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Environmental And Economic
Issues Of Planned Construction Of
Spewrell Bluff Dam In Georgia B-177442

Corps of Engineers (Civil Functions)
Department of the Army

**BY THE COMPTROLLER GENERAL
OF THE UNITED STATES**

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JUN 10 1974



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-177442

C
The Honorable Herman E. Talmadge
United States Senate

R Dear Senator Talmadge:

1 In response to your request, this is our report on the environmental and economic issues associated with the Corps of Engineers' planned construction of the Spewrell Bluff Dam project on the Flint River near Thomaston, Georgia. 305

120 On September 26, 1973, we asked the Department of the Army and the State of Georgia for their comments on the matters discussed in our report. Written comments were received from the State of Georgia on November 9 and from the Department of the Army on December 27, 1973. Subsequent to our request for comments, the Corps of Engineers completed a reanalysis of the recreation and area redevelopment aspects of the project and computed new estimates of the benefits. The power feature was also reanalyzed and new feasibility studies were made. 20

The Corps' recent efforts made it necessary for us to review the reanalyses and studies and to consider them in this report. The Corps' comments on this review were received on May 14, 1974, and are included in the appendix.

We believe the report would be of interest to committees and to other Members of Congress. However, we do not plan to distribute this report further unless you agree or publicly announce its contents.

Sincerely yours,

Comptroller General
of the United States

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D I G E S T

WHY THE REVIEW WAS MADE

At the request of Senator Herman E. Talmadge, GAO reviewed the environmental and economic issues of the Corps of Engineers' planned construction of the Spewrell Bluff Dam project on the Flint River near Thomaston, Georgia.

FINDINGS AND CONCLUSIONS

This project is one of three authorized by the Congress for the development of the Flint River Basin. It is intended to provide recreation, power, flood control, navigation, and fish and wildlife benefits. (See p. 1.)

Redevelopment benefits are also expected to accrue to the economically depressed counties in the area. (See p. 35.)

The estimated cost of construction increased from \$63.2 million at the time the project was authorized in 1963 to \$148 million in July 1973, an increase of about 134 percent.

About \$2.1 million has been spent on the project through February 28, 1974.

Construction was scheduled to begin during the fourth quarter of fiscal year 1974, but all work was deferred in October 1973, because the State

of Georgia withdrew its support for the project. (See pp. 4 and 5.)

Annual project benefits computed by the Corps have increased from about \$3.6 million in 1963 to about \$12.3 million as of November 1973. The relative significance of benefits to be provided by the individual project purposes has changed considerably. In this same period, average annual costs increased from about \$3.1 million to \$8.3 million. (See p. 3.)

Many basic environmental issues have not been resolved. GAO's review questioned the adequacy of the supporting documentation for and reasonableness of the estimated benefits claimed for certain project purposes. (See pp. 7 and 18.)

Environmental issues

Georgia and certain Federal agencies and other groups have stated that the project will have a significant impact on the environment and have argued against its construction. They do not agree, however, on the nature and extent of the adverse effects or on the measures for mitigating the adverse impact. For example, measures had not been definitized for mitigating the expected fish and wildlife losses.

Some of the known effects of the project will be the loss of a

unique river fishery, 23,000 acres of wildlife habitat, and one of the few remaining free-flowing rivers in Georgia providing natural recreation opportunities.

In addition, concern has been expressed that the project would reduce the habitat for several rare and endangered fish and wildlife species, contribute to water quality problems, and cause the loss of known archeological sites. (See p. 7.)

Many of the environmental concerns have evolved during project planning and have not been fully resolved by the Corps in its detailed planning. Therefore, if the project is reactivated, GAO believes that additional assessments are necessary to fully determine its potential adverse environmental effects and the measures and costs of preventing or lessening such effects. (See p. 16.)

Economic issues

Before completing its fieldwork, GAO could not fully review the project's economic issues because the Corps was still analyzing and revising its estimates of expected recreational and power benefits. The Corps completed ~~the~~ reanalyses in November 1973 and Corps comments on them have been included in this report. (See p. 18.)

GAO's review of the most recent Corps estimates and records showed that:

- Recreation benefits claimed appeared to be overstated. (See p. 20.)
- Greater need for reservoir recreational opportunities rather

than river-based recreation had not been convincingly demonstrated. (See p. 22.)

- The power feature was considered economically and financially feasible. (See p. 28.)
- The project would provide little flood control protection to existing development. (See p. 30.)
- The flood control benefits were primarily based on an insufficiently supported assumption that existing woodlands and croplands would be converted to higher value croplands. (See p. 32.)
- The basis used in computing the area redevelopment benefits was not adequately supported. (See p. 35.)

Price escalation

Corps procedures for computing price escalation do not include cost growth that may occur before construction begins and the project is completed. Because price escalation increases have averaged about 10 percent a year during the last 5 years and the scheduled completion date of the project is 1983, the final project cost will probably be considerably higher than the latest estimate. (See p. 40.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

The Corps of Engineers stated that GAO overemphasized the adverse impacts of the project and did not consider the beneficial impacts, such as project benefits, which are discussed in this report. (See p. 16.)

For the economic issues, the Corps requested that GAO consider the new

estimates for benefits that had been prepared since the completion of GAO's fieldwork. In response to GAO proposals, the Corps advised that an adequate analysis of the recreation benefits had been made, financial and economic feasibility of the power feature had been verified, and flood control and area redevelopment benefits were realistic.

In commenting on GAO's proposal that the Congress be informed of the results of the latest analyses, the Corps stated that it keeps the Congress informed during each annual budget submission of all proposed major changes in plans, costs, and benefits. (See p. 37.)

GAO's evaluation of the Corps' latest analyses and documentation supporting the benefit computations and environmental considerations showed that some issues had not been

resolved. The findings and conclusions discussed in the report are based on GAO's consideration of the Corps' latest analyses and on Corps comments. (See p. 18 and the appendix.)

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On October 1, 1973, the Governor of Georgia formally withdrew State support for the Spewrell Bluff project. The Governor recommended that the proposed project not be constructed and indicated that Georgia was pursuing the development of the area as a river park to provide optimum enjoyment of the Flint River in its natural state.

The Corps stated that the project had been shelved in recognition of the Governor's opposition and that future action could occur only if the Governor reversed his decision or the Congress directed it to proceed despite this opposition.

CHAPTER 1

INTRODUCTION

At the request of Senator Herman E. Talmadge, we reviewed the planned construction of the Spewrell Bluff Dam project on the Flint River near Thomaston, Georgia, by the Army Corps of Engineers (Civil Functions). Our review covered the environmental issues and the methodology and adequacy of data supporting the computation of project benefits and examined the impact of price escalation on project costs.

The general plan for the comprehensive development of the Flint River Basin was set forth in House document 567, 87th Congress, and provided for developing five projects.

--Spewrell Bluff, authorized by Public Law 88-253 and approved on December 30, 1963.

--Lazer Creek and Lower Auchumpkee, authorized by Public Law 89-298 and approved on October 27, 1965.

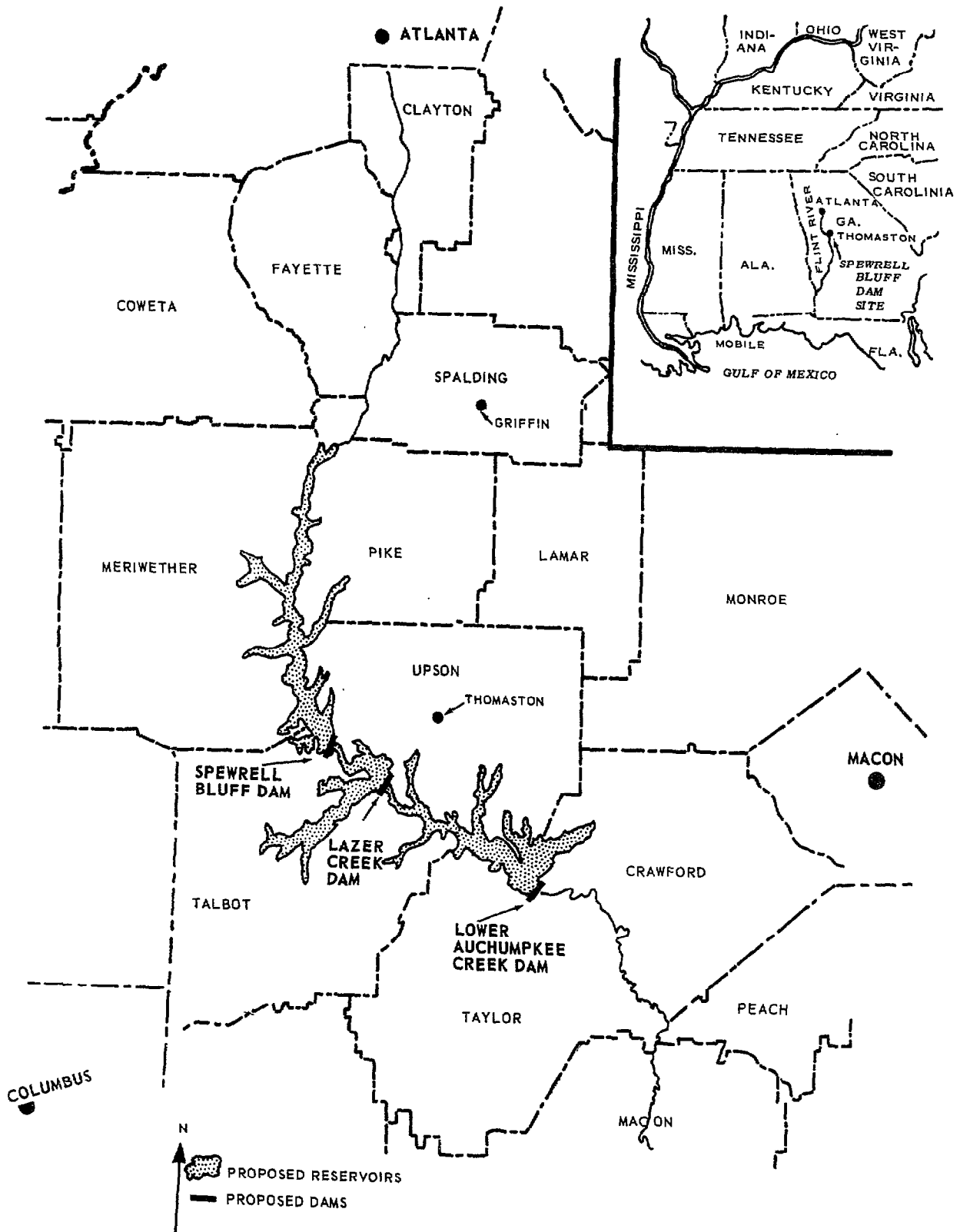
--Two projects which have not been authorized.

The following map shows the location of the three authorized projects.

Since 1971 the Corps' District office in Mobile, Alabama, has been studying a modification to the plan for the three authorized dams, which proposes to delete the multi-purpose Lazer Creek Dam--8 miles downstream from Spewrell Bluff--and to add a reregulation dam 6 miles downstream at Yellow Jacket Shoals. The reregulation dam would provide a reservoir for pumped storage operations whereby water would be pumped back into the main reservoir at Spewrell Bluff during periods of minimum power demand for reuse during periods of peak use. The District estimates that the reregulation dam will add about \$20 million to the project cost.

On November 29, 1973, the Mobile District formally recommended to the South Atlantic Division Engineer that this modification be adopted as the basis for continued detailed planning. As of February 22, 1974, the modification had not been submitted to the Chief of Engineers for his approval and submission to the Congress for its consideration.

PROPOSED FLINT RIVER PROJECTS



PROJECT BENEFITS AND COSTS

The Spewrell Bluff project was authorized in 1963 to provide recreation, power, flood control, navigation, and fish and wildlife benefits. Since then, the estimated annual benefits to be provided by the project have increased from about \$3.6 to \$12.3 million, and the relative significance of the benefits to be provided by individual project purposes has changed considerably, as shown in the following table.

Estimates of Annual Benefits and Costs

	Initial estimate (note a)	Percent of total	Current estimate (note b)	Percent of total
	(000 omitted)		(000 omitted)	
Federal purpose:				
General recreation	\$ 216	6	\$ 4,202	34
Power	2,436	68	5,923	48
Flood control	409	11	1,174	10
Area redevelopment (note c)	-	-	830	7
Fish and wildlife	295	8	127	1
Navigation	<u>34</u>	1	<u>28</u>	(d)
	\$3,390		\$12,284	
Non-Federal purpose:				
General recreation	<u>216</u>	6	-	-
Total benefits	<u>\$3,606</u>	<u>100</u>	<u>\$12,284</u>	<u>100</u>
Total costs	\$3,107		\$ 8,298	
Benefit-cost ratio	1.2 to 1		1.5 to 1	

^a Sept. 1962.

^b Nov. 1973. Does not include future recreation benefits from future recreation development.

^c Corps policy permits area redevelopment benefits to be included in project plans for informational purposes but precludes their use in determining a project's economic justification. Excluding these benefits from the Corps' current estimate would reduce the benefit-cost ratio to 1.4 to 1.

^d Less than 1 percent.

Federal water resource construction agencies develop and report benefit-cost ratios to the Congress to show the economic feasibility of proposed projects. The Congress seldom authorizes water resource projects unless the benefit-cost ratios exceed unity (estimated benefits exceed economic cost).

The major benefit expected from the Spewrell Bluff project, as initially authorized, was from power production. However, since then, power benefits have decreased from 68 to 48 percent of total project benefits, and general recreation benefits have increased from 12 to 34 percent. See chapter 3 for the computation of project benefits.

The initial estimated cost of the Spewrell Bluff project was \$63.2 million. The Corps, as of July 1, 1973, estimated the cost at \$148 million, an increase of 134 percent. In the November 1973 supplement to the General Design Memorandum (the document outlining the general plan for project development and construction), the Mobile District estimated the project cost with the proposed reregulation dam at \$168.4 million. See chapter 4 for the impact price escalation has on the project's costs.

ENVIRONMENTAL ISSUES

The project has been criticized by the State of Georgia and by environmental groups, who argue that the economic benefits are marginal and costs have been understated in relation to the benefits and costs associated with leaving the river in its natural state. Project opponents contend that the Flint River should be maintained in its natural free-flowing state. The Bureau of Sport Fisheries and Wildlife states that the Corps should consider a river park or scenic river as an alternative to the project, and the Georgia Department of Natural Resources supports this position.

On September 28, 1973, the Corps filed with the Council on Environmental Quality¹ a draft environmental impact statement describing the beneficial and detrimental aspects of

¹ The Council is responsible for providing policy advice and guidance on Federal activities affecting the environment and for issuing guidelines for preparing environmental impact statements.

the project. This statement was based on the project as modified by the reregulation dam. The statement was given to Federal, State, and local agencies; conservation groups; and the general public for review and comment. The Corps has received comments from these parties but does not plan to finalize the draft because the project has been deferred. Chapter 2 discusses the environmental matters at issue.

PROJECT STATUS

On October 1, 1973, the Governor of Georgia formally withdrew State support for the project. The Governor recommended to the Corps that the project not be constructed and indicated that Georgia was pursuing the development of the area as a river park to provide optimum enjoyment of the Flint River in its natural state. Corps policy is to defer further work on a project whenever this happens, so most of the remaining fiscal year 1974 funds for the project were transferred to other projects, and funds were not requested for fiscal year 1975.

About \$2.1 million had been spent on the project through February 1974. No funds were spent on land acquisition or construction. The Corps advised us that it had shelved the project in recognition of the Governor's opposition and that future action could occur only if the Governor reversed his decision or the Congress directs it to proceed despite this opposition.

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On September 26, 1973, we asked the Department of the Army and the State of Georgia for their comments on the matters discussed in our report. Their written comments have been considered in this report.

After we completed our fieldwork in July 1973, the Mobile District finished a reanalysis of the recreation and area redevelopment benefits. The power feature was also re-analyzed and new feasibility studies made. The results from these reanalyses are contained in the Mobile District's November 1973 supplement to the General Design Memorandum. We reviewed the reanalyses and studies and considered them in this report. The Corps' comments on this review were received on May 14, 1974, and are included in the appendix.

SCOPE OF REVIEW

We made our review at the Corps' District Office in Mobile, Alabama, which had done the environmental and benefit-cost studies for the project, and talked with officials of the

- Corps of Engineers in Washington, D.C., and at the South Atlantic Division in Atlanta.
- Environmental Protection Agency, Region IV.
- Department of the Interior's Bureaus of Sport Fisheries and Wildlife and Outdoor Recreation regional offices in Atlanta and Southeastern Power Administration in Elberton.
- Georgia State Department of Natural Resources in Atlanta.

CHAPTER 2

ENVIRONMENTAL ISSUES

Federal and Georgia State agencies have stated that the Spewrell Bluff project would have an adverse impact on the environment. They do not agree, however, on the nature and extent of the adverse effects or on the measures that should be taken to lessen the adverse impact.

Some known effects of the project will be the loss of (1) a unique river fishery, (2) 23,000 acres of wildlife habitat, and (3) one of the few remaining free-flowing rivers in Georgia providing natural recreational opportunities. Also, some Federal and State agencies are concerned that the project would reduce the available habitat for several rare and endangered fish and wildlife species, contribute to water quality problems, and cause the loss of known archeological sites.

Many basic environmental issues have not yet been resolved. For example, plans have not been developed to mitigate the wildlife habitat loss although the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) requires that such plans be prepared. We believe additional assessments are necessary to fully determine the potential adverse environmental impacts of the project and the measures and costs for preventing or mitigating such impacts.

CORPS STUDIES OF ENVIRONMENTAL IMPACTS

The Corps developed a study plan in January 1971 for the upper Flint River basin to:

"* * * provide a basis for considering the overall public interests and to insure that environmental aspects are identified and considered. Enhancement of the overall environment and amelioration of any detrimental effects will be pursued to the maximum intent possible."

Two major portions of the study were the determination of the effect of impoundment and flow regulation upon existing environmental conditions and the evaluation of the effect of the project on the plants and animals. As of January 1972,

the estimated completion date of the study was November 1, 1973; however, it has been deferred because of project changes and the Governor's withdrawal of support for the project.

Pursuant to the requirements the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), the Corps issued a draft environmental impact statement in 1971 but because of project changes a revised statement was issued in September 1973. The Corps did perform some environmental studies in preparing the draft statement for the project, such as computer simulations of water temperature, dissolved oxygen content, and amount of downstream flow. In addition, a consultant's study on possible alternatives for recreation development of the Spewrell Bluff area was cited in the draft statement.

FISH AND WILDLIFE

Although the Corps has discussed the project's potential threat to plants and animals in the 1973 draft environmental impact statement, the means and measures to mitigate the fish and wildlife losses have not been definitized in the project plans.

River fishery

The reservoir for the Spewrell Bluff project will inundate about 34 miles of the river and about 70 tributary miles of stream habitat for sport fish. Periodic flood storage will affect an additional 4 miles of main river and 31 tributary miles. Bureau of Sport Fisheries and Wildlife officials have stated that the loss of the unique Flint River fishery cannot be valued monetarily and that river fishing is a different and higher quality type of recreation than reservoir fishing. The Georgia State Comprehensive Outdoor Recreation Plan shows a great and growing demand for river recreation and a shortage of free-flowing rivers to provide it. The plan also indicates a need for additional lake-oriented recreation; however it documents a greater need for canoe trails and fishing streams.

The Bureau of Sport Fisheries and Wildlife has stated that the loss of a free-flowing stream at Spewrell Bluff will have a detrimental effect on the Flint River bass, a unique species of game fish found only in the project's geographic

area. This bass inhabit rapids and shoals and spawn in moving water. Very few have ever been found in a reservoir. Because of impoundments elsewhere in the area, the prime Flint River bass habitat is in the Spewrell Bluff region. The project would reduce their total habitat by about 30 percent and their prime habitat by about 60 percent.

Wildlife habitat

The project would be located in an unusual virtually unstudied area where the plants and animals of the Georgia Piedmont merge with those of the Coastal Plain. The Georgia Department of Natural Resources considers this mixture unprecedented. The Spewrell Bluff project would inundate the peculiar and rare plant life in the area which the Department considers a biological phenomenon.

The Georgia lamp pearly mussel is found only in the upper Flint River and may become extinct because of the project, according to the Bureau of Sport Fisheries and Wildlife. In addition, the red-cockaded woodpecker is on the official endangered species list and could be affected by the project because of the reduction in habitat.

The Corps recognized these effects in the 1973 draft environmental impact statement and plans additional studies to determine the feasibility of mitigation measures, such as transplanting, to preserve the rare plants. The Corps believes that the remaining woodlands would provide adequate habitat for the red-cockaded woodpecker.

Efforts to mitigate loss of wildlife habitat

According to the Bureau of Sport Fisheries and Wildlife, the project will result in the loss of 23,000 acres of wildlife habitat. However, the Corps considers this loss to be the 16,500 acres of permanently inundated or cleared land in the project's normal storage pool. The remaining 6,500 acres would be subject to periodic flooding and its habitat value would be reduced but not completely lost.

The Fish and Wildlife Coordination Act generally requires the Corps to consult with the Bureau of Sport Fisheries and Wildlife and its State counterpart to prevent the loss or

damage of wildlife resources. The act states that wildlife shall be given equal consideration with other project purposes and that adequate provision, including acquisition of lands and waters, be made at water resource developments for wildlife conservation.

The Bureau and the Georgia Department of Natural Resources reported to the Corps on the Spewrell Bluff projects in 1962, 1968, and 1973. Although the Bureau did not specially recommend acquisition of lands for mitigating the wildlife habitat loss in the 1962 and 1968 reports, it did recommend that the Corps continue consultation with it and Georgia as project plans were developed and pointed out the State's interest in having lands acquired for this mitigation.

In 1968 the Georgia Department of Natural Resources expressed a need for lands to mitigate the wildlife habitat losses that would result from the project and requested that the Corps acquire 5,000 acres. The request was revised in 1969 to cover all three authorized projects on the Flint River and the acreage requirement was increased to 10,000 acres. The Department identified five potential land acquisition areas.

The District took the position that additional land for mitigation purposes could not be provided as a part of the Spewrell Bluff project because no provisions had been made in the authorizing document for this purpose. In 1969 the District advised the State that "the authority available to the Corps of Engineers does not permit the acquisition of lands for the purpose you desire beyond the limits of that needed for the project." Project lands, a narrow strip around the reservoir, would be unsuitable for wildlife management according to the State. While the Corps may not be able to acquire all lands requested by the State without specific congressional authority, we noted that at other projects the Corps had requested such authorization to mitigate wildlife losses after project authorization.

Corps policy provides for acquiring lands for mitigation only if the monetary or nonmonetary value of the loss justifies such action. For Spewrell Bluff, the District valued the annual hunting-day loss at \$9,000 and the fishing-day loss at \$50,000. Under Corps procedures for evaluating economic feasibility, the District considered the value of

the fishing and hunting man-days lost as an economic cost to the project.

Despite the loss that would occur to the Flint River fishery and wildlife habitat, the District claimed fish and wildlife benefits of \$239,000 annually, based on the 1968 Bureau of Sport Fisheries and Wildlife estimate of 226,000 man-days of reservoir fishing at \$1 a man-day and downstream fishing valued at \$12,500. In 1973 the Bureau decreased its estimate by about 50 percent to an annual 115,000 man-day usage, due partly to the construction of a nearby competing reservoir. The annual usage at the Spewrell Bluff reservoir was based on statistical studies of data from other reservoirs and from comparative information on other Georgia impoundments. The Corps' subsequent computation of benefits considers the revised Bureau projections wherein the fish and wildlife benefits are estimated to be \$127,500 annually.

In 1973 the Bureau recommended that the Spewrell Bluff project not be constructed because of severe losses of fish and wildlife habitat and river recreation resources it would cause. Instead, it recommended a river park or scenic river designation, and the Georgia Department of Natural Resources supports this recommendation. The Bureau report to the Corps states that:

"* * * this habitat is of such great significance to the sustenance of a unique fishery, to several rare and endangered species, and to wildlife resources that the Georgia Department of Natural Resources and this Bureau cannot condone its destruction * * *."

The Corps told us that the issue of wildlife mitigation is not a closed subject for the Spewrell Bluff project. The 1973 draft environmental statement stated that it would be pursued further if the proposed project were to be constructed. We believe, however, that the Corps should have fully considered measures and costs for lessening the adverse wildlife impact so that they could have been effectively evaluated in the project before the impact statement was issued.

WATER QUALITY

The water quality of the proposed reservoir and the downstream releases cannot be predicted with certainty. The Flint River in its natural state is a free-flowing river and somewhat self-purifying. The proposed reservoir would tend to create water quality problems relating to potential nutrient buildup in the reservoir caused by upstream pollutants and the dissolved oxygen content, water temperature, and amount of downstream flow.

The Corps states that any water quality problems would be temporary and localized and that the project offers a significant potential for water quality enhancement. However, the Environmental Protection Agency informed us that the thermal stratification of the water (i.e., the variation in water temperature at various depths) which produces deteriorated water quality in a reservoir cannot be considered temporary and localized. Stratification will probably continue in a reservoir like that produced by the Spewrell Bluff Dam for the life of the project. The Environmental Protection Agency comments to the September 1973 draft environmental impact statement noted that a few water quality parameters, such as turbidity and coliform count, would be improved but most other parameters, such as dissolved oxygen, temperature, color, odor, and taste, would be degraded by the impoundment.

Potential nutrient buildup

The Georgia Department of Natural Resources notes that the Flint River in its natural state is somewhat self-purifying and a dam at Spewrell Bluff would tend to trap nutrients and sediment. The Environmental Protection Agency stated that a greater degree of upstream nutrient removal would be needed with Spewrell Bluff and that accelerated eutrophication was a definite possibility. The Agency has also indicated that the nutrient problem could be further aggravated by South Atlanta urban growth because of the nutrients in untreated urban storm runoff as well as in the treated sewage effluent.

If nutrients in the reservoir ever reach excessive levels because sufficient treatment facilities were not provided upstream or because of lax enforcement of antipollution statutes, the process of lake aging or eutrophication would

be accelerated. The process occurs as nutrients (primarily nitrates and phosphates) accumulate in the water and stimulate overpopulation of algae and plants which consume large quantities of oxygen as they decompose. Advanced eutrophication is manifested by massive algae blooms (commonly referred to as scum), noxious plant growth, foul odors, and fish kills. Such a stagnant condition would render a lake virtually useless for recreation purposes.

The Corps informed us that Georgia would be responsible for the quality of water flowing into the Spewrell Bluff reservoir and assumed that the State would provide adequate pollution abatement facilities. In view of this, the Corps in the September 1973 environmental impact statement noted that accelerated eutrophication is not anticipated at this reservoir.

The Georgia Department of Natural Resources stated that additional waste treatment facilities might be necessary upstream from the reservoir at the town of Griffin and that, because such facilities would be needed to maintain the water quality in the Corps-created lake, the cost of such facilities should be included in the project benefit-cost computations. An Environmental Protection Agency official stated that the waste discharge at Griffin may someday need treatment for biochemical oxygen demand but that nutrient removal, which is two or three times more costly, would be necessary only if the Spewrell Bluff reservoir were created. The Corps and the State have not determined the need for, or method of, providing additional treatment facilities.

Possible adverse effects on
downstream water quality

The Georgia Department of Natural Resources has indicated that the Corps is responsible for providing that high quality releases will occur at Spewrell Bluff. The Corps will be responsible for insuring that the dissolved oxygen content and temperature of the released water and the amount of downstream flow meets State water quality criteria.

The State has requested the Corps to:

- Provide a multiple level outlet to protect downstream water quality.

- Prevent downstream water surges and resultant erosion.
- Insure that a minimum flow of 350 cubic feet per second (cfs) will be maintained.
- Insure, in general, that all State water quality standards will be observed.

The Corps expects that the release water from the proposed dam will meet all State water quality requirements with the combined effects of a high level intake and a reregulation dam and reservoir. The Corps stated that the reregulation dam will prevent downstream water surges and resultant erosion.

Dissolved oxygen and water temperature

According to a District official, experience at other projects indicates that upper levels of the proposed reservoir will meet Georgia's standard for dissolved oxygen, but studies cannot be made to confirm this indication. However, the District anticipates adherence to all State water quality standards in the reservoir. Water temperature levels were predicted by computer simulation, which showed the maximum temperature of the release water to be 81° fahrenheit, which complies with State regulations.

The water to be released into the reregulation pool will, according to the District, be relatively oxygenated and warm. Unlike some reservoirs that release water from the bottom, the water from Spewrell Bluff will be released from the upper third of the reservoir into the reregulation pool. A District official stated that this method of releasing water would generally have the same beneficial result as the State-requested multiple-level outlet. However, the Georgia Department of Natural Resources stated that good water quality cannot be guaranteed without a multiple level outlet.

Amount of downstream flow

The project does not provide specific storage capacity for the purpose of augmenting the natural low stream flows that occur during the late summer and fall months. The District has stated that in compliance with previous State and

Federal agency recommendations, the downstream flow will never be less than 110 cfs, the once in 10 years 7-day-low flow.

In 1973, the State requested a minimum release of 350 cfs to meet future water quality needs downstream.

A District official said that power generation requirements imposed on the Spewrell Bluff dam by the Southeastern Power Administration, which would market the project's power, would be unpredictable and would affect the amount of water available for release. In addition, the beginning of the dry season coincides with the peak power demand month of August which also has high recreation use. On a weekly basis, the Administration directs the amount of power to be produced at each facility within its jurisdiction based on power demands, reservoir storage conditions, and equipment failure.

A maximum reservoir drawdown of 10 feet would expose over 4,000 acres of mud and rock, which would adversely affect the suitability of the reservoir for recreation. The Corps plans to design recreational facilities to accommodate the fluctuating water surface elevation. In the Corps study of the reservoir's drawdown, based on 35 years of flow records, the maximum drawdown occurred only once, and that was for a period of 6 months. However, a District official said that with the guaranteed minimum downstream flow of 350 cfs, the water level fluctuation may be more frequent and greater (although not more than 10 feet) than originally anticipated.

A District official advised us that the competing project purposes, i.e., holding water for power generation, limiting reservoir drawdown, and providing adequate downstream flow, could be balanced and that a period of severe drought would restrict the Southeastern Power Administration's flexibility only in allocating power production. The Corps stated that it would consider the guaranteed release when reservoir regulations and power contract negotiations were undertaken.

ARCHEOLOGICAL SITES

The Corps advised us that the Spewrell Bluff project would give impetus to the salvage of 30 known archeological sites. According to a University of Georgia professor,

however, the archeological reconnaissance cited by the Corps may have found only half the locations. He stated that no tests were made below the surface. Also, recovery might be only 5 percent of the total archeological fossils, relics, and artifacts at the 30 sites.

An official of the Southeastern Archeological Center, National Park Service, stated that at best only a 10- to 15-percent archeological recovery would occur. The Center will award a contract for a survey of the Spewrell Bluff area whether or not the dam is constructed. Only major sites will be selected for salvage efforts; all other sites in the project area will be inundated.

AGENCY COMMENTS

The Corps stated that our report overemphasizes the adverse environmental impacts and does not consider the beneficial aspects of the project. It said that the Spewrell Bluff project would satisfy some of the identified needs of the Flint River basin.

- Recreational opportunities
- Public access and facilities
- Low flow augmentation
- Water supply potential
- Lake and commercial fisheries
- Permanent open space and greenbelts
- Hydropower production
- Enhancement of downstream power potential
- Flood protection
- Area redevelopment

The Corps stated that all the adverse impacts discussed in our report as well as the beneficial impacts had been presented in their draft environmental impact statement.

CONCLUSIONS

Federal and State agencies and many other groups are concerned about the environmental damages that could result from the construction of the Spewrell Bluff project. Many of these concerns have evolved during the planning process and have not been fully resolved by the Corps in its detailed planning for the project.

If the project is reactivated, we believe that additional assessments are needed to fully determine its potential adverse environmental impacts and the measures and costs of preventing or mitigating such impacts.

CHAPTER 3

COMPUTATION OF PROJECT BENEFITS

Our review of the way the Corps computed the estimated benefits for the Spewrell Bluff project questioned the adequacy of the supporting documentation for and reasonableness of the benefit estimates claimed for certain project purposes. The Corps has revised its estimates many times since the project was authorized, in some instances changing the methods or assumptions used in computing the benefits.

During our fieldwork, the Corps was recomputing the recreation benefits. Also, power aspects of the project had undergone a series of reformulations, and studies using a reregulation dam had not been completed.

The Corps stated that physical, environmental, and social changes occurring since the preauthorization planning necessitated these revisions. Corps policy is to keep all studies current to insure the adequacy of proposed projects for meeting existing and future needs.

After completion of our fieldwork, the District finished recomputing the benefits for the project. The new estimates were published in the supplement to the General Design Memorandum dated November 29, 1973. The Corps gave us information on the new estimates, and our evaluation showed that issues of the prior estimates had not been resolved.

Our review of the Corps' most recent estimates and supporting records showed that:

- Recreation benefits claimed appear to be overstated.
- Greater need for reservoir recreational opportunities rather than river-based recreation had not been convincingly demonstrated.
- The Corps study considers the power feature economically feasible and the Southeastern Power Administration considers it financially feasible.

- The project would offer little flood control protection to existing development.
- Flood control benefits were primarily based on the insufficiently supported assumption that existing woodlands and croplands would be converted to higher value croplands.
- The basis used in computing area redevelopment benefits was not adequately supported.

RECREATION BENEFITS

Estimated annual recreation benefits and the cost of recreation facilities to meet the anticipated level of public use have increased substantially since the project was authorized. The following table compares the benefits at the time of authorization in 1963 with those contained in the November 29, 1973, General Design Memorandum.

	<u>1963</u>	<u>Estimated benefits</u>	<u>Percent of total benefits</u>
Federal		\$ 216,000	
Non-Federal		<u>216,000</u>	
Total		<u>\$ 432,000</u>	12.0
	<u>1973</u>		
Initial recreation development		\$4,202,000	
Future recreation development		<u>1,170,000</u>	
Total		<u>\$5,372,000</u>	39.9

Corps records show that the increase in benefits is primarily due to (1) assuming that Spewrell Bluff will be used more than originally expected, (2) assigning the total projected attendance from the full upper Flint River market area for the first 3 years of operation to the Spewrell Bluff project, and (3) distributing to Spewrell Bluff a proportionate share of the attendance that initially had been assigned to the Lazer Creek project.

Possible overstatement of benefits

The National Park Service prepared the initial estimate of annual attendance at Spewrell Bluff which appeared in the project authorization document. Since then, the District has prepared five estimates, including the latest revision in November 1973. During our fieldwork, we reviewed the estimate in the 1971 supplement to the General Design Memorandum. We also reviewed the November 1973 revision as part of our evaluation of the Corps' comments on our report.

1971 estimate

The Corps prepared the 1971 estimate, which supported the 1974 budget, by projecting a per capita use rate curve based on actual rates experienced at four comparable Corps projects in Georgia, Lakes Seminole, Lanier, Allatoona, and Walter F. George. The computed attendance was estimated at 772,000 visitors for the first year, increasing to 6.7 million visitors by the 50th year of operation. The average annual benefits over the 100-year project life at \$1 a visitor-day was thus computed to be \$4,606,000.

The per capita use rate for Spewrell Bluff exceeded the actual use rates at three of the four reservoirs used as a basis for the projection. In addition, Lakes Lanier and Allatoona were two of the most popular Corps projects in the Nation in 1969.

Factors that would make Spewrell Bluff more popular than the three other reservoirs were not presented. For example, the documentation supporting the estimate did not discuss the differences between the projects in terms of competing lakes and reservoirs, socioeconomic makeup of the market area population, population density, level of recreational development, and accessibility of the reservoirs.

1973 estimate

The District study was more definitized than the earlier studies but some basic issues were not adequately addressed or resolved.

The District's reanalysis basically followed the same procedures and methods used in the 1971 estimate; however, only the Lake Allatoona statistics were used for determining

the per capita use rates for Spewrell Bluff and Lower Auchumpkee. The projected attendance was computed to be 3.1 million visitors in the first year, increasing to 6.4 million visitors by the 40th year of operation and staying at that level for the remaining life of the project. The average annual benefits were estimated to be \$5,372,000 based on \$1.20 a visitor-day.

The procedures followed by the District in the reanalysis were to (1) divide the market area into four subareas, (2) determine per capita use rates from actual visits to Lake Allatoona, based on the visitor's travel distance from the lake, and plot these on a graph, (3) determine from the graph the applicable per capita use rates for each of the four subareas, based on distance from the upper Flint River projects, (4) plot out future per capita use rates for each subarea, and (5) compute the projected attendance from the market area and distribute it between the Spewrell Bluff and Lower Auchumpkee projects.

We believe the way the Corps applied these procedures addresses several of the issues we had questioned, however it still does not adequately consider the differences between the projects with respect to the effect of competing lakes and reservoirs and the relative accessibility of the two reservoirs.

The Corps reduced the use rate for one of the four subareas, the immediate 20-county area adjacent to the projects, to give consideration to the competing influence of other lakes and reservoirs. The use rates for the other three subareas were not similarly reduced, even though these areas also have lakes and reservoirs within the normal 50-mile commuting range as shown on the following map. For example, Lakes Allatoona and Lanier lie within 50 miles of the Atlanta metropolitan area, a subarea in the Corps calculations. The other two subareas have lakes within 50 miles; Walter F. George and West Point Lakes for the Columbus metropolitan area and Lake Sinclair for the Macon metropolitan area. We believe that these use rates should also have been reduced to consider the effects of this competition.

District officials stated that the accessibility to Spewrell Bluff would be comparable to that for Lake Allatoona. However, we noted some differences in distances from

expressways and four-lane highways. Lake Allatoona is directly accessible from a major four-lane highway, whereas the nearest Spewrell Bluff public use area would be 13 miles from such a road. We believe that such a difference should have been considered in determining recreation benefits.

Reservoir recreational opportunities

State and Federal agencies have questioned the Corps' claim of recreation benefits because they say that the Spewrell Bluff project will destroy a scarce free-flowing stream recreation resource and replace it with the more abundant reservoir recreation source.

As early as March 1947 the National Park Service recognized that the project construction area on the Flint River possessed potential for preservation as a free-flowing stream, and reported that:

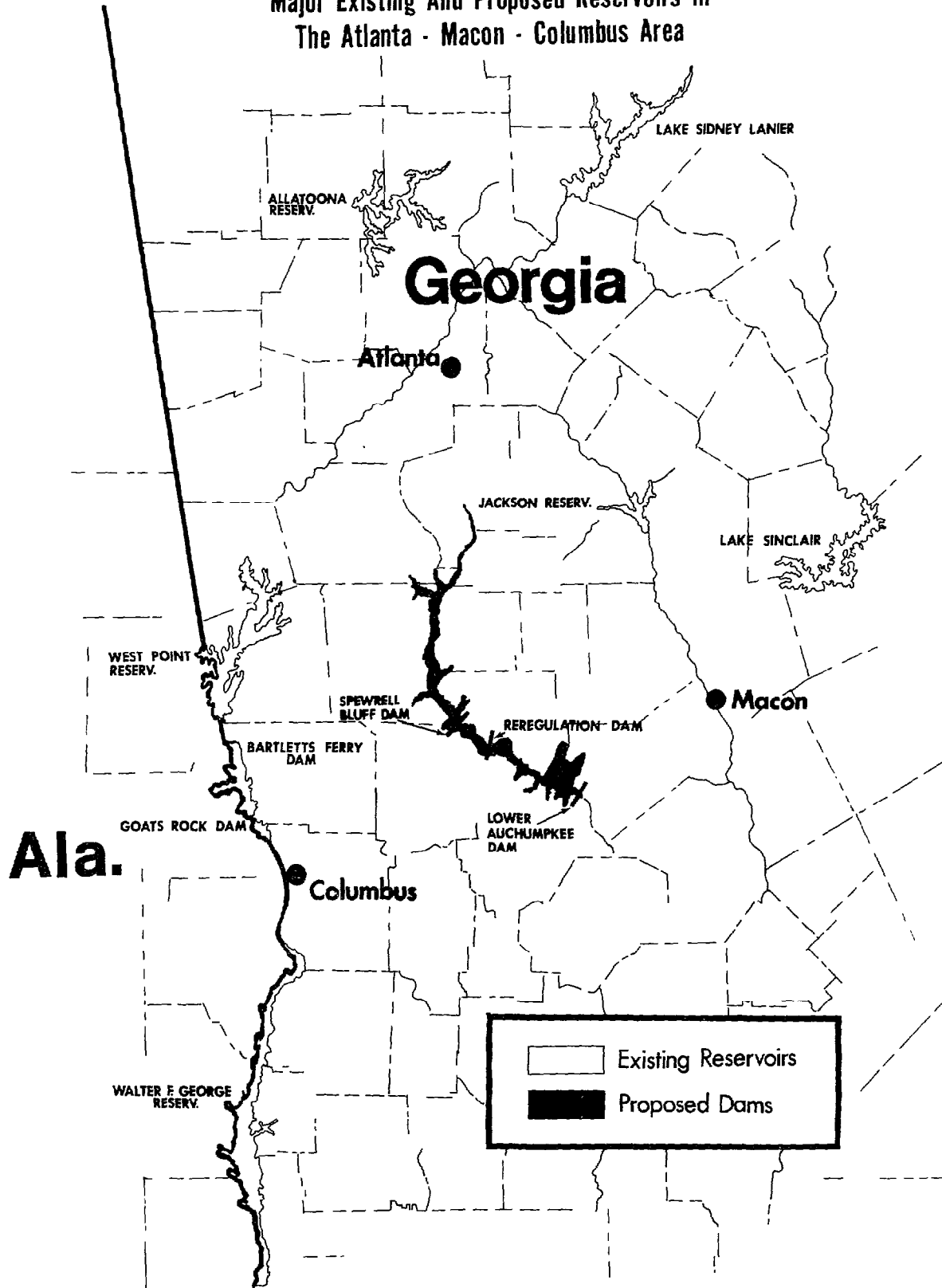
"The intangible natural loss that would result from the construction of the reservoir is impossible to translate into monetary terms and is not reflected in the recreation benefits. The importance of this fast disappearing natural resource in providing well-balanced recreation opportunities cannot be stressed enough."

At the present time there are seven lakes, existing or under construction within 50 miles of the Spewrell Bluff site. The 1972 Georgia State Comprehensive Outdoor Recreation Plan pointed out that there was and would continue to be an abundance of potential broadwater recreation areas for the next 13 years. Although the plan indicates additional reservoir recreation is needed, it documents a greater need for present and future canoe trails and fishing streams. The present deficit of 1.5 million fishing stream miles is expected to increase to 2.6 million miles by 1985.

The plan states:

"According to the statistical analysis of recreation needs in this area of Georgia * * * there is a much greater * * * need for river-based recreation than for lake-based. This is particularly true on the Piedmont Province of the State. Four major impoundments--Lake

Major Existing And Proposed Reservoirs In The Atlanta - Macon - Columbus Area



Walter F. George, Tobescofkee, West Point Dam and Reservoir, and Goat Rock Lake--are already well within driving distance."

The Bureau of Sport Fisheries and Wildlife May 1973 report to the Corps recommends that the Spewrell Bluff project not be constructed and states:

"We believe that destruction of a high value recreational resource and unique stream fishery resource by the project is not justified in view of the existence of such a great demand for warm-water stream fishery as indicated by the Georgia SCORP [plan]."

* * * * *

"Losses of fish and wildlife habitat and resource oriented recreational opportunities will occur in the project area as a consequence of reservoir inundation, and from the use of lands for the dam and other project facilities."

An April 1973 report prepared by a consultant firm under a Corps contract to study the recreation alternatives of the Flint River corridor states:

"There is a need for reservation of space for system and river associated activities. If diversity of opportunity is to be maintained, diversity of resources must be protected. A balance between stream associated and reservoir associated activities is desirable * * *. Visitation estimates, demand projections, and estimates of recreation needs by the state all indicate high future need for facilities to serve nature oriented activities. Need for nature oriented activities exceeds that for facility oriented activities."

The Corps stated that the need for reservoir recreation was demonstrated by its calculations showing that existing and proposed projects, including Spewrell Bluff, would be able to meet only 70 percent of that needed by the year 2030. Although the Corps did not state specifically at

what point in time the existing projects would be unable to meet the needs, our examination of the supporting data indicated that this would not occur until around the year 2000.

The following table summarizes Corps data on the needs of the market area for the upper Flint River projects compared with the supply for water resource projects.

	<u>Recreation user days</u>		
	<u>1980</u>	<u>2000</u>	<u>2023</u>
	————(millions)————		
NEEDS:			
Apportioned to water resource projects	<u>10.6</u>	<u>26.4</u>	<u>56.4</u>
SUPPLY:			
Capacity at existing lakes and reservoirs	22.5	22.5	22.5
Capacity to be supplied by upper Flint River projects	<u>13.9</u>	<u>13.9</u>	<u>13.9</u>
Total Supply	<u>36.4</u>	<u>36.4</u>	<u>36.4</u>
Percent of existing supply to needs	212	85	40
Percent of total supply to needs	343	138	65

Furthermore, the Corps based its calculations on data from the "Selected Outdoor Recreation Statistics-1971" published by the Bureau of Outdoor Recreation. District officials advised us that they had not consulted with the Bureau on the use of these statistics in determining the needs for reservoir recreation. The Bureau's Southeastern Regional Office told us that the Corps was in error in using statistics in the way it did. Specifically, the calculated figures on need were inflated, because population increases were double counted in Corps computations. The Bureau stated that the existing supply could meet the needs until around the year 2023.

The Corps acknowledged its error in the use of Bureau statistics but advised us that subsequent analysis indicated the net effect on recreation benefits would not be enough to change its belief that including recreation facilities at the project was warranted. Further, a Corps' official informed us that, should the Congress direct the Corps to proceed with the project, recreation will be reanalyzed in depth to consider factors discussed in the report and conditions prevailing at the time of the analysis.

In addition, the Georgia Department of Natural Resources made additional analyses, at our request, on the relative needs between stream-oriented and lake-oriented recreation for the Spewrell Bluff market area and for the entire State. These analyses show that, at present, stream-oriented recreation requirements are greater than those for lake-oriented recreation and that this differential will increase in future years.

Its report stated that, for the Spewrell Bluff market area:

"This increasing differential may be easily seen by comparing 1970 data to 1985 data. SCORP revealed that in 1970, 23% of the demand for broad water based recreation was being met, while only .03% of demand for stream based recreation was being met. By 1985, 30% of the service area need (demand) for broad water based recreation will be met while only .03% of the service area need for stream related recreation will be available."

For the entire State of Georgia the report stated that:

"The analysis of state-wide demand/supply data is even more significant for two reasons. First, 95% of the broadwater need was being met in 1970 as compared with .21% of the stream based need. SCORP data projects 80% of the broad water need will be met by 1985 as compared with .10% of the stream based for the same period. Secondly, the statewide data is particularly relevant in view of the Flint River's

designation in the Wild and Scenic River Study
(Georgia Natural Areas Council, 1970) as the
State's most unique free-flowing stream."

POWER BENEFITS

The Spewrell Bluff project is designed to produce peak power--power needed to meet surges in demand--and could provide about 0.6 percent of the total capacity and 1.6 percent of peak energy required in 1980 in its market area, primarily Alabama and Georgia. Annual power benefits of about \$5.9 million, or about 48 percent of total project benefits, are based on the rated generator capacity of 150,000 kilowatts. These benefits are based on 228,800,000 kilowatt hours of energy annually.

Under Corps policy, the inclusion of power facilities in a multipurpose project must meet two criteria to be considered feasible: (1) the separable hydropower costs cannot exceed the costs of the most likely alternative source of power (economic feasibility) and (2) the revenues from the sale of power must be sufficient to repay all allocated power costs, including operation and maintenance costs, with interest within 50 years (financial feasibility).

Economic feasibility

In determining the economic feasibility of power, the Corps uses the estimated cost of a federally financed steam-plant as the most likely alternative means of providing equivalent service in the absence of the project. The power values are furnished by the Federal Power Commission.

In 1972, the Corps based its evaluation on the proposed modification of deleting the Lazer Creek project and adding a reregulation dam for the Spewrell Bluff project. For this modification, the separable costs--costs specifically identified with the inclusion of the power feature in the project--were estimated to be \$2,698,000 annually and the alternative costs \$2,727,000 annually, leaving a margin of \$29,000.

The sensitivity of the power economic analysis can be illustrated by the fact that, if the separable costs of the power feature were to increase by more than \$29,000 annually, it would make the alternative less expensive. If this condition materialized, the power aspects of the project would not be considered economically feasible and would be subject to deletion.

After the completion of our fieldwork, the District reanalyzed the total project and updated the earlier

estimates. The results of the reanalysis show that the separable costs are estimated at \$2,908,000 annually and alternative costs at \$3,523,000, leaving a \$615,000 margin. A District official informed us that the increase in the economic margin was due primarily to the higher power values the Federal Power Commission has assigned to the alternative costs; \$17.50 per kilowatt per year for 1973 compared with \$13.80 per kilowatt per year for 1972.

Financial feasibility

The Southeastern Power Administration is the marketing agency for the power generated by Federal water resource projects in the southeastern region of the country, which would include the Spewrell Bluff project. Upon request, the Administration makes financial feasibility studies of projects, based on cost data provided by the Corps.

In April 1971 the Administration advised the Corps that it could not unequivocally state the Spewrell Bluff and the Lazer Creek projects were financially feasible. Its analysis was based on the 150,000 kilowatt capacity for Spewrell Bluff. The project was planned with a reservoir drawdown of 30 feet.

In May 1972 the Corps submitted revised project data to the Administration based on deleting the authorized Lazer Creek project and adding a reregulation dam at Yellow Jacket Shoals. The modified plan provided for a drawdown of only 10 feet. At this drawdown, the Administration engineering studies determined that the minimum power capability which could be assured at all times was 170,500 kilowatts, which would include an overload of 20,500 kilowatts above the generator nameplate or rated capacity of 150,000 kilowatts. The Administration's analysis concluded that the power feature in the revised project was financially feasible when considered as an integrated part of the total Georgia-South Carolina-Alabama system.

At the completion of our fieldwork, a District official told us that cost and power data had changed significantly since the Administration's analysis in May 1972 and that the Corps planned to ask for another analysis based on the latest cost allocations and revised power data.

On September 7, 1973, the Corps requested Administration views on the financial feasibility based on the revised cost allocations. The Corps' method allocated

\$68,482,000 in initial project costs and \$798,000 in annual operation and maintenance expenses, including pumping-energy costs and major replacement costs to power, based on the generator's rated capacity of 150,000 kilowatts. Using these figures, the Southeastern Power Administration calculated average annual costs at \$5,809,000, including its marketing costs for a 50-year amortization period.

The Administration's analysis of the revised data was furnished to the Corps on September 10, 1973, and concluded that:

"Based upon a completely coordinated power operation of these projects such that they are integrated hydraulically, electrically, and financially, we are assured that we can obtain power revenue sufficient to repay all costs associated with the production and transmission of the power produced by the system, including the amortization of the capital investment allocated to power within 50 years from the time that each increment of power investment becomes revenue producing. This, in our opinion, clearly establishes for power the financial integrity of the complete Georgia system including the proposed Spewrell Bluff Project."

Southeastern Power Administration policy is to apply the system concept. Under its marketing plan, power operations for these projects are hydraulically and electrically integrated, which logically calls for integrating the financial aspects. The Administration advised us that the overload capacity was used for the Spewrell Bluff project because its experience at other Corps power facilities indicated that this amount of overload capacity could be attained from the power generators. It said there would be no difficulty in marketing this additional capacity.

FLOOD CONTROL BENEFITS

Our review showed that the flood control benefits would provide little protection to existing development and were primarily based on an insufficiently supported assumption that existing woodlands and croplands would be converted into higher value croplands.

The Corps estimate of annual flood control benefits increased from \$409,000 in 1962 to \$1,173,900 in November 1973 because of updating the benefits from 1961 prices and 1970 development to 1972 prices and 1983 development. Of the total annual flood control benefits, \$964,400, or 82 percent, is attributed to the increased net income that would be realized by changing floodplain-farming practices to include higher valued crops and by converting woodlands to croplands. The remaining \$209,500, or 18 percent, is attributed to the reduction of flood damages to development in the floodplain. The reduction of flood damages to development in urban areas of the floodplain accounts for about \$69,300 of the total flood control benefits.

Protection for existing development

Benefits attributable to reducing damages to existing development were computed by determining the average annual flood losses and deducting the lesser amount that would have occurred had Spewrell Bluff Dam been in operation. The difference is the amount of damages that would have been prevented by Spewrell Bluff Dam and the amount claimed as benefits.

Proponents of the project cite flood protection as a major project justification. However, Corps data shows that the project will afford only minimal protection, especially in the lower reaches¹ at Albany, Newton, and Bainbridge where most of the development exists and the majority of flood damage along the Flint River occurs.

Corps' design studies show that the operation of the Spewrell Bluff Dam will principally protect the rural areas just below the dam and that the degree of protection will become progressively less for the lower reaches of the river. In the first three river reaches, where there is

¹When typical flood damage is analyzed, the area subject to flooding is divided into subareas, usually designated as river reaches. In selecting the reaches, the District considers such factors as political boundaries, zoning plans, and differences in development.

limited development in the floodplain, Spewrell Bluff would reduce average annual flood losses by slightly less than half. In the lower three reaches at Albany, Newton, and Bainbridge, where all the urban damages and the majority of the total damages occur, average annual losses would be reduced by less than one-fourth.

Flood control benefits are based on the project's ability to control the frequency and depth of floods. How well the project accomplishes this is shown in the following table developed from Corps statistics.

Expected Depth and Frequency of a
10-year Flood With and Without
Spewrell Bluff Project

<u>Stream reach</u>	<u>Gage heights at which flooding begins</u>	<u>Years between floods</u>		<u>Depth in feet on river gage</u>	
		<u>Without project</u>	<u>With project</u>	<u>Without project</u>	<u>With project</u>
Culloden	18	10	47	33.0	26.0
Montezuma	17	10	18	24.0	22.0
Oakfield	18	10	14	30.5	29.0
Albany	23	10	14	32.5	31.0
Newton	24	10	13	32.5	31.0
Bainbridge	25	10	12	33.5	32.5

This chart shows that partial protection will be provided, but Spewrell Bluff Dam will not have a significant impact on the frequency or depth of a 10-year flood in the lower reaches. A major flood occurred on January 21, 1925, doing approximately \$2 million in damage to Albany, the first urban area below the dam. Had the project been in full operation at this time, it would have reduced damages by only \$35,700 or less than 2 percent. Another major flood occurred on March 20, 1929, and did approximately \$1 million damage to the Albany area. Had the project been in operation, it would have reduced this damage by \$23,400 or by about 2 percent.

Increased agricultural productivity

The Corps states that the reduction in depths and frequency of flooding to be provided by the Spewrell Bluff project will permit farmers in the floodplain to convert

their present crops to higher valued crops and to convert about 15,000 acres of woodlands to croplands. About 107,000 acres of rural farmland below the dam site are subject to flooding, 19,000 acres in croplands and pastures and 88,000 in woodlands. About 82 percent of total flood control benefits claimed are based on the difference between the net productive value of the land as it is being used and the anticipated uses when Spewrell Bluff Dam becomes operative.

The Corps estimate of flood control benefits to be derived from increased agricultural production was based on its field survey of farmers, Department of Agriculture personnel, and county officials residing in the Flint River floodplain. Information collected during the survey, made between November 1958 and February 1959, included yields, cost of production, and percentage of the flood plain devoted to each crop. The Corps also obtained opinions by questionnaire from the persons interviewed on changes in crop practices that might occur if flood protection were provided. The responses were summarized and used to calculate the benefits. The majority of the questionnaires, however, were incomplete, and responses to the same question varied widely.

The value of the questionnaire as a basis for predicting agricultural growth expected 25 years later when the project is to begin operation in 1983 appears questionable.

Pertinent data from the Department of Agriculture shows a 10-percent decline between 1959 and 1969 in the number of acres of harvested cropland in the counties in the Flint River floodplain. Therefore, we believe a new survey may be warranted. A District official stated that a new survey would be desirable but one had not been made because of manpower limitations.

The Corps has claimed benefits for the increased productivity of the land below the dam; however, the economic loss of existing or potential agricultural production on the 36,000 acres that will be acquired to construct and operate the Spewrell Bluff project has not been considered. Of this land, 25,000 acres is woodland, and 11,000 acres is open land which includes cropland, pastureland, and other cleared areas.

The Corps advised us that the conversion of lands to higher value crops is a reasonable assumption borne out by

numerous examples in which moderate-to-low protection from flood hazard has precipitated similar changes. The Corps also stated that, by giving recognition to other factors, such as discontinued Federal soil bank program and the decline in surplus foodstuffs nationally, further substantiation of this assumption is provided.

Although such an assumption might prove to be reasonable, we believe the benefit determinations for increased agricultural productivity should be based on current information on practices and the extent to which these practices would be changed with reduced flooding.

AREA REDEVELOPMENT BENEFITS

The Corps may claim area redevelopment benefits for water resource projects in counties designated by the Economic Development Administration as redevelopment areas only under title IV of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3121). Corps' instructions state that such benefits can be claimed for water resource projects for counties designated as areas having chronic and persistent unemployment and underemployment that are within reasonable commuting distance of the project. Benefits are to be estimated as the value of local labor within commuting areas that will be used in project construction, operation, and maintenance and that, in the absence of the project, would be unemployed or underemployed.

These benefits are considered as incidental benefits in project evaluations and, as such, cannot be used to justify the project on the basis of its effect on the benefit-cost ratio. In other words, the benefits attributable to other project purposes must exceed the total project costs before area redevelopment benefits are included.

In January 1973 the Corps estimated the area redevelopment benefits for the Spewrell Bluff project at \$703,000 annually. This figure was included in the Corps' 1974 fiscal year budget submission.

The Corps estimated that 70 percent of the total labor force required for construction, operation, and maintenance of the project would be drawn from the unemployed work force in the nearby counties and computed the benefits on this basis. District officials stated that this percentage was based on professional judgment and was not supported by analysis.

The Corps had determined the eligibility for claiming these benefits for the project in 1971. At that time, 9 of the 24 counties considered as within a 50-mile commuting range of the dam site qualified for redevelopment benefits under title IV of the act. In addition, the Corps had estimated that a total of 1,348 persons were unemployed in the 9 county area, of which 382 were considered as employable at the project. According to the Corps, this provided an indication of a more than adequate labor market from which workers could be obtained for the project.

To determine whether these counties still qualified as redevelopment areas, the Corps reexamined the latest Economic Development Administration designations. Based on the Administration's March 1973 national review, only four of the nine counties used in the Corps' original computation were still designated as redevelopment areas and the Administration had so designated three other counties in the area. A District official stated that the seven counties would justify the benefits claimed in their original computation.

Our review showed that two of the seven counties were designated by the Economic Development Administration under title I of the act and therefore could not be used under Corps instructions in computing benefits. The five remaining counties were designated under title IV.

After completion of our fieldwork, the District completed a reevaluation of the project's eligibility for area development benefits and recomputed the benefits based on updated information from the Economic Development Administration. The new estimates were published in the supplement to the General Design Memorandum dated November 29, 1973.

The evaluation and latest benefit computation showed that the Corps considered 29 counties as being wholly or partially within a 50-mile commuting range of the proposed Spewrell Bluff Dam site. Five of these counties were designated as redevelopment areas.

The Corps estimated that a total of 551 unemployed persons were in the 5 county area, of which 151 were considered employable at the projects. The Corps again estimated that 70 percent of the total labor force required for the construction, operation, and maintenance of the project would be drawn from the unemployed work force in these counties. Based on this percentage factor, the area redevelopment benefits were computed at \$830,000 annually.

A comparison of the area redevelopment benefits claimed at the conclusion of our fieldwork with those currently being claimed shows that (1) more counties have been included in the 50-mile commuting range of the proposed Spewrell Bluff Dam site, (2) the number of designated counties has

decreased, and (3) the number of unemployed persons considered for employment at the project has decreased from 382 to 151.

Despite the drop in the number of unemployed, the Corps still considers that 70 percent of the labor force would be drawn from these ranks, contending that this is a reasonable assumption because the normal work force for a reservoir project would range up to a maximum of 200 workers. The employable labor market would be adequate to cover 70 percent of the total force. However, since area redevelopment benefits account for 7 percent of total project benefits, we believe the Corps should have more substantive evidence to support the use of the 70-percent factor.

AGENCY COMMENTS

We proposed that the Corps reanalyze recreation benefits, verify financial and economic feasibilities of the power feature, and reevaluate the basis for computation of flood control and area redevelopment benefits. The Corps advised us that (1) new estimates of project benefits have been computed, (2) an adequate analysis of the recreation benefits has been made, (3) the feasibility of the power feature has been verified, and (4) flood control and area redevelopment benefits are considered realistic. We have discussed our assessment of these new benefit computations in each of the appropriate sections of this chapter.

We also proposed that the Corps inform the Congress of the results of the reanalysis of benefits and of the study on the environmental assessments. The Corps stated that it keeps the Congress informed during each annual budget submission of all proposed major changes in plans, costs, and benefits and also submits postauthorization reports when the extent of the change is significant so that the Congress may reassess projects.

CONCLUSIONS

After considering the Corps' most recent analyses and benefit computations we concluded that:

- Greater need for reservoir recreational opportunities rather than river-based recreation had not been convincingly demonstrated.

- Recreation benefits claimed for the project appear to be overstated.
- Corps studies show the power feature to be economically feasible and the Southeastern Power Administration believes the power feature to be financially feasible.
- The basis for and information used in computing flood control benefits should be updated and reevaluated.
- Additional support for computation of area redevelopment benefits is needed.

CHAPTER 4

IMPACT OF PRICE ESCALATION

We examined the nature and extent of the price increases which have occurred since the project was authorized. We recognize that Office of Management and Budget instructions for budget preparations do not require that future price increases be incorporated into the project economic analysis, and we are not suggesting that such action be taken.

The District applies a price-level factor each year to the General Design Memorandum estimate of project costs to bring the estimate up to current price levels. According to a District official, the Corps has no specific policy for calculating price-level changes. The District uses construction-cost indexes in the "Engineering News-Record" as a basic factor for adjusting the estimate. This publication is one of seven listed in Corps' regulations as a reference for cost trends. Below is the amount of cost increase the Corps has attributed to price escalation each year since project authorization.

<u>Cost estimates</u> (note a)		<u>Increase over</u> <u>previous year</u>	<u>Increase</u> <u>due to price</u> <u>escalation</u> (note b)	<u>Percent</u> <u>increase</u> <u>for price</u> <u>escalation</u>
<u>Year</u>	<u>Amount</u>			
	(millions)	(millions)		
1963	\$ 63.2	-	-	-
1964	70.0	\$ 6.8	\$ 5.956	9.4
1965	70.0	-	-	-
1966	70.0	-	-	-
1967	70.0	-	-	-
1968	76.7	6.7	.364	0.5
1969	91.8	15.1	9.62	12.5
1970	98.0	6.2	6.2	6.8
1971	121.0	23.0	10.533	10.7
1972	133.0	12.0	12.0	9.9
1973	148.0	<u>15.0</u>	<u>14.75</u>	11.1
Total		<u>\$84.8</u>	<u>\$59.423</u>	

^aDoes not include estimated cost of reregulation dam.

^bBalance of increases primarily due to project design and development changes.

The cost estimates cover the estimated cost at current price levels but not the estimated cost growth due to the inflation that might occur before construction begins and the project is completed.

Because price escalation increases have averaged about 10 percent a year during the last 5 years and the scheduled completion date of the project is 1983, the final cost of the project might be considerably higher than the latest estimate.



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
 WASHINGTON, D.C. 20314

REPLY TO
 ATTENTION OF:

DAEN-CWP-A

14 May 1974

Mr. Harold Pichney
 Assistant Director
 U. S. General Accounting Office
 Room 5H044 Forrestal Building
 1000 Independence Avenue, SW
 Washington, D. C. 20314

Dear Mr. Pichney:

This provides comments on your revised draft report entitled "Environmental and Economic Issues Associated with the Planned Construction of the Spewrell Bluff Dam, Georgia," furnished our office at a meeting on 8 May 1974. You indicate the revised draft was prepared to reflect results of studies and analyses made by the Corps subsequent to issuance of the initial draft report. The revised draft report does not make any recommendations for consideration by the Congress, but concludes that (1) additional assessments on the environmental impact of the project are needed to more fully define mitigation measures, and (2) that recreation, flood control, and area redevelopment benefits require additional supporting documentation.

Our review of the revised draft report indicates that it is not materially different from the initial draft report and therefore comments made in connection with that draft report and furnished you in letters dated 27 December 1973, 13 March 1974, and 11 April 1974 are considered equally applicable to this report. Basically, we are not in disagreement with your findings regarding the need for additional studies pertaining to environmental issues and to supporting data for benefit analyses; however, we are somewhat concerned that this report does not present those earlier comments in as objective a manner as considered appropriate. As examples, this report continues to indicate a wildlife habitat loss of 23,000 acres of bottomland hardwoods, whereas our earlier comments show 5,000 acres; that coordination with Fish and Wildlife agencies was wanting, whereas our reply had indicated it was quite extensive and had been initiated and conscientiously pursued by the Corps throughout project studies; that Lazer Creek was to be deleted, whereas our reply

DAEN-CWP-A
Mr. Harold Pichney

14 May 1974

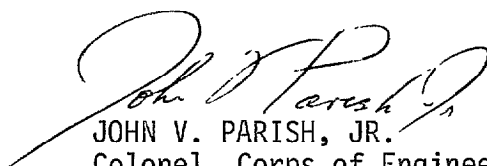
indicated that its deferral was recognized; and that further action on the Spewrell Bluff project was at the discretion of the Corps of Engineers, whereas our reply indicated that the Spewrell Bluff project was shelved in recognition of the Governor's opposition and that further action could only occur if the Governor reversed his decision or if Congress directed us to proceed in spite of that opposition.

We concur that further evaluation of recreational opportunities at the project are warranted. However, we consider the continuing environmental assessments made during project studies have been in consonance with the scope of project planning to date, that adequate analysis of area redevelopment and flood control benefits have been made, and Corps estimates based on prevailing conditions are realistic.

As we have indicated, we find your findings have some basis in view of the rather lengthy planning processes related to this project. However, established Corps planning procedures already provide for the development of data which you consider relevant. Accordingly, in the normal progression of the project, that data would have been routinely prepared. In the event that further action is undertaken on the project, these data will be developed as discussed in your report.

If the report is to be finalized and processed further, it is suggested that appropriate changes be made in the report to present the Corps position more objectively. Upon finalization of the report, it is requested that the Corps be provided 15 copies for our files and use.

Sincerely yours,



JOHN V. PARISH, JR.
Colonel, Corps of Engineers
Executive Director of Civil Works