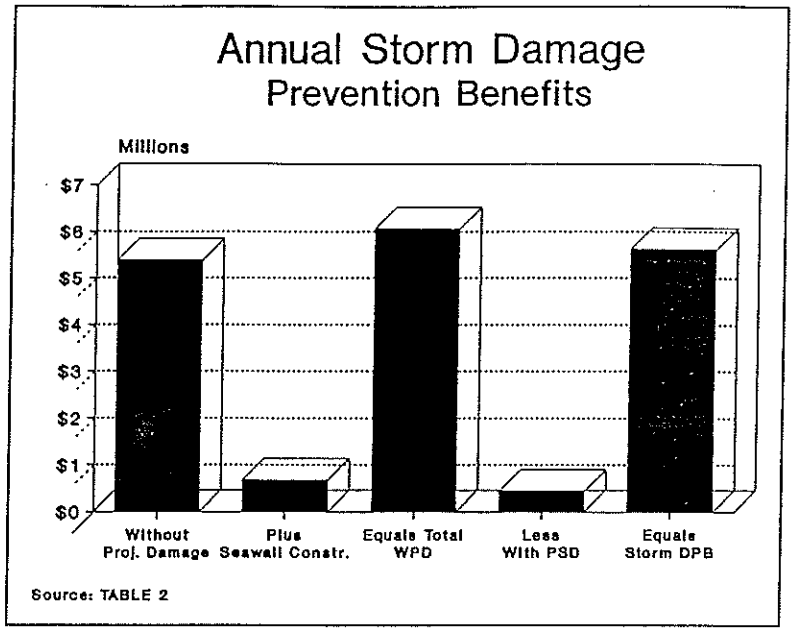
Storm damage prevention benefits are those damages which are reduced by the existence of the beach fill project and are calculated by subtracting the "with project" damages from the "without project" damages. The "without project" damages include the value of property lost due to storm damage and the cost of protecting property if the beach project is not undertaken.

TABLE 2
Annual Storm Damage Prevention Benefits

Benefit Category	Amount
Without Project Damage	$5,387,508
Plus Without Project Seawall Construction	$ 688,748
Equals Total Without Project Damage	$6,076,256
Less With Project Storm Damage	$ 450,825
Equals Storm Damage Prevention Benefit	$5,625,431

For the Anna Maria Island project, the average annual value of property lost due to storm damage in the absence of the project is estimated at $5,387,508. In addition, the Engineer estimates that an annual expenditure of $688,748 would be justified in order to protect existing upland property in the absence of the project. Therefore, total annual losses or costs in the absence of the project are estimated at $6,076,256. From this are subtracted the estimated annual property lost when the project is complete, which is estimated at $450,825. As a result, the annual storm damage prevention benefit is $5,625,431. This potential annual loss in property value amounts to about one percent of the total assessed

value of the island each year. A portion of the storm damage prevention benefit flows directly to the general public because some of the property in danger of storm damage is publicly owned. The value of public property lost each year is estimated at $314,400. In addition, as shown in the next section, there will be a loss of tax revenues in the absence of the project.



Recreational Benefits

A second category of direct benefits is associated with beach use. Surveys of beach visitors to Anna Maria's study area beaches indicate that beach users place a value of $2.03 on an average day at the beach. With a total of 570,243 beach visits, this implies an annual recreational value of $1,157,593 for the existing beaches. This value is projected over the design life of the project and discounted to present worth to give the recreational value of the existing beaches of $12,857,530 reported in TABLE 3[1].

TABLE 3
Annual Recreational Benefits

Benefit Category	Amount
Recreational Value of Existing Beaches	$ 12,857,530
Existing Beach Size (Square Feet)	1,677,875
Recreational Beach Value Per Square Foot	$ 7.66
Design Beach of Project (Square Feet)	1,352,350
Recreational Value of New Beach	$ 10,359,001
Annualized Recreational Value of New Beach	$ 932,645

The interpretation of the $12,857,530 is as follows. This is what beach users would be willing to pay in order to secure recreational rights to the beach over the design life of the project. Dividing this by the number of square feet of existing beach yields an average recreational value per square foot of $7.66. When this is

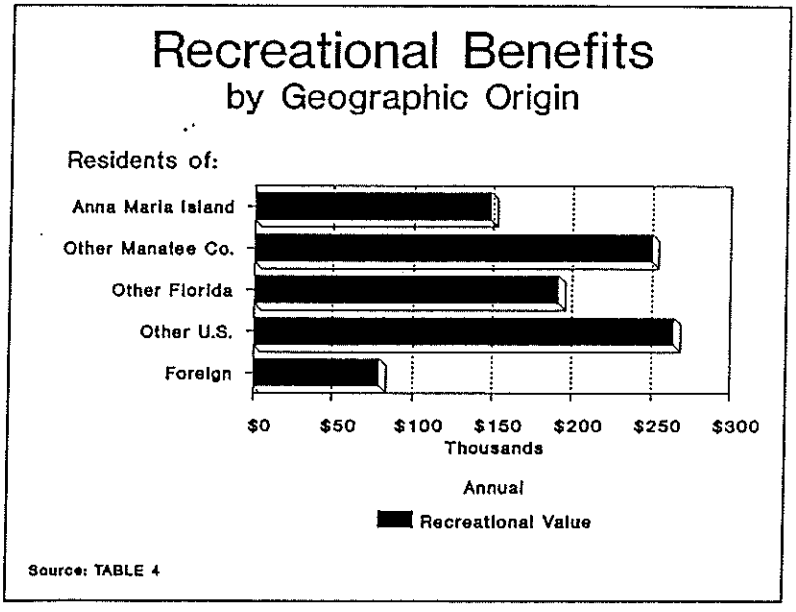
[1]Although the beach will erode in the absence of the project, the value per square foot will be little changed because neither the estimated recreational value nor the beach size figures are adjusted for future without project erosion.

multiplied by the size of the new beach, the recreational rights to the new beach are valued at $10,359,001 and this is amortized over the life of the project to yield an average annual recreational benefit of $932,645.

TABLE 4
Recreational Benefits By Geographic Origin

Geographic Origin	Amount	Percent
Anna Maria Residents	$148,291	15.9
Other Manatee County	$249,948	26.8
Other Florida	$191,192	20.5
Other U.S.	$263,939	28.3
Foreign	$ 79,275	8.5
Total	$932,645	100.0

Note: Anna Maria residents include seasonal residents.



Assuming that the geographic origin of future users of Anna Maria's beaches remains similar to the present situation, a geographic breakdown of recreational benefits is given in TABLE 4. The largest beneficiary of the new recreational benefits would be out of state residents, and this makes it appropriate that much of the cost of the project

should be funded with State and Federal grants. The second largest group of beneficiaries are residents of Manatee County who do not live on the island. The smallest group of beneficiaries are residents of the island.

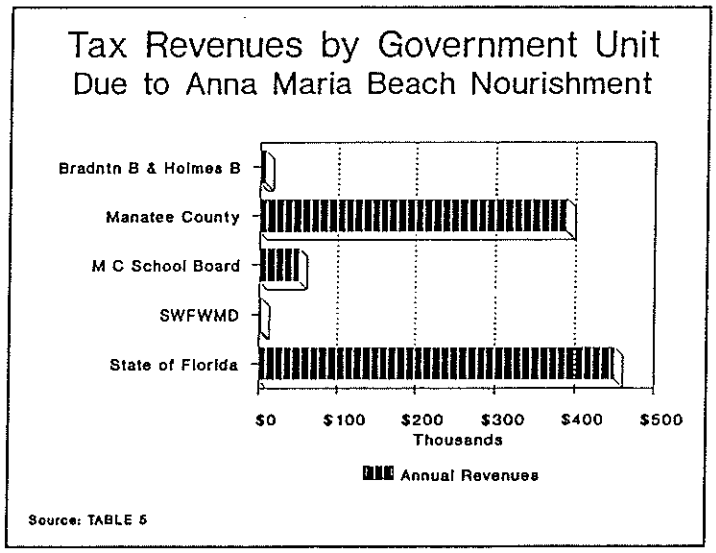
Tax Revenues Generated by the Project

The beach nourishment project will generate increased tax revenues for the State and for the local governments in the region. TABLE 5 shows that the biggest beneficiary of increased tax revenues as a result of the project will be the State of Florida, whose revenues are expected to rise annually by $450,926 as a result of the project.

TABLE 5
Annual Tax Revenues By Government Unit

Government Unit	Amount	Pct.
Cities: Bradenton Beach and Holmes Beach	$ 6,751	0.7
Manatee County	$ 389,550	43.2
Manatee County School Board	$ 50,655	5.6
Southwest Florida Water Management District	$ 3,077	0.3
West Coast Inland Navigation District	$ 169	0.0
State of Florida	$ 450,926	50.0
Total	$ 901,128	100.0

The second largest increase in revenues will be received by Manatee County, whose revenues are projected to increase by $389,550 annually. A third major beneficiary is the Manatee County School Board which will experience an increase annually of $50,655.



The revenue sources of Manatee County that will be affected by the project will include property taxes, tourist taxes, sales taxes and gasoline taxes (TABLE 6). The largest component of County tax revenues that will increase as a result of the project will be the sales tax which will rise annually by $204,899 due to the increased spending in the county of out-of-county visitors to the newly restored beaches[2]. The second largest increase in revenues will be in tourist or "bed" taxes.

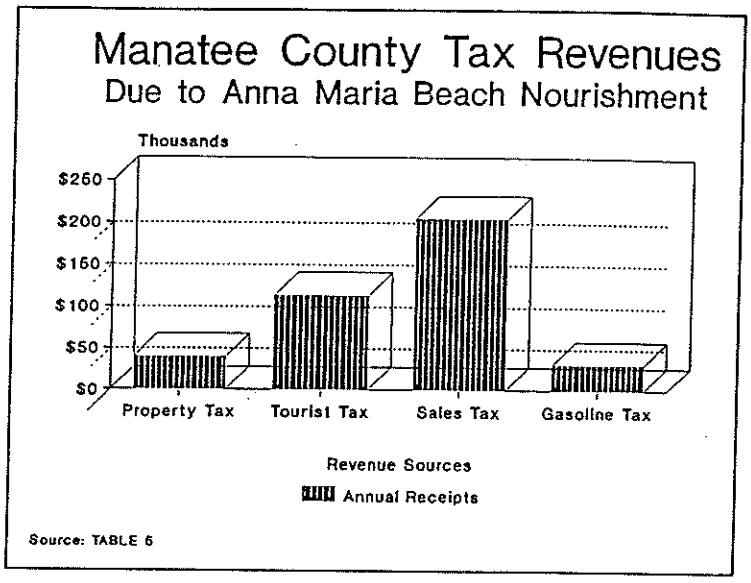
TABLE 6
Manatee County Tax Revenues

Revenue Source	Amount	Percent
Property Taxes	$ 39,848	10.2
Tourist Tax	$ 113,617	29.2
Sales Tax	$ 204,899	52.6
Gasoline Tax	$ 31,186	8.0
Total	$ 389,550	100.0

Manatee County, and the other local governments listed in TABLE 5, will experience increases in property taxes as a result of the new beaches. The estimates provided in TABLE 5 and TABLE 6 incorporate the assumption that assessed values will rise by an amount equal to the storm damage prevention benefits due to the

[2]Although there will be increased use of the beaches by Manatee residents, it is assumed that this will involve a reallocation of spending rather than the creation of new spending within the county. The rise in spending is projected to be the same proportionately as the rise in recreational value of the new beaches.

project[3]. The property tax increases are obtained by applying current millages to this rise in assessed value.



In fact the estimates of increased property tax revenues are likely to be under-estimated in the tables presented here because they do not allow for the likely redevelopment of the upland property on the island as a result of the economic rejuvenation produced by the project.

The State of Florida will gain substantial revenue from the beach project as a result of the increased spending of out of state visitors. The spending of visitors is projected to rise at the same rate as the rise in recreational value. Throughout this report only the spending of main destination visitors is used in generating tax revenue estimates. TABLE 7 shows that the primary source of State revenues is the state sales tax.

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[3]The current value of a property should contain a discount for likely storm damage. If this damage is prevented the discount should be removed.

TABLE 7
State of Florida Tax Revenues

Revenue Source	Amount	Percent
Sales Tax	$ 440,391	97.7
Gasoline Tax	$ 6,658	1.5
Beverage Tax	$ 3,877	0.8
Total	$ 450,926	100.0

The millage rates used in this section are: combined County funds, 7.0835; Manatee County School Board, 9.0047; SWFWMD, 0.5470; WCIND, 0.03. Real property values in million $ are: Bradenton Beach, $103.6; Holmes Beach, $328.1. Local tax rates are: tourist tax, 3 percent; sales tax, 1.5 percent; gasoline tax, 7 cents per gallon. State tax rates are: sales tax, 5.5 percent; gasoline tax, 4 cents per gallon; beverage tax estimated at 8 cents per tourist per day. Expenditure data was obtained from surveys of beach visitors and is reported in Beach Use and Economic Impact: Anna Maria Island, 1989-90, a report submitted to Manatee County Parks and Recreation in October 1990.

Employment and Payrolls

The creation of jobs is another benefit due to Anna Maria's beach restoration. These were projected under the assumption that spending generated by the new beach will create jobs and payroll in the same way as existing spending by visitors to the island's beaches.

TABLE 8
Employment and Payroll Creation

	Employment	Payrolls
New Manatee Jobs Created	428	$ 9,501,644
From Elsewhere in State	197	$ 4,373,420
From Out of State	231	$ 5,128,224
New Florida Jobs Created	246	$ 5,461,225
Created in Manatee	231	$ 5,128,224
Created Elsewhere in State	15	$ 333,001

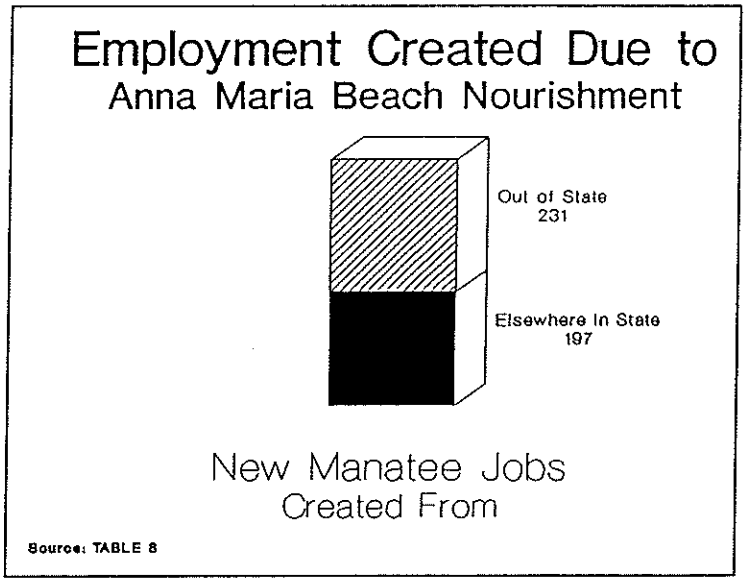

TABLE 8 shows that the beach restoration will result in an increase of 428 jobs in Manatee County, as a result of the spending of main destination out-of-county visitors. However, 197 of these jobs are created as a result of the spending by residents of other parts of Florida. As a result, part of the

increase in jobs and payroll represents a reallocation within the state. The number of jobs created in Manatee County by the increase in out of state visitors is projected at 231 with a payroll of $5.1 million. There will be a further increase of 15 jobs elsewhere in the state with a payroll of $333,001 as main destination out-of-state visitors to Manatee travel elsewhere in the state as part of their visit to Anna Maria Island.