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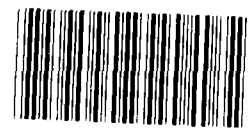
BY THE U.S. GENERAL ACCOUNTING OFFICE **RELEASED**

Report To The Honorable Don Sundquist House Of Representatives

The Tennessee Valley Authority's Benefits And Cost For Rehabilitating The Ocoee No. 2 Hydroelectric Project

The Tennessee Valley Authority's (TVA's) No. 2 hydroelectric project on the Ocoee River in Tennessee was originally constructed in 1913. In 1976 TVA took it out of service because of deterioration of trestles used to support the 4.6 mile wooden flume which transported water between the dam and the powerhouse. In 1979 TVA decided to rehabilitate the trestles and flume to restore generation of electricity. Since the powerplant was shut down in 1976, water has been released through the dam into the natural riverbed. This created conditions along this stretch of the river favorable to recreational "whitewater" rafting which were projected to attract an estimated 100,000 visitors in 1983. TVA's decision in 1979 to rehabilitate the project created controversy between recreational users and TVA.

This report provides information on TVA's efforts to identify the benefits that were expected to accrue from the rehabilitation project, the total costs incurred for rehabilitation, the cost of power generated from Ocoee, the estimated number of recreational visits for 1983, the estimated total revenues or dollar value of those visits, and an agreement resolving the recreational controversy.



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GAO/RCED-84-143
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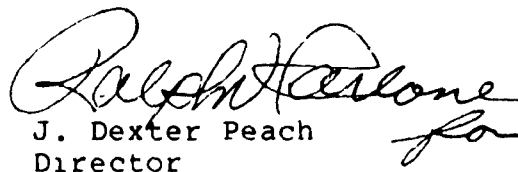
The Honorable Don Sundquist
House of Representatives

Dear Mr. Sundquist:

In accordance with your May 3, 1983, request, this report discusses the Tennessee Valley Authority's (TVA's) rehabilitation of the Ocoee No. 2 hydroelectric project. The report provides information on TVA's benefits and costs for rehabilitating the project, the cost of power produced by Ocoee, and the controversy that arose between TVA and whitewater rafters when the decision was made to rehabilitate Ocoee as well as the efforts which have settled the controversy.

As requested by your office, unless you announce its contents earlier, we plan no further distribution of this report until 7 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,


J. Dexter Peach
Director

D I G E S T

The Tennessee Valley Authority's (TVA's) three dams on the Ocoee River near Chattanooga, Tennessee, produce electrical power from water flowing through them. One of these dams--Ocoee No.2--was constructed in 1913 and generated power until 1976 when power generation was stopped due to the deterioration of the trestles which support the wooden flume used to carry water between the dam and the power house. Since power generation was stopped, water has been released through the dam into the natural river bed instead of into the flume. This has created conditions for recreational rafting, called whitewater rafting.

In 1979 TVA decided to rehabilitate the wooden flume and start producing power again. This action created controversy between TVA and recreational users of the river because as the water is diverted into the flume for power generation it is not available to release through the dam for whitewater rafting.

At the request of Congressman Don Sundquist, GAO was asked to review TVA's benefit/cost analysis for the rehabilitation of Ocoee No. 2. Because the rehabilitation of Ocoee No. 2 was over 90 percent complete at the time of the request, GAO agreed with the Congressman's office that rather than reviewing the benefit/cost analysis, GAO would provide information on TVA's efforts to rehabilitate Ocoee No. 2, including what benefits were expected to accrue from the rehabilitation; what total costs will be incurred; and, based on these costs, what the power generated from Ocoee will cost. Congressman Sundquist also asked that GAO provide the projected number of visits for recreation in 1983 and the estimated total revenues or dollar value for the benefits of whitewater rafting. (See p. 2.)

REHABILITATION DECISION

As soon as power generation was stopped, TVA began evaluating options for rehabilitating

Ocoee No. 2. The analysis of options was finalized in a draft environmental impact statement in August 1978 which presented four options for the project. In the draft statement, TVA proposed the option of replacing about 1,800 feet of the 4.6-mile wooden flume at a cost of \$4.7 million (in 1977 dollars).

TVA received comments on its draft statement and issued its final statement in July 1979. By this time, however, TVA had decided the flume had deteriorated to the point that it had to be entirely replaced, which increased the cost to \$14.7 million (in 1977 dollars). The final statement reflected that the project was beneficial because the power that Ocoee No.2 was expected to generate (135 million kilowatt hours annually) would be less expensive than electricity produced by other sources on the TVA generating system (primarily from coal-fired plants) over the expected life of the project. TVA's analysis showed that power to be generated from Ocoee would decrease the need to generate from its coal-fired plants. The final statement reflected that benefits would exceed costs by a ratio of 1.3 to 1.0.

The TVA Board approved the rehabilitation in November 1979. The estimated cost in the project authorization at that time had increased to \$20 million. TVA attributed the increase in the cost estimate to inflation. The project authorization for the \$20 million expenditure included a justification that benefits would recover costs in about 9 years. TVA awarded a \$21 million contract in June 1980 to a private contractor to rehabilitate the flume. (See p. 5.)

Ocoee's Rehabilitation Costs

The construction at Ocoee has been completed and power generation began in October 1983. The cost to rehabilitate Ocoee stands at about \$36.4 million. This is comprised of \$33.8 million in capitalized construction cost¹ and about \$2.6 million in repairs that were expensed during fiscal years 1977 through 1983. A further

¹Construction costs of an asset that yields returns over several years and is depreciated over the period of the return are referred to as capitalized costs. Expensed costs are those costs that yield all of their return in the current time period.

breakdown shows that \$12.7 million of the total was for TVA's own in-house work while the contractor's cost escalated to \$23.7 million from the 1980 contract award of \$21 million.

A primary reason for the further cost increases was that the major components related to the flume, such as the foundation, were more deteriorated than expected and had to be repaired. Another reason was that TVA underestimated the effect the rugged terrain would have on removing the old flume and erecting the new one. (See p. 15.)

COST OF OCOEE POWER

Ocoee, like other hydroelectric projects has high fixed costs and low variable costs. Power generated during the first year by Ocoee is expected to cost about 3.64 cents per kilowatt hour. This means that power from Ocoee No. 2 will be slightly more than TVA's average system cost of about 3.45 cents per kilowatt hour for fiscal year 1983, but will be less than TVA's projected average system generating cost of about 3.84 cents per kilowatt hour for 1984 (the first year of Ocoee generation). The Ocoee No. 2 power cost will be less than other generation scheduled to be finished and begin producing power in the next 2 years. The fixed cost² of Ocoee (about 3.3 cents per kilowatt hour) represents amounts already spent and will be incurred regardless of whether power is generated.

Since the project is finished, TVA believes the comparison of costs for savings which needs to be made is of variable costs.³ When Ocoee is generating power it is displacing coal-fired generation, which has a higher variable cost. Ocoee's variable cost is about 0.29 cents per kilowatt hour, which is lower than the variable cost (about 1.9 cents per kilowatt hour) for TVA's coal plants. (See p. 21.)

²Costs associated with investment in a plant which exist regardless of the amount of production.

³Costs associated with operations or utilization of a plant which vary according to the amount of production.

RECREATION BENEFITS

TVA projected that Ocoee whitewater rafting would attract about 100,000 visitors in 1983. TVA also estimated that whitewater rafting would contribute about \$4.5 million to the local economy in 1983. Whitewater rafters have been concerned about TVA's plans to restore power operations to Ocoee No. 2 because as power is generated, water is diverted out of the river causing the whitewater to disappear. TVA also became concerned because it would have to generate power from a higher cost coal-fired plant if it had to shut down power operations to allow for whitewater rafting.

After negotiations among TVA, the whitewater rafting supporters, and the State of Tennessee, the issue was settled. On November 14, 1983, the Congress passed a one-time appropriation of \$7.4 million to support recreation on the Ocoee. This includes \$6.4 million to compensate TVA for having to generate power from another source when Ocoee is used for recreation. In addition, the State of Tennessee will receive \$1 million for the management and operation expenses of the recreation area. The \$7.4 million is required to be repaid to the U.S. Treasury within 35 years from the imposition of fees for recreational activities.

On March 16, 1984, an agreement became effective between TVA and the State of Tennessee which will provide for 116 days of water releases per year for recreational purposes. The agreement further provides that commercial rafters will be required to pay TVA a fee based on the number of customers they serve. TVA is to return the proceeds to the U.S. Treasury. The fee can be adjusted after 5 years and every year thereafter to reflect any surplus or deficit in the proceeds.

AGENCY COMMENTS

TVA provided comments on a draft of this report in a May 4, 1984, meeting. At that time TVA officials offered comments to clarify their position with regard to the benefit/cost study that was prepared, contractor claims for work performed, and recreational benefits. TVA also provided updated figures for the cost of power from Ocoee to reflect actual operating costs for the first year of operation. GAO accommodated these comments where appropriate.

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ABBREVIATIONS

EIS	environmental impact statement
GAO	General Accounting Office
kWh	kilowatt hour
MW	megawatt
NEPA	National Environmental Policy Act
O&M	operation and maintenance
TVA	Tennessee Valley Authority
WRC	Water Resources Council

CHAPTER 1

INTRODUCTION

The Tennessee Valley Authority (TVA) has three hydroelectric plants¹--referred to as Ocoee Nos. 1, 2, and 3--located on the Ocoee River in Polk County, Tennessee, as shown on the map in appendix II. Construction of the Ocoee No. 2 project began in May 1912 and was completed in October 1913 at a cost of about \$2.2 million. TVA acquired the project in August 1939, and it became an integral part of TVA's hydroelectric system until 1976 when the power generation part of the plant was shut down because of its deteriorated condition.

The Ocoee No. 2 hydroelectric plant consists of a rock-filled dam, a 4.6-mile-long wooden flume, and a powerhouse. (The photographs on p. 2 depict the dam and the beginning of the flume as well as a view of the flume downstream from the dam.) As water flows downstream, it is diverted into the wooden flume located at the dam. The water is then transported through the wooden flume to the forebay² holding area and on to the penstock³ intake located above the powerhouse. The powerhouse contains two generators with a capacity of about 21 megawatts⁴ (MWS).

Since power production from the Ocoee No. 2 project was stopped in 1976, water has been released through the dam into the natural riverbed. This, along with existing dams releasing water upstream, created whitewater rafting conditions along this stretch of the river, which were projected to attract an estimated 100,000 visitors in 1983. However, TVA's decision in 1979 to rehabilitate the project for power generation created controversy between recreational users and TVA. This occurred because the river cannot be used for whitewater purposes while power is being generated since most of the streamflow is diverted away from the natural riverbed into the flume. According to TVA, without controlled releases from upstream dams, the river would permit almost no rafting.

¹Dams which are built on streams or waterways which contain equipment for generating electricity from water flow are referred to as hydroelectric plants.

²A small area at the end of the main flume above the powerhouse. The major purpose of the forebay is to clean trash from the water prior to release into the short flume.

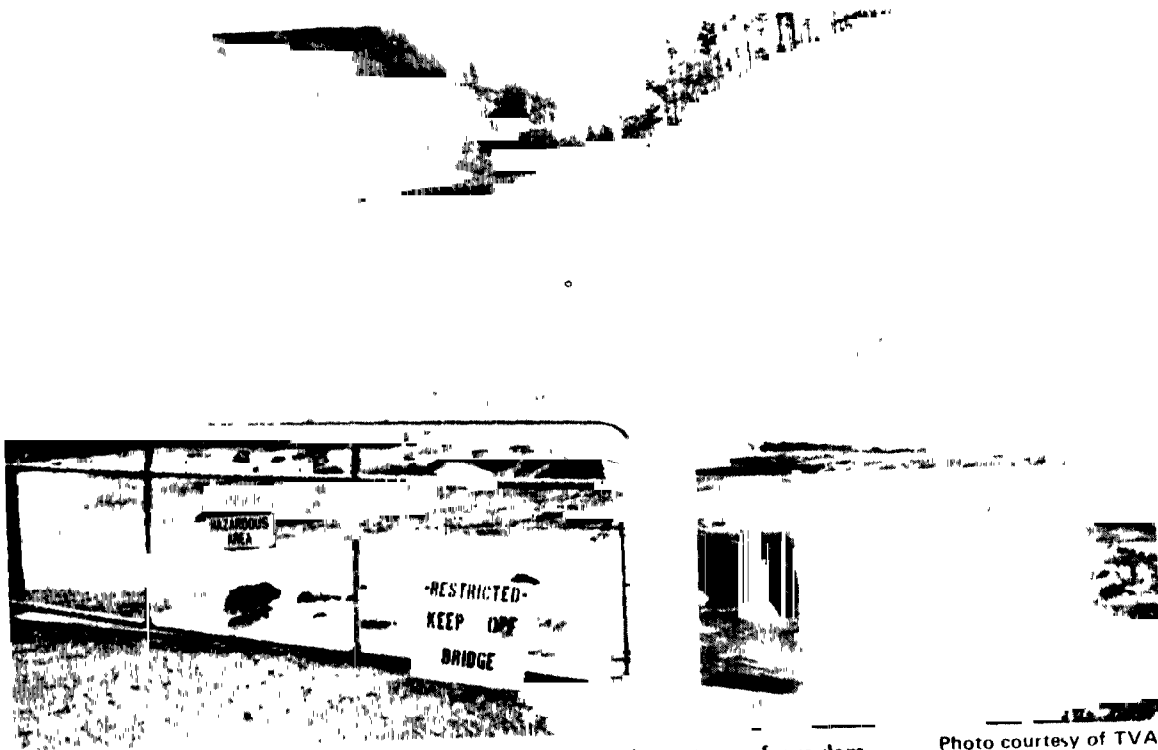
³A penstock connects the short wooden flume to the turbines. The water flows out of the flume, into the penstock, and through the turbines in the powerhouse.

⁴A megawatt equals 1,000,000 watts, or 1,000 kilowatts.



View of Ocoee No 2 dam and beginning of flume

Photo courtesy of TVA



View of flume above Ocoee River downstream from dam

Photo courtesy of TVA

OBJECTIVES, SCOPE, AND METHODOLOGY

By letters dated May 3 and 23, 1983 (see app. I), Congressman Don Sundquist requested that we review TVA's benefit/cost analysis for rehabilitating Ocoee No. 2. Because the rehabilitation of Ocoee No. 2 was over 90 percent complete at the time of the request, we agreed with the Congressman's staff that rather than reviewing the benefit/cost analysis we would provide information on several aspects of TVA's rehabilitation of Ocoee No. 2, including the estimated cost of the work and the recreational benefits from the use of the river. He requested that we provide the total estimated cost of the work at completion, the reasons for the cost increases, the cost of contractor work and purchased materials, the amount of appropriated funds used for the work, the amount of interest on money borrowed for construction, and the total cost of TVA's in-house work on the project. The Congressman also requested that we provide the cost of power to be generated by the project and whether it would accrue significant deficits during its first 20 years of operation.

Regarding TVA's justification for rebuilding the power portion of the project, we were requested to look into the benefit/cost analysis prepared by TVA as well as an independent evaluation of TVA's analysis made by a consultant for the Ocoee River Council.⁵ We were also requested to project the number of visits for recreation in 1983 and estimate the total revenues, or dollar value, for the recreational use of the river.

In accomplishing the requested work, we examined various TVA records, documents, and reports containing the actual and estimated cost of work associated with the rehabilitation effort. We also discussed various aspects of these costs with TVA officials, including the reasons for cost increases. We also obtained from TVA the estimated cost per kilowatt hour (kWh)⁶ of power to be generated by the project and determined the extent to which the project would operate at a deficit during its initial 20 years of operation.

To provide information on TVA's justification for rebuilding the project, we looked into the benefit/cost analysis that TVA prepared and used as a basis for deciding that rehabilitation was cost effective. In doing so, we looked into the assumptions used by TVA and, to the extent possible, the source data used in projecting the benefits of the project and source data for selected test years. We discussed the benefit/cost analysis with TVA officials to obtain an understanding of the assumptions used and the rationale for the computations made. We also contacted the Ocoee River Council's consultant and discussed various aspects of his evaluation of TVA's benefit/cost analysis and his computations of

⁵The Ocoee River Council is a nonprofit organization formed for the purpose of promoting recreational use of the Ocoee River.

⁶Kilowatt hour is a measure of electrical energy equal to 1 kilowatt of power supplied steadily for 1-hour.

the power deficits that would accrue during the project's operational life.

To provide information on the recreational benefits, we obtained TVA's projections of the number of visits expected in 1983 for recreational purposes and the projected dollar value of the river for recreational usage. We also discussed TVA's plans for managing the recreational activities with the TVA General Manager and reviewed a recent agreement between TVA and the State of Tennessee regarding recreational use of the river now that the rehabilitation is complete.

We conducted our audit in accordance with generally accepted audit standards. Our audit work was conducted from May through November 1983.

TVA provided comments on a draft of this report in a May 4, 1984, meeting. At that time TVA officials offered comments to clarify their position with regard to the benefit/cost study that was prepared, contractor claims for work performed, and recreational benefits. TVA also provided updated figures for the cost of power from Ocoee to reflect actual operating costs for the first year of operation. GAO accommodated these comments where appropriate.

CHAPTER 2

TVA'S PLANNING AND EVALUATION OF OCOEE NO. 2

During the late 1960's and early 1970's, TVA's Office of Power performed several studies to determine if the Ocoee No. 2 powerplant should be retired. TVA was concerned with the flume, which was deteriorating. Results of a 1968 TVA study showed that rehabilitating the flume and trestles was uneconomical and the report recommended that the project be retired at the point when the flume could no longer be safely maintained or when the operation and maintenance expenses were greater than the value of the power produced.

A 1974 Office of Power study concluded that,

"At the Ocoee No. 2 Hydro Plant, the five flume supporting trestles are, as you know, in very bad order; and special measures are continuously in effect with respect to the water load in the flume box above the trestles. If any one of the trestles should fail, the entire wooden flume will be unserviceable from dryout before the trestle could be replaced."

TVA's Depreciation Committee¹ closely monitored these studies. On April 8, 1975, the Committee was notified by the Office of Power that the conditions noted in its 1974 study were still prevalent and that replacing the flume was not economically feasible. TVA officials stated that the economic infeasibility was based on the 1968 study. In the Office of Power's opinion, 5 years was the maximum life expected for Ocoee No. 2. The Committee, which approves depreciation life, decided to apply special rates to Ocoee No. 2 to amortize the remaining net book cost² over a 5-year period beginning July 1, 1975. This amortization was completed in 1980, leaving Ocoee No. 2 with zero net book value.

¹The Depreciation Committee, established on April 9, 1964, is composed of representatives of organizations having primary responsibility for construction and custody or operation of significant portions of depreciable property. The Committee meets annually to review the reasonableness of existing depreciation rates and to approve new and revised rates as required. A member of the committee is appointed from each of the following TVA organizations: Office of Agricultural and Chemical Development; Office of Engineering Design and Construction; Office of Natural Resources; Office of Power; Division of Finance; Division of Property and Services; Office Service Branch and Computing Operations Branch; and Transportation Services Branch.

²The value of an asset after subtracting accumulated depreciation.

Table 1

Draft Environmental Impact Statement
Construction Alternatives

<u>Alternative</u>	<u>Estimated cost^a</u> <u>(in millions)</u>	<u>Construction</u> <u>time</u>	<u>Description</u>
1. Facility retirement	\$ 1.9	12 months	Remove unstable silt in reservoir, remove crib dam, remove flume, plug the penstock, and seal powerhouse
2. Repair trestles and rockfill dam	4.7	26 months	Strengthen crib dam with rockfill, repair trestles, and replace 1,800 feet of the wooden flume
3. Repair trestles and construct new concrete dam	12.1	26 months	Construct new concrete dam, repair trestles, and replace 1,800 feet of wooden flume
4. Replace wooden flume and dam	20.9	36 months	Construct new concrete dam, provide new trestles, and replace the 4.6-mile-long wooden flume

^a1977 dollars, including interest during construction.

Ocoee No. 2 SHUTDOWN (1976-79)

Although the Depreciation Committee decided in 1975 to accelerate depreciation on Ocoee and fully depreciate its book value over the next 5 years, TVA decided in September 1976 that conditions had become unsafe and decided to stop generating power. As TVA was stopping Ocoee No. 2 power operations, the Office of Power also decided to begin evaluating the possibilities of rehabilitating or retiring the facility since a study had not been done since 1968. This decision came about because of the cost increases being experienced in other parts of TVA's generating system, especially the cost of coal to burn in its coal-fired plants. TVA believed that if Ocoee was rehabilitated, its cost of power might be less than coal-fired generation.

Initial assessments made in 1977 and 1978 indicated that TVA could either retire Ocoee No. 2 for about \$1.9 million or select one of several alternatives at various estimated costs. Options that TVA staff considered ranged from modifying the flume into a tunnel at a cost of \$16.4 million to constructing a dam for use as pumped storage³ at a cost of \$210 million. From the range of options, TVA chose four and presented them as alternatives in an August 1978 draft environmental impact statement (EIS). These four alternatives are described in table 1.

Of the four alternatives examined in the draft EIS, TVA selected alternative 2. The draft EIS stated that the powerhouse, with a capacity of 21 MWs, could continue operating in its present state for many years with continued maintenance although it was 65 years old. Further, the draft EIS stated that the generators and turbines could be put back into operation without extensive repairs. TVA estimated that this alternative would take about 26 months to complete. According to TVA's analysis, this alternative appeared to be the most cost-effective plan (see table 2).

³A method of power generation where water is held above the powerhouse and released to generate power when additional power is needed. When demand for power is low, the water is pumped back above the powerhouse to be stored for use again as the power system needs it.

Table 2

Draft EIS Annual Power Costs and Benefits^a

	<u>Alternative construction plans</u>			
	- - - - (000 omitted) - - - -			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Annual power costs	\$ 205	\$ 915	\$1,721	\$2,575
Annual power benefits	0	2,450	2,450	2,500
Annual net benefits	(-)205	1,535	729	(-)75

^aDiscount rate--11 percent; price levels--1977 dollars; economic life--50 years.

After receiving public comments on the draft EIS, TVA issued its final EIS for Ocoee No. 2 on July 25, 1979. TVA again presented four alternatives but with some modification in the scope of work for alternative 2. TVA made these modifications after obtaining more information on the condition of the entire flume. Between the period of the draft and the final EIS, inspections showed that the entire 4.6-mile-long flume would have to be removed and replaced because of its advanced stage of deterioration, rather than the 1,800 feet included in the earlier estimate. Because of the changed work scope, TVA increased the estimated cost of alternative 2 from \$4.7 million to \$14.7 million (in 1977 dollars) and extended the construction period from 26 to 30 months. The costs of the other three alternatives did not change.

In TVA's final EIS on Ocoee No. 2, alternative 2 was selected. This alternative was projected to yield net benefits of \$590,000 annually with a benefit/cost ratio of 1.3 to 1 (annual power benefits of \$2,500,000 divided by annual costs of \$1,910,000 equals a ratio of 1.3 to 1 in benefits to costs) (see table 3).

Table 3

Final EIS Annual Power Costs and Benefits^a

	<u>Alternative construction plans</u>			
	<u>1</u>	<u>2</u>	<u>3^b</u>	<u>4</u>
Annual power costs	\$ 205	\$1,910	\$1,721	\$2,575
Annual power benefits	0	2,500	2,450	2,500
Annual net benefits	(-)205	590	729	(-)75

^aDiscount rate--11 percent; price levels--1977 dollars; economic life--50 years.

^bTVA no longer considered alternative 3 as feasible since the entire flume line had deteriorated to the point that it had to be replaced. The cost of this along with constructing a new concrete dam was considered not cost beneficial and the alternative was deleted from consideration.

TVA believed benefits would accrue from

- generating 135 million kWhs annually, or enough power to meet the annual demand for about 9,000 homes;
- displacing more expensive sources of generation such as coal plant generation and reducing its coal burning requirement by 60,000 tons annually, as well as occasionally displacing gas turbine generation; and
- reducing emissions of sulfur oxide, nitrogen oxide, hydrocarbons, and particulates into the atmosphere due to the displacement of coal generation.

On November 8, 1979, the TVA Board of Directors approved a project authorization to proceed with the rehabilitation work as outlined in the final EIS. The project authorization showed that the work was estimated to cost \$20 million with a projected completion date of about March 1982. According to an official of TVA's Office of Power, inflation was the primary reason for the estimated cost increase from \$14.7 million to \$20 million in the final EIS. The \$14.7 million was at 1977 price levels. The \$20 million was for a construction start in 1979 real dollars.

With the Board's approval in November 1979, TVA proceeded in early 1980 to request bids to perform the flume rehabilitation. A contract was awarded to the lowest bidder in June 1980 for \$21.3 million.

JANUARY 1981 BENEFIT/COST STUDY

TVA realized the total cost of rehabilitating Ocoee No. 2 would be greater than the \$20 million estimate made at project approval and conducted a new benefit/cost study and presented the results in January 1981. This study showed estimated costs had increased to \$26 million. Most of the increase can be attributed to the need for more extensive foundation work than had been anticipated and the fact that fewer existing materials could be reused.

The January 1981 analysis was made using two different methodologies. The first method used the Water Resources Council's Principles and Standards,⁴ which was consistent with the methodology TVA had used in all of its prior benefit/cost studies

⁴The Water Resources Council (WRC) established the principles and standards in effect at the time of these studies which federal agencies such as the Corps of Engineers, Bureau of Reclamation, and TVA follow in formulating and evaluating federal water resource projects. WRC gets its authority from the Water Resources Planning Act (Public Law 89-90, as amended) to provide for the optimal development of the nation's natural resources through the coordinated planning of water and related land resources.

for Ocoee No. 2. This method yielded a benefit/cost ratio of 1.6 to 1 using the constant-dollar approach (benefits of \$3,610,000 divided by costs of \$2,273,000). TVA did not believe that using the constant-dollar approach adequately reflected that the benefits would escalate throughout the project's 50-year life. Therefore, TVA prepared a benefit/cost analysis to recognize that project benefits would change and become more valuable throughout the project's life. This method was computed in real dollars⁵ and showed a benefit/cost ratio of at least 1.5 to 1 (benefits of \$6,755,000 divided by costs of \$4,578,000).

TVA's SUPPORT FOR THE BENEFIT ASSUMPTIONS

TVA estimated the benefits of Ocoee No. 2 hydroelectric power on the basis that power produced from Ocoee would cost less than other forms of power generation in the TVA system; thus, the project would displace power generation from the more costly source. The difference in costs between the two generation sources would be the benefits. The TVA benefit/cost studies indicated that Ocoee No. 2 would be used primarily for base load⁶ generation and would displace about 19 MWS⁷ of coal-fired capacity. For example, in 1985, the studies showed that 98 percent of Ocoee's generation would be in lieu of power generated by coal-fired units. According to TVA, about 86 percent of these benefits was comprised of fuel savings with the other 14 percent being reduced variable operation and maintenance (O&M) costs at the plants with displaced power. No fixed O&M savings were assumed.

We examined TVA's O&M and fuel assumptions and the support for the benefit calculations. We selected 1985, 1990, 1995, and 2000 as test years to see how the assumptions were applied and to verify the calculations. TVA provided totals for the benefit calculations for these years, but the supporting working papers showing these calculations and how they were done were not available. TVA policy does not require these types of records to be kept on file. Because of this, we were able to verify the accuracy of only the total figure calculations, not the supporting figures

⁵Constant-dollar approach holds the comparison of all benefit/cost values constant during the life of the project. Under the real dollar approach, the benefits are increased to realize inflation.

⁶Load is the amount of power needed at a given point on an electric system. The total load of a utility system is generally made up of base load and peak load. Base load is the generating load which is more or less constant throughout a period of time. Peak load is the load generated when demand is the highest.

⁷Although Ocoee No. 2 has a nameplate capacity of 21 MWS, it will have a practical capacity of displacing 19 MWS of coal generation because it will not continually generate at full capacity.

leading up to the totals. We found no arithmetic errors in the total calculations for these test years.

TVA assumed that benefits would accrue from reduced O&M costs at those generating units that would be generating less because of Ocoee power. TVA officials said that this is a well-accepted practice within the electric utility industry. For example, TVA assumed that, due to decreased operation, the plants would require less maintenance, labor costs would be reduced, and equipment life would increase. TVA could not provide any studies it had performed to support the operation and maintenance benefits. For real day-to-day operation of a coal-fired plant, it would be difficult to show how operating the plant at, for example, 270 MWs rather than 290 MWs would result in lower labor or maintenance costs. Questions that would need to be addressed include whether or not continually increasing and decreasing generation causes more wear on the equipment. Because of this, we are unable to either agree or disagree with the assumptions used for operation and maintenance benefits.

Ocoee River Council vs. TVA

Concern over the loss of whitewater rafting led the Ocoee River Council to file suit on March 6, 1981, in the U.S. District Court for the Eastern District of Tennessee. Most of the suit questioned the adequacy of TVA's EIS. TVA initially contended that although it had prepared an EIS, it was not required to do so because Ocoee No. 2 was an existing project and did not pose a major federal action, only restoration. Further, TVA contended that its decision was not subject to judicial review under the National Environmental Policy Act (NEPA) because of certain requirements in the TVA Act respecting operations of dams and reservoirs and financing of the power system. The court ruled on June 9, 1981, that while TVA's EIS was adequate, TVA had not properly considered economic values in reaching its decision.

Specifically, the court ordered TVA to reconsider its rehabilitation decision in light of the requirements under NEPA, assuming TVA would not be compensated for the lost power when water is diverted for recreational purposes for 82 days per year. TVA concluded, however, that releases should not be made except under arrangements which would compensate the power program for lost power generation.

Subsequently, in September 1981, the Board reported to the court that TVA, after reconsidering the updated analyses, had decided to complete the rehabilitation. In making this decision, TVA considered two separate benefit/cost analyses, each of which showed the project to be cost beneficial. The difference in the two analyses was the difference in completion dates. The court subsequently ruled in TVA's favor and dismissed the case in June 1982.

Even though the case was dismissed, the Ocoee River Council did question several aspects of TVA's benefit/cost analysis. In

May 1983 the Ocoee River Council sent to TVA the results of a study prepared for the Council by an independent consultant. This report essentially addressed all of the issues that related to the economic and engineering feasibility assessments made by TVA in the past for rehabilitating Ocoee No. 2. Specifically, the consultant questioned the assumptions used in the benefit/cost study. For example, the consultant questioned TVA's use of a 10 percent growth rate in coal fuel prices in computing the value of displaced power. TVA maintained that its assumptions were reasonable. We agree that at the time TVA made its coal cost escalation assumptions for the benefit/cost study, they seemed reasonable even though history has shown variances between what has been experienced and what was projected. When the benefit/cost study was prepared, TVA estimated that coal costs would increase about 10 percent annually. This was based on long-term coal contracts that TVA had just signed which were high cost and provided for periodic price escalations. Therefore, it appears that the coal cost assumptions TVA used were consistent with conditions at the time the benefit/cost study was made.

CHAPTER 3

PROJECT COST

Since power production at the Ocoee No. 2 project was stopped in September 1976, TVA has spent about \$36.44 million on the project. This expenditure includes amounts that were capitalized¹ and expensed² from fiscal year 1977 through project completion in November 1983. Table 2 below provides a breakdown of the total expenditures showing what amounts were capitalized and expensed and how these amounts were allocated to either the contractor or TVA work forces.

Table 4

Ocoee No. 2 Expenditures

	<u>Contractor</u>	<u>TVA</u>	<u>Total</u>
	- - - - - (in millions ^a) - - - - -		
Capitalized	\$23.77 ^b	\$10.03	\$33.80
Expensed	-	<u>2.64</u>	<u>2.64</u>
Total	<u>\$23.77</u>	<u>\$12.67</u>	<u>\$36.44</u>

^aAll amounts rounded.

^bThis amount contains about \$379,000 for trestle work that TVA will reclassify as an expense because of the nature of the work performed.

The following discussion will present a breakdown of these costs in a manner that explains how and why they varied from the original project cost estimates. In addition to the above expenditures, the contractor has claims outstanding against TVA for about \$7 million that are being litigated.

CAPITALIZED COST

TVA's most current cost estimate, prepared in November 1983, shows that the capitalized cost for rehabilitating the Ocoee project totaled about \$33 million. This represents a \$13 million cost increase over the original \$20 million estimate approved by

¹Capitalized costs are costs of an investment in an asset that yields returns over several years and is depreciated over the period of the return.

²Expensed costs are those costs that are recognized as a cost of doing business during daily operations or an investment that yields all of its return in the current time period.

the Board of Directors in November 1979. A comparison of these two cost estimates is shown in table 5.

Table 5
Comparison of Cost Estimates

<u>Cost element</u>	Project authorization approved <u>estimate</u>	Nov. 1983 <u>estimate</u>	<u>Variance</u>
	- - - - - (000 omitted) - - - - -		
Reinforce dam	\$ 150	\$ 623	\$ 473
Remove flume	688	1,370	682
Flume trestles	2,385	2,421	36
Flume foundation	1,243	4,709	3,466
Flume erection	7,035	12,990	5,955
Field overhead	3,588	3,495	(93)
Interest	--	4,719	4,719
Engineering design	246	476	230
Other cost	124	1,692	1,568
Contingency allowance	<u>4,541</u>	<u>1,274</u>	<u>(3,267)</u>
 Total	 <u>\$20,000</u>	 <u>\$33,769</u>	 <u>\$ 13,769</u>

Cost variances

The increased cost shown in table 3 can be attributed to a number of factors. We discussed each of these variances with TVA officials and obtained an explanation for the variances.

Reinforce dam: The initial approved cost estimate provided for placing rockfill against the downstream face of the dam. While this work was in process, most of the rockfill was washed away by flooding. The rockfill had to be replaced by compacted concrete to reinforce and stabilize the dam. This additional effort resulted in a cost increase of \$473,000.

Remove flume: Because of the rugged, mountainous terrain along the 4.6-mile-long flume, access to the flume was difficult. This restricted work area resulted in more difficult working conditions than were allowed for in the initial approved cost estimate. These conditions resulted in a cost increase of \$682,000 over the initial estimate.

Flume trestles: The trestle work experienced a small net increase of \$36,000 above the initial estimate because TVA decided to use six steel trestles instead of five steel trestles and one concrete trestle.

Flume foundation: When the old flume was removed, several sections of the foundation were found to be more deteriorated than

expected. This deterioration required the use of more crushed stone bedding material under the flume than was earlier estimated. In addition, more extensive repairs to some foundations were needed. In addition to this problem, some landslides had to be removed, and a storm run-off drainage system was added to the work scope. This additional work resulted in a \$3.466 million cost increase.

Flume erection: The initial approved cost estimate for replacing the 4.6-mile flume was prepared on the basis that the flume walls and floor would be installed as prefabricated panels. However, because of the rugged terrain it was difficult to transport the prefabricated panels to the construction site; the walls and floor of the flume had to be constructed piece by piece on-site. The photograph on page 16 depicts the inside of the flume during construction. In addition, the cost of a 300-foot-long extension flume connecting the forebay dam and the penstock was not included in the initial approved estimate because of an oversight by TVA. These factors resulted in a cost increase of \$5.955 million for erecting the flume.

Field overhead: The initial approved estimate was based on field overheads for all construction being accomplished by TVA. The current estimate, however, is \$93,000 less than the project's authorized estimate since TVA contracted out for the construction.

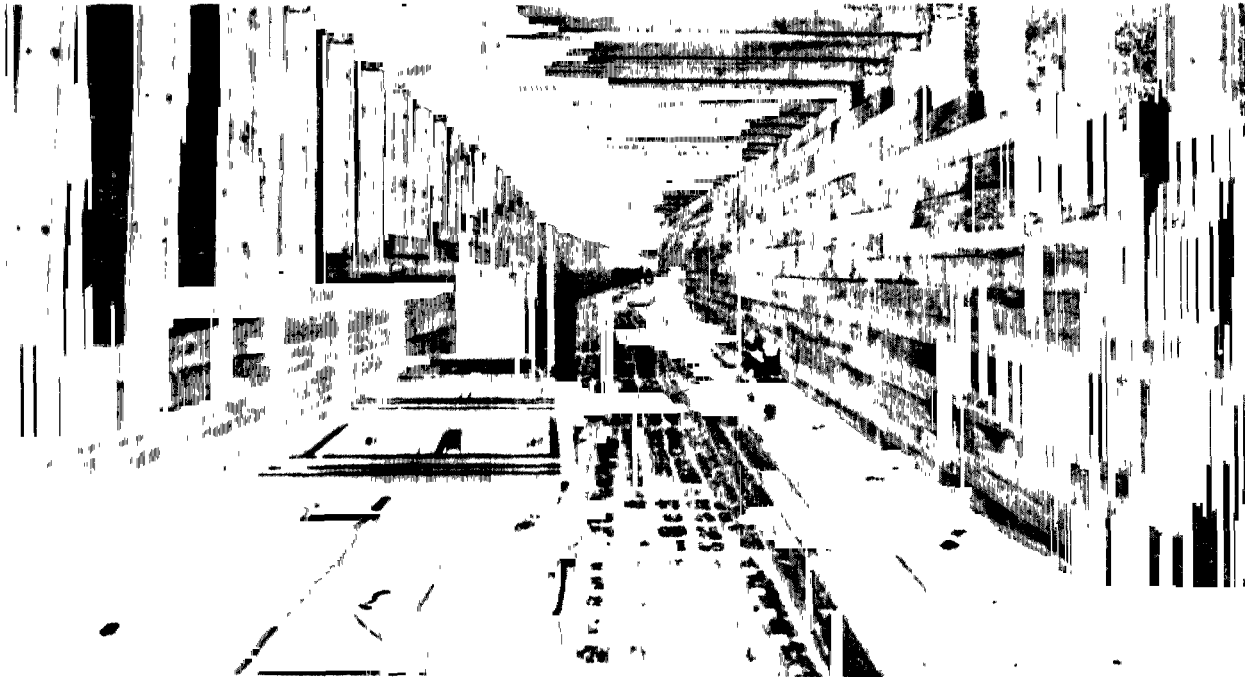
Interest: At the time the initial approved estimate was prepared, TVA policy did not provide for capitalizing interest on construction for additions and improvements at existing powerplants. TVA did include interest on construction in its benefit/cost analysis. TVA has since changed its policy and interest of \$4.719 million is included.

Engineering design: Most of the \$230,000 cost increase for additional engineering design can be attributed to the flume foundation and schedule delay problems encountered during construction.

Other costs: The \$1.568 million cost increase relates primarily to costs that are prorated to the project based on direct cost. Thus, as total cost increased, prorated costs increased. These costs include TVA corporate management expense, central services, and other central organizational overhead expenses.

Contingency allowance: The \$3.267 million reduction in the contingency allowance³ occurred as the scope of work became more clearly defined or certain. Most of the work was already completed or was established by the contract at the time the current cost estimate was made. The remaining contingency allowance is to provide for uncertainties subsequent to the current estimate.

³An amount included in cost estimates to account for unforeseen construction costs.



View of inside of flume during construction

Photo courtesy of TVA

Contractor costs

In June 1980, TVA awarded a contract to rehabilitate the flume to an independent contractor for \$21.3 million. However, due to changes in the amount of work required for the removal of the old flume and construction of a new one, the estimated cost increased. Because of construction change orders, TVA estimates that the contractor-performed work at project completion would total about \$24.6 million. However, TVA will recognize only \$23.77 million for contractor work because it determined that an estimated \$848,000 for trestle repairs should be charged to expense instead of being capitalized. TVA determined that this effort should be expensed because the work was considered to be maintenance on an existing facility rather than a capital expenditure.

Contractor claims and litigation

Through change orders authorized by TVA, the actual cost of the contract totaled \$23.77 million; however, as of November 1983, all of the contractor claims had not been submitted and/or settled and certain litigation actions had not been completed. The contractor has either presented or notified TVA of claims totaling over \$7 million, as shown in table 6. TVA believes that the claims are inflated and that it has little or no liability for most of them. The total cost of the contractor's work on the project will not be known until all of the claims have been submitted and reviewed by TVA and litigation is completed.

Table 6

<u>Description</u>	<u>Amount^a</u>	<u>Status^a</u>	<u>Delay/claimed (calendar days)</u>
Additional engineering support work	\$ 119,398	Being negotiated	26
Additional cost for alleged differing site conditions at German trestle	2,096,685	Denied, decision under <u>Disputes</u> clause requested	-
Alleged differing site conditions in replacement of viaduct foundations	3,993,884	Denied	58
Additional cost for reprocurment of wood for the flume	500,000 plus	Claim not presented	138
Extra work for concrete testing	62,581	Denied	-
Construction change concerning grade beams	Not quantified	Denied	-
Cost for additional stone	83,030	Denied, lawsuit filed	-
Costs due to labor dispute	171,503	Denied	8
Extra costs for erosion control	168,451	Being negotiated	72
Extra costs for tightening bolts	Not quantified	Denied	-
Rock removal	<u>4,885</u>	Being negotiated	---
Total claimed	<u>\$7,200,417</u> =====		302 =====

^aAs of November 17, 1983.

TVA IN-HOUSE COSTS

TVA estimates that it will incur in-house costs of \$12.67 million through project completion. This amount is comprised of about \$10 million in capitalized costs and \$2.64 million in expensed costs.

Capitalized costs

Table 7 contains a summary of TVA's \$10.03 million of in-house costs included in the \$33.77 million capital cost estimate.

Table 7

In-House Capitalized Costs

<u>Cost element</u>	<u>Amount</u>
	(000 omitted)
In-house work and services:	
Reinforce the dam	\$ 623
Field overhead	542
Interest	4,719
Engineering design	476
Other cost	1,692
Contingency	<u>1,274</u>
Total	\$ 9,326
Purchased materials	
Steel trestles	<u>705</u>
Total	<u><u>\$10,031</u></u>

Expensed costs

In addition to the capitalized cost, TVA also charged about \$2.64 million to power production expenses during fiscal years 1977 through 1983 for various maintenance and repair work on the project. Specifically, TVA spent about \$554,000 between the time the plant was shut down in September 1976 and November 1979 when it approved the rehabilitation. This amount includes about \$418,000 for work to preserve as much of the old wooden flume as possible. The remaining expenditures were for maintenance and repairs to the permanent plant facilities, including the powerhouse, bridges, roads, and various equipment items. TVA considered these expenditures necessary to preserve its options, and thus excluded them from its evaluation.

Between the time the Board approved the rehabilitation work and the end of fiscal year 1983, TVA charged an additional \$2.1

million to power production expenses for work related to the project. Some examples of this effort include \$185,136 for painting the interior of the powerhouse, \$423,604 for penstock repairs, \$287,420 for turbine repairs, and \$64,000 for repairing and sandblasting the dam gate.

We discussed with TVA officials their basis for considering these costs as power production expenses and excluding them from the project cost estimate. TVA officials told us that Ocoee No. 2 was always considered to be an existing facility and that some of the expenditures were necessary to maintain the project during the period of time that TVA was evaluating the various alternatives for rehabilitating the project. They also pointed out that their treatment of these items as expense was consistent with TVA accounting procedures, which provide for classifying these types of costs as expenses rather than capital items. TVA added that had this effort been accomplished on a new hydroelectric facility, all associated costs would have been considered capitalized costs and included as a part of the project cost estimate.

In addition to the \$2.64 million charged to maintenance expenses during fiscal years 1977 through 1983, TVA charged \$1.2 million for Ocoee No. 2 operational expenses. Since the plant was not generating electricity during this period, we asked why the project incurred operational costs. TVA officials told us that the Blue Ridge and Ocoee No. 3 Dams, located upstream, were remotely controlled from the Ocoee No. 2 powerhouse. According to these officials, most of the \$1.2 million was for the remote control operations of the two upstream dams and its being expensed to the Ocoee No. 2 plant was an oversight.

COST OF OCOEE GENERATION

The first-year cost of power generated at Ocoee No.2 based on the life of the project (50 years) will be about 36.4 mills⁴ per kWh assuming an average generation of 135 million kWhs annually. This generation cost is based on TVA's \$33.769 million capitalized investment in the project (about \$675,000 in annual depreciation expense), a projected first-year operating and maintenance expense of \$396,000, interest on the investment of about \$3.5 million annually, and a 10 percent margin on the interest of about \$349,000. Table 8 reflects how these costs convert into cost of power from Ocoee.

⁴A monetary unit equaling one-tenth of a cent (\$0.001).

Table 8^a

Ocoee Generation Costs

	<u>Annual cost</u>	<u>Mill per kWh</u>
Depreciation	\$ 675,000	5.0
O&M	396,000	2.9
Interest ^b	3,492,000	25.9
Margin on interest	349,000	<u>2.6</u>
		<u>36.4</u>

^aBased on annual generation of 135,000 kWhs.

^bAnnual interest was computed at 12 percent on the capitalized investment.

Further analysis of the above figures shows Ocoee fixed cost of 33.5 mills (depreciation plus interest plus margin on interest) and variable cost of 2.9 mills.

We also calculated the average cost of power generated at Ocoee No.2 over the life of the project. The average cost will be about 33.6 mills per kWh assuming average generation of 135,000 kWhs annually. The first year cost of 36.4 mills per kWh and the average cost of 33.6 mills per kWh is higher cost power than some projects in TVA's generating systems, but less than other generation scheduled to come on line. Coal-fired plants built since the 1950's provide energy at a cost of about 33 mills per kWh on the average, and TVA's average cost of power in its system in 1983 was 34.5 mills per kWh. However, according to TVA, since the fixed costs will now be incurred regardless of whether Ocoee generates electricity, the variable cost becomes the figure to use for comparing which powerplants would be cheaper to operate. Ocoee's variable cost of 2.9 mills per kWh is lower than today's variable cost for TVA's coal-fired generating plants (about 19 mills). This means that when Ocoee is producing electricity, it is displacing coal-fired generation that has a higher variable cost.

CHAPTER 4

USE OF THE OCOEE RIVER FOR WHITEWATER RAFTING

When power operations at Ocoee No. 2 stopped in 1976, the river began to be used for whitewater recreation rather than power generation. Recreational use of the river has continually grown over the past 7 years and has stimulated the local economy. However, TVA's decision to rehabilitate Ocoee No. 2 created controversy between TVA and the whitewater rafters because as the Ocoee River water is diverted into the flume for power generation, the whitewater disappears from the riverbed. The controversy revolved around the number of days TVA would be willing to make available for recreational releases, and how the power system would be reimbursed for having to generate from higher cost resources due to the recreational releases. These issues have recently been settled with the passage of a one-time federal appropriation to reimburse TVA for the higher cost generation when water is released for rafting and an agreement between TVA and the State of Tennessee whereby the river will be open for rafting 116 days per year.

ECONOMIC IMPACT FROM RECREATION

From 1977 through 1980, the estimated number of users of the whitewater along the 4.6-mile part of the Ocoee river increased from 7,000 to 56,000. By 1980, according to TVA's information, about 85 percent of the users were customers of commercial firms that provided rafts and guides.

For the period from 1980 through 1982, TVA estimated that the use of Ocoee's whitewater increased about 29 percent a year with the heaviest use occurring from May through August. For 1983, TVA projected whitewater use on the Ocoee at approximately 104,000 visitor trips--92,500 commercial trips and 11,500 private boaters. Table 9 presents TVA's projection of 1983 revenues from whitewater recreation.

Table 9

TVA Estimated 1983 Revenues From Whitewater Use^a

92,500 visitors @ \$23 per trip ^b	\$2,127,500
92,500 visitors @ \$23 ^c	2,127,500
11,500 private boaters @ \$23 ^c	<u>264,500</u>
Total	<u><u>\$4,519,500</u></u>

^aOcoee user trips based on visits during May, June, July, and August.

^bCommercial outfitters' average charge per person per trip is \$23.

^cUsers would spend about \$23 on the average for food, motel, etc., per trip.

Recreational support

TVA has used no appropriated funds to rehabilitate the power facilities, but to support the whitewater rafting activities, TVA plans to spend about \$300,000 in appropriated funds in developing recreation support facilities at Ocoee No. 2 as shown by table 10.

Table 10

Recreational Cost

<u>Description</u>	<u>Estimated cost</u>
Gravel parking lots, river access points, and temporary change buildings	\$ 30,000 ^a
Permanent restrooms	60,000
Parking lots	92,000
Bridge	8,000
Walkway and access	68,000
Fill, bank stabilization	20,000
Miscellaneous	9,000
Contingency	<u>13,000</u>
Total	<u><u>\$300,000</u></u>

^aRepresents funds spent to November 1983.

According to TVA officials, about \$270,000 of these funds was provided under Public Law 98-8 (referred to as the Jobs Bill). None of the appropriated funds expenditures were included in the rehabilitation cost estimates because the recreational facilities were not considered part of the Ocoee No. 2 rehabilitation.

LOST POWER BENEFITS DUE TO RECREATION
AND TVA'S EFFORTS TO GAIN REIMBURSEMENT

During the late 1970's, TVA recognized the operational impact of the whitewater recreational releases. This was recognized in TVA's final EIS where the proposal was made to have the river available for rafting 46 days each year. The EIS recommended 46 days for release because, according to TVA's analysis, it provided the maximum overall benefits to the public from the standpoint of both power generation and recreation. However, whitewater rafters and other interested parties believed that 46 days were not sufficient. In approving the rehabilitation of Ocoee, TVA based its decision on 82 days for whitewater rafting.

The TVA Board approved the renovations to Ocoee No. 2 on the expectation that having to produce from a higher cost generation source due to recreational releases would be reimbursed by a one-time appropriation. TVA calculated that the present value of the replacement power for an 82-day release program over 35 years would be \$5 million. In 1980, the Chairman, TVA Board of Directors, in an attempt to ameliorate the recreation issue, requested that the Congress appropriate \$5 million. Subsequently, the Chairman, House Committee on Appropriations, in a congressional report, responded to TVA's request by stating that

"The committee believes that this proposal can be initiated within available appropriations but because of the particular characteristics of the river and the recreational plan, this proposal can and should be financed by the collection of charges from recreational users."

Subsequently, on October 28, 1980, the Chairman of TVA's Board of Directors responded to the House Appropriations Committee report. In his response, the Chairman stated that,

"With a high level of commercial use, assurance of the required flow of water is essential. Because water releases for recreation would cause losses to TVA's power program that would need to be recovered from sources other than the power system, staff considered four alternative financing options."

The four alternatives considered were

- user fees,
- concession system,
- annual appropriation for foregone power, and
- single appropriation capitalizing the annual cost to TVA power operations due to recreational releases.

In summary, TVA considered all the alternatives impractical except for the single, one-time appropriation. TVA considered it to be the most reasonable for both preserving and integrating recreational releases with operation of the flume for power production.

With no positive response from the Congress, TVA concentrated its recreation reimbursement efforts on two strategies between 1980 and 1983. The first involved discussions between TVA and the commercial operators. The second involved negotiations with the State of Tennessee. Under this strategy TVA planned to allow the state to manage whitewater recreation at Ocoee No. 2 and charge user fees if the state would make a one-time payment to cover the higher cost of power generation to be used in lieu of Ocoee.

After much debate and negotiation about the number of days TVA would allow water releases for whitewater rafting and how TVA would be reimbursed for lost power generation, recent actions have put the issue to rest. On November 14, 1983, Public Law 98-151 was enacted which provides appropriations to TVA to reimburse it for lost power generation. Under this act, TVA will receive a one-time payment of \$6.4 million to pay for hydropower lost as a result of recreational releases over a 35-year period. An additional \$1 million was provided to the State of Tennessee for the development, operation, and maintenance of a recreation facility at Ocoee No. 2. The money is to be repaid to the U.S. Treasury over the 35-year period from the imposition of fees for such recreation.

On March 16, 1984, a contract between TVA and the State of Tennessee became effective whereby the state will receive from TVA an easement of 23 acres to provide for recreation over the 35-year life of the contract. Other key points of this contract are as follows:

- TVA will make recreational releases 116 days a year from March through November.
- TVA will collect fees directly from the commercial outfitters on the schedule of \$2 per customer for the first 8 years, \$3 per customer in years 9-16, \$4 per customer in years 17-24, and \$5 per customer in each year thereafter.
- TVA has the right after the first 5 years and thereafter to adjust user fees to account for revenue shortfalls or terminate the agreement.
- The state will maintain all facilities, provide on-site management and controls, and establish necessary safety requirements and commercial operation standards as appropriate.

- The state will receive \$1 million to be placed in a trust fund (under separate agreement) to generate operation and maintenance funding over the life of the contract.
- The state will assume TVA's perpetual maintenance of a bridge in southeastern Tennessee.

DON SUNDQUIST
7TH DISTRICT TENNESSEE

COMMITTEES
PUBLIC WORKS AND
TRANSPORTATION
VETERANS AFFAIRS

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Congress of the United States
House of Representatives
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May 3, 1983

The Honorable Charles A. Bowsher
Comptroller General
General Accounting Office
441 G Street, N W
Washington, D C 20548

Dear Mr. Bowsher

I am requesting an audit of the construction costs of the Tennessee Valley Authority's Ocoee No. 2 Hydro Plant. In December of 1979, the Board of Directors authorized construction of the project at an estimated cost of \$21.4 million. Current completion costs are estimated at \$29 million. I am interested in a determination of the:

- a. estimated total project costs upon completion of the project,
- b. cost of contract work and materials,
- c. cost of TVA's own work on the project,
- d. interest on money borrowed for construction,
- e. cost of work done by TVA personnel from divisions of TVA supported by appropriated funds.

In determining the cost of TVA's own work on the project, there are several areas that may be worthy of your investigation. It is my understanding that TVA's work force reinforced the dam, built access roads to the flume line, refurbished the powerhouse, constructed a staging area below the dam, manned the powerhouse with electricians and operators during the years the project was inoperable, and widened the bridge at the powerhouse. As well, TVA provided design and engineering services, environmental impact statements, inspection and administrative services during the project's construction.

From your audit of the project costs, I ask that you determine the cause of cost overruns, the per kilowatt cost of the power produced by Ocoee No. 2, and whether this project will accrue significant deficits in the initial 20 years of operation.

page 2

I request that the results of this study be marked for my own use at present

The General Accounting Office provides a vital service to the public in its oversight of the operations of the agencies of the Federal Government. With this information, I hope that we can accurately analyze and continue to improve the efficiency of the Tennessee Valley Authority.

Thank you for considering this request.

With best regards,

Sincerely,

A handwritten signature in black ink, appearing to be 'Don Sundquist', written in a cursive style.

Don Sundquist, M C

DKS dc

DON SUNDQUIST
7TH DISTRICT, TENNESSEE

COMMITTEE
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901 382 8811

Congress of the United States
House of Representatives
Washington, D.C. 20515

May 23, 1983

Mr. T. Vincent Griffith
Legislative Attorney
Office of Congressional Relations
Comptroller General
Washington, D.C. 20548

Dear Mr. Griffith:

Thank you for your prompt attention to my request for an audit of the Ocoee No. 2 Rehabilitation Project. I am writing to provide some additional information that may help you in your analysis of TVA's justification for rebuilding this plant.

It has come to my attention that there were 93,400 visits to the Ocoee in 1982 for white water recreation. In addition to the questions asked in my original correspondence, I am requesting that you determine:

- 1) the projected number of visits for recreation in 1983, and
- 2) an estimate of the total revenues, or a dollar value for the total benefit deriving from recreational use of the river.

In your review of the TVA's benefit/cost analysis, you may be interested in a report prepared by Mr. Steve Taylor, 721 Boundary Avenue, Silver Spring, Maryland 20910. Regarding the value of recreations, you may wish to contact the Tennessee Department of Tourist Development, and the Office of Natural Resources, Tennessee Valley Authority, Norris, Tennessee. Additional information may also be obtained from Mr. David Brown, Executive Director, Ocoee River Council, Box 238, Ocoee, Tennessee 37361, phone (615) 338-8619.

Thank you for your consideration of this request. I hope that the information and services I have provided are of value to you in your review of the Ocoee No. 2 Project.

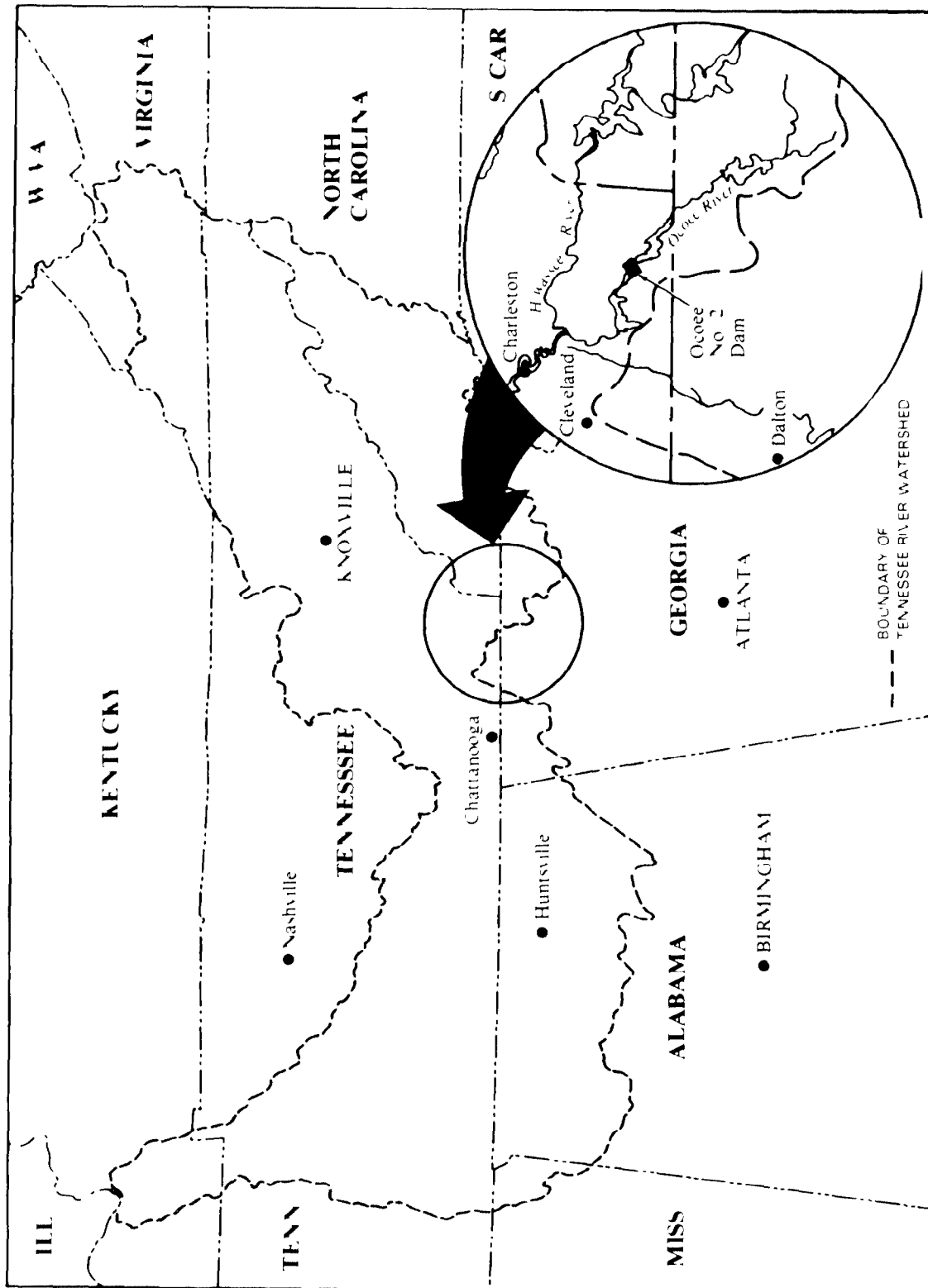
Sincerely,



Don Sundquist, M.C.

DRS:dc

MAP SHOWING LOCATION OF OCOEE NO. 2 DAM



28802

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