AREAS OF CRITICAL STATE CONCERN: FLORIDA'S EXPERIENCE WITH THE GREEN SWAMP

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Public concern has been expressed in most states over the adequacy of present allocative mechanisms to guide land and water use effectively. Private land and water use decisions are seen to have effects far beyond those intended by the decision makers. People intuitively recognize that society's natural resources are not being used to the greatest good when these "spillovers" occur. Ervin et al. (p. 4) have described the situation: ". . . given our (society's) broader viewpoint where impacts are taken into account which do not enter a firm's profit calculations (or a consumer's), the decision may well be socially inefficient." The concern about these "spillovers" has led to calls for increased government intervention by way of regulation (Healy and Rosenberg). The implicit assumption is that government action can improve the efficiency of land and water use.[1]

Florida, with its dramatic growth, has experienced great change in its land and water resources, and much concern has been expressed about the effectiveness of the allocative mechanisms to meet future growth in land and water demand (Carter; Healy and Rosenberg).[2] The Florida legislature responded to public concern by passing sweeping land and water legislation in the early 1970s. The Environmental Land and Water Management Act of 1972 was one of the major enactments, and two stated purposes were to "(1) insure a water management system that will reverse the deterioration of water quality and provide optimum utilization of our limited water resources, and (2) facilitate orderly and well planned (land) development . . . ." One of the several approaches authorized under the Act to be used to improve land and water use efficiency was the regulation of "areas of critical state concern." The state government was given power to declare a part of the state as an "area of critical state concern" and impose special controls on the area.

This paper is concerned with the first "area of critical state concern" in Florida, the Green Swamp (first section), and analyzes the circumstances of its designation (second section). The overall objective of the original analysis was to determine under what land-use conditions there would be significant effects—implying external costs—imposed on the users of water in the greater central Florida region. The results of the analysis caused the authors to puzzle over the reason why the Green Swamp was designated as an area of critical state concern. Given the economically likely growth conditions in the area, it was difficult to create scenarios in which water was a scarce resource and in which undue costs would be imposed on water users of the region. This finding led the authors to submit a hypothesis (in the last section of this paper) suggesting how "internalities" associated with the government regulation[3] could have led to continued misallocation of land and water in the region.[4]

AREAS OF CRITICAL STATE CONCERN

The Florida Legislature drew heavily from the American Law Institute's Model Land Development Code (ALI Code) in drafting the Environmental Land and Water Management Act. The concept of an area of critical state concern (ACSC) was included in the Act, and the section of the Act concerning ACSCs was taken practically verbatim from the ALI Code.[5]

Briefly, a summary of provisions in the Florida Act (and the ALI Code) for ACSCs follow. The Act suggests an ACSC designation and regulation when an area (a) contains, or significantly affects, environmental, historical, natural or archeological resources of regional or statewide importance; (b) is significantly affected by, or has a significant effect upon, an existing or proposed major public facility; and (c) has major de-

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[1] Equity in land and water use is, of course, a major concern and another reason for government intervention. But in most acts providing for regulation of land and water-use, terms such as "efficient" and "optimal" use are indicated as goals. The Florida Environmental Lands and Water Act and the Florida Water Resources Act are examples. This paper to a large degree focuses on questions of efficiency.

[2] Population grew from 2.7 million in 1950 to 6.7 million in 1973, with another 25 million visitors annually (Carter).

[3] Wolf defines internalities as: "The goals that apply within nonmarket organizations to guide, regulate and evaluate agency performance and the performance of agency personnel" (p. 116).

[4] Misallocation in the sense that resources are used in quantities such that marginal social benefits fail to equal marginal social costs.

[5] The American Law Institute spent 15 years studying, researching, and preparing *The Model Land Development Code* (Dunham and Bosselman). The basic objectives of the document were to supersede the influence of the Standard Zoning Enabling Act and the Standard City Planning Act (prepared by the U.S. Department of Commerce in 1922 and 1928, respectively), and to provide state governments with a unified code that could be used in drafting state land use legislation.

velopment potential, which may include the site of a new community (Florida Environmental Land and Water Act; Dunham and Bosselman, p. 293). The Florida approach is for the Division of State Planning (the state land planning agency) to recommend to the Administrative Commission (the Governor and Florida Cabinet) a specific area as an area of critical state concern. In making its recommendation, the Division of State Planning (DSP) is to include (a) the boundaries of the area, (b) the reasons for the concern, (c) the dangers resulting from uncontrolled development, (d) the advantages of development under the controls, and (e) specific principles for designation as an ACSC. Once a designation has been made, the local government involved has 6 months to establish land development regulations. If the local government does not establish regulations, or if they are deemed not to meet the state's requirements, the DSP is to prepare the regulations. Once adopted, all private individuals must follow the regulations. Florida added a constraint on the procedure by allowing no more than 5 percent of the state's area to be designated as ACSCs. At present, a number of areas have been so designated (including the Florida Keys and the Big Cypress Swamp).

An area of 322,000 acres in central Florida generally referred to as the Green Swamp was designated the first ACSC in 1974. The Green Swamp ACSC is part of an area located in the middle of a triangle with corners in three rapidly growing metropolitan areas, namely Tampa, Lakeland, and Orlando. More than half of the Green Swamp ACSC is not a swamp. The ACSC that lies along the Florida ridge is characterized by low hills upon which citrus is grown, surrounded by flatland pastures and wetlands. Currently, development resulting from the Walt Disney World complex nearby is occurring east and south of the area. Table 1 presents land and water uses in the ACSC at the time of designation.

The reason for the ACSC designation was given as "the resources of regional and state concern in the critical area . . . are becoming endangered as a result of central Florida's growth explosion, and uncoordinated development . . . ." Resources of concern were listed as (a) the natural function of the Floridan Aquifer (concern expressed over recharge rates), (b) the wetlands, and (c) the flood-detention areas associated with the headwaters of several rivers that have their origins in the area (Boundary and Regulations for the Green Swamp Area of Critical State Concern). Ostensibly, the ACSC designation was specified primarily to reduce external effects on the water supply of central Florida resulting from land use in the Green Swamp area.

Land-use controls were instituted to deal with the perceived "growth problem." The criterion for particular land-use classification was based on natural drainage capabilities of the major soils. The amount of allowed site alteration was limited to (a) upland soils—60%, (b) flatwood soils—25%, and (c) wetland soils—10%. Installation of nonpermeable surfaces was limited to 50 percent of any altered site. Release of surface water was to be in a manner approximating the natural surface water flow regime of the area. Agriculture was exempted from the ACSC regulations. However, any drainage operations, water retention, or water withdrawal from surface or groundwater comes under the authority of the regional water management district established by the Water Resources Act of 1972.

TABLE 1. Green Swamp ACSC Land and Water Resources and Uses, 1973

Land Resources			
Total Land Area	ac.	--	545,331
Upland Soils	ac.	--	105,674
Flatwood Soils	ac.	--	190,844
Wet Flatwood Soils	ac.	--	26,463
Wetlands, Lakes & Streams	ac.	--	222,350
Water Resources (Annual Averages)			
Rainfall (49.85 in./yr.)	ac.	--	27,184,000
Evapotranspiration (36.67 in./yr.)	ac.-in.	--	19,997,000
Runoff (9.53 in./yr.)	ac.-in.	--	5,197,000
Actual Recharge (3.65 in./yr.)	ac.-in.	--	1,990,000
Total Potential Recharge	ac.-in.	--	2,261,693
Reduction in Recharge Due to 1973 Land Use	ac.-in.	--	272,000
Land Use			
Housing	ac.	--	4,400
Citrus Grove	ac.	--	47,959
Improved Pasture	ac.	--	120,467
Native Range Pasture (excluding wetlands)	ac.	--	89,814
Native Wetlands, Lakes & Streams	ac.	--	212,231
Planted Pines	ac.	--	9,259
Public Owned Land	ac.	--	51,786
Water Use			
Agricultural Use	ac.-in.	--	126,223
Housing Use	ac.-in.	--	76,522

ANALYSIS OF THE GREEN SWAMP ACSC

In the declaration of the Green Swamp as an ACSC and in the preparation of the land-use regulations, there was no quantitative analysis of the effects that might result with and without the regulations. The objective of the following analysis was to determine quantitatively the effects on water resources and on economic benefits stemming from land and water use under the ACSC regulations. Included in the study were proposed restrictions on housing densities, large block developments, irrigation and drainage changes, and exportation of groundwater. The possibility of water transfer, while not addressed directly in the ACSC designation, is a real possibility under the 1972 Florida Water Resources Act and is a major aspect of the groundwater hydrology of this area of Central Florida.

A spatial linear programing model was developed for the analysis in which the features of the controls—land-use activities, soil resources, water resources and wetlands—were incorporated. The model was used to create a picture in time, one of a situation that might result, given certain conditions and controls in the region (and the state). The nature of the change in the transition from the initial conditions to some future condition in the region was not considered. Rather, the economic rents accruing to certain land and water uses during a given year (1973) under various scenarios were estimated.

Activities. The potential land use activities were specified as citrus groves, cow-calf production on improved pastures and native ranges, pine production, suburban residential development, and natural wetland ecologic systems (Table 2). Agricultural activities can take place on four soil categories and can be irrigated or non-irrigated. In accordance with the ACSC regulations on altering sites, housing on upland and flatwood soils was restricted to 4 and 2 housing units per acre, respectively. For the present study, housing was not allowed on wet flatwood and wetland soils. Agricultural land-use activities incorporate the restrictions imposed on water use by the Southwest Florida Water Management District, the district within which the study area is located. In total, 25 activities (x_{jk}) occurring in 63 sub-regions were considered (where j = 1, . . . , 25 activities and k = 1, . . . , 63 sub-regions).

TABLE 2. Model Activities and Net Returns for Sub-Regions*

Notation	Net Return, $/ac.	Activity Description
x_{1k}	229.00	Citrus on upland soil, no irrigation
x_{2k}	261.00	Citrus on upland soil, irrigation
x_{3k}	85.00	Citrus on flatwood soil, no irrigation
x_{4k}	69.00	Citrus on flatwood soil, irrigation
x_{5k}	9.19	Cow-calf, high management, upland soil, irrigation
x_{6k}	6.26	Cow-calf, high management, flatwood soil, no irrigation
x_{7k}	9.19	Cow-calf, high management, flatwood soil, irrigation
x_{8k}	6.26	Cow-calf, high management, wet flatwood soil, no irrigation
x_{9k}	6.26	Cow-calf, high management, wetland soil, no irrigation
x_{10k}	1.93	Cow-calf, low management, upland soil, no irrigation
x_{11k}	1.93	Cow-calf, low management, flatwood soil, no irrigation
x_{12k}	1.93	Cow-calf, low management, wet flatwood soil, no irrigation
x_{13k}	1.93	Cow-calf, low management, wetland soil, no irrigation
x_{14k}	1.10	Cow-calf, upland soil native range
x_{15k}	1.10	Cow-calf, flatwood soil native range
x_{16k}	1.10	Cow-calf, wet flatwood soil native range
x_{17k}	1.10	Cow-calf, wetland native range
x_{18k}	**	Pine on flatwood soil
x_{19k}	**	Pine on wet flatwood soil
x_{20k}	**	Wetlands
x_{21k}	**	Lakes and streams
x_{22k}	300.00	Housing on upland soils
x_{23k}	275.00	Housing on flatwood soils
x_{24k}	***	Housing on wet flatwood soils
x_{25k}	***	Housing on wetland soils

* Activities and net returns are based upon a number of Florida Experiment Station publications.

** No returns are considered on these activities.

*** These activities were not included in the present study.

Objective Function. The objective function facilitated selection of activities in order to maximize the economic net returns to the study region. The objective function coefficients used for the agricultural activities were the annual net returns (the residual before taxes) to land, water, and management. Because these are resources of the region, this estimate of the net returns is the economic rent (from agriculture) accruing to the region. The net returns to citrus and cow-calf production as presented in Table 2 were based on a number of budget publications from the Florida Agricultural Experiment Station.

Similarly, the coefficients used for the suburban housing activities were a measure of the economic value that accrues to land on which a house is located. Since the area presently has very little housing (and very few publicly provided amenities), an attempt was made to use a value for these coefficients that approximated the value of land for housing when it is substantially removed from any type of amenities. The intent was to have values for the coefficients that reflect the inherent value of a parcel of land, which could be used for a "productive use" (agriculture) or a "consumptive use" (housing) before any collectively provided improvements have been made.

The annual benefits to land used for housing were $300 per acre and $275 per acre for upland and flatwood soils, respectively. These values translate to capitalized values (10-percent discount rate) of $3,000 per acre and $2,750 per acre, respectively. During the mid-1970s, market values of unimproved land in the area were near these values.[6]

The objective function, then, had the form

$$TNR = \sum_{k=1}^{63} \sum_{j=1}^{25} c_{jk} x_{jk}$$

subject to the following set of constraints.

[6] For the sake of the analysis, it is assumed that rent ratios will remain constant as the level of land and water use change.

Constraints. The sub-region resource constraints can be expressed as

$$\sum_{j=1}^{25} a_{ijk}\, x_{jk} \geq b_{ik} \quad (\leq)$$

where i represents a particular resource of the sub-region. The resources considered in each sub-region were (a) upland soils, (b) flatwood soils, (c) wet flatwood soils, (d) wetland soils, (e) total sub-region area, (f) irrigation water, (g) residential water, and (h) groundwater recharge. Of particular interest, are the groundwater constraints. The coefficients in these equations reflect the reduction in groundwater recharge per acre caused by the activity in a particular sub-region. These recharge coefficients vary among activities because of differences in soil type, drainage, and water use, and vary among the sub-regions as a result of differences in geologic formations that influenced the potential for deep percolation.

Regional constraints were used in addition to the individual sub-region resource constraints. A groundwater recharge constraint allowed specification of quantities of groundwater to be "exported" from the entire region. This constraint allowed mining of water in individual sub-regions while honoring a specific recharge (export) policy. Similarly, a region-wide constraint was specified on wetlands. This allowed an exogenous specification of a minimum level of wetlands in the entire region.

The resulting matrix was large, with 506 rows and 1,575 columns. Of course, the density was low because the resulting matrix is a partitioned block diagonal consisting of individual matrices (8 × 25) for each sub-region and a matrix (2 × 1,575) that links the land and water resources of the region together. Resource availabilities, which vary significantly across sub-regions, were arranged in a partitioned column vector consisting of a series of 63 eight-element vectors (one for each sub-region) plus a 2-element vector of regional resources.

Data. Land-use data were collected from aerial photographs provided by the Florida Division of State Planning and field checking by the University of Florida Center for Wetlands. Information on soils was derived from Soil Conservation Service maps.

The difference between mean annual rainfall and evapotranspiration in the area is the quantity of water that will either recharge to the aquifer or be drained away as streamflow. The rates of water infiltration and percolation affect the balance between recharge and streamflow. The rate of infiltration is influenced by land use, soil type, and the difference between the elevation of the land surface and the elevation of the top of the water table. The rate of percolation is influenced by the underlying geology, and by the difference between the elevation of the top of the water table and the potentiometric surface.

Both Pride et al. and Ross and Anderson found the study area not to be an especially good recharge area. Ross and Anderson, using an aggregate water balance of the study area, estimated the annual average recharge to be 3.65 inches per year. Analyzing the soil type, the underlying geology, the water table elevation, and the potentiometric surface elevation, they estimated that 8.4 percent of the area had a high recharge rate, 24.6 percent a medium rate, and 47.1 percent a low rate. A substantial part of the area, 19.9 percent, is discharging water because the potentiometric surface has a higher elevation than the water table. Using recharge rates of 9.04, 6.03, 3.01, and 0.0 inches per year for high, medium, and low recharge rates and discharge, respectively, the recharge for each of the sub-regions was determined. The maximum total potential aquifer recharge occuring with only "natural" land uses was estimated to be 2,261.7 thousand acre-inches. Reduction in recharge caused by land uses and associated water withdrawals was established using Florida Agricultural Experiment Station reports. These quantities were netted from the per acre recharge rates.

Results. The model was used to explore several land- and water-use issues. The model was initially set with the activities at 1973 levels (Scenario 1, Initial Condition, Table 3). These base conditions for land and water uses, groundwater recharge, wetland acreages, and net returns to the agricultural and housing activities were used for highlighting the effects of land- and water-use changes. It is interesting to note that the water used for economic activities in the area is only 9 percent of the maximum total potential recharge.

The ACSC regulations create an impetus to build housing on upland soils. Scenario 3 depicts the situation that would occur if all uplands except the 48,000 acres presently in citrus were put in housing. Housing acreage shows an increase from 4,400 to 54,100 acres, an increase that would create nearly 200,000 households, with up to 600,000 people. Even with this completely unlikely growth, groundwater recharge would be 961.4 thousand acre-inches, 42 percent of the maximum potential recharge.

An even more extreme condition can be created by assuming that all citrus is irrigated along with housing located on all remaining upland soils (a combination of Scenarios 2 and 3). The increased irrigation would cause a 627.3 thousand acre-inch reduction in recharge. The remaining groundwater recharge, which could be exported from the area, is 493.7 thousand acre-

TABLE 3. Summary of Land and Water Use Activities

Scenario	Total Net Returns $	Agricultural Net Returns $	Housing Net Returns	Citrus Acreage	Pasture Acreage	Housing Acreage	Wetland Acreage	Agricultural Water Use ac.-in.	Housing Water Use ac.-in.	Groundwater Recharge ac.-in.
	---All values are in thousands---									
1. Initial conditions.	13,110.9	11,820.8	1,290.1	48.0	120.3	4.4	132.0	126.2	76.5	1,989.8
2. 100% citrus irrigation.	14,325.7	13,035.6	1,290.1	48.0	120.3	4.4	132.0	627.3	76.5	1,488.7
3. All uplands in housing except citrus acreage.	27,915.4	11,700.6	16,214.8	48.0	87.3	54.1	132.0	126.2	1,071.5	961.4
4. All uplands along major highways in housing.	21,860.9	907.6	20,953.3	4.9	106.0	69.9	132.0	10.5	1,387.4	741.8
5. Housing along major highways.	15,363.0	11,565.0	3,798.0	48.0	116.9	13.0	132.0	114.2	214.0	1,857.8
6. Housing along major highways & recharge requirement of 1,961,700 ac.-in.	15,149.6	11,351.6	3,798.0	48.0	86.5	13.0	135.8	37.9	214.0	1,961.7
7. Housing along major highways & recharge requirements of 2,061,700 ac.-in.	14,181.0	11,255.1	2,925.9	48.0	84.5	10.1	135.8	0	155.9	2,061.7

inches. This represents more than 21 percent of potential recharge and nearly 25 percent of actual recharge in 1972. It is unlikely because of market forces, that all citrus will be irrigated and that the number of households will approach 200,000 in the near future.

Given general development patterns, housing is more likely to be concentrated along the major traffic arteries. When housing was allowed to locate in these areas and to displace other land uses, again water was not a restrictive resource (Scenario 4). Total housing acreage increased to 69,900 acres and citrus acreage decreased to 4,900 acres. The recharge was 741.8 thousand acre-inches. In essence, even under the regulations, nearly 250,000 residences with as many as 750,000 people could be allowed to replace nearly all citrus (about 90 percent) and still there would be sufficient water to export approximately 33 percent of the maximum possible groundwater.

One of the major purposes of the ACSC controls was to protect the Floridan aquifer. The effect of increasing levels of groundwater export was examined in Scenarios 5, 6, and 7. Housing was again allowed to come into sub-regions along major highways, but at levels (not exceeding 300 acres per sub-region) presumed to be reasonable. With this three-fold increase in housing (13,000 acres), the region could export 1,857.8 thousand acre-inches to other regions.

As the requirement for more groundwater export was increased, improved pasture acreages in areas of high recharge potential decreased, and wetland and wet flatwood native range acreages increased. Housing and citrus acreages remained stable, although irrigated citrus dropped to about ⅓ of its initial acreage. Even with a constraint requiring more water to be exported than occurred in 1973 (2,061,700 acre-inches), housing acreage could increase by more than two times (10,100 acres), while citrus acreage remained constant.

CONCLUSIONS

Although the stated reason for the ACSC designation was to protect the water resources of the region, the analysis suggests that there is not a major threat. Under present land- and water-use patterns in the ACSC, substantial quantities of water are recharged and exported to surrounding areas. There continues to be an abundant water supply for recharge when scenarios depicting land and water uses possible under present economic conditions are considered. Even when all citrus acreage is irrigated and housing acreage is specified at levels far in excess of those likely, recharge is 25 percent of the present rate. Considering water quantity, it is not evident that land and water use levels in the ACSC will lead to undue costs on water resource users in the surrounding region.[7]

From a water quality perspective, the upland soils are suitable for use because of the depth to the water table and the filtering of percolating water in the soil profile before reaching the water table. Use of the wetland soils, where water quality and natural systems could be affected, is highly unlikely because of the high cost of development. Private developers would simply not make the investment in wetlands when there are lower-cost uplands that can be developed. The development of wetland areas would depend upon substantial public investment in flood control and roadways.

AN ALTERNATIVE HYPOTHESIS OF NONMARKET FAILURE

One could reasonably ask, "If private land and water use in the Green Swamp area imposes little or no undue cost on other water resource users of the region, why was a public policy intervention beyond that imposed on all land users in the greater region instituted?" Although this question cannot be answered conclusively without substantial additional research, the concept of "nonmarket failure" provides a basis for advancing a hypothesis relative to the reasons behind the land use controls.

Whereas regulation may be defined as the public administrative policing of a private activity with respect to a rule intended to achieve a social goal (Mitnick, p. 7), Wolf (p. 112) has pointed out how regulation may fail to accomplish the desired goal: "Just as the absence of particular markets accounts for market failure, so nonmarket failures are due to the absence of nonmarket mechanisms for reconciling calculations by decision makers of their private and organizational costs and benefits with total benefits and costs." The original social goals of regulation may be widely missed because of the agency's goals and the private motivation of the individuals involved in the agency. Our hypothesis is that the leadership of the Division of State Planning and Administrative Commission advanced the land use controls for the Green Swamp area for reasons relating to their own motivations and their organizations' goals.

Tracing the series of events that led to the designation of the Green Swamp as an ACSC can provide insights into the action of the public decision makers. The passage of the Land and Water Resources Act of 1972 stemmed from widespread public support for reducing undue environmental and resource costs associated with the development. The exact contents of the Act did not arise from a popular movement, but instead were taken from a nationally circulated model code—the ALI code.

The implementation of the ACSC element of the Act likewise did not stem directly from the people involved in land and water use in the region. Instead, the initiative came from the Division of State Planning (DSP), where the leadership possibly saw it as advantageous to use the ACSC designation as quickly as possible to establish their role in land use decisions under the new Act. Potentially, the DSP could gain increased importance within the administrative branch of state government by proposing an ACSC; and, the Green Swamp was available for the first use of the ACSC designation.[8]

Under the Act, the DSP is granted the authority to recommend an ACSC to the Administrative Commission, and then approve, modify, and/or completely specify any land development regulations that are to be imposed on the area.[9] To a great extent, the private benefits and costs received by the individuals in DSP that stem from their decisions concerning the Green Swamp ACSC are substantially removed from the benefits and costs associated with actual land and water use in the central Florida region. The civil service employees in the DSP serve a number of roles, and there is no reason to believe that the actual costs incurred, and benefits received, by private individuals in the Green Swamp region can be translated into benefits and costs to these employees. There is no guarantee that achieving the goals and ambitions of the individual employees in the DSP will generate a greater social benefit.

The Administrative Commission, composed of the governor and elected cabinet members, also saw a possible political advantage to the ACSC designation. During 1970 and 1971, central and southern Florida experienced a severe drought, and the people of central Florida were sensitive to water issues. The commission members could have seen this as an opportunity to take a stand in support of water supply for the region. On one hand, several million people lived in the greater central Florida area and realized the Floridan Aquifer was the source of their water, while, on the other hand, only several thousand people

[7] In addition, the head of the Florida Department of Environmental Regulation and the chief of the U.S. Geological Survey, Orlando, both have stated before a legislative committee that areas surrounding the Green Swamp ACSC are in fact much more effective recharge areas (Florida Legislature Joint Committee on Areas of Critical State Concern).

[8] Gerald Parker, in 1973 the Chief Hydrologist for the Southwest Florida Water Management District, gained much attention for the area with a newsletter that contrasted the Green Swamp with the Big Cypress Swamp and proposed that Florida "should purchase and use for water recharge and conservation . . . (areas) . . . normally flooded during most years." He recommended that land not flooded in most years could remain in private holdings for development.

[9] The DSP prepared preliminary regulations for the Green Swamp ACSC. The two counties involved had six months within which to respond. The state rejected the counties' responses, and the DSP regulations were adopted.

lived in the Green Swamp, the area reputed to be "the source" of the Floridan Aquifer's water supply.[10]

One can qualitatively project the "political" benefit-cost balance expected by the members of the Administrative Commission resulting from the decision to control the Green Swamp area. First, if the several million people in the greater central Florida region perceive the regulation of the land in the Green Swamp area as protecting their water supply, and, on a per-voter basis, this perception is translated into even a small positive attitude, the potential political benefit to the governor and cabinet members from making the decision can be large. On the other hand, because only a few thousand residents of the Green Swamp area will bear the direct costs of regulation, even substantial opposition and subsequent political antagonism toward the governor and cabinet members would not translate into a major political cost.[11] It is expected that most politicians would judge the decision to regulate the area as politically reasonable. Although it is not possible to support this analysis with specific data, there are credible political reasons why this is not an unacceptable premise.

The results of these political "internalities" within the Administrative Commission and Division of State Planning are land and water allocations that probably do not correspond to a criterion whereby the social marginal costs are equated to the social marginal benefits. In their efforts to provide a water supply to central Florida, the regulators made allocation decisions—in this case, land allocation decisions—which do not necessarily expand the water supply. However, costs in terms of lost opportunities for the land were definitely increased. Wolf identifies these types of "x-efficiency" costs as being typical of nonmarket allocation where activities are "carried on inside, rather than on, the production possibilities frontier at any given time" (p. 125). This result is a consequence of decision makers within nonmarket organizations allocating resources on the basis of their "private" and organizational costs and benefits.

Wolf has said: "Whether the nonmarket failure associated with internalities is greater or less than the market failure associated with externalities is an analytically interesting, and operationally crucial, question" (p. 117). In the case of Florida's Green Swamp area of critical state concern, where it is difficult to identify any undue external effects, it appears that there is reason to question the effectiveness of this nonmarket mechanism for allocating land and water resources.

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[10] As stated earlier, the literature does not indicate the Green Swamp area to be more important than any other area in the region. Wolf has noted that "with rewards frequently occurring in the political arena to publicizing the problem and initiating action labeled as a remedy, nonmarket activities may be authorized which have quite infeasible objectives" (Wolf, p. 124).

[11] An additional dimension of the benefit-cost balance results from the legal action (Weller vs. Askew) taken by the owners of land affected by the ACSC controls. Although Governor Askew is named as defendant, the legal costs are borne by the taxpayers as a whole. The outcome of the court action did not affect the regulation of the area.