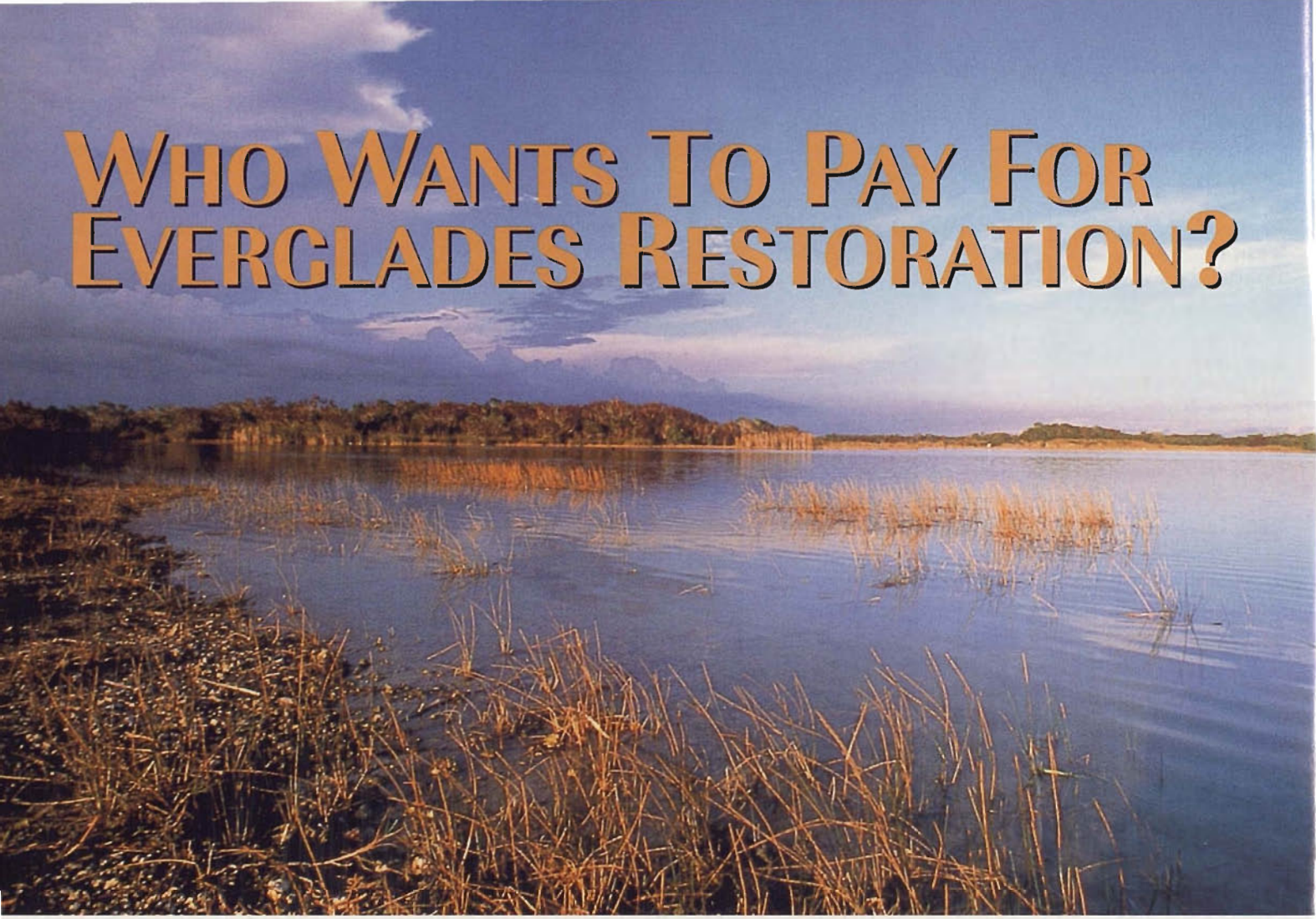
Who Wants To Pay For Everglades Restoration?



Here's how to do it: Remove 240 miles of canals and levees, store billions of gallons of fresh water and work back to a more "natural" Everglades. Ready?

by J. Walter Milon and Alan W. Hodges

The Florida Everglades is one of America's unique natural treasures. Yet, five decades of drainage of wetlands and changes in natural water flows have dramatically altered the Everglades ecosystem. More than two-thirds of the natural water flow through the Everglades has been diverted to the ocean or gulf. Native bird and other wildlife populations have dwindled such that the region is now home to more than 56 threatened or endangered species of birds and animals.

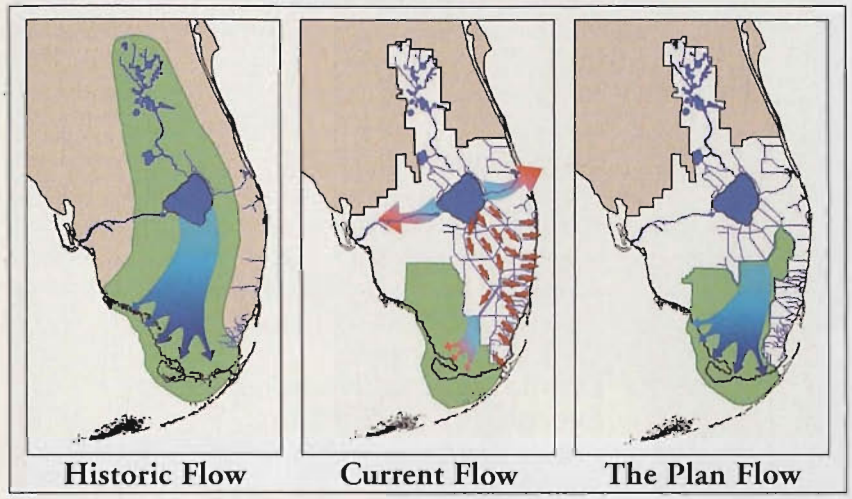
On July 1, 1999 Vice President Gore asked Congress to authorize a massive land acquisition and construction program to restore the Everglades. The program is called the "Restudy" because it evaluates the feasibility of modifying the Central and Southern Florida Project authorized by Congress in 1948 to manage water in the region. The Restudy was developed after more than six years of planning by the U.S. Army Corps of Engineers working in conjunction with a special multigovernmental task force.

The overall objective of the Restudy is shown in Figure 1. Water that now flows primarily eastward into the Atlantic Ocean will be redirected so the natural southerly flow of shallow water through the system's channels can be restored. This will require removing 240 miles of canals and levees, storing billions of gallons of fresh water in underground and surface reservoirs, and releasing it into the Everglades to mimic historical flows. Stored water will also be available to meet agricultural and municipal demands. The Restudy's proposed projects are often described as the most ambitious and costly ecosystem restoration projects in the world.

Are Floridians and the U.S. public willing to pay for Everglades restoration?

Initial funding to implement the Restudy projects is expected to be part of the Water Resources Development Act (WRDA) of 2000. Debate about funding, however, will be influenced by provisions of the WRDA of 1996 (P. L. 104-303) that established a special feasibility criterion and cost-sharing terms for the Restudy. The 1996 WRDA stipulated that the Secretary of the Army would determine whether activities proposed in the Restudy were justified "by the environmental benefits derived by the South

Figure 1: Overall Objective of Restudy



Florida ecosystem in general and the Everglades and Florida Bay in particular" and "[they] shall not need further economic justification if the Secretary determines that the activities are cost-effective" (Section 528). The non-Federal share of development costs was set at 50 percent except for non-essential water quality improvement projects. Operation and maintenance costs are the responsibility of the non-Federal sponsor, the South Florida Water Management District.

Photo courtesy SFWMD

The 104th Congress bypassed the customary benefit-cost analysis for water projects when it declared that activities under the Restudy would be justified by "environmental benefits" to the Everglades ecosystem and further declared that the activities were "cost-effective." The presumption is that restoring this area is a national priority, and economic measures of the value of the environment are either unreliable or unavailable. Given this, decisions about public funding for Everglades restoration will proceed with limited economic information. This missing information raises a number of important questions for policymakers: How do the economic benefits that accrue to Floridians compare to the benefits received by non-Floridians? Are the cost-sharing requirements commensurate with the distribution of economic benefits? And, perhaps most importantly, are Floridians and the U.S. public willing to pay for Everglades restoration?

Benefit-cost analysis and Everglades restoration

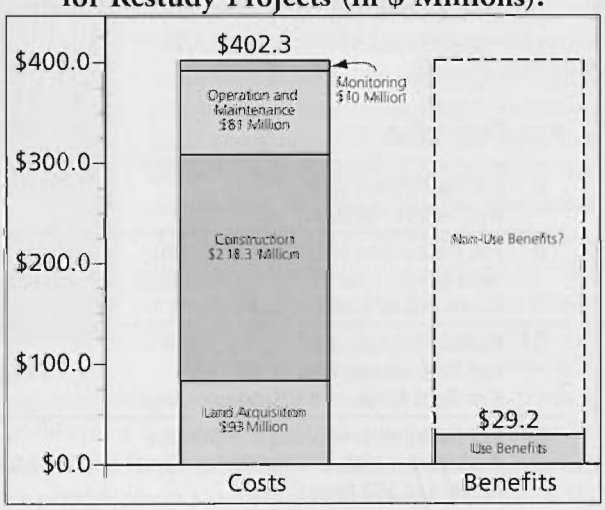
Benefit-cost analysis is frequently used to help answer such questions. It is based on estimates of monetary measures of changes in individual well-being that result from policies or projects. Costs measure the expenses incurred to construct, operate and maintain a project. Gains to consumers are described as either *use* or *nonuse* benefits. Use benefits result from changes in the prices or quantities of market or nonmarket goods and activities. For example, a project that lowers the cost of flood control insurance creates a benefit. Benefits may also include the value of increased crop production, increases in municipal and industrial water supplies, and the value of additional opportunities for nonmarket activities such as fishing, bird-watching, or boating on lakes and rivers.

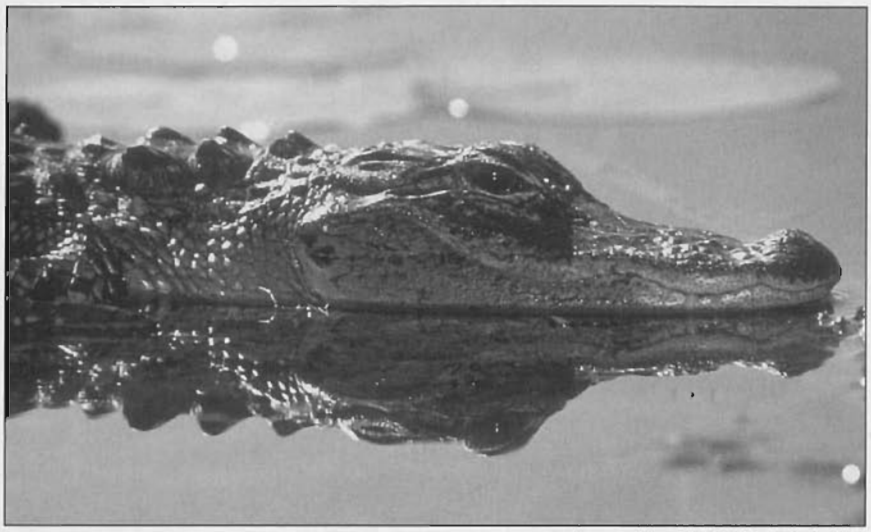
Nonuse benefits derive from nonmarket goods such as natural amenities and improved environmental quality. Nonuse benefits for changes in environmental quality differ from purely physical indicators (such as dissolved oxygen levels in a lake) because the monetary value of the physical changes are estimated through individuals' willingness to pay for (or accept) the change. For example, individuals' willingness to pay to improve air quality around the Grand Canyon is a measure of nonuse benefits for an environmental good. Nonuse benefits are often estimated through surveys by asking individuals their willingness to pay for specific changes in environmental quality.

These benefit-cost analysis concepts can be described in the context of Everglades restoration. Figure 2 shows the annual costs and benefits reported in the Restudy final report to Congress. Costs include land acquisition ($93 million), construction ($218.3 million), operation and maintenance ($81 million), and monitoring ($10 million) expenses in an *average* year during the 50-year planning period used for the Restudy.

The $29.2 million in annual use benefits shown in Figure 2 result from additional water supplies available from

Figure 2: Average Annual Costs and Benefits for Restudy Projects (in $ Millions).





the proposed Restudy projects. These use benefits accrue to agricultural and municipal water users in South Florida because the projects reduce the likelihood of water shortages. Over ninety percent of the annual benefits accrue to municipal users. These annual benefits were based on expected shortages that would occur at the *end of the 50-year planning horizon*. No attempt was made to estimate benefits for interim time periods because only existing and desired "end state" conditions could be predicted. Given the special cost-effectiveness criterion established for the Restudy, no estimates were provided for recreational or nonuse benefits — the unshaded area in Figure 2.

A direct comparison of the Restudy's benefits and costs is difficult. But, if the usual criterion that total benefits equal or exceed total costs is applied, how large would the unquantified recreational and nonuse benefits have to be to justify the Restudy projects? Using the same annualized basis as the Restudy, the magnitude of recreational and nonuse benefits would need to be on the order of $370 million *per year* to make annual benefits equal to annual costs. What indication do policymakers in Florida and Washington have that recreational and nonuse benefits of this magnitude would result from Everglades restoration? And, how are these benefits divided between Floridians and other U.S. citizens?

Public policy cannot be based on a presumption of very large nonuse benefits for each and every ecosystem restoration project.

Estimating nonuse benefits for Everglades restoration

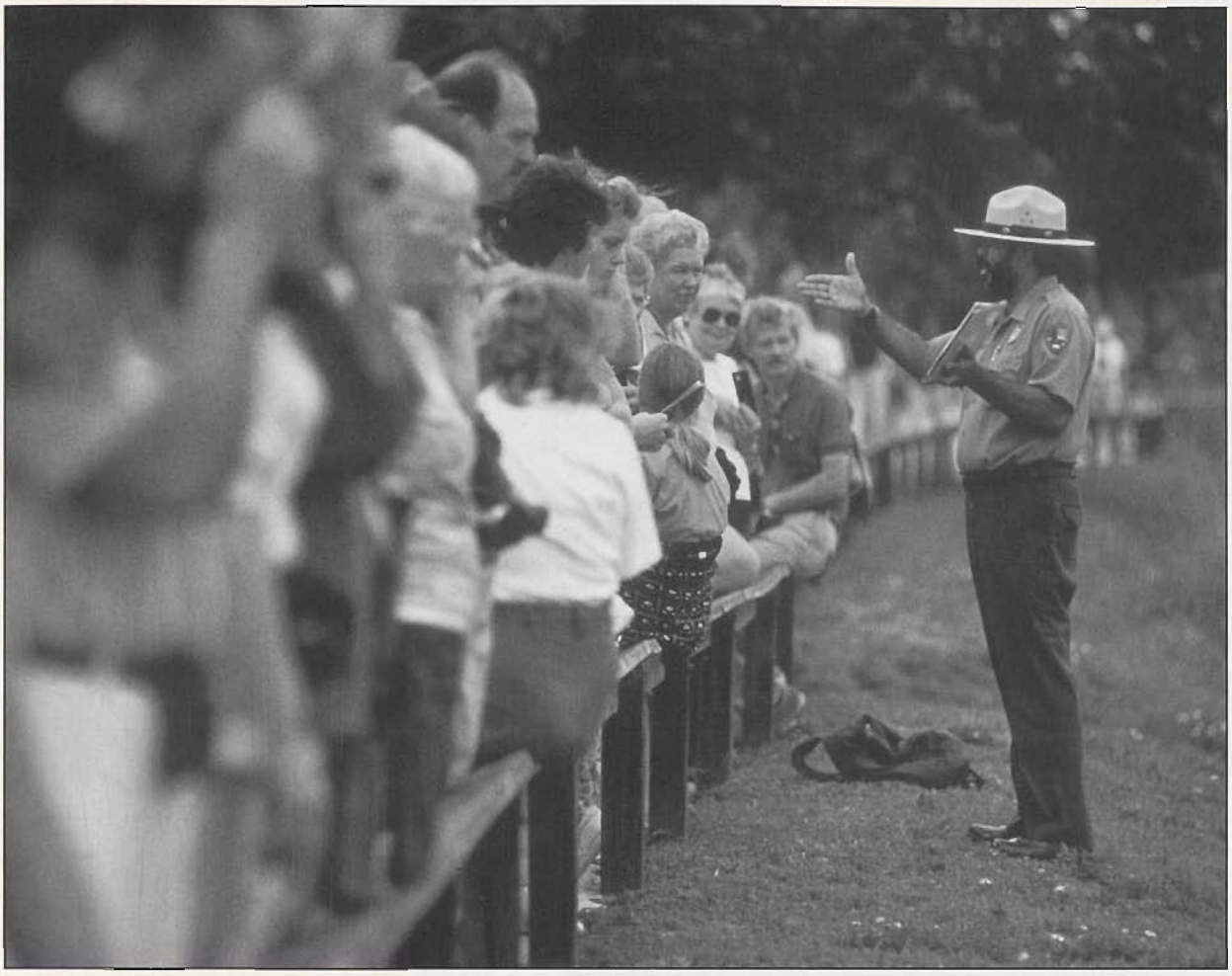
Some evidence on potential nonuse benefits to Florida residents from Everglades restoration comes from a 1998 interview survey that included nearly 500 households. Respondents were asked to select between alternative plans that differed in the extent of ecosystem restoration and dollar costs the household would pay through increased utility taxes, restrictions on household water use, and reductions in farmland acreage in South Florida. The plan descriptions stipulated that any new tax payments would go into a special trust fund for Everglades restoration.

Table 1 shows Floridians' nonuse benefits from four of the plans. Under Plan A, full ecosystem restoration would be achieved with no costs to Floridians — an alternative precluded by the 1996 WRDA. Under this plan, the maximum annual benefit per household is $58.79 or an annual benefit of more than $342 million for all Florida households.

Plan B includes full restoration and annual taxes of $25 per household, minor restrictions on water users in South Florida, and a loss of 100,000 farmland acres in South Florida. The net benefit (total benefit net of taxes) per household would fall to $15.60 or about $90 million per year for all Florida households. The $25 tax, however, would provide more than $145 million annually to fund restoration projects. A *partial* restoration alternative (Plan C) with the same $25 tax and other costs would yield annual net benefits of $9.32 per household or more than $54 million for all Florida households.

Table 1: Florida Residents' Non-use Benefits from Alternative Restoration Plans

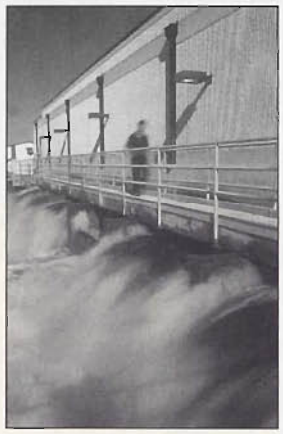
Plan	Description	Annual Net Benefit (per HH)	Annual Aggregate Benefits to Florida Residents
A	Full Restoration with No Costs to Floridians	$58.79	$342.2 million
B	Full Restoration with Minor Water Use Restrictions, Loss of 100,000 Farmland Acres, and $25 Annual Taxes	$15.60	$90.8 million
C	Partial Restoration with Minor Water Use Restrictions, Loss of 100,000 Farmland Acres, and $25 Annual Taxes	$9.32	$54.2 million
D	Full Restoration with Major Water Use Restrictions, Loss of 200,000 Farmland Acres, and $50 Annual Taxes	-$61.09	-$355.3 million



Restoring Interest. Assessing the value of interpretive education programs such as this one in The Everglades National Park is key to non-use benefits.

Photos courtesy SFWMD

The effect of shifting the burden of Everglades restoration funding to Florida households is evident in Plan D. With full restoration, a $50 annual tax per household coupled with major water use restrictions and the loss of 200,000 farmland acres would cause an annual net loss (negative benefit) of $61.09 per household or more than $355 million across all Floridians. Thus, the survey results suggest that although significant nonuse benefits would accrue from Everglades restoration, Floridians can not be expected to pay the full costs of restoration.

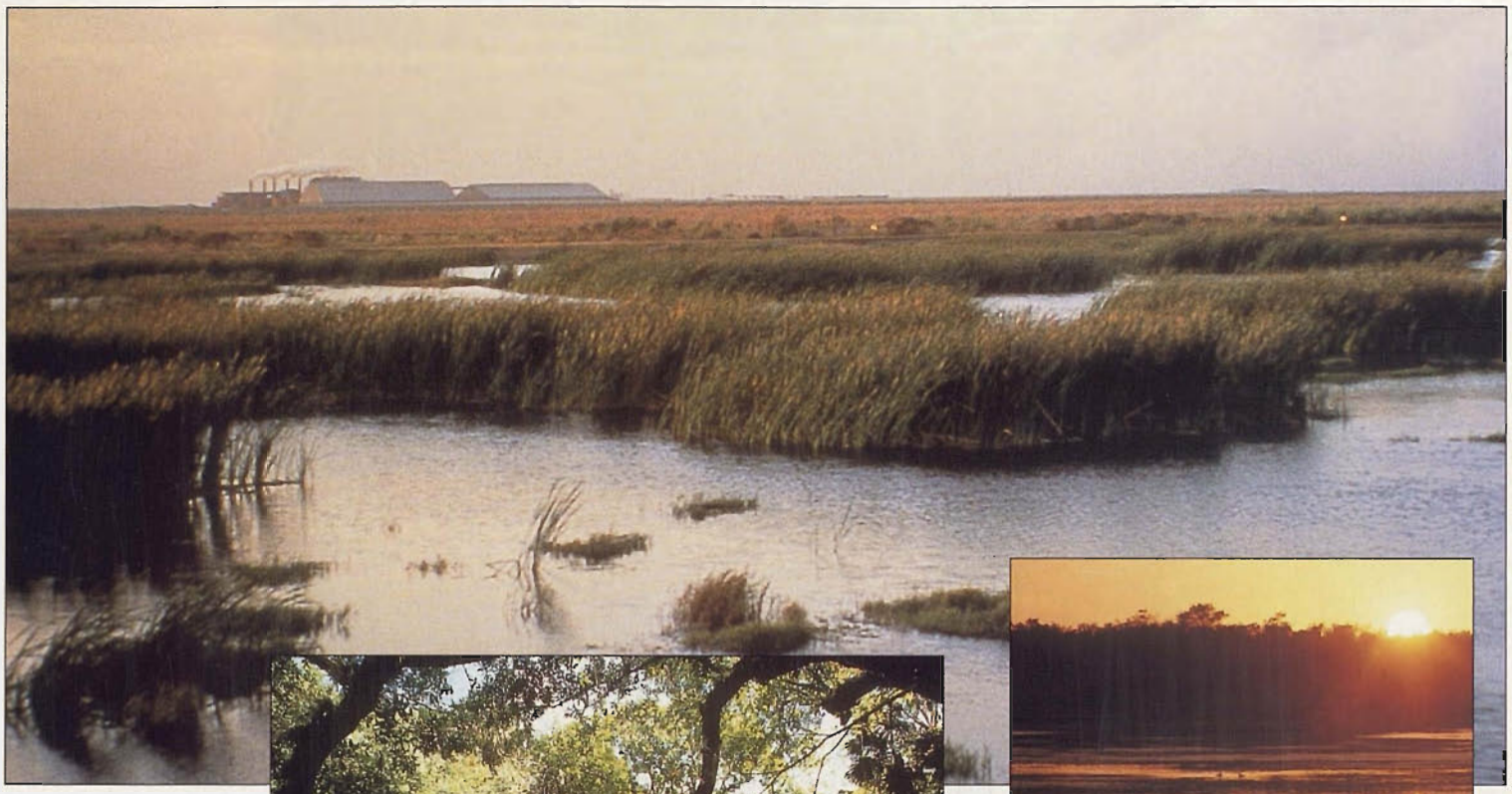


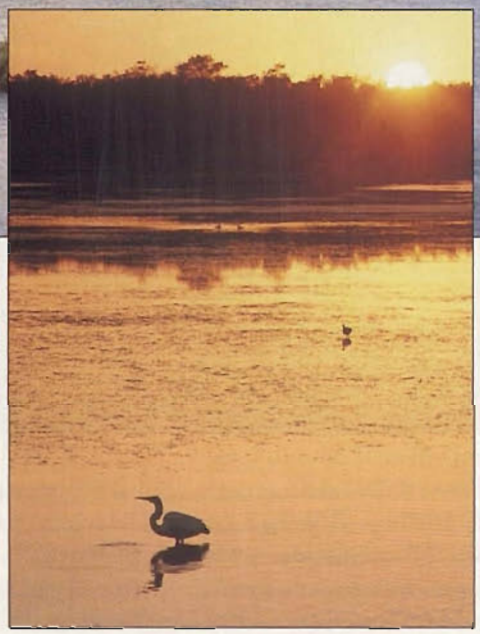
Passing the hat

The Everglades restoration provisions of the 1996 WRDA established an important precedent for water resource planning in the United States. While benefit-cost analysis for water projects has always been controversial, its use has provided planners, legislators, and the public with economic information to use in assessing and evaluating the gains and losses from public expenditures. The recent Congressional appeal to a cost-effectiveness standard instead of a benefit-cost standard circumvents the need to quantify difficult-to-measure economic benefits that may result from improvements in ecosystem quality. But the sheer magnitude of the costs relative to the benefits that were measured in the Restudy raises questions over whether there is a legitimate basis for the commitment of funds to the Everglades. Public policy cannot be based on a presumption of very large nonuse benefits for each and every ecosystem restoration project.

Surveys like the one reported here can help to fill the need for information about nonuse benefits from environmental restoration projects. This type of survey reveals important evidence about citizens' preferences and their willingness to pay for improvements in environmental quality. The survey shows significant nonuse benefits accruing to Floridians from Everglades restoration and Floridians express a willingness to pay part of the estimated costs. Whether these benefits extend to people who live outside Florida, and whether non-Floridians are willing to make a financial commitment to Everglades restoration, remains to be determined.

Further evidence of Florida's commitment to Everglades restoration was revealed in January, 2000 when Governor Jeb Bush announced a plan for restoration funding that would obligate state government to provide more than $100 million annually from the





Exploring Benefits. A nutrient removal plant in South Florida (top), canoeing on the lower east coast and waterfowl at sunset. How do you tally the value?

Nutrient removal plant and canoeing photos courtesy SFWMD; Fowl by K. Elliott Nowels, Clear Window.

state's general revenue fund over a ten-year period. The Bush plan also called for $100 million per year to be provided by residents living in South Florida. Although no specific funding mechanism was identified for this money, the most likely source would be a special property tax levied by the South Florida Water Management District, the non-Federal sponsor. In announcing his plan the Governor stated, "...Florida [has] honored its 50 percent commitment to Washington, D.C. Today, we are indeed ready, willing and waiting for our federal partners to match our commitment." The 2000 Florida Legislature subsequently endorsed the Bush plan and authorized the state's share of funding. Now the focus will shift to the federal arena, and the 106th Congress will be faced with the issue of whether the benefits of Everglades restoration justify the costs outlined in the Restudy. ■

■ For more information

The Restudy final report to Congress and other information on the Restudy are available at www.evergladesplan.org.

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