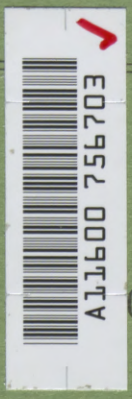
1045

Y 4.P96/10
96-
H56

TRANSPORTATION NEEDS OF INCREASED COAL PRODUCTION AND COMPLETION OF THE TENNESSEE-TOMBIGBEE WATERWAY



HEARINGS

BEFORE THE

OMMITTEE ON WATER RESOURCES

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

NINETY-SIXTH CONGRESS

SECOND SESSION

JULY 25, 28, AND 29, 1980

SERIAL NO. 96–H56

Printed for the use of the
Committee on Environment and Public Works

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

TRANSPORTATION NEEDS OF INCREASED COAL PRODUCTION AND COMPLETION OF THE TENNESSEE-TOMBIGBEE WATERWAY

HEARINGS

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

NINETY-SIXTH CONGRESS

SECOND SESSION

JULY 25, 28, AND 29, 1980

SERIAL NO. 96–H56

Printed for the use of the
Committee on Environment and Public Works

U.S. GOVERNMENT PRINTING OFFICE
67–591 O WASHINGTON : 1980

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

JENNINGS RANDOLPH, West Virginia, *Chairman*

MIKE GRAVEL, Alaska
LLOYD M. BENTSEN, Texas
QUENTIN N. BURDICK, North Dakota
JOHN C. CULVER, Iowa
GARY HART, Colorado
DANIEL PATRICK MOYNIHAN, New York
GEORGE J. MITCHELL, Maine

ROBERT T. STAFFORD, Vermont
HOWARD H. BAKER, JR., Tennessee
PETE V. DOMENICI, New Mexico
JOHN H. CHAFEE, Rhode Island
ALAN K. SIMPSON, Wyoming
LARRY PRESSLER, South Dakota

JOHN W. YAGO, Jr., *Staff Director*
BAILEY GUARD, *Minority Staff Director*

SUBCOMMITTEE ON WATER RESOURCES

DANIEL PATRICK MOYNIHAN, *Chairman*

LLOYD BENTSEN, Texas
GARY HART, Colorado
GEORGE J. MITCHELL, Maine

PETER V. DOMENICI, New Mexico
ALAN K. SIMPSON, Wyoming
LARRY PRESSLER, South Dakota

CONTENTS

OPENING STATEMENTS

Page

Moynihan, Hon. Daniel Patrick, U.S. Senator from the State of New York 1, 355
Randolph, Hon. Jennings, U.S. Senator from the State of West Virginia 8
Simpson, Hon. Alan K., United States Senator from the State of Wyoming 73, 357

WITNESSES

JULY 25, 1980

Baker, Jr., Hon. Howard H., U.S. Senator from the State of Tennessee 3
Prepared statement 9
Briggs, Richard E., Executive Vice President, Association of American Railroads 82
Prepared statement 180
Carroll, Joseph H., director, Transportation Institute, Pennsylvania State University 91
Prepared statement 215
Claflin, Thomas O., professor of biology, University of Wisconsin at Lacrosse ... 256
Prepared statement 256
Cochran, Hon. Thad, U.S. Senator from the State of Mississippi 10
Prepared statement 11
Gholson, Hunter, attorney, Tennesee-Tombigbee Waterway Development Authority 16
Havenman, Robert H., professor of economics, University of Wisconsin at Madison 86
Prepared statement 193
Heiberg III, Maj. Gen. E. R., director of Civil Works, U.S. Army Corps of Engineers, accompanied by Jake Lankhorst, deputy counsel; Alex Shwaiko, chief, Planning Division; and Ed Cohn, economist 107
Prepared statement 274
Massey, David, journalist, Knoxville, Tenn 100
Prepared statement 249
McLindon, Dean Gerald, School of Environmental Design, Louisiana State University 44
Prepared statement 118
Pfrommer, Carol, Department of Economics, University of Alabama at Birmingham 96
Prepared statement 229
Skinner, James A., president, Herbert Materials, Inc., of Nashville, Tenn 60
Prepared statement 150
Wilkins, Glover, administrator, Tennessee-Tombigbee Waterway Development Authority 14

JULY 28, 1980 (p. 355)

Bronzini, Michael, associate professor of Civil Engineering, University of Tennessee 394
Prepared statement 415
Fuller, John, director, Institute of Urban and Regional Planning, University of Iowa 408
Heinz III, Hon. John, U.S. Senator from the State of Pennsylvania 386

Morris, Lt. Gen. John W., Chief of Engineers, U.S. Army Corps of Engineers, accompanied by Maj. Gen. E. R. Heiberg III, director, Civil Works; Jake Lankhorst, Deputy Counsel; Alex Shwaiko, Chief, Planning Division; and Ed Cohn, Chief, Economics Section, Planning Division ..... Page 358
Warner, Hon. John W., U.S. Senator from the State of Virginia 371
Prepared statement 372

JULY 29, 1980 (p. 487)

Heiberg III, Maj. Gen. E. R., Director, Civil Works, accompanied by Alex Shwaiko, chief of planning, Edward Cohn, economist; and Ron Allen, counsel 487
Prepared statement 507

ADDITIONAL MATERIAL

Congressional Research Service, Library of Congress, memorandum from entitled, "Benefit-Cost Analysis for a Waterway Project" 54
Corps of Engineers, material supplied by:
Robinson, Brig. Gen. Hugh G., statement of 285
Army Audiy Agency, report of 297
Statments:
Stennis, Hon. John, C., U.S. Senator from the State of Mississippi 49
Alexandar, Hon. Lamar, Governor, State of Tennessee 4
Winter, Hon. William F., Governor, State of Mississippi 57
Alabama State Docks Department 173
Illinois Department of Transportation 422
Allegheny County Port Authority 353
Lyon County Port Authority 354
American Association of Port Authorities 429
Arch Mineral Corp 171
Ashland Coal, Inc 442
Babcock & Wilcox 164
Bowater Southern Paper Corp 156
Coaliquid, Inc 339
East Mississippi Council 341
Environmental Policy Center 461
Foote Mineral Co 347
Gulf and Western Industries 348
Herbert Materials, Inc 159
Hopkinsville Elevator Co., Inc 167
M. Cohen Iron and Metal Co 166
Michigan United Conservation Clubs 349
National Dump Transport Industry Association 177
Ohio Valley Improvement Association, Inc 467
Oil-Dri Corp 351
Road Maintenance Supply, Inc 165
Steiner-Liff Iron and Metal Co 161
West Kentucky Coal Operators Association, Inc 172

TRANSPORTATION NEEDS OF INCREASED COAL PRODUCTION AND COMPLETION OF THE TENNESSEE-TOMBIGBEE WATERWAY

FRIDAY, JULY 25, 1980

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES,
Washington, D.C.

The subcommittee met at 10:40 a.m., in room 1202, Dirksen Senate Office Building, Hon. Daniel Patrick Moynihan (chairman of the subcommittee) presiding.

Present: Senators Moynihan, Randolph (chairman of the full committee), Bentsen, Baker, Domenici, Chafee, and Simpson.

Also present: Senators Stennis and Cochran.

OPENING STATEMENT OF HON. DANIEL PATRICK MOYNIHAN, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator MOYNIHAN. May I open this hearing of the Subcommittee on Water Resources of the Senate Committee on Environment and Public Works.

Might I first state the exceptional honor and distinction which this obscure body has in having present one of the most distinguished Senators ever to serve in this body, our revered and beloved, greatly respected chairman of the Armed Services Committee, Senator Stennis of Mississippi.

Alongside of him, his able and highly regarded associate, Senator Cochran.

Also here, in an occasion of odyssey beyond our deserts, is the minority leader, author, orator, advocate of the interests of his region and Nation, the minority leader, our friend, Senator Baker.

I have a short opening statement, Senator Baker, after which the floor is yours.

On the general proposition that the United States must produce and consume more coal, there has been no shortage of support lately. "The World Coal Study," conducted at the Massachusetts Institute of Technology, projected that U.S. production of coal would increase threefold by the year 2000. The National Academy of Sciences, in their recent study "Energy in Transition 1985–2010," estimated that at three times today's production rate, coal is likely to supply one-third to one-half of the Nation's energy by the year 2000. At the Venice Summit, the participants called for a doubling of world coal production by 1990.

There is further agreement on another point—a most important constraint to meeting such ambitious goals to increase domestic

consumption of coal and increase coal exports is our national transportation system. How are we to handle such enormous quantities of coal?

Over the last decade, waterways have accounted for only 10 or 12 percent of the tonnage of coal shipped from the mine. Most of our existing coal piers are inadequate to handle the projected increase in the export of steam coal. With the expansion of facilities on both the gulf and east coasts and the easing of lock constraints on connecting waterways, the existing bottlenecks could be alleviated.

But such investments must take place in the context of a national plan to coordinate our various modes of transportation. Our current arrangements on the Federal level do not lend themselves to a well-coordinated plan of action. Jurisdiction is spread among various executive departments—Commerce, Transportation, Energy, and Defense—and a multitude of congressional committees. Regulation of competition and public subsidies fall unevenly on the various modes of transportation.

I call upon Theodore Roosevelt for support on this point. In the 1908 Report of the Inland Waterways Commission. Roosevelt wrote in his letter of transmittal to Congress: ". . . the successful development and use of our interstate waterways will require intelligent regulation of the relations between rail and water trafic. When this is done the railways and waterways will assist instead of injuring each other. Both will benefit, but the chief benefit will accrue to the people in general through quicker and cheaper transportation."

As a new chairman of the Water Resources Subcommittee, it fell to me to initiate an appraisal of our waterways and ports in light of the new set of economic and political circumstances confronting our Nation. It is in this spirit that our subcommittee approaches these hearings today and Monday.

The hearing today is on the particular subject of the Tennessee-Tombigbee Waterway, the largest Federal public works project now underway and the largest ever undertaken by the corps. During the course of today's proceedings, it is worth recalling the Erie Canal—the first major water project in the United States and the greatest in the 19th century. The 363-mile canal with 81 locks was begun in 1817 and completed in 1825—8 years. The total cost of the project was $12,720,032.25. In the first year after the canal was completed, revenues exceeded the expenses of maintenance. By 1838, net receipts had paid the interest on the construction debt and had reduced the debt by $3.5 million.

The Erie Canal was a project of the State of New York. President Thomas Jefferson declined to support the project, claiming the Erie Canal was a century ahead of its time. Indeed, from the start of the Republic to about 1850, States—and not the Federal Government—took the initiative in improving our waterways.

There is no question that any economic evaluation of the Tennessee-Tombigbee project suffers dearly from our inability to predict the future. And when the planning and design of the project is spread over so many years, it is a coincidence if estimated effects match the eventual physical and economic realities. For 200 years, the concept of the Tennessee-Tombigbee Waterway has been put to our imperfect tests. Studies or reviews were carried out in 1817, 1875, 1913, 1923, 1935, 1945, 1951, 1965, and 1976.

Superimpose this progression on our economic history. Our pattern of energy consumption—from wood to coal to oil and now, apparently, back to coal—suggests the difficulty in reconciling the differences between the planning and the realization of a major public works project. The Erie Canal was not a century ahead of its time. Yet how could even Thomas Jefferson have anticipated the coming of the railroads?

Our economy suffers from a shortage of capital. In the next decade, we will see our roads, waterways, water supply systems and other public works fall into disrepair unless we begin once again to make the necessary investments. Water resource projects should be thought of as an investment.

Controversy surrounds the Tennessee-Tombigbee because its value as an investment is—fairly or unfairly—questioned. The project was authorized in 1946 when the rate used to discount costs and benefits to present value was 3¼ percent. We know that such a low discount rate did not in 1946 and does not in 1980 reflect the true social cost of capital. And yet, 46 percent of the construction on the authorized project is complete.

Our hearing today will concentrate on the nature of the Federal investment in the waterway. It is important that we establish the source of the benefits and the assumptions underlying those estimates. And, it is important that we know exactly what needs to be done to realize these benefits from the project. Today's hearing is an opportunity to build a well-documented, balanced public record on these questions.

Now, Senator Baker would like to introduce friends and associates of his from Tennessee who are directly responsible for the project that we are discussing this morning the Tennessee-Tombigbee Waterway.

We have here Glover Wilkins, who is the administrator of the Waterway Development Authority; Mr. Skinner of Nashville; Mr. Gholson, the attorney for the authority; and Dean McLindon from the School of Environmental Design of the Louisiana State University.

That is not for me to say but, rather, for my friend Senator Baker who may wish to comment on the project generally as well as introduce the witnesses.

STATEMENT OF HON. HOWARD H. BAKER, JR., U.S. SENATOR FROM THE STATE OF TENNESSEE

Senator BAKER. Thank you very much, Mr. Chairman.

If I might indulge the time of the distinguished chairman and my colleague, Senator Cochran, for just a minute, I will take advantage of your offer and officially, if I may, present the witnesses at the table who will constitute the panel for a presentation this morning.

I would like to say, first, that our Governor, who is Chairman of the Commission, Gov. Lamar Alexander, could not be present today because of other pressing business and commitments. By your leave, Mr. Chairman, I ask unanimous consent to include in the record at this point a statement by Governor Alexander in respect to these hearings.

Senator MOYNIHAN. Without objection.

Senator BAKER. I thank you, sir.

[Governor Alexander's statement follows:]

STATEMENT OF LAMAR ALEXANDER
GOVERNOR OF TENNESSEE

BEFORE

THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN
WATER RESOURCES SUBCOMMITTEE OF THE
SENATE COMMITTEE ON PUBLIC WORKS AND THE ENVIRONMENT

JULY 25, 1980

Mr. Chairman, I am Lamar Alexander, Governor of the State of Tennessee. Also, I am currently serving as Chairman of the Tennessee-Tombigbee Waterway Development Authority.

I regret very much that State business did not allow me to personally testify before your Committee during these oversight hearings on the Tennessee-Tombigbee Waterway. I do, however, request that my statement in support of continuing construction of this project be made part of the record of this important hearing.

It is not really necessary that I acquaint this Committee of my State's strong interest in the Tenn-Tom. It is well known within the Congress. We, in Tennessee, are proud that our State was the first to petition the Congress to build the waterway as far back as 1810. It's been a long time coming!

We today have the same interest in the Tenn-Tom as our ancestors did 170 years ago--a more direct access to the Gulf of Mexico. By linking the Tennessee River with the Port of Mobile, cities such as Knoxville and Chattanooga will be more than 800 miles closer to these deepwater ports.

The Tenn-Tom is a model project. It is ideal in its approach to environmental problems. It has achieved new levels of cooperation among state governments and the federal government.

If ever this country needed a modern multi-modal transportation system--it is now! The American business community is being hampered by declining productivity and inflation. Businesses are finding it increasingly difficult to hold down prices in order to compete with foreign suppliers. The steel and auto industries are prime examples of this dilemma.

Increasing fuel costs are making transportation an important factor in prices of U. S. goods and services. We must improve our transportation system to move our raw materials and commerce in a much more efficient manner.

Waterways, like the Tenn-Tom, are the most efficient means of moving bulk-type commodities long distances. A study conducted by the U. S. Department of Transportation shows that one gallon of fuel can move one ton of commerce by barge 514 miles compared to 202 miles by rail.

Waterways are also the safest mode for transporting hazardous and toxic materials. The recent outgrowth of derailments which have claimed scores of lives, destroyed property and polluted the environment, demand a better and safer means of transporting these materials.

While waterways have distinct advantages for moving some commodities a good healthy rail and trucking industry is needed to move other goods. You will find no industrial developer who will locate a port or waterfront industrial park that is not served by rail and highway.

The Tenn-Tom will benefit the great heartland of America. It is no more a local pet project than the Saint Lawrence Seaway. It is every bit as vital.

If there is provincialism associated with this project, it comes from the detractors outside our region.

There is no other transportation project now envisaged that will have the geographic impact of the Tenn-Tom. Some fourteen states will receive over $82 million in savings in transportation costs during its first year of operation alone. These states range from Minnesota to Florida. Savings to commerce in my state, alone, will exceed over $17 million by using the waterway during its first year of operation.

These transportation benefits are expected to increase after the waterway is completed and average about $105 million each year during the 50-year life of the project.

We are now getting ready for the completion of the Tenn-Tom. I just recently approved a request to initiate design of a $10 million waterfront industrial park at Chattanooga.

I also recently have approved legislation to allow formation of a four-county port authority to help finance $26 million in port developments near the northern terminus of the waterway.

A 3000 ton per day coal handling facility has opened on the Tennessee River near Harriman. Other port and industrial development plans are now underway near Nashville, Knoxville and New Johnsonville.

Several decades ago, when the people of the Midwest and Northeast clamored for an inland waterway system, Congress listened and responded. The St. Lawrence Seaway, built at a cost of more than $1 billion, converted more than 6,600 miles of Great Lakes shoreland into a far-reaching seacoast.

Today, the people of middle America realize the completion of Tenn-Tom will give us a new hope and a new destiny.

Congress has had the good judgment to act positively and forthrightly on Tenn-Tom. I trust that good judgment will continue. When this important project is completed, it will be a testimony to the foresight and cooperation of our region's citizens and our nation's leaders.

Thank you again for the opportunity to present my views on this great project.

###

Senator BAKER. Mr. Chairman, the panel before you has a distinguished chairman, as you pointed out. We have Mr. Glover Wilkins, who is the administrator of the Tenn-Tom Authority of Columbus, Miss.; Mr. Hunter Gholson, attorney for the authority, also of Columbus; and Dean Gerald McLindon of the School of Environmental Design at LSU.

It gives me no pause whatsoever to point out to Dean McLindon that I once attended Tulane University and that our animosities and hostilities have long since subsided.

James Skinner, who is president of Herbert Materials of Nashville and is vice chairman of the Tennessee-Tombigbee Waterway Development Authority; and Mark Smith, vice president of Weyerhaeuser Paper Corp.

Mr. Chairman, on my own behalf, I would like to express my appreciation to you for agreeing to chair these hearings. It is an important undertaking. I would presume to believe that in part at least these hearings are a product of the colloquy that you and I conducted on the floor, and at which time we agreed that there was a requirement now to inquire into the general method by which costs and benefits for civil projects of this sort might be undertaken.

I therefore appreciate your commitment and dedication of time and energy to this purpose today. You know from our previous conversations and colloquy of my support for this project which has been enthusiastic from the beginning and which continues.

I would like, Mr. Chairman, in the interest of time, and in deference to my colleagues, to place my full statement on this subject in the record.

Senator MOYNIHAN. Senator Randolph, our distinguished chairman, will be with us shortly, so without objection, we will place his statement along with yours, Senator Baker, in the record at this point.

[The statements follow:]

OPENING STATEMENT OF HON. JENNINGS RANDOLPH, U.S. SENATOR FROM THE STATE OF WEST VIRGINIA

I am pleased to join with the chairman of our Water Resources Subcommittee, Senator Moynihan, in opening the first subcommittee hearing under his chairmanship. The issue of waterway development in this country is important and one we must carefully examine.

With respect to the Tennessee-Tombigbee Waterway which is the subject of this morning's hearing, many issues have been raised in recent years about the validity of this project which was first authorized by the Congress in 1946. I know there are those who feel strongly both ways on this project. We have only to look at the Congressional Record of less than a month ago to see the depth of the feeing on this issue.

I look forward to testimony we are to receive this morning both from proponents and opponents on this project. I am sure this hearing, as well as the one to follow on Monday, will prove to be educational and valuable to the members of the Committee on Environment and Public Works as we look at future waterway development in this country. And new development is not the only thing we must consider. Rehabilitation and maintenance of our existing inland navigational system and our deep-draft harbors are also important. This country cannot move its products without this balanced transportation system which includes highways, rails, and waterways.

I am pleased to be here this morning and look forward to hearing from our witnesses.

STATEMENT OF HON. HOWARD H. BAKER, JR., U.S. SENATOR FROM THE STATE OF TENNESSEE

I appreciate the opportunity to offer a brief statement in support of the Tennessee-Tombigbee Waterway project.

This project, which is near the halfway mark of completion, offers demonstrable advantages to the entire country in terms of energy requirements and an expanded national transportation system for goods and raw materials. As I have stated before, I believe this is a good project, and one which we must complete now that we have made substantial progress.

The waterway will be a drawing card for industrial growth because of the inherent need for water transportation. Studies show that initially 12.3 million tons of goods and raw materials will move on the waterway from Tennessee at an impressive $17.4 million in transportation savings during the first year of operation alone. It will provide more direct access to the industrial and consumer markets in Tennessee, Alabama, and Mississippi and will stimulate development on the Tennessee River.

The Corps of Engineers estimates the cost for completion of the project at $1.9 billion. Approximately $900 million has been appropriated to date and $209 million is requested in the 1981 budget. We have already expended millions of dollars in public funds toward construction of this project and to stop now would be unconscionable in view of the dislocations which would occur, not to mention forgoing the positive benefits which will accrue when the project is completed.

The project is being constructed among some of the most economically depressed areas of this country. Significant benefits will accrue in terms of positive economic growth and development for these areas as the project is completed. An estimated 135,000 additional jobs will open up in these areas by the year 2000 with resultant increases in personal income and investment.

We have instituted a minority hiring and training program and a minority contracting program for work on the project which offer unique job and business opportunities to disadvantaged people living in these areas. About 27 percent of all workers on the waterway project are minorities. Minority businesses have received over $15 million for water contracts associated with the project.

Another positive aspect of the project is the outdoor recreational benefits that will occur as part of the waterway development. Some 40,000 acres of lakes will be created by the waterway and the Corps of Engineers will develop 13,000 acres of land along the lakes into a variety of parks and public use areas. Development of the recreation facilities will eventually attract 7 million people annually and lead to added economic growth and stability for the areas along the waterway.

Because the Tennessee-Tombigbee Waterway project will have a number of local and regional benefits as well as accomplish its stated national goals, I support its continuation and completion.

Senator BAKER. I would make one other remark, if I may, Mr. Chairman. Brig. Gen. Hugh Robinson is in the front row to our left, Mr. Chairman. He is deputy director for civil works of the Corps of Engineers. Since 1978 he has participated in efforts to expand the Tenn-Tom scope to insure minority businesses and minority workers and women a full opportunity to participate in this project and to share in its benefits.

It was in the course of another hearing before this subcommittee, and at a time I believe before our distinguished subcommittee chairman came to the Senate, that the question of the adequate representation of minorities in this large project first surfaced officially. In a colloquy with the chairman of the committee, Senator Randolph, and the then-ranking member, Senator John Sherman Cooper of Kentucky, and others, they very kindly agreed to a proposal I made at that time to see that we created this division.

I am happy to see that Brigadier General Robinson is here. I am happy to report to this committee, Mr. Chairman, that his efforts and those of others who have been involved in the minority participation projects have been highly successful and highly appreciated and I believe highly appropriate in that this project goes through

the area of the United States where the per capita population of blacks is the highest in the United States.

Mr. Chairman, with those additional remarks, I will await with great interest the inquiry of this committee and once again congratulate you, sir, on the good work you have done, as you always do and finally, to express my boundless admiration for your good taste and judgment in the lavish praise you have heaped on those poor mortals of us who are here at this table with you.

Senator MOYNIHAN. Did Senator Stennis indicate he, with his careful mode, might wish to just observe before commenting?

Senator STENNIS. Mr. Chairman, I am delighted to be here. I appreciate the invitation to say something, but if I may pass on that at least for the time being, I think you want to proceed. You may proceed.

Senator MOYNIHAN. Of course, sir.

Senator Cochran?

STATEMENT OF HON. THAD COCHRAN, U.S. SENATOR FROM THE STATE OF MISSISSIPPI

Senator COCHRAN. Mr. Chairman, I have a statement which I hope could be included in the record at the appropriate place. Beyond that, I appreciate your kindness and generosity in inviting us to be with you at the table here during the course of these hearings. Thank you.

Senator MOYNIHAN. Thank you, Senator Cochran. We will put your statement in the record, along with the statement of Senator Domenici.

[The statements follow:]

THE HONORABLE THAD COCHRAN
STATEMENT FOR THE RECORD
TENNESSEE-TOMBIGBEE WATERWAY HEARING
SUBCOMMITTEE ON WATER RESOURCES
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JULY 25, 1980

Mr. Chairman, I appreciate the opportunity to reaffirm support of the completion of the Tennessee-Tombigbee Waterway Project.

During the Senate's consideration of the Supplemental Appropriations Bill for FY 80, virtually every argument that had previously been raised in opposition to the project was brought up again, and we learned nothing new. The Senate again approved funds for the Waterway.

Nothing will be gained, and much will be lost, if this project is not completed. Taxpayers will not win if construction is stopped.

According to the most recent analysis by the Corps of Engineers, the physical features necessary for navigation on the authorized project are 46% completed. As of June 30, 1980, approximately $824.4-million had been obligated to the Waterway. Of this amount, $46.5-million was spent to acquire lands for the project. As a result of construction activities on these lands, such as clearing, their present value is estimated to be approximately $28.8 million-dollars. Instead of the alleged recovery of 50% of the investment in the Waterway through the resale of the lands, in fact only about 3% would be recovered. Nearly $800-million of project funds would not be recovered. When the additional investments in construction of high level

bridges and costs to terminate contracts are added, unrecoverable costs would exceed $1-billion.

Mr. Chairman, the authorized project is nearly half complete. Its estimated cost to the federal government for completion is $1.72-billion; not the $3-billion figure we see splashed in the editorial headlines of the Washington Post and New York Times.

This project has been studied, litigated, legislated and berated. Most of us are for it being completed, so let's get on with it.

Senator Pete V. Domenici
Opening Statement
Tennessee-Tombigbee Waterway Hearings
July 25, 1980

Mr. Chairman. I am pleased to join with you to open these oversight hearings, which begin with our discussion today of the important Tennessee-Tombigbee Waterway Project.

I commend the Subcommittee on scheduling these hearings and for its careful examination of the Tenn-Tom issues such as the benefits of the project, and the additional costs that may be needed to bring forth the full value of the project.

When the F.Y. 1980 Supplemental Appropriations Bill came to the Senate floor late in June, I voted against the additional funding for Tenn-Tom. I will be most interested to hear what each side has to say about this project, for it will assist me greatly in determining the position I shall take should this issue come to the Senate floor during debate on the F.Y. 1981 appropriations bill.

But I must state my basic view that this issue need never have been brought before this Subcommittee. The reason that the value of the Tenn-Tom project is dubious is that the project is a freebee. It is paid for -- lock, stock and barrel -- by the taxpayers, with the beneficiaries using it for free. The Tenn-Tom is even exempt from the waterway fuel tax, which begins in October.

How can the taxpayers of the nation have confidence in the value of such a project unless the users are paying a significant percentage of the project's capital cost, possibly over the life of the project.

Mr. Chairman, I am firmly convinced that we will never have a waterway system in this nation in which the taxpayers can support with confidence until the direct beneficiaries of that system are paying a set and significant percentage of the expenditures for that system.

Thank you.

67-591 O—80——2

Senator MOYNIHAN. May I, before proceeding, make a very brief statement. We have reversed the order of our inquiry. We are going to have 2 days of hearings, the first of which is on the general subject which the subcommittee is concerning itself with, which is the transportation facilities for coal in the Nation. Are we going to follow the goals which increasingly emerge in studies, in conferences, in summit meetings of the western nations, that we increase the amount of coal burned to generate electricity and power generated in the industrial nations by a third to a half in the next 20 years?

The question of how it is going to be transported is a very central one to the policy decision itself. And to a degree this has surprised the subcommittee. We have not heard this discussed. Somehow the coal is in the ground and it will get to the generating plants, and "how" is something for someone else at this point to decide. Well, this certainly involves the question of inland waterways and ocean transportation, and ports.

We were to open our hearings on this general subject and then move to this more particular one, the Tennessee-Tombigbee water project, which from the time it began has been seen as a conduit for coal moving out of the coal regions of Appalachia to the Gulf of Mexico. The scheduling problems of various persons required us to reverse the order, and so while we begin with the specifics, on Monday we will go to the general. But I would wish everyone to know we are here not for the specific purpose of inquiring into this particular project but, rather, to inquire or to open this subject and to do so in the context of the most important project of its kind that is now underway, the Tennessee-Tombigbee waterway project—the largest public works project of its kind in the history of the Corps of Engineers of the United States.

Enough from me. I think we should go directly to our distinguished panel. Mr. Wilkins, perhaps you would have the goodness to begin.

STATEMENTS OF GLOVER WILKINS, ADMINISTRATOR, TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT AUTHORITY; HUNTER GHOLSON, ATTORNEY, TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT AUTHORITY; DEAN GERALD McLINDON, SCHOOL OF ENVIRONMENTAL DESIGN, LOUISIANA STATE UNIVERSITY; AND JAMES A. SKINNER, PRESIDENT, HERBERT MATERIALS, INC., OF NASHVILLE, TENN.

Mr. WILKINS. Thank you, Mr. Chairman.

Mr. Chairman, I am Glover Wilkins, administrator of the Tennessee-Tombigbee Waterway Development Authority, a five-State interstate compact created by the State legislatures of Alabama, Florida, Kentucky, Mississippi, and Tennessee, and ratified by this Congress.

May I take this opportunity to express the appreciation of my five States for this chance of being heard, even in the constrained time and short notice you have allotted us.

It is time the true worth and benefits of this project were heard. We are certainly grateful to you.

My authority is a supporter of the waterway, but we are not its sponsor. The waterway was already authorized by the Congress when we were created in 1958.

The sponsor of the project is the Congress and executive branch of our Government, who declared it feasible economically in 1938 and authorized it in 1946.

The legislative history of the project is over a century old. There have been hearings, studies, legal trials on it over a long span of time. In each instance, it has proven its worth since being approved by the corps in 1938, with one exception.

In 1981, if moneys are provided, this will be the 14th year we have been funded. In each of these years we have made extensive presentations to the Appropriations Committees, since we were already authorized, of the House and Senate. We have also presented our case each year to the executive branch, the Office of Management and Budget. Appearing with us have been Governors, Members of this Congress, State and local political leaders, business, labor, and minorities.

This case has been thoroughly aired. President Carter took office in 1977 with questions in his mind concerning Tenn-Tom. He requested a full-scale investigation of the project. In March of 1977, a hearing on the project was held in Columbus, Miss. Over 9,000 interested citizens attended and signed cards for the meeting. Of this 9,000, less than 200 expressed opposition to the project.

President Carter became the sixth President to consecutively support Tenn-Tom.

The waterway has been under almost constant litigation since the summer of 1971. The issues of the 1971 case, based on economic and environment, are basically the same issues as brought against the waterway in 1976. The only added issue was the authorization question which was the centerpiece of this case.

The district judge ruled against the plaintiffs in this matter of authorization, and his decision was upheld by the U.S. Circuit Court of Appeals.

In the 1971 case on environment and economics, the district judge ruled in favor of the Government and the waterway, and the Fifth Circuit Appeals Court concurred in that decision. Due to the similarity of the remaining issues of the 1976 case with the adjudicated issues of the 1971 case, we feel the present plaintiffs have no case against the Tenn-Tom.

We understand that the U.S. Army Corps of Engineers, the official representative of the executive branch, a fact concurred in by Congress, will testify on their technical findings this afternoon and answer any technical questions you might have in mind as described in your official notice to me of July 17—which I received on the 18th—regarding these hearings.

Mr. Chairman, I guess what I am trying to say here now is this field, which we have been plowing and working for over 35 years that I have been in the fold, is a very large field. We can cover only a small part of it, just a little corner, during these hearings. But I want to thank you for this opportunity.

Mr. Chairman, would you like me to introduce the panel now?

Senator MOYNIHAN. I would very much appreciate it if you would, Mr. Wilkins, just in the order you would like to make the

presentation. We will have questions after we have heard from the panel itself.

Mr. WILKINS. Thank you, sir.

If I may ask, could you keep the record open for a few days or a reasonable length of time after these hearings so we may add some other evidence that we were unable to get in the short time of the notice?

Senator MOYNIHAN. Surely. We would be happy to do that. The record, for those who are interested, will be open until August 8.

Mr. WILKINS. Thank you, sir.

Mr. Chairman, at this time I would like to introduce to you and this distinguished panel the attorney for the Tennessee-Tombigbee Waterway Development Authority, Mr. Hunter Gholson. Thank you, Mr. Chairman.

STATEMENT OF HUNTER GHOLSON

Mr. GHOLSON. Mr. Chairman, it is indeed a privilege and an honor for me to be here. I may say I sped here during the night from an equally hotly contested but not so highly regarded dispute in the circuit court in the big city of Clarksdale, Miss. I am indeed awed by this rapid change of forum.

Mr. Chairman, in considering the Tennessee-Tombigbee Waterway and its ability to address the coal-hauling needs of the United States and, indeed, the free world, I think we should first examine the attacks which have been made on the waterway and the motivation for those attacks.

Attacks on the Tennessee-Tombigbee Waterway have taken several forms over the past decade—court attacks, attacks in the news media, and attacks in the Congress. Information from depositions in the litigation has revealed these attacks have been conceived, promoted, sponsored, and almost completely financed by the L. & N. Railroad.

It has also revealed the strategy of this railroad to use environment and economic claims in a last-ditch effort to retain the railroad's monopolistic control of the shipments of vast quantities of vital energy resources, such as coal.

The deposition of Executive Vice President Philip Lanier, taken in January of this year, revealed that the L. & N. has a corporate charitable gifts committee which distributes approximately $150,000 annually in so-called gifts to tax-exempt organizations. These have included gifts to the environmental defense fund, reimbursement of travel and other expenses for members of the committee to Leave the Environment of America Natural, which is a plaintiff in this matter opposing Tenn-Tom and the total sponsorship of the Tombigbee River Conservation Council. This council was formed in 1976, according to its executive director and also a plaintiff, Randall Grace, for the purpose of providing a full-time office to fight the Tennessee-Tombigbee Waterway.

Mr. Grace in his deposition confirmed that the L. & N. made an initial grant of $18,000 to the Tombigbee River Conservation Council when it was formed and has paid other amounts in subsequent years. The L. & N. has paid $1,000 per month directly to Mr. Grace to defer his expenses to fight the Tenn-Tom.

In his deposition in April 1980, Seaboard Coastline chairman and chief executive officer Mr. Prime F. Osborne denied any knowledge of these gifts. But the testimony of Mr. Grace and others indicates that not only has he been reimbursed by the Louisville and Nashville for his expenses, but since the litigation has begun, he has been working for their attorneys on a daily payment arrangement.

The testimony of Mr. Brooks Gordon, the manager of commerce for the railroad, indicated that as early as 1968 he began attending meetings of the Tenn-Tom Project Committee of the Association of American Railroads and that L. & N. has served as chairman of that committee from that time as long as the committee has functioned. Mr. Gordon has addressed the Congress in opposing waterway funding as the designated representative of the Association of American Railroads.

Despite the fact that L. & N.'s attorneys have argued vigorously in court and still argue that they did not know the channel of the waterway was to be widened to 300 feet until 1976, documents in the discovery proceedings belie those assertions. We understand that today the question of the width and the authorization of the width remain an issue, although the courts have spoken conclusively to this issue.

Mr. Prime Osborne testified that President Carter's administration predicts that the coal needs of this Nation will double from the present rate of consumption of 600 million tons a year to 1.2 billion tons in the very near future. Mr. Osborne candidly admitted that the L. & N. and other railroad coal haulers are now incapable of handling that volume of traffic with the present equipment and tracks.

He stated that there has been a significant shift of coal traffic from the eastern Kentucky coal fields to the south versus previous movements to the north. L. & N. tracks to the south run through winding mountainous areas and will have to be substantially rebuilt and duplicated to cope with the growing coal traffic needs.

The southbound increase of coal traffic from 1972 to 1976, according to Mr. Osborne, was 60 percent and is still growing. L. & N. originates 10 percent of the Nation's coal traffic and is expanding its facilities to try to keep pace with this demand. Even Mr. Osborne's optimistic forecast only predicts an ability to handle 90 million tons by 1984—considerably short of L. & N.'s share of the 1.2 billion tons needed.

Mr. Osborne also candidly admits that the L. & N.'s ability to expand depends entirely on how much money it can obtain. We all know where such money will have to be derived. The Department of Transportation studies in 1978 show that the benefit-cost ratio for improving rail facilities to handle coal traffic is woefully below parity.

Mr. Osborne stated that Federal funds already poured into the railroad industry under the so-called 4–R Act have achieved "negligible results." Their concerns for the national purse strings with respect to this waterway ignore the fact that according to a study by Jesse J. Friedman and Associates in 1978, the Federal financial bailout of the Railroad Retirement Fund requires $7 to $9 billion in Federal funds. That is more than all the inland waterway expenses, Mr. Chairman, in 154 years.

Another aspect of this matter which must be considered by the Congress is safety. The L. & N.'s safety record on its present traffic level is abominable. Think of what it will be if its coal volume is doubled in the near future.

The railroads have studied the possibility of supplemental slurry pipeline transportation of coal. Mr. Osborne testified in his deposition that the present technology makes such slurry pipelines unfeasible.

Despite the railroad's inability to serve the Nation's energy transportation needs and despite the vital national interests which call for the rapid completion of this waterway as a coal traffic alternative, the selfish interest of the railroad continues to pour massive sums into the thus far futile efforts to prevent the waterway's completion.

This latest challenge has been precipitated largely by allegations made by the plaintiffs against the waterway. We submit that as their hopes grow dimmer to prevail in court, they have directed their efforts to the Congress and the news media.

We have prepared responses to these charges——

Senator MOYNIHAN. Could I just interrupt, sir. Are you suggesting this hearing is in some way the consequence of money expended by the Louisville and Nashville Railroad?

Mr. GHOLSON. I would respectfully suggest, Mr. Chairman, not that this committee is acting from that motivation but that——

Senator MOYNIHAN. The Chair would advise you to be very careful and explicit in what you suggest with respect to the activities of this subcommittee.

The chairman of this subcommittee has never met anybody from the L. & N. Railroad and does not like the idea that its money is in some way responsible for our being here. We are here in response to the concerns expressed by the Senate of the United States. And I should ask you to be most explicit in any implications you might make.

Mr. GHOLSON. I am respectfully aware of that, Mr. Chairman, and I do not wish to make any contrary implications. I mean to say and will explicitly say that the Congress as well as the news media have been bombarded in recent weeks and months by packets of information prepared by the railroad in its attack on the waterway.

I can, Mr. Chairman, and will gladly furnish copies of that information to the committee. I certainly do not mean to imply that these hearings are held for that purpose.

Senator MOYNIHAN. You are advised not to, sir. Please proceed.

Mr. GHOLSON. The opponents in their attacks on the waterway contend that as much as one-half of the construction costs of the waterway could be recovered through the sale of project lands if the project is in fact abandoned.

As of June 30 of this year, nearly $825 million have been spent on the waterway. Of that amount, about $46.5 million has been spent for land acquisition. It is estimated by the Corps of Engineers that if all the land acquired in fee were sold, it would total only about $28.8 million in recovery, which is indeed a far cry from the $400 million the opponents allege could be recovered.

If the project were terminated, nearly $800 million of costs already spent would be wasted, not including an additional $130 million which the States of Alabama and Mississippi have spent on high-level highway bridges.

In addition, about $144 million of additional Federal funds would be spent, according to corps estimates, to terminate these contracts, to pay contractor claims, and for other costs. Therefore, we submit that over $1 billion of Federal funds would be totally wasted if the Tennessee-Tombigbee Waterway is stopped. This is just an example of what we believe to be misinformation which is being disseminated.

The opponents also have alleged in court and in the media that the States of Alabama and Mississippi have not met their financial responsibilities to this project. We submit that that allegation is untrue.

Except for one, all of the necessary bridge relocations are either completed or are now underway. A contract for the remaining bridge in Mississippi has been approved. We have today copies of affidavits from Governor James of Alabama and from the agency heads in Mississippi responsible for these assurances, and these affidavits show that the State responsibilities have indeed already been fulfilled.

These States have issued $115 million of State bonds to help finance these bridges. Had the Tennessee-Tombigbee been authorized after 1952, the Federal Government would have borne practically the entire costs for these bridge relocations. This, in my understanding, is the case for other navigation projects authorized since 1952.

I am sure, Mr. Chairman, that you are familiar with the Hudson River and Buttermilk Channel navigation projects in New York and the impact that they have had on the economy of your State. It is my understanding that the State of New York did not have to contribute 1 dollar to these projects because of full financial funding.

I believe that everyone will have to agree that Alabama and Mississippi, based on their very limited revenues, have made a tremendous financial sacrifice to the development of the Tennessee-Tombigbee. This was done on the hope and assumption that the Federal Government will also fulfill its commitments to the project.

Probably the most serious allegation which has been made against the waterway is that its benefits are overstated. We believe that time will prove that the benefits are underestimated, as has been the case for other waterways, such as the Tennessee and the Arkansas Rivers.

The plaintiffs are trying to destroy the credibility of the transportation benefits by citing a very few companies which are claimed will not utilize the waterway. We would like to point out some of the fallacies of these contentions.

An exhaustive transportation analysis of the waterway was conducted in 1975 by A. T. Kearney Co. of Chicago, a nationally known management firm. We have an affidavit from the study manager of the A. T. Kearney Co. that this analysis was based on data received from the companies.

The plaintiffs claim that 8 of a total of 121 listed companies have no intention of using the waterway. In one case a representative who claimed that Kearney had not contacted his company is, according to the Kearney information sheets, the very person who furnished the information used.

This confidential information received by Kearney from the companies was made available to the plaintiffs in the litigation by the Federal courts under a protective order, but in some manner this information fell into the hands of the news media.

It is true that at least some of the commodity movements cited by the opponents do not any longer exist. We are not surprised by this development since business activities, including the shipment of materials and products, change based on competition and market conditions.

One of those companies that has been cited by the opponents is the Freeport Sulfur Co. A statement from that company states that the movements which were projected in 1975 in the study do not now exist because of competition with Canadian sources but that these movements were indeed legitimate when Kearney conducted its study and were not fabricated as has been alleged.

Opponents are attempting to sell the Congress on the idea that the Tennessee-Tombigbee is a $3 billion project. They contend that the economic justification of the waterway is dependent upon improvements on another river system, the Black Warrior-Tombigbee.

We do not believe that to be true. The benefit-to-cost ratio of the Tenn-Tom does not assume any future improvements on the Black Warrior-Tombigbee system between Demopolis and Mobile, nor does it assume any improvements on any other waterway.

While the Tenn-Tom will be able to accommodate an eight-barge tow, the connecting waterway below Demopolis will only serve a six-barge tow. Taking that into consideration, a fleeting center will be needed to rearrange the Tenn-Tom tows.

Any improvements on the lower Tombigbee River south of this project would increase the operational capacity of the Tenn-Tom and improve its economic efficiency. But without any improvements below Demopolis, the estimated annual transportation benefits are $105 million. If the identified improvements are made, these benefits would increase to about $125 million annually.

Opponents argue that the waterway below Demopolis cannot accommodate a six-barge tow. However, today we present a statement from a leading towing company that states that six-barge tows can physically and economically navigate this reach of the river and are now doing so.

In citing the $1 billion of additional improvements, the project opponents fail to point out that these improvements are not authorized by Congress and have not been found to be justified at this time and do not constitute a part of the Tennessee-Tombigbee waterway project. They also fail to point out that this $1 billion estimate includes some $750 million of additional costs due to future inflation between now and the time the improvements are estimated to be needed.

Mr. Chairman, I appreciate the opportunity to appear before your committee to present these views on behalf of the Tennessee-Tombigbee Waterway Development Authority. Thank you, sir.

[Attachments to Mr. Gholson's statement follow:]

ANSWERS TO THE ALLEGATIONS MADE AGAINST THE TENNESSEE-TOMBIGBEE WATERWAY

When opponents of the Tennessee-Tombigbee Waterway lost their court battle a few weeks ago, they moved those already disproven allegations to "trial" before the Congress and in the press.

It is these same half-truths, veiled innuendos, and outright falsehoods that have been contrived into outrageous allegations and presented as the case against the Tennessee-Tombigbee Waterway.

Detailed depositions taken from plaintiffs in the lawsuit seeking to halt Tenn-Tom revealed that the L & N Railroad financed the long and costly court battle. Now they are turning their resources to fighting the waterway in Congress.

It is obvious that their aim is to stiffle any competition that would force them to maintain an equitable and fair rate schedule. The Tennessee-Tombigbee Waterway might stand in the way of them writing their own ticket and holding southeastern shippers and consumers hostage to exorbitant transportation charges.

The following responses bring these veiled allegations out into the light of day so that all can see and judge them for the falsehoods they are.

ALLEGATION

"If the project were to be ended today, a very substantial portion of the moneys that have been expended are fully recoverable." "...50 percent of the costs that have already been expended on the waterway can be recovered through the sale of land."

RESPONSE

This allegation is totally untrue and indicative of the kind of fallacious and misleading statements being made by the project's opponents.

As of June 30, 1980, about $824.4 million of funds have been obligated on the waterway of which about $46.5 million have been spent for acquiring the lands for the project. To date, 90,884 acres have been acquired or about 87 percent of the total land acquisition for the project. Due to the construction activities on these lands, such as clearing, the Corps estimates that the present value of those lands acquired in fee is about $28.8 million. About 70,410 acres have been acquired in fee title which could be resold.

The resale of the property acquired for the waterway would only recover about 3 percent of the current Federal investment leaving a balance of nearly $800 million of project funds unrecovered. In addition, nearly $130 million for construction of high level bridges and other relocations performed as part of the waterway construction would be lost. Moreover, at least $144 million of additional expenses for terminating contracts, payments for contract claims and other related costs would be incurred if the project was terminated. Therefore, over $1 billion of investments or nearly two-thirds of the total project cost would be wasted if the waterway construction was terminated.

ALLEGATION

The Army Audit Agency report in 1976 indicated that local sponsors in Alabama and Mississippi would be unable to meet the requirements of local cooperation because of inadequate funding. The Federal Aid Highway Act of 1976 provided a Federal bailout for the states.

RESPONSE

At the time the AAA report was prepared, work on the Tenn-Tom had barely begun in Mississippi and, therefore, no need for the State to commit any financial resources to the project at that time. However, the State of Alabama had passed a $10 million bond referendum and was performing all of the relocations needed to comply with the Corps' construction schedule at that time.

Since 1976, the State of Mississippi has approved $80 million of bonding authority, an overwhelming financial burden for the nation's poorest state, to meet its waterway-related responsibilities. The State of Alabama has passed a total of $35 million for its contributions. Presently 12 of the 13 bridge relocations are either completed or underway. The remaining bridge will be initiated upon approval of the necessary Federal permits with $40 million of Mississippi bonds available to finance construction of this bridge. Alabama has $25 million of Tenn-Tom bonds yet to be issued. Therefore, it cannot be argued that the local cooperation requirements for the project have not been met. Affidavits of the Governor Fob James of Alabama and agency heads in Mississippi attest that these non-Federal responsibilities have been met for the waterway.

Had the Tenn-Tom been authorized after 1952, the Federal government would have incurred practically all of the bridge relocation costs instead of the two states, as had been the case for all Federal navigation projects authorized since then. Under the provisions of the so-called Truman-Hobbs Act, as amended in July 1952, the United States bears the costs of bridge alterations of relocations except those costs attributable to increased traffic capacity or other improvements.

While the State did receive assistance from the Federal Highway Assistance Act of 1975 in the amount of $89.5 million, the States have contributed about 46 percent of the estimated $165 million of the total costs of relocations. This contribution is significantly higher than that which would have been required if the Tenn-Tom had been fortunate as other projects to have been authorized after 1952. For "in-kind" bridge replacements, the percent of non-Federal contributions for post 1952 projects is about 3 to 5% of the total relocation costs. Moreover, such use of Federal funds is legal. Based on an opinion of the U. S. Comptroller General made in May 1977, the Corps may permit project sponsors to utilize Federal funds toward meeting its local cooperation requirements. The opinion resulted from a request of a city in Wisconsin to use HUD Community Development Block grants to fulfill its financial obligations toward construction of a flood control project. The Wisconsin case is no different than that for the Tenn-Tom.

ALLEGATION

Based on current interest rate for water projects now being formulated and not yet authorized, the benefit-to-cost ratio of the waterway is below unity.

RESPONSE

As dictated by Federal law and regulations, the applicable interest rate for determining the B/C ratio of the Tenn-Tom as well as other projects authorized prior to 1968 is $3\frac{1}{4}$ percent. The remaining B/C ratio of the project based on this interest rate is 2.5 to 1 or $2.50 return for each $1 remaining to be invested over the 50-year economic life of the waterway. The B/C ratio of the project based on total costs and benefits is 1.2 to 1, well above unity.

For comparative purposes, the remaining benefit-to-cost ratio of the authorized project using the current interest rate of 7 1/8 percent is 1.25 to 1, although this rate is not applicable to Tenn-Tom and other similar projects. It should be noted that water projects are the only projects for which B/C ratios are used as part of the decision-making process for authorizing and funding Federal projects and programs.

ALLEGATION

The navigation benefits identified by the Corps of Engineers for the Tenn-Tom are overstated and many of the companies claimed will use the waterway will not.

RESPONSE

The Tenn-Tom has been subjected to a continuing series of restudies and economic restudies and economic reanalyses during the past fifty years. Several of these restudies have shown variations in the kinds and amounts of commodities that could be economically shipped on the waterway as well as changes in the geographic area to be served by the waterway. Such variations are due to economic conditions and continuing changes in market conditions brought about by dynamic competition within the private sector. However, these reanalyses of the project's benefits over the years have continued to demonstrate the economic feasibility of the waterway.

The latest transportation restudy was conducted in 1975 by A. T. Kearney Co., Inc. of Chicago--a nationally known management consulting firm. During this study, the company contacted nearly 1000 potential shippers concerning their plans at that time for moving commodities. On the basis of personal contacts, including submission of information on government-approved survey forms by these companies, A. T. Kearney determined that 121 major movements of commodities could realize significant savings by utilizing the Tenn-Tom.

Because of government regulations adopted for Federal navigation projects, these estimates made by Kearney are most conservative. The identified movements only reflected those surveyed companies' present and planned shipments at that time and did not include future industrial growth in the area served by the Tenn-Tom, particularly that induced by the waterway. Everyone knows that waterways stimulate growth which will be significant for the Tenn-Tom since the waterway will serve some fourteen states.

The estimated savings in transportation costs resulting from use of the Tenn-Tom by these movements is $105 million annually throughout the fifty-year life of the waterway.

The confidential business information received by Kearney from the companies were provided to the plaintiffs in the present lawsuit against the Tenn-Tom by the Federal courts under a protective order. Some way, this detailed information of these companies' plans fell into the hands of certain reporters.

Undoubtedly, the representatives of those companies contacted by the press were greatly surprised that this information had been divulged. It is not surprising that these officials were reluctant to publicly commit their company to using a waterway or different mode of transportation still some six to eight years away from reality. In many cases, the companies cited were solely dependent on rail which was not presently providing the services needed by the company for transporting its shipments. Any overtures toward the Tenn-Tom would likely have worsen their plight.

It is obvious that the opponents are trying to destroy the entire credibility of the waterway's transportation benefits by citing and by contending that these movements and their savings associated by these were fabricated by A. T. Kearney and the Corps. This is totally untrue.

The manager of the Washington office of A. T. Kearney and manager of the Tenn-Tom study has sworn in an affidavit that his company's analyses were based on detailed information received from representatives of those companies. Moreover, written statements have been made by company officials, such as the President of Gulf Power Company of Florida, in response to these allegations that their companies do <u>in fact</u> plan on utilizing the Tenn-Tom.

In one case, a representative of one of the cited companies reported stated that his company not only did not plan on using the Tenn-Tom but had not even been contacted by Kearney during the study. The worksheets of Kearney show that this was the same individual who provided the detailed information on his company's plan to Kearney.

It is true that a couple of the movements cited by the opposition no longer exist. However, officials of these affected companies have stated that these movements were legitimate in 1975 but have been eliminated due to changes in market conditions or competition. As indicated above, it is recognized that some of these identified movements may not be in existence when the waterway is available while others not identified or known at the time of the 1975 survey will come into the picture. A traffic survey is more or less a camera snap shot of the conditions at the time. Changes are expected to occur before and after the picture is taken.

Statements have been received from several companies which identify movements that will utilize the Tenn-Tom which were not known in 1975. These identified movements, which are not the result of any exhaustive survey or reanalysis, involve substantial savings in transportation costs or benefits to the waterway.

If the transportation savings or benefits claimed for the Tenn-Tom were overstated or false, would L & N Railroad, the principal opponent, be spending hundreds of thousands of dollars to stop the project? Without the Tenn-Tom, L & N with its pending merger with C & O Railroad will enjoy a monopoly in moving commodities, particularly coal, from eastern Kentucky and Tennessee to the southeastern states, such as Florida. Depositions of officials of L & N Railroad confirm that the plaintiffs sole interest in Tenn-Tom is competition. The allegations raised by the railroad concerning the waterway's economics and environmental effects are nothing but a ruse to fulfill their profit motives.

The Tenn-Tom, like other waterways, will only transport bulk-type commodities, such as coal and grain. With the projected great demands for these commodities in the future, it will require improvement and expansion of all the nation's modes of transportation to efficiently move these goods from producing areas to market places. Only L & N Railroad fails to recognize this reality.

ALLEGATION

To make the Tenn-Tom a functional waterway, an additional $1 billion must be spent on imporvements to the existing Warrior-Tombigbee Waterway between Demopolis and Mobile, Alabama.

RESPONSE

The Tenn-Tom, as authorized in 1946 and is now being constructed, extends from Demopolis 232 miles northward to the Tennessee River near Pickwick Dam. The current benefit-to-cost ratio of 2.5 to 1, based on remaining costs and benefits do not include or assume any future improvements on the Black Warrior system below Demopolis or any of the other connecting waterways.

While the Tenn-Tom will be able to accommodate an eight-barge tow, its transportation benefits recognize that only a six-barge tow can efficiently utilize the Tombigbee Waterway below Demopolis. At that point a fleeting center will be needed to rearrange the Tenn-Tom tows into six-barge tows. A fleeting center will also be needed at the northern end of the Tenn-Tom since the average tows on the Tennessee River are larger than eight barges. This kind of operation is not unique from other connecting waterways. For example, the very large tows on the Lower Mississippi River must be broken down and reassembled to continue up the Arkansas River which will only accommodate a four-barge tow.

It is no question that any improvements made on the lower Tombigbee River would likely increase the operation capacity of the Tenn-Tom and improve its economic efficiency. Without any improvements below Demopolis, the estimated annual transportation benefits of the Tenn-Tom are $105 million annually. If the identified improvements were made, these benefits would increase to $125 million. Improvements on the Tennessee, Ohio, the Upper Mississippi and any other waterways with which the Tenn-Tom will serve will also improve the efficiency of the Tenn-Tom. The efficiency of these connecting waterways will likewise be enhanced by the Tenn-Tom.

The Corps of Engineers is presently studying the feasibility of improvements below Demopolis as part of its continuing investigation of the Black Warrior-Tombigbee Navigation Project. This study will not be completed for three years. If found to be economically feasible and environmentally sound by the Executive Branch, improvements on this waterway would require the review and approval by the Congress, both for authorization and funding.

Opponents argue that the waterway below Demopolis will not accommodate a six-barge tow. However, barge companies state it is physically and economically practicable to navigate six-barge tows on this reach of the waterway and their records indicate such is the case.

In citing the $1 billion of additional improvements, the project opponents fail to point out that these very preliminary cost estimates include $750 million for future inflation since they are not expected to be needed until 1997, some 12 years after the Tenn-Tom is completed, if they are found to be feasible and are approved by the Congress at this time.

ALLEGATION

The Corps of Engineers have increased the width of the Tenn-Tom and made other major changes in design of the project without the approval of the Congress.

RESPONSE

This allegation was the centerpiece of the lawsuit filed by L & N Railroad against the Tenn-Tom in 1976. The Federal Judge heard five days of testimony on this allegation and subsequently ruled against the plaintiffs on this issue. It was not until the U. S. Fifth Circuit Court of Appeals upheld the District Court's ruling in March 1980, that the plaintiffs decided to retry their case in the U. S. Congress.

The L & N Railroad and the other plaintiffs were aware of the revised dimensions of the Tenn-Tom as early as 1966 when the Secretary of the Army recommended to the Congress that its width be increased to conform with other waterways being constructed at that time. Yet the plaintiffs failed to raise their objections in the courts until some ten years later and just recently in the Congress after the waterway is nearly 50 percent completed.

The Corps of Engineers has presented documents as well as testimony each year since 1966 concerning the dimensions of the Tenn-Tom as well as other relevant information on the project. Over $800 million have been funded for the construction of the project by the Congress on the basis of this information.

ALLEGATION

The Corps of Engineers purposely withheld information on increased costs of the Tenn-Tom from the Congress.

RESPONSE

This is just another example of the opposition attempting to stop the Tenn-Tom by attacking the integrity of the Corps of Engineers--the builder of the waterway.

In the fiscal year 1977, a major increase in project costs was reported to the Congress by the Corps, from $815 million the previous year to $1.36 billion. This large increase was due primarily to the bid experiences on large contracts awarded immediately after the oil embargo in 1973 and reflected the uncertainties of future oil prices on construction materials and work. Later experience showed that this estimate was too high based on current price levels at that time.

Previous estimates made each year by the Corps for water projects did not include future inflationary effects. (This policy was subsequently changed this year, and the currently estimated Federal cost of $1.75 billion includes about $100 million for future inflation.)

The Corps was concerned about the impact of oil price increases by OPEC on the costs of the Tenn-Tom and initiated an indepth review of the project costs. Prior to the 1977 budget submission which reflected the large cost increase, the South Atlantic Division Engineer of the Corps alerted the Congress of a forthcoming major increase in the project costs.

The Chief of Engineers, Lt. General John Morris, stated during his testimony in February 1979 before the House Appropriations Subcommittee for Energy and Water Development that this cost increase, while not reported in the early appropriations hearings in 1976, was later provided to the Appropriations Committees before their approval of the Tenn-Tom appropriations for that year.

It is important to note that if the Corps had wanted to keep these costs from the Congress, they could have withheld them indefinitely until even now or later when the project was further toward completion. Of course, this is not the case neither was there deceit in that the Corps did not report the cost increase as promptly as hindsight may now dictate. The Army Audit Agency report so frequently quoted out of context by the project opponents was actually initiated by General Morris. Had the Corps had something to hide, would he have initiated the audit?

It is also important to point out that the Congress as well as the Executive branch have continued to fund the waterway at optimal levels since these costs increases were reported since the project is still economically justified.

ALLEGATION

The Corps of Engineers has violated state and federal environmental laws in building the Tennessee-Tombigbee Waterway. The project is an "environmental disaster". "Additional costs--possibly in the hundreds of millions--will be needed to comply with the Fish and Wildlife Coordination Act."

RESPONSE

The Tennessee-Tombigbee Waterway is the most environmentally studied water project in the world, having been the first constructed under stringent NEPA guidelines established in 1970. No other waterway has ever been built under such close scrunity.

The first Environmental Impact Statement (EIS) of the Tenn-Tom was filed by the Corps in April 1971. Continuing environmental studies have not revealed any significant deviations; therefore, it is still valid. A nine-volume set of these continuing studies was appended to the EIS in October, 1975. A second supplemental report was filed in February 1978. Environmental evaluations will continue as construction proceeds and after the waterway is in operation.

Since 1971, an independent Environmental Board of Consultants have monitored every phase of construction and insisted on some construction changes that have increased costs but assured an improved natural environment. The formation of this board, the first of its kind, has prompted similar boards to be formed. In Washington, a similar board was formed through the Office of the Chief of Engineers to review and recommend national environmental policies related to Corps projects and programs.

Members of the Tennessee-Tombigbee Waterway Environmental Board are: Gerald McLindon, Dean of the School of Environmental Design, Louisiana State Univeristy, Chairman; Philip E. LaMoreaux, a consulting hydrologist and geologist and former Alabama State geologist; Dr. Stanley Auerbach, zoologist, Director of Environmental Sciences of Union Carbide's nuclear division, Oak Ridge National Laboratory and former University of Georgia professor.

Some examples of results of the work of the Board of Environmental Consultants are:

(1) Resiting Columbus Lock and Dam to preserve the ecologically important Plymouth Bluff.

(2) Developed solutions for disposal of excavated materials with emphasis on long range environmental improvements.

(3) The board was instrumental in the development and adoption of the Chain-of-Lakes concept to replace the "perched canal". Five small reservoirs are created on the "Chain-of-Lakes" resulting in a more environmentally acceptable plan.

(4) Fish attractors are provided in all lakes on the waterway at the behest of the board. On a Saturday in mid-June 1980, at one recreation area alone (China Bluff near Gainesville, Alabama), all available parking areas were taken before 6:00 a.m. Lines waited as much as an hour for use of boat launch areas. Catches have been impressive.

(5) Special attention to development of fish and wildlife habitat has resulted in exceptionally strong support for the waterway from sportsmen and their organizations.

Many of the environmental innovations carried out in design and construction of the Tennessee-Tombigbee Waterway will lead to improved environmental approaches in other areas, such as strip-mining according to Board Chairman McLindon.

The results of the intense environmental efforts on Tenn-Tom are bound to serve as a bellwether for every project for decades to come.

General John W. Morris, Chief, U. S. Army Corps of Engineers, recently said, "the Tennessee-Tombigbee Waterway has been the Corps' "standard-bearer" in efforts to achieve environmental sensitivity in engineering and design of public works projects.

There are no legal requirements that a mitigation study must be done prior to construction of a federal project. However, the Corps and the U. S. Fish and Wildlife Service have been working on an overall coordinated mitigation study of the project. This mitigation study is only one phase of the Corps' continuing environmental monitoring of the impact on the waterway.

The mitigation study will determine the need and method for mitigation of wildlife habitat losses.

The draft study by the Fish and Wildlife Service contracted last fall and now under review contains a plan for intensive management of about 118,000 acres to mitigate all possible losses as a result of the Tenn-Tom. The estimated cost is approximately $38 million, far less than the charge of "hundreds of millions of dollars" alleged by the opponents. The draft study will be reviewed by appropriate federal and state agencies and then a final report developed by the Fish and Wildlife and the Corps. This report will be submitted to Congress for its review and consideration.

STATE OF MISSISSIPPI)
COUNTY OF LEE)

AFFIDAVIT

Personally appeared before me, the undersigned authority of law, in and for said county and state, BOBBY G. RICHARDSON, who, after being by me duly sworn, deposed and stated on his oath as follows:

I

I am an adult, resident citizen of Tupelo, Mississippi, and I am the duly elected and serving Highway Commissioner of the Northern District of the State of Mississippi.

II

The Northern District of Mississippi comprises counties including all of the local requirements for highway and bridge relocations and other local construction projects in connection with the construction of the Tennessee-Tombigbee Waterway.

III

The State of Mississippi has fulfilled its local responsibilities for Waterway projects both through the Mississippi Highway Department and its construction and relocation activities and through the activities and funding of the Tombigbee River Valley Water Management District.

IV

I state of my personal knowledge and based upon the examination of the records of the Mississippi Highway Department, that all construction projects including all bridge and highway relocations required for local responsibilities for the State of Mississippi for the Tennessee-Tombigbee Waterway have either been completed or are now under contract except for a new bridge on U. S. Highway 78 crossing the Waterway.

V

I state of personal knowledge and based upon examination of the records that there are adequate funds available to bear the cost of constructing the Highway 78 Bridge and the State of Mississippi will see that said bridge is contracted for and

constructed in accordance with the requirements of the authorizing documents of the Tennessee-Tombigbee Waterway and in cooperation with and in compliance with the standards of the U. S. Army Corps of Engineers.

VI

There has never been any failure on the part of the State of Mississippi to accept and to meet the local requirements placed upon the State of Mississippi in connection with the construction of this Waterway.

Further affiant saith not, this 11 day of July, 1980.

Bobby G. Richardson

SWORN TO AND SUBSCRIBED before me this 11 day of July, 1980.

Notary Public

(SEAL)

My commission expires:
My Commission Expires March 21, 1983

STATE OF ALABAMA)
COUNTY OF MONTGOMERY)

AFFIDAVIT

Personally appeared before me, the undersigned authority of law, in and for said county and state, HONORABLE FOB JAMES, Governor of the State of Alabama, who, after being duly sworn, deposed and stated on his oath as follows, to-wit:

I

As Governor of the State of Alabama, I am the Chairman of the Tombigbee Valley Development Authority.

II

The Tombigbee Valley Development Authority is a State Agency of the State of Alabama which is the sponsoring agency for the Tennessee-Tombigbee Waterway charged with the responsibility of fulfilling local responsibilities and commitments under the authorizing legislation of the Tennessee-Tombigbee Waterway.

III

I have investigated the records of the Tombigbee Valley Development Authority and the facts surrounding the fulfillment of local responsibilities in connection with the construction of the Waterway, including bridge and highway relocations and all other local funding responsibilities.

IV

Based upon my investigation and knowledge of these facts, I can state unequivocally that every construction project, relocation and other requirement of the State of Alabama in connection with the Waterway has either been completed or is now under construction with adequate funding available to meet the costs required.

V

The Tombigbee Valley Development Authority has approximately $25,000,000 in additional bonding capacity which we do not anticipate will be called upon for the completion for these local sponsorship requirements.

Further affiant saith not, this 10th day of July, 1980.

Fob James, Governor of Alabama

SWORN TO AND SUBSCRIBED before me this 10th day of July, 1980.

Notary Public

(SEAL)

My commission expires:

3-29-81

STATE OF MISSISSIPPI)
COUNTY OF LOWNDES)

AFFIDAVIT

Personally appeared before me, the undersigned authority of law, in and for said county and state, LARRY DILLARD, who, after being by me duly sworn, deposed and stated on his oath as follows:

I

I am an adult, resident citizen of Tupelo, Mississippi, and I am the duly appointed and currently acting Executive Director of the Tombigbee River Valley Water Management District.

II

The Tombigbee River Valley Water Management District is an agency created by the Legislature and Governor of the State of Mississippi funded by ad valorem taxes deducted from the general tax fund of the counties comprising this Water Management District. It exists for the purpose of developing water resources in the counties comprising the District and especially and directly for the purpose of serving as the sponsoring agency for the fulfillment of the State of Mississippi's responsibilities with respect to the construction of the Tennessee-Tombigbee Waterway.

III

The TRVMD has the capacity to issue and sell revenue bonds for the purpose of providing funds for the necessary improvements and has issued and sold such bonds.

IV

The costs of constructing highway and bridge reloations and other local requirements which were and are the responsibility of the State of Mississippi in connection with the Waterway construction have been borne both by the Tombigbee River Valley Water Management District and by the State Highway Department. To the extent that at any time in the period of authorization and construction of this Waterway the local responsibilities exceeded the funds available through the Tombigbee River Valley

Water Management District, these funds have been available and provided by the State Highway Department of the State of Mississippi.

V

I state of my personal knowledge and after an examination of relevant documents that all local responsibilities of the State of Mississippi for construction projects in connection with the Tennessee-Tombigbee Waterway have either been completed or are now under contract except for the new bridge on U. S. Highway 78 crossing the Waterway. Funds are available which are entirely adequate to pay the cost of constructing the Highway 78 Bridge and there is no possibility that the State of Mississippi will default in the fulfillment of its obligations for the local requirements in connection with the construction of this Waterway.

Further affiant saith not, this 10th day of July, 1980.

Larry Dillard

Larry Dillard

SWORN TO AND SUBSCRIBED before me this 10th day of July, 1980.

Barbara B. Bradford

Notary Public

(SEAL)

My commission expires:

8-1-81

Alexandria)

Virginia)

AFFIDAVIT OF JOHN W. EGAN

Personally appeared before me, the undersigned authority of law, in and for said city and state, John W. Egan, who, after being first by me duly sworn, deposed and stated on his oath as follows:

I

Affiant is a Vice President and Manager of Government Operations of A. T. Kearney Inc., the consulting firm which contracted with the U. S. Army Corps of Engineers to perform certain survey work and analysis in connection with the 1975 Economic Re-Analysis of the Tennessee-Tombigbee Waterway.

II

The undersigned affiant has personally examined the records of A. T. Kearney, Inc. in connection with the survey performed by that company for that re-analysis with particular respect to the shipments which the "Kearney Report" utilized in computing navigation benefits presented as part of that report.

III

With respect to the following reported potential shipments, the records of A. T. Kearney Inc., show that representatives of the various companies were contacted by employees of A. T. Kearney, Inc and that each such respondent gave information by telephone or personal conference or submission of Corps of Engineers' written survey forms. This information was, properly included into the analysis made by A. T. Kearney, Inc.

IV

The information described includes the following companies:

A. Gulf Power Company of Florida;

B. Kentucky Energy Development Company;

C. Hawley Fuel Company;

D. Freeport Sulphur Company;

E. Hammermill Paper Company, Selma, Alabama;

F. Aluminum Company of America, Pittsburgh, Pennsylvania;

G. International Paper Company, New York, New York;

H. Amax Coal Company, Indianapolis, Indiana.

With respect to Hammermill Paper Company, Selma, Alabama, it is the understanding of affiant that Mr. H. Leroy Wiedner of that company has made statements denying that information was given as incorporated in the Kearney report.

Affiant has made a special effort to re-confirm the information used with respect to Hammermill Paper Company. The survey work sheets show that Mr. H. Leroy (Lee) Wiedner of Hammermill Paper Company was contacted by A. T. Kearney, Inc. and that Hammermill furnished the information used by A. T. Kearney, Inc. in compiling its report.

V

Affiant further states that typically information on movements included in the final report was developed by and also reviewed by more than one staff member on the project. Further, the report and analysis was closely scrutinized and reviewed by the Corps of Engineers management. A. T. Kearney, Inc was responsible for its contracted project. The final benefits and cost estimates for the project were the responsibility of the Corps of Engineers. Our experience on the project indicates that the Corps of Engineers undertook this responsibility to it's fullest extent.

VI

Affiant can state of his knowledge that no effort was made by A. T. Kearney, Inc. to force any conclusion from this survey or to distort or conceal any of the information which the survey efforts produced. The survey report was an objective, factual honestly documented, and professionally conducted project.

Further affiant saith not, this 23rd, day of July 1980.

John W. Egan

John W. Egan
Vice President

SWORN TO AND SUBSCRIBED before me, this 23rd, day of July 1980.

Notary Public

STATE OF VIRGINIA
CITY OF ALEXANDRIA

(SEAL)

My commission expires: 10-9-83

FREEPORT

FREEPORT SULPHUR COMPANY • COMMERCE BUILDING, NEW ORLEANS

A DIVISION OF FREEPORT MINERALS COMPANY

ADDRESS CORRESPONDENCE P.O. BOX 61520
NEW ORLEANS, LA. 70161

July 19, 1980

Mr. Glover Wilkins, Administrator
Tennessee-Tombigbee Waterway Development Authority
Madison Hotel
15th and M Streets NW
Washington, D. C. 20036

Dear Mr. Wilkins

In response to an inquiry in May 1975 concerning potential benefits which would result from development of the Tennessee-Tombigbee Waterway project werresponded by indisating that 225,000 tons per annum of Crude Sulphur would ship from Pensacola, Florida by barge to Ohio River destinations.

Although we did not anticipate the change in competitive market forces at that time, recovered sulphur from sour natural gas and crude oil penetrated this market area and our tonnage diminished to 100,000 tons per annum in 1979. In 1980 we are in the process of phasing out of this area entirely. We anticipate that our waterbourne shipments to Ohio River destinations will cease by year end. The new sources of supply will apparently be delivered by rail.

I trust that you can appreciate the change which developed in our marketing and distribution system which was beyond our control and expectations at the time of the survey.

Sincerely,

L. R. Dartez - Manager
Transportation and Terminaling

LRD/lrd

JUL 21 1980

PARKER TOWING COMPANY, INC.
P. O. BOX 72 • TUSCALOOSA, ALABAMA 35402 • 205-349-1677

July 18, 1980

Tennessee-Tombigbee Waterway
Development Authority
P. O. Drawer 671
Columbus, Mississippi 39701

ATTENTION: Mr. Donald G. Waldon

TO WHOM IT MAY CONCERN:

Dear Sir:

In regards to the question of four (4) versus six (6) barge tows on the Black Warrior-Tombigbee River System between Demopolis, Alabama, and Mobile, Alabama, please be advised that Parker Towing Company and other barge lines have been routinely operating six (6) barge tows between these two (2) areas for several years. The movements are so common place that we are building new linehaul boats with that feature in mind. There is no question in our mind that six (6) barge tows on the Black Warrior-Tombigbee River System are an everyday fact of life.

Parker Towing Company has been operating on the Black Warrior-Tombigbee River System for over forty (40) years. We have ten (10) towboats of our own, six (6) of which will routinely handle six (6) barge tows on the Black Warrior-Tombigbee.

Sincerely,

Tim Parker, Jr.
Tim Parker, Jr.

TPJ/i

Senator MOYNIHAN. Thank you, Mr. Gholson. We will return to your testimony and some of the propositions you raised when we finish with the full panel.

I have first to introduce to our guests this morning the distinguished colleagues who do not need to be introduced, but I think their presence should be acknowledged. Senator Chafee of Rhode Island is very much involved in another matter, the Alaska lands issue, and is only able to get away briefly. He must return to that conference which is now underway.

Would you like to say a word before you do? I have some questions on your behalf which we will, of course, address to the panel.

Senator CHAFEE. Thank you very much, Mr. Chairman. I have to return to that mediation session we have with the Alaska lands. I have a couple of questions which I would hope that you would ask on my behalf. Then I will read over the record very thoroughly. I appreciate that.

I regret that I am unable to stay to hear all of the witnesses and have a chance to discuss the situation further with them and also with the opponents. Thank you.

Senator MOYNIHAN. You have been one of the most vigorous exponents of inquiry into this subject. If it is here, it is very much owing to your enterprise in the matter. We thank you for this time you are able to give us.

Senator Bentsen, would you like to speak to this case? We welcome you as a colleague.

Senator BENTSEN. Thank you very much, Mr. Chairman. I am delighted to be here.

I have had a long-term interest in Tombigbee, but I think that this committee is serving a useful purpose in further evaluating it, seeing what additional construction is projected and what the costs and benefits happen to be.

For the moment I want to absorb the information rather than ask questions. I appreciate the opportunity to be here. I am not going to be, unfortunately, able to stay too long because, as you know, the Finance Committee is underway and I have been asked to chair it later in the morning. Thank you.

Senator MOYNIHAN. We thank you. Such is the condition toward the end of the Congress when we are all supposed to be in more than one place, as I am sure our witnesses are.

Mr. Wilkins, who would you wish to speak next?

Mr. WILKINS. It gives me a great deal of pleasure to present to this committee Dean Gerald McLindon of the School of Environmental Design, Louisiana State University.

STATEMENT OF GERALD J. McLINDON

Mr. MCLINDON. Thank you very much, Mr. Chairman.

If I may, let me modify my job title. Recently I suffered a disabling accident and as of July 1, I went on disability retirement from the Louisiana State University. So I am now dean emeritus of Louisiana State University.

Senator MOYNIHAN. That which there could be no more honorific condition.

Mr. MCLINDON. Thank you very much, Mr. Chairman.

I have prepared an affidavit which has been submitted to you. Now I would like to just——

Senator MOYNIHAN. We will place that in the record.

Mr. MCLINDON. It is indeed, sir, in the record.

[The affidavit and Mr. McLindon's prepared statement appear at p. 118.]

Mr. MCLINDON. At this time let me just speak from the heart, if I may.

I am a member and this year chairman of the three-man board of environmental consultants for the Tennessee-Tombigbee Waterway. The other members are Dr. Stanley I. Auerbach who is a noted ecologist from the National Laboratories and Dr. Philip Lamoreaux who is an internationally renowned hydrologist and geologist. Dr. Dan Nelson, also an ecologist, served from 1971 until his death in 1975.

Since 1971 this board has been involved with every aspect of the development of the Tennessee Tombigbee Waterway, and our particular charge as an independent board has been to review the progress of the works and to comment and advise the Mobile and Nashville districts of the Corps of Engineers on the suitability of the works and how they relate to the environment.

The major task assigned to us was to find out ways of reducing the environmental impacts of this project. Over the years, we have worked very closely with the corps staff in meetings, reviewing and commenting on studies, and in reviewing every aspect of the project, in the field. We have commented quite freely upon the impacts as we perceive them.

Before going into the environmental aspects of the waterway, I would like to address some planning considerations. I get the feeling that the Tennessee-Tombigbee Waterway is looked upon as being a local waterway connection serving Mississippi and Alabama. When you examine this waterway in terms of national import, you find it has great significance nationally and particularly for the eastern one-third of the Nation.

First of all, we know that in this country 74 percent of the population has settled in coastal areas. Over the years there have been many efforts to distribute population into inland areas of the country. The coastal zones are the most environmentally fragile areas. Tenn-Tom represents a big step forward in opening up other segments of the country for future settlements.

Secondly, the area through which the waterway passes and the area which it serves has been economically stressed for generations—nigh, a century. The availability of this waterway will again open up industrial opportunities and permit the small towns and communities in this entire region to offer a viable location for living. Therefore, the waterway assists in distributing population, particularly future populations, more equitably throughout the country and away from coastal regions.

Thirdly, the Tennessee-Tombigbee ties in with the Tennessee River system, the Ohio River system and the upper Mississippi River system, and this total system serves those areas of the country in which there are known concentrations of coal.

As a Nation we are now recognizing the importance of coal and coal shipments to our future, and as one of the resource for solving known energy problems.

The Tennessee-Tombigbee Waterway is a vital link in the entire waterway system and, for instance, on the Tennessee River system and the Ohio River system, will shorten the trip to the gulf by some 400 miles, which means a savings in money and time.

Fourthly, the gulf coast, where we have very intensive settlements in coastal regions, is an area of great natural hazard. Every year the Gulf Coast States are visited by some form of storm be it hurricane or tornado. Every year we have to go in and repair the damages resulting from these natural onslaughts.

By offering other locations for industries, communities and towns, Tenn-Tom will enable the settlement and the development of contiguous areas in an orderly fashion and reduce the risk of damages which can result from natural hazards. By not having the people in the coastal zone, we remove them from those direct hazards.

Lastly, and a very significant concern, if you study the waterway systems of the United States, you find that a very large portion of this country is dependent upon the Mississippi River outlet. Those who are familiar with the system realize in the vicinity of New Orleans, the Mississippi River has already reached a point of congestion. As we sit here, the Mississippi Gulf outlet is closed.

Senator MOYNIHAN. Would you say that again? That was a rather striking statement.

Mr. MCLINDON. The Mississippi River gulf outlet is closed as of this moment. There was an accident there 2 days ago. Toxic materials entered the water and as a safety measure the gulf outlet is closed today. That will be for a short-term condition, but it is a very wise decision which has been made.

I would point out in terms of long-range development and national defense, that should any disastrous event occur on the lower stretches of the Mississippi River closing the river, that we would have no alternative outlet.

Tenn-Tom offers another outlet which will serve at least the Tennessee and Ohio Rivers, and the upper Mississippi River. In terms of our security, in terms of commerce, in terms of being able to keep the country moving, the Tennessee-Tombigbee is a vital part of our total waterway system and should be allowed to go forward and to be completed as rapidly as possible.

Turning to the environmental matters, the Corps of Engineers prepared an environmental impact statement for the Tenn-Tom and we as a board of environmental consultants were asked to review that environmental impact statement. This we did, and found that in our opinion that statement recognized all of the significant impacts that would result from the development of the Tennessee-Tombigbee Waterway.

Since that time, the corps has continued its studies into all aspects of development. They have looked at ground waters, surface waters, and water quality. They have looked at the archeological and historical aspects, ecosystems and mitigation. There is a long list of continuing studies made in an effort to ascertain that

those original impacts were in fact as stated and that there are no additional impacts.

During that period of time, the board of environmental consultants has reviewed all of this work, and in our opinion there have been no additional significant impacts resulting from the development of this waterway.

I would like to read a statement now from my affidavit which I believe summarizes the board's review of Tenn-Tom in terms of the environmental studies. Mr. Chairman, I hope you will appreciate that we have been at work for 10 years in a great deal of detail and it is very difficult to summarize all that work in 10 minutes. So I ask you to accept this as an honest statement.

Based upon my experience in the field of environmental planning, my direct involvement in the continuing environmental studies process, my review of project design statements and environmental study reports, my personal inspection of the ongoing construction activities and my involvement as a member of the board of environmental consultants, I can unequivocally state that the Tennessee-Tombigbee Waterway is being developed in a manner which in my opinion truly exemplifies the spirit and the intent of NEPA.

In keeping with the stated goals of minimizing the environmental impacts of the project, the Corps of Engineers has undertaken or caused to be undertaken studies and research which are far and above that which one would reasonably expect for a project of this type.

I can further state that as a result of these studies and/or construction, no new significant environmental impacts have been discovered which were not considered in the EIS or the previous litigation.

The continuing environmental studies have served to expand upon and further define the identified impacts but have not brought forward any significant new issues. All of the design refinements which have been implemented on the waterway have been subjected to the scrutiny of the Corps of Engineers environmental staffs, other Federal and non-Federal agencies, and the board of environmental consultants.

These design refinements meet the overall objectives of minimizing environmental damage and providing environmental protection and enhancement. I am convinced that history will prove that the Tennessee-Tombigbee Waterway is an outstanding example of what can be gained from the implementation of good interdisciplinary planning and that these works in total will contribute substantially to the quality of life for people and to environmental enhancement.

I can simply tell you that we as a board, continuing to review these projects, feel that the corps has done an exemplary job not only in identifying the impacts but in trying to mitigate them and to provide enhancement.

Thank you very much, Mr. Chairman.

Senator MOYNIHAN. Dean, we thank you for your careful statement. I would like to say that what with your deep southern accent how can we not accept the total integrity of your purposes, which we would do regardless of that fine Baton Rouge burr that you have acquired somehow.

Mr. McLINDON. Mr. Chairman, I am practicing saying "y'all."

Senator STENNIS. Mr. Chairman?

Senator MOYNIHAN. Yes, Senator.

Senator STENNIS. I have a statement from Gov. William Winter of Mississippi.

Senator MOYNIHAN. Would you wish to read it?

Senator STENNIS. No, thank you. I would ask that it be placed in the record.

Senator MOYNIHAN. So ordered.

Senator STENNIS. I would appreciate that. I have a statement of my own and information that I requested the Library of Congress to furnish to me. I ask the same for that, inclusion in the record.

Senator MOYNIHAN. Without objection, so ordered.

[The statements follows:]

JOHN C. STENNIS

STATEMENT BEFORE THE

SENATE SUBCOMMITTEE ON WATER RESOURCES

July 25, 1980

Mr. Chairman, I thank you for your kind invitation to appear before the Committee as it conducts oversight hearings on national waterway development as it relates to the production of coal.

The Committee's initiative at this particular time in our nation's history is particularly noteworthy. The importance of these hearings is underscored by the urgency of the country's energy situation.

The adverse effects of an excessive reliance on imported oil has been made clear to us all. The 1973-74 oil embargo disrupted the world economy and had a serious impact on production, jobs, and employment. The current economic crisis which was stimulated by a curtailment of Iranian oil production, followed by another round of OPEC initiated price increases, illustrates the vulnerability of the economy to petroleum.

The continuing risk of supply interruption and irresponsibile oil pricing is a serious threat to the economy of our country and to our National Security.

The petroleum situation has prompted a high level of interest in coal as an alternavtive fuel to oil.

The actions of this Congress and many foreign nations have launched the long expected rise in world demand for coal. The recent initiative to switch utilities to coal in this country and the agreement of world leaders at the Western Economic Summit in Venice are expected to establish the early demand for greatly increased production of the vast coal resources of the United States.

The main stimulus for coal production is the expected increase in oil prices and the very risky outlook for oil availability. The great abundance of coal in the United States has attracted the energy market to this source of energy. U. S. steam coal shipments are expected to increase dramatically. In the first four months of this year coal export shipments doubled. It has been estimated in study after study that to meet the demands coal production will have to increase two and one half to three times and the world trade in steam coal will have to grow 10 to 15 times above 1979 levels by the year 2000.

This kind of expansion will require a massive effort to expand facilities for the production, transport, and use of coal. Our transportation facilities, railways, highways, waterways, pipelines, ports and harbors will be especially stressed by the needs of this increased commerce.

Already the precursors of serious transportation bottlenecks have been highlighted by rail car shortages and long lines of ships off our shores which are waiting to load.

As the Chairman knows, I am deeply concerned that the Senate has not yet approved a water projects bill. The lack of such legislation since 1976 has resulted in a large backlog of navigation, waterway, and port development projects which are urgently needed for a smooth transition to coal, oil shale, and synthetic fuels.

The ability to transport bulk cargo from the agricultural, industrial and energy resource centers is essential for our future economic sustenance and growth.

It is extremely urgent that we continue the development of our national transport system. For more than 30 years, I have served on Senate committees having jurisdiction of water resources, first as a member of the Authorizing Committee and more recently as a member and for several years as Chairman of the Appropriations Subcommittee on Energy and Water Resources. During this period I had the opportunity to gain firsthand knowledge of the tremendous potential and importance of our water resources and have tried to help in the growth and development of our water resources assets throughout the nation. I am proud that I could share in the initiation of many of the great national navigation projects that made possible our continued economic progress. These projects have extended navigation to areas which were economically stagnant but are now contributing to the betterment of our entire economy.

In this regard, I am struck by the discussion here today on the benefit to cost ratio. I believe, Mr. Chairman, that perhaps we have overemphasized the value of benefit to cost ratios. The ratio was initially conceived and utilized to establish investment priorities. It by no means ever was believed to include all of the benefits or costs which could result from a given investment.

Clearly, the benefit to cost ratio has been a very conservative tool for analysis. History has proven times and time again that the benefits without exception are on the low side.

I urge the Committee to consider the tremendous benefits and importance of the Tennessee-Tombigbee as a vital link to our national energy and economic future.

This waterway, which connects the heart of the huge eastern coal basin and great agricultural lands of the middle Atlantic to the Gulf of Mexico will shorten the transport distance for coal, grain, and other bulk cargo to the Gulf of Mexico. It was make available the inherent advantages of highly efficient water barges over a shorter route to the ocean. The Waterway is 50 percent complete and when finished in 1986 will provide for low cost transportation to and from the middle American States. The great economic benefit is evident. The savings in energy and transportation costs, and induced economic growth will repay this investment many times over. These great savings will result in lower

transportation costs which ultimately will be passed along to the consumer of the products being shipped. Shippers, on the other hand, will find their products more competitive.

Perhaps the greatest single concern of the world today is the availability of a ready source of energy. It is evident that the best chance we have to solve the immediate energy crisis is with the great coal deposits found in the Appalachian Region. Methods of transporting this coal poses a most serious economic problem which can only be solved by all modes of transportation working together. It will be impossible for all these other modes of transportation to move this coal to market and for export without the Tennessee-Tombigbee Waterway in place.

The farsighted decision by Congress and the Executive Branch to build this waterway was made over 13 years ago. We are now nine years into actual construction. With the completion date very near, coal and other commodities can soon be moved over this waterway route at less cost ever obtained to and from the heartlands of America.

The urgency of achieving national energy independence confirms the foresight of many planners which include four Presidents and many Congresses who have recognized the strategic and economic importance of this shorter route. It links the waters of the Tennessee, Ohio, and upper Mississippi Rivers in the North to the Port of Mobile and the Gulf Intracoastal Waterway in the South. There is no time to lose.

I urge the Committee to join in supporting the completion of this vital project.

Congressional Research Service
The Library of Congress

Washington, D.C. 20540

August 4, 1980

TO : The Honorable John C. Stennis
Attention: Jim Jordan

FROM : Jane Gravelle
Specialist in Taxation
Economics Division

SUBJECT : Benefit-Cost Analysis for a Waterway Project

This memorandum is in response to your request for a discussion and calculation of the benefit-cost ratio for a waterway project; using data supplied by the Corps of Engineers. The Corps uses a 3.25 percent discount rate for determining this benefit cost ratio, which they calculate at approximately 1.3. Because of the methodology they use (i.e., using constant cost data) the discount rate is a real rate. In order to translate this value into a nominal interest rate (the type we actually observe in the market) the value 1.0325 must be multiplied by 1 plus the inflation rate, where the inflation rate represents a long term rate. At a 9.5 percent inflation rate (the rate of the GNP deflator for the first quarter of 1980) the nominal interest rate would be 13.1 percent.

At your request, we have recomputed the benefit-cost ratio for a real discount rate of 2 percent (corresponding to an 11.7 percent nominal interest rate at 9.5 percent inflation). The benefit cost ratio in this case would be approximately 1.8.

Please note that there is some dispute in the cost benefit literature on the proper real discount rate to use in discounting Government projects. There is dispute on whether to use private or Government discount rates; and in the case of private discount rates whether to use pre-tax or after-tax returns, and whether to use returns on debt or equity. If the discount rate is the Government rate, the 3.25 percent rate of return would probably be considered too high.

The 3⅛ Discount Rate

The discount rate is perhaps the single most important factor in computing the BCR of a project. The higher the discount rate, the lower the BCR; the lower the discount rate, the higher the BCR.

Many lay readers believe that a discount rate of 3⅛ percent is ridiculously low. They compare this rate to treasury bills (8%), the prime rate (12%), bank rates (5%), private AAA bond rates (8-12%), consumer credit rates (18%), auto loan rates (11%) and home mortgage rates (11-12%). This type of comparison is wholly inappropriate from an economics point of view. I hope you will bear with me while I explain this important point.

I'll start with the economics term, "the real rate of interest." It means the actual return exclusive of inflation. There are several different methods of computing the real rate of interest. One method, offered by Dr. Paul Samuelson of MIT in his standard text on economics is:

> "... real interest rate is calculated by subtracting from the nominal long-term interest rate on AAA bonds the annual percentage increase in the Consumer Price Index for the previous five years..."

Dr. Samuelson notes that real interest rates had varied from 0 to 4 percent during the 20 year period 1959 to 1979 (see attached handout). In 1971, the year construction began on the Tenn-Tom, the real rate was 3%. In 1975, the year of the restudy, the real rate was 2%. In 1975, when Tenn-Tom opponents brought their second, and currently pending lawsuit, the real rate was 1½%.

What is the significance of the real rate of interest for water resources planning? All economists agree that the discount, or interest rate should be inflation free if benefits and costs also exclude inflation. Conversely, if the discount rate includes inflation, so should benefits and costs. Dr. Charles Howe, a water resources economist from the U. of Colorado, has proven mathematically that the exact BCR is obtained as long as either: (1) benefits, costs and discount rate are all inflation free; or (2) benefits, costs and discount rate are all inflated.

A long-standing practice in water resources planning is to hold benefits and costs free of inflation. Therefore, the discount rate should also be free of inflation. Inflation is built into the kinds of market interest rates I mentioned earlier. As stated by Dr. Samuelson:

> "Thus, once we expect prices to rise at 9 percent per year, my pension funds invested in bonds and mortgages will tend to pay 12 percent rather than 3 percent... In the 1980s, one sees something of a similar inflation premium built into American and European interest rates."

Therefore, comparison of market rates of interest and the 3½% rate is wholly inappropriate.

I believe I can make this same point a second way. Let us take a 5% rate of inflation for benefits and costs; let us further apply the current discount rate for survey studies, 7 1/8%. Making no other change, the BCR for the entire authorized Tenn-Tom project is 2.1 to 1. The BCR using 3½% and no inflation is, as you know, 1.3 to 1.0! This result occurs because I used a real rate of only 2 1/8% (7 1/8% - 5%) to compute the 2.1 BCR, while I used a real rate of 3½% (3½% - 0%) to compute the 1.3 BCR.

There are two further points pertaining to the discount rate. First, of course, the discount rate is prescribed by law, S.80 of the 1974 Water Resources Development Act. It requires the use of 3½% for the Tenn-Tom. While such a rate is low in comparison to market rates of return, such comparison is not appropriate. Second, this committee should be aware that there is respected economic support for a variety of methods of determining the proper discount rates; results of various studies range from 1% to 10%. Some of these methods consider neither market nor real interest rates important. The merits of these contending methods are beyond the scope of my remarks today. The point I am making is that it is erroneous to use current market rates of interest, wholly independent of the legalities of the situation, to impeach the 3½% used on the Tenn-Tom.

STATEMENT OF WILLIAM F. WINTER

GOVERNOR OF MISSISSIPPI

PREPARED FOR U.S. SENATE

ENVIRONMENT AND PUBLIC WORKS COMMITTEE

JULY 25, 1980

Mr. Chairman, I wish to indicate my strong support for the early completion of the Tennessee-Tombigbee Waterway. I believe that I speak for the overwhelming majority of the people of Mississippi--not merely those who live within the vicinity of the waterway.

In this brief statement I do not propose to attempt to reiterate the points about remaining costs and measurement of benefits. These have been adequately covered in debate by proponents of the project, and I am sure that the Corps of Engineers will respond in great detail to many questions of technical detail about the cost of completion of construction.

I wish to emphasize some points about the benefits of this project to the low-income people of the region--points which have been obscured, overlooked and sometimes apparently deliberately misconstrued in previous discussion of the project. It is my belief that every federal construction project in Mississippi should provide a fair distribution of benefits to all the people of the state, and that every one should have a major goal of special attention to the needs of the low-income people of our state.

Since becoming Governor of Mississippi earlier this year, I have closely monitored the construction and planned operation of the Tenn-Tom project with these purposes in mind. I have been highly encouraged by the evidence I have found of a new orientation toward measurable goals of direct benefits for low-income people from the project. Before outlining the evidence of the new orientation, let me stress the issue with which the Congress is now confronted in considering the Tenn-Tom project:

> A vote against completion of the Tenn-Tom is a vote against a better way of life for thousands of low-income people in Mississippi and Alabama.

It has long been my belief that proper planning by local groups and working in coordination with state agencies, would be the best way to assure the highest benefits of the project for all citizens. The various state departments and agencies of my administration have been directed to work toward these goals for Tenn-Tom, in cooperation with existing federal agencies.

Now the White House has provided us with a cooperative mechanism which has my enthusiastic support. The Tennessee-Tombigbee Project Area Council has been created. The Council consists of the various federal agencies operating in the area, representatives of state and local government, and, most importantly, a wide variety of community based organizations, and representatives of business, labor, educational and health groups from throughout the region.

The Council has been charged in its goals set forth by its organizing committee to seek to provide through the Tenn-Tom project, both in construction and operation, "maximum opportunities for women, minorities and the economically disadvantaged." The Council has further goals of maximum utilization of small and minority business in the area in the procurement of project related goods and services, and in long-range economic growth. There is a specific goal of mitigation of adverse impacts of project construction on community services and facilities, and improvement of the social and economic environment.

The Tenn-Tom Project Area Council will have its headquarters in Columbus, Mississippi, and will begin operation in the month of August. I am an enthusiastic supporter of the goals for the project which it will seek, and I believe that this method of bringing local people into the project planning is the surest method of achieving those goals.

The State of Mississippi does not expect to sit back and let the Council proceed without timely checks and evaluations. I have appointed an advisory group to membership on the Council which includes five heads of state agencies. To make clear my interest in minority benefits from the project, half of the members of the advisory group are black.

I have had concerns about the efforts of small business and minority contractors to gain contracts in the Tenn-Tom construction, especially as related to those from my state and those who would offer employment to Mississippi workers. As with major construction projects all over the

country, getting the fullest use of minority contractors has been a difficult process, but I believe that significant progress has been made on the Tenn-Tom project.

I can assure you that black leaders in Mississippi outspokenly support continuation and completion of the Tenn-Tom project. They favor it as an overall benefit to our state and nation, but also because of the specific benefits it will bring to the low-income people of the region, both black and white. As the work of the Tenn-Tom Project Area Council becomes better known, support will be more outspoken.

The Tennessee-Tombigbee Project is the great hope for economic gains for the low-income people of the waterway area. A vote against the project is a vote against the tools these people desperately need in order to help themselves.

Senator MOYNIHAN. I believe Mr. Skinner is our remaining panelist.

Good morning to you, and welcome.

STATEMENT OF JAMES A. SKINNER

Mr. SKINNER. Thank you very much, Mr. Chairman. My name is James A. "Buddy" Skinner. I am from Nashville. I am president of a family-owned towing company and brick manufacturing company.

Due to the time schedule, I am going to submit, if it is all right with the chairman, my statement for the record.

Senator MOYNIHAN. Please do. So ordered.

[The statement with attachments appears at p. 150:]

Mr. SKINNER. If you don't mind, I would like to make a small comment or two. I would rather not be rebuked, and I am not easily intimidated, but you scared me to death when you got on him.

Senator MOYNIHAN. Please go right ahead, Mr. Skinner.

Mr. SKINNER. In the past 15 to 20 years, we have operated a small towing company on the Cumberland-Tennessee and Mississippi River as well as the Ohio River. We operate on the Cumberland River equal amounts of barges that will be appearing on the Tennessee-Tombigbee Waterway.

We feel that we can profitably invest our funds and our capital into operating on the Tennessee-Tombigbee Waterway. We can make a profit, thereby paying taxes. We feel that it is a capital

investment area that will expand not only our business but many other small, aggressive, if you will excuse me, hungry businessmen.

We wish to pay taxes. We wish to pay waterway charges. We wish to do all that is necessary to make a profit. We feel that the Cumberland River on which we operate is exemplary to the same type of operation as will be on the Tennessee-Tombigbee when it is completed.

There are many of us in the small inland rivers that feel like we can't operate in conjunction with the railroads. We are operating in conjunction with L. & N. now, and we are pleased with the progress that the intermodal system has attained over the past few years. We think that if this project is completed, it will open up for new industry that we as independents are looking for and will allow the growth in an area that definitely has the natural resources and has the capital investment and the interest.

We thank you for this opportunity, sir.

Senator MOYNIHAN. We thank you, Mr. Skinner.

Let's see. Tell a northeasterner a bit more about the Cumberland traffic. You move into the Tennessee.

Mr. SKINNER. The Cumberland River moves from Kentucky in the east and makes a U-shape southward, ending up again in Kentucky in the north at Paducah, at the confluence of the Tennessee River and the Ohio River, sir.

Senator MOYNIHAN. That is right.

Mr. SKINNER. It runs parallel to the Tennessee River.

Senator MOYNIHAN. Your outlet is again the Mississippi outlet from the Cumberland——

Mr. SKINNER. Yes, sir.

Senator MOYNIHAN.——to get to the Gulf of Mexico?

Mr. SKINNER. Yes, sir.

Senator MOYNIHAN. This is a profitable mode of transport, and you are suggesting that a parallel mode would be equally profitable.

Mr. SKINNER. They are not obscene profits, but we are satisfied with them, yes, sir.

Senator MOYNIHAN. You are still hungry?

Mr. SKINNER. Yes, sir.

Senator MOYNIHAN. Is that because you have a huge or meager fare?

Mr. SKINNER. I don't think we are greedy yet, but we are still hungry.

Senator MOYNIHAN. That is the way to be. That is the way to go.

I think that concludes our panel discussion. Thank you very much, Mr. Skinner.

I wonder if Senator Stennis would like to put some questions to the panel.

Senator STENNIS. I thank you again, Mr. Chairman. I have placed my statement in the record. It doesn't cover the entire matter at all, but I emphasize the contribution that I think this Tennessee-Tombigbee will make in the new situation, the new problem that we have in connection with energy, energy sources, additional, as well as utilizing the great utility that we do have in the way of coal.

67-591 O—80——5

If I may just enlarge on that, Mr. Chairman, while you so graciously extend the time, and I will just make it very brief, but I am familiar with the ups and downs of these water installations. I am in my 31st year here. So many projects have been started and completed in that time. They have had their ups and downs.

I don't know of a single one of them that could be called a failure. I have personal knowledge that most of them have gone far beyond the expected contributions they would make to our economy.

If I may mention, I have the duty and the privilege every year of being involved in our military policies and problems and appropriation worldwide. We have already presented to the Senate the largest authorization bill for military preparedness in the history of the Nation, peacetime or wartime. The Senate almost eagerly accepted that program for fiscal 1981. There were only three votes cast against it and the rest were for it. It is a sign that the Congress is ready for that step up. It is tied in with our energy problems.

Now, as I see it, for us to establish that energy priority and policy and then turn around and abolish this waterway transportation project that contributes so much is a step backward. It is already more than half finished. To turn our backs on a project like this just because of some critical points that, I am sure, are seriously, honestly, and sincerely made does not coincide in logic and reason.

I say that with great deference to all. I hope the committee will weigh and look further into that last point I make.

I thank you again most warmly.

Senator MOYNIHAN. Mr. Chairman, we thank you. I think what you have said is commanding insight for this subcommittee, that our experience has been so positive. Of course, this is not a new experience. If I could just expand a moment, Mr. Chairman.

The development of the United States, the interior United States, to which Dean McLindon referred, has been fundamentally that of inland waterways. As a matter of fact, the 1,850 tonnage of the inland waterways of the United States was greater than that of the British Merchant Marine, Scots included. It has always been that.

Certainly it is not the purpose of this subcommittee to see it be anything less.

I appreciate very much, of course, particularly the gracious way you characterized those persons who may have a different view. That is why we are here, to hear those different views. Your colleague to your left has different views on some things, we regret to say. But otherwise we welcome him to this subcommittee. Would you like to speak, sir?

Senator COCHRAN. I have no further comments at this time. Thank you, Mr. Chairman.

Senator MOYNIHAN. Thank you.

Senator Bentsen?

Senator BENTSEN. Thank you very much, Mr. Chairman.

Mr. Chairman, I think that doing the audit procedure here is a very proper one. We are looking at a project that has been underway for many, many years. As the Senator from Mississippi has

stated, he has been working on it for a long time. I can recall Jan Rankin making these speeches back in 1950 on this, loud and long.

I don't think I have ever supported, and I certainly haven't knowingly supported, any project in my state in the way of a capital investment that has had a negative cost-benefit ratio. I won't support one. That is why it is important that we audit these as they go along, to see if conditions have changed.

I found long ago that when you are talking about government expenditures by agencies, that you can expect what you inspect, that they must have knowledge that we are going to go back to audit this type of thing.

So I would like for any one of you to restate the cost-benefit ratio on this and where you think it is. You probably have stated that, but I came in late to your hearings.

Mr. WILKINS. The benefit-cost ratio, Senator, on the remaining cost, is 2.5 to 1.

Senator BENTSEN. 2.5 to 1?

Mr. WILKINS. Yes, sir, on the remaining cost.

Senator BENTSEN. On the incremental cost it is 2.5 to 1.

I have also been told that, and I may mispronounce this, Demopolis——

Mr. WILKINS. Yes, sir.

Senator BENTSEN.—below Demopolis, that the project would need another billion dollars of straightening-out work. I assume you do not agree with that. That is not figured into that cost-benefit ratio.

Mr. WILKINS. Senator, we have the answers to all the allegations that were raised during the debate. We are going to make that a part of the record.

But in specific answer to that, we have stated that this was a part of the project that is not—I mean it is a separate project from the Tennessee-Tombigbee Waterway. This is the Warrior-Tombigbee system that runs from Birmingham to Demopolis to Mobile that we tie into.

This project was not authorized. It is under study to determine whether or not it would be needed. The initial estimates are that it will not be needed until 1987. And the estimated cost at this time for including inflation would be a billion dollars. But of that, $750 million is inflation. So a quarter of a billion dollars will be a cost if it were built today, I mean $250 million, and the $750 million is the inflation cost.

Senator BENTSEN. That is, nevertheless, inflation we have to consider.

Mr. WILKINS. Right. But that has not been authorized. It hasn't been fully studied by the corps. When it is, in that time, in 1987, the proponents of it then, if it is needed, will bring it to the Congress, ask for authorization, it goes through the appropriation process and settles at that time.

Senator BENTSEN. One would expect that the inflation factor would also apply to the cargo that is being transported and the benefit ratios would not be that distorted as a result thereof.

Let me ask you about the discount rate. When you talked about 2.5 times, that was the best number I have seen or have been told. What discount rate were you using?

Originally, as I understand it, it was three and a quarter.

Mr. WILKINS. The authorized rate, authorized by Congress, is for three and a quarter.

Senator BENTSEN. What do you think the cost-benefit ratio would be if you got to something that was more realistic as to what is being used today?

Mr. WILKINS. 1.25, using the 7⅛ ratio. It would still be 1.25 to 1, using 7⅛ on the remaining cost.

Senator BENTSEN. I noticed in Senator Domenici's statement he said that the Tennessee-Tombigbee is even exempt from the waterway fuel tax, which begins in October.

Other than the high esteem in which the two Senators from Mississippi are held by all of us in the Senate, and other than their articulation and persuasiveness, why are you entitled to that?

Mr. WILKINS. Because the Tennessee-Tombigbee was not built and in operation at the time the law was passed. Certainly I don't think it would be reasonable to assume when we do start operating on the waterway it would be exempt from the tax.

Senator BENTSEN. You don't think it would be reasonable to have it assumed to be exempt then?

Mr. WILKINS. I think it would be reasonable to assume that we will have a tax on the waterway when we start using it, yes. We are counting on that.

Senator BENTSEN. Do you want to comment on that?

Senator STENNIS. No.

Mr. WILKINS. In other words, they just haven't gotten around to it, Senator. We will have a tax on the Tennessee-Tombigbee. We know that.

Senator BENTSEN. I have a hunch you will, too.

Mr. WILKINS. We will not fight it either.

Senator BENTSEN. I would say as long as the intercoastals off the State of Texas have it, you will all probably end up with it, too.

Mr. WILKINS. If they have it on the Cumberland, we will have it on the Tennessee.

Senator BENTSEN. I must say I have a great affinity for the great State of Mississippi since my wife and I were married there in Columbus, Miss.

Mr. WILKINS. I knew you were, sir.

Senator BENTSEN. Thank you.

Mr. WILKINS. Mr. Chairman, if I may, before we close, I have some other statements which I would like to present for the record right now, particularly one that shows that there are eight minority contractors working on the waterway that wouldn't even be in business were it not for the Tennessee-Tombigbee. Also, an information sheet and answers to these questions and some other data that I have, if we may place that in the record.

Senator MOYNIHAN. We are very happy to put those in the record.

[The material referred to follows:]

INFORMATION ON THE TENNESSEE-TOMBIGBEE WATERWAY

The 232-mile Tennessee-Tombigbee Waterway will connect mid-America's 16,000 miles of navigable waterways with ports along the eastern Gulf. The project will extend from Demopolis, Alabama on the Black Warrior-Tombigbee system via the Tombigbee River into a chain of lakes paralleling the east fork of the Tombigbee, then through a divide cut into Pickwick Pool on the Tennessee River. It will cut the distance from some major inland ports to the Gulf by 800 miles.

Construction of the waterway began in 1972 and is now nearly 50 percent complete, with about 70 percent of the total cost of the project under contract. Limited navigation is now open to some barge traffic from near Columbus, Mississippi south to the Port of Mobile via the existing Warrior-Tombigbee Waterway. Over $1 billion has been committed to the project and with only about $28 million recoverable, it would take nearly as much if the project was terminated.

The waterway is being built through the heart of one of the most depressed areas in the nation with a high percentage of the population minority and poor. It is offering minorities and other disadvantaged persons their first opportunity to raise their standard of living now and in the future. About 27 percent of all workers on the waterway are minorities. Minority businesses have received over $15 million of water contracts.

Despite being the two poorest states in the nation, Alabama and Mississippi have already met their obligations by investing over $100 million for relocation construction. They are, at the same time, spending many more millions for terminals, ports, roads, utilities, etc.

Support for the Tenn-Tom was never more evident than when President Carter called for a full review of the waterway project in March 1977. More than 9,000 people jammed the meeting to support the project. Fewer than 200 voiced objections.

The waterway builders have welcomed the challenge of this being the first national waterway project built under stringent NEPA requirements. The required Environmental Impact Statement has been fully accepted and approved. Subsequent supplemental reviews, which were not a legal requirement, have met full approval of EPA and CEQ.

An independent Environmental Board of nationally-known consultants, a first, has proven so successful in insuring the preservation and enhancement of the environment during waterway construction that it serves as a model for other projects.

Despite the loud claims of a handful of so-called environmentalists, the Tennessee-Tombigbee Waterway is NOT an environmental disaster. In fact, it is doubtful that any of these self-proclaimed environmental critics have ever seen the waterway firsthand to observe the paramount concern of everyone for preservation and enhancement of the environment. Dr. Gerald McLindon, Dean of the Louisiana State University School of Environmental Science and chairman of the board of consultants, says the waterway is being built with great care and concern by the U. S. Army Corps of Engineers and that they are doing a superb job in meeting and exceeding all aspects of the National Environmental Policy Act.

Make no mistake about it, this misguided few so-called environmentalists are only serving the willful purposes of the L & N Railroad which is spending millions of dollars to delay or stop this crucial national project. It is obvious that their single selfish purpose is to eliminate competition so they can hold up their southeastern customers with exorbitant rates--such as their 40 percent rail rate hike just handed Kentucky coal shippers.

The greatest single concern of the world today is the availability of a ready source of energy. Two recent world conferences have called for the doubling or tripling of coal supplies to 7.5 billion tons before the next century. With more than a third of the world supply of coal in the United States, most of it in Appalachia, the world looks to us to solve the immediate

energy crisis. Methods of transporting this coal poses a most serious economic problem which can only be solved by all modes of transportation working together as they did before the Sixties. It is now impossible for all the existing modes of transportation to move this coal to market and for export without the Tennessee-Tombigbee Waterway in place.

When completed, the waterway will be an important component to our national transportation system serving some fourteen states. The waterway is expected to generate an average of nearly $122 million in benefits annually, $105 million of which will be savings in transportation costs. Coal will be the principal commodity to move on the waterway with over 21 million tons expected to move at a savings of over $54 million the first year of operation, alone. The average savings in transporting these coal shipments on the Tenn-Tom, compared to alternative mode, is $2.57 per ton. The importance of the waterway toward helping meet our energy needs will continue to increase as coal becomes an even greater contributing source for the nation's energy needs.

The farsighted decision by Congress and the Executive Branch to build this waterway was made over 13 years ago. We are now nine years into construction. With the completion date very near, coal and other commodities can soon be moved over this less costly waterway route to and from the heartlands of America.

It is no accident that when waterway opponents lost their battle in the courts a few weeks ago, they moved their less than admirable fight to the U. S. Congress and the national news media. The U. S. Fifth Circuit Court of Appeals in their recent ruling warned that the time for battle was past and that dissention over this project should be laid to rest and construction should continue full speed ahead. Yet this small special interest group persists despite warnings that all modes must work together if the nation is to throw off the oppressive yoke of OPEC prices.

When opponents moved from the Federal courts to the Congress, they brought with them the same long list of unproved allegations, most of which the courts had already ruled as false. Now they are circulating this same misinformation and half-truths to our Members of Congress.

These charges are blatantly false--the biggest fallacy of them all is that the project will cost $3 billion. The cost of the approved project is $1.7 billion. If any supplemental projects to the Tenn-Tom are built, it will be for Congress to decide through the legislative process.

The Tennessee-Tombigbee Waterway has been thoroughly reviewed and approved by the Legislative, Executive and Judicial branches of government. The legislative process spans the last 35 years and each year for the past 13 years this project has been thoroughly analyzed during Congressional Appropriation hearings which consist of taking testimony from hundreds of witnesses.

The only criticism that has been raised against the Tenn-Tom from the coal industry and other shippers is that it will not be built soon enough.

The decision to build this waterway should be one made by the President and the Congress, not by the whim of a few well-heeled Washington lobbyists who are prostituting the true environmental movement and helping hold the consumer hostage to an unwarranted energy crisis.

TENNESSEE–TOMBIGBEE

CONSTRUCTION AND BUSINESS ASSISTANCE CENTER, INC.

605 North 2nd Avenue
Suite 301

P.O. BOX 587 • COLUMBUS, MS 39701 • (601) 328-3251

July 22, 1980

To Whom It May Concern:

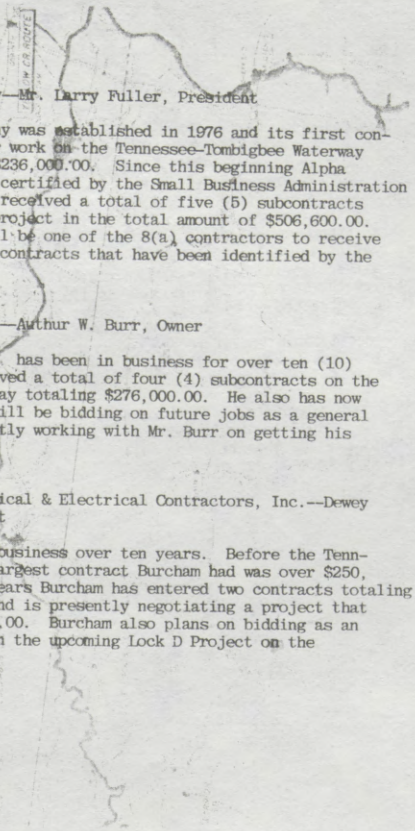
Over $13,000,000 have been awarded to minority businesses either as subcontracts, 8(a) contracts or A&E contracts. (I have enclosed a chart showing these awards made over the past four (4) years.)

The office has been working very closely with the Corps of Engineers, and we are now at that phase in the Construction of the Tennessee Tombigbee Waterway Project where the Minority businesses can realize the greatest benefits. In working with the Corps of Engineers, over $40,000,000.00 in 8(a) contracts alone will be contracted to minority businesses over the next three (3) years.

Grant you, minority involvement in the construction of said Project has not been to our satification but we did not agree with all the statements printed in the "White Paper."

The Tennessee-Tombigbee Construction and Business Assistance Center, Inc. was established in 1976 to involve minority businesses in the construction of said project. Since this time the following companies were either established or have been able to grow and expand:

CBAC
CONSTRUCTION AND BUSINESS ASSISTANCE CENTER, INC.
TENNESSEE-TOMBIGBEE
605 North 2nd Avenue
Suite 301
P.O. BOX 587 • COLUMBUS, MS 39701 • (601) 328-3251



1. Alpha Building Company—Mr. Larry Fuller, President

Alpha Building Company was established in 1976 and its first construction contract was for work on the Tennessee-Tombigbee Waterway Project in the amount of $236,000.00. Since this beginning Alpha Building Company has been certified by the Small Business Administration as being 8(a). They have received a total of five (5) subcontracts for work on the waterway project in the total amount of $506,600.00. Alpha Building Company will be one of the 8(a) contractors to receive a large share of the 8(a) contracts that have been identified by the Corps of Engineers.

2. Burr Contracting, Inc.—Authur W. Burr, Owner

Authur Burr Masonry has been in business for over ten (10) years. Burr has now received a total of four (4) subcontracts on the Tennessee-Tombigbee Waterway totaling $276,000.00. He also has now formed a corporation and will be bidding on future jobs as a general contractor. We are presently working with Mr. Burr on getting his company 8(a) certified.

3. Burcham & Son's Mechanical & Electrical Contractors, Inc.—Dewey Burcham, President

Burcham has been in business over ten years. Before the Tenn-Tom Waterway Project the largest contract Burcham had was over $250,000.00. In the last two years Burcham has entered two contracts totaling over one million dollars and is presently negotiating a project that will run close to $800,000.00. Burcham also plans on bidding as an electrical subcontractor on the upcoming Lock D Project on the Tenn-Tom Waterway.

Esther M. Harrison, Executive Director
Funded by U.S. Department of Commerce Minority Business Development Agency
Serving the States of Alabama, Florida, Kentucky, Mississippi, Tennessee

CBAC
CONSTRUCTION AND BUSINESS ASSISTANCE CENTER, INC.
TENNESSEE-TOMBIGBEE
605 North 2nd Avenue
Suite 301
P.O. BOX 587 • COLUMBUS, MS 39701 • (601) 328-3251

4. J. C. Cheek Sod & Erosion Control, Inc.--J. C. Cheek, Sr. President

No other projects have been so important to this company as the Tenn-Tom Waterway Projects. Over the past five years Cheek has had 14 subcontracts totaling $9,124,285.00. Before the Tenn-Tom Waterway Project, J. C. Cheek Sod & Erosion Control, Inc. largest project was under one million dollars. Presently J. C. Cheek has a $6.5 million landscaping contract on Divide Cut 4 & 4A on the Tenn-Tom Waterway. In the future there will be several opportunities for sod & erosion contractors on the waterway project in the areas of public use facilities and the canal sections.

5. Magee Landscaping Company--Mr. Eugene Magee, Owner

Magee Landscaping Company was one of the first minority contractors doing work along the waterway. From a partnership venture in 1976, Magee went to a sole ownership firm and obtained a $156,280.00 landscaping subcontract. Magee Landscaping is presently or have worked on seven (7) different projects along the waterway totaling over $1.4 million. In addition to subcontract work from waterway projects, Magee Landscaping has obtained numerous state highway, city and local landscaping contracts that were generated as a result of the waterway.

6. N. L. Carson Construction--N. L. Carson, Owner

The majority of N. L. Carson Construction Company's work has been the result of 8(a) contracts. Carson Construction was the first and only minority construction firm that has done work on the waterway project as a prime contractor. Carson Construction Company has done two (2) 8(a) contracts totaling over $900,000.00.

CONSTRUCTION AND BUSINESS ASSISTANCE CENTER, INC.

TENNESSEE-TOMBIGBEE

605 North 2nd Avenue
Suite 301

P.O. BOX 587 • COLUMBUS, MS 39701 • (601) 328-3251

7. Alvin Thomas Construction Company--Alvin Thomas, Owner

Alvin Thomas Construction Company first contract on the Tenn-Tom Waterway Projcet was the result of another minority contractor not being able to meet the prime contractor's bonding requirments. Alvin Thomas Construction Company took and completed the $170,000.00 project and since that time the firm has been certified by the Small Business Administration as being 8(a). The firm has been mentioned as one of the 8(a) dirt moving firms to receive a large share of the estimated $5,400,000.00 Bay Springs Reservoir Clearing Project later this fall or early 1981.

Senator MOYNIHAN. We are not anywhere near finished, Mr. Chairman.

Senator Simpson, good morning to you, sir.

Senator SIMPSON. Good morning to you.

We have finished our work on nuclear waste, Mr. Chairman, thank you very much. We missed your presence as we passed out the nuclear waste bill, but it is headed for the floor.

May I just take a moment.

Senator MOYNIHAN. Please. You are very welcome, sir.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. I am one who has shared a great deal of concern about the Tennessee-Tombigbee. I run a hazardous course of objecting to any water projects since I am from Wyoming. We always, of course, are completely wrapped up in water projects because we are a State that is semiarid in nature. Without the Platte River and the dams and the systems on it, we would be in trouble in the State of Wyoming.

But it has seemed to me since I came on the Environment and Public Works Committee and have become a member of this subcommittee that this one project seems to me to be a tremendous cost, whereby the taxpayers of the country are not being properly served in the process.

I have tried to do a good bit of homework on it. I made some rather strident comments on the floor that were received by my colleague from Mississippi over there smiling as he leaped from his seat to comment on those.

I have come to have great respect for Thad Cochran and have listened to him and his views on this legislation. I still feel that it is a very inefficient, very inadequate return to the taxpayers of America.

Now with that, and my prejudices fully exposed, I am concerned about several things. I guess I will just splatter them off the wall. Then you can see where I am coming from.

I don't quite understand why we don't deal adequately with the requirements of what is going to be needed south of Demopolis on this river. And we are already told now that these other things are in the process. That is what is curious to me. I think that in looking at the corps commentary that yes, in the future there will be major improvements required; yes, those improvements will be considered in the normal course of the authorization process; and yes, it will then go forward to bid and so on; and then yes, yes, it will cost another billion or something in that category, that concerns me.

Another thing that concerns me is the size of the locks that will be provided, which are not the same size as the locks up on the Tennessee River. It seems logical that if the locks under construction on the Tennessee-Tombigbee are 110 feet by 600, half the size of those on the Tennessee River, it is certainly not illogical to assume that operators of barges will prefer to continue on the Tennessee and south to New Orleans.

Obviously 17-barge tows are more efficient than 8-barge tows which may have to come down to 6-barge tows as the river narrows. Those things concern me.

The other thing that concerns me is the level of coal production in eastern Tennessee and northern Alabama. In looking at coal projections, and I speak as one who represents a State of coal production—and I am not one of those Senators who has set up the barrier of eastern coal versus western coal—I think the sooner in America we deal with just plain American coal, we will be better off. Quit messing around with high level or low sulfur, high sulfur, union coal versus nonunion, eastern versus western.

But in looking at the reserves in this area, and in looking at a 50-year project, a 50-year life of the project of the Tennessee-Tombigbee, and in looking at the known reserves in this area and the extent of production of 7 million tons, whatever figure, depending on who you are talking to, there isn't any way that the reserves will outlast the life of the waterway. That concerns me.

What are the markets for the coal? What is the likely coal production based on those reserves? What is the use of that coal? Those are some of the things that concern me. The cost of moving that coal per ton, that is one of the things that has my colleagues worked up.

In other words, are we in Wyoming charging too much on freight rates for coal? And that is rail, of course.

So those things, Mr. Chairman, cause me concern. I hope we can begin to develop some of those answers for my benefit on this issue.

Senator MOYNIHAN. I certainly think that you have raised explicit questions. Perhaps just for the purposes of our guests here today and for our panel it might be useful to describe in general terms the escalation of costs that have been involved in this project.

In 1967, when we first began, the estimated cost was $289 million, as we understand it. The present estimated project cost is $1.925 billion. But that does not include the developments on the Tombigbee River itself, to which Senator Simpson referred. We will hear later from the Corps of Engineers on this. But it does appear that another $1 billion would be involved there. That, in any event, is the corps projection of $3.3 billion for ultimate development.

We have gone in a fairly short order to an order of magnitude of a 10-fold increase in cost inside 13 years. That is a larger proposition than certainly we originally contemplated.

But let me first ask the panel if it would like to respond to Senator Simpson's comments in some way.

Mr. Wilkins, would you like to respond to Senator Simpson's comments?

Mr. WILKINS. I think I said in the beginning that we were in support of the waterway, that the Corps of Engineers would provide the technical answers to these questions.

Senator MOYNIHAN. That is right.

Mr. WILKINS. I will say, though, that in our part of our record here, we have tried to address some of these subjects in the allegations which were mainly brought up——

Senator MOYNIHAN. No. You have done that. I just want to make sure you have an opportunity to respond if you wish.

Mr. WILKINS. Sir?

Senator MOYNIHAN. I just wanted you to have the opportunity to respond if you wish.

Mr. WILKINS. I would respond to this allegation on page 6 right here, and I would be glad to read it for the record or else I will just——

Senator MOYNIHAN. Would you help the committee, Mr. Wilkins? Page 6 of your testimony?

Mr. WILKINS. No, sir; page 6 of the answers to the allegations made against the Tennessee-Tombigbee Waterway. May I provide the chairman with a copy?

Senator MOYNIHAN. Why don't you just read it.

Mr. WILKINS. I will say again that this is not the official request. This is the response that we as the supporter, not the official sponsor of the project, have given. In other words, we are not in the arena. We think the Corps of Engineers should respond to these. But, Mr. Simpson, I will be glad to read it to you.

Senator MOYNIHAN. We do have it and we will place it in the record.[1] We thank you for it. We do want to move along. Since you have provided the material, I think that will be sufficient. As you say, the corps is here to give the precise numbers and ratios. That is very good. You shouldn't be held responsible for their work.

Senator Domenici has arrived from the conclusion of our other hearing, as has our incomparable chairman, Senator Randolph. Senator Domenici, I have entered your statement into the record. Would you like to make some additional comments or remarks?

Senator DOMENICI. Mr. Chairman, first I want to apologize to you and to the committee, and the witnesses for being late. Our distinguished chairman, Senator Randolph, and I and others, including Senator Simpson, were trying to finish up the nuclear waste bill. So I am pleased to be here, even if it is late.

I commend you for holding the hearings to look at the issues, such as the benefits of the project and additional costs that may be needed to bring the project into full fruition.

I did vote against the appropriation on the Senate floor. I stated quite clearly then that based upon the knowledge I had at that point, that my principal concern is that we do not prove the value of this project when we continue to have the entire cost of it paid for by the taxpayer, when, in a sense, it is being constructed principally for a specific kind of user. It seems to me that we detract from the credibility of it when that is totally free, when the taxpayer pays the whole cost.

It is even interesting to note that these users will be exempt from the waterway fuel tax, which is nominal, which begins in October. That seems quite strange to me also. One of the real ways to get these projects moving with dispatch is to eliminate some of the concern as to whether or not they are totally needed, whether they are excessively built, whether there are excessive costs. One of the best ways to do that is have those who use it for commercial purposes pay part of the tab. If you want the taxpayers to have confidence, then they need some kind of a check like that, that the commercial part of America's system has passed judgment on its

[1] The material referred to was submitted for the record as an attachment to Mr. Gholson's statement and may be found at p. 21.

validity and is going to pay part of it. That is the way you get some credibility built in.

So I am firmly convinced that we are never going to have a waterway system that is adequate, we are never going to eliminate the kind of major confrontations that occur at every stage of this kind of project until we have broader support from the taxpayers. That, in my opinion, means that the beneficiaries of the system have to pay a significant percentage of the cost of the system, unless there is a justifiable national reason for not having it so. I haven't seen any justifiable reason as yet.

So I would close by asking you, since you are proponents, with various degrees of expertise, why the users of this new system shouldn't pay a significant portion of it in some kind of special or general fees.

Mr. WILKINS. Senator, I have no fault at all with what you are saying. I think that the only reason why it is listed as being tax exempt now, is because we are under construction. It wasn't built at the time it was passed.

We have no plans or do not wish to be against paying the same tax that the rest of the country pays. Like he operates on the Cumberland River, but it is not fair for him to pay a tax and us on the Tennessee-Tombigbee to not pay it.

We expect the user charge that is the law of the land, that you were responsible for, and we would expect to pay that on the Tennessee-Tombigbee.

In fact, I might call on Mr. Skinner, who is a shipper, do you agree with that?

Senator DOMENICI. Before he does, let me clarify what I am saying. The fuel tax, the nominal one we have in existence that begins to phase in, is not related in any way to the cost of this project or any project. That is the point I am making and that is the question I am asking. Would it not add to the credibility of the need for the project if some very significant and well-defined portion of the cost was going to be paid by the user, albeit over many years?

I am not suggesting that it be made irrational with refenence to the way you finance anything in America—20 years, 30 years, 40. But there just isn't any relationship between the cost and what the users would pay. Do you not think that ought to be the case? I thought I heard you say yes.

Mr. WILKINS. I think what I said was that we would expect the users of the Tennessee-Tombigbee Waterway to pay the same tax, fuel tax, that the users of the other inland waterway systems pay, whatever the law of the land is.

Senator DOMENICI. I understand.

Mr. WILKINS. So far as figuring this into the cost at the time the study was made, there was no fuel tax. That was not included in it. I think that if it were included in there, that you all could go to the benefit side and look at some additional benefits you could put on. This is a matter of time.

Senator MOYNIHAN. Thank you. Does Mr. Skinner wish to respond?

Mr. SKINNER. I am still intimidated.

Senator MOYNIHAN. You will leave this court a free man.

Mr. SKINNER. I thank you.

Senator Domenici, I would like to in some way address your question and yet not speak for the industry, the towing industry itself. Just my own personal opinion is that I did not know the Tennessee-Tombigbee Waterway was exempt. I have been fooling with it for 10 years. So we had "pro forma-ed" everything that we pro forma in our operations as justifying our operations on the Tenn-Tom, as we do on the Cumberland River, with the waterway user charge in there. The contracts we are "pro forma-ing" right now will have the waterway user charge in there.

Senator DOMENICI. Let me be more specific and just ask you this question: Philosophically, don't you think the taxpayers would have a lot more confidence in the Tenn-Tom if there was a capital charge on the waterway, some evidence that the capital expenditures were going to be recovered by those who use it? You don't have to speak for the industry. That would be very difficult.

Mr. SKINNER. Yes, sir; it would be.

Senator DOMENICI. I understand that.

Mr. SKINNER. Total cost recovery, of course, is a totally different and new issue for me.

Senator DOMENICI. I didn't even say total.

Mr. SKINNER. Oh, excuse me.

Senator DOMENICI. You might give us your idea of what might be reasonable.

Mr. SKINNER. I really don't have any idea. I would like to address it, though. I think it is something that is a good question that somebody else might ask me, too.

I think that the mood of the Nation is moving towards the direction that you are setting here. I think that we are beginning to be asked, both us in private life and those in public life, what are we getting for our dollars? Yes, sir; I think that is true. But I think there is no equity in this life.

I think if there was a scheme that we could develop whereby we could recover costs of everything we do—we have to do that in business to make a profit and retire a debt and service our debt; yes, sir.

Senator DOMENICI. Mr. Chairman, do any of the others have any comments?

Senator MOYNIHAN. I think we have heard a very good statement from Mr. Skinner, for which we thank you. I would like to suggest——

Senator RANDOLPH. Mr. Chairman?

Senator MOYNIHAN. Mr. Chairman, sir. I was just about to turn to you.

Senator RANDOLPH. I do not want to be presumptuous in the explanation of my absence.

Senator MOYNIHAN. The full committee was marking up legislation of a most important nature, and it has now successfully been reported to the floor.

Senator RANDOLPH. I would ask unanimous consent, Mr. Chairman, to have my opening remarks entered in the record at an appropriate place.

67-591 O—80——6

Senator MOYNIHAN. We have already taken the liberty of doing so, Mr. Chairman. [See p. 8.]

Senator RANDOLPH. I want to add only that I am really older than the Tombigbee problem because I was here in the House of Representatives when we first considered this subject in 1938. That was the beginning. Then in 1945, and then finally it was authorized in 1946.

I will simply say that this is an important hearing, complex in subject matter. You plan another hearing on this subject on Monday, is that right, Mr. Chairman?

Senator MOYNIHAN. You are quite right, sir. As you know, we planned our first hearing to be on the general question of the transportation of coal by waterways and then to the specific question on the second day's hearing. We had to reverse them because of the witnesses' availability.

Senator RANDOLPH. I remember in the Committee on Public Works—it was not then the Environment and Public Works Committee, and I was not at the time its chairman—I was attempting to widen and deepen the channel at Hampton Roads in that area of Virginia. I was severely criticized by many of my constituents in West Virginia. "Why are you working for a project in Virginia?" in reference to that widening and deepening. I of course replied to them, which was a practical answer and correct, documented in every instance, that the ships from Italy and France, if their bottoms were to be filled with coal, moving in export from this country that is why I was moving for that project. Of course it is not improper to say, and I would be forgiven, I know, for indicating that a large amount of that coal was moving from West Virginia.

So they took a little different viewpoint, you see, than they did at first blush because they knew the product was a West Virginia product that was to be moved.

Not being facetious in any way, but we have to realize that a balanced transportation system for the country is necessary. We are faced with challenges of new problems which may have been simmering for some time but now have surfaced. We must be equal, Senator Moynihan, to the challenge, to act as promptly, yet as carefully, not cautiously, carefully as possible, with reference to the review process which is now in effect in our committee.

I thank all of those who have come to testify. We would not want the record in any way to be warped or slanted. We want the record to be complete, the record of all of those for and against this.

The responsibility is within our committee, reflecting a later responsibility in the Senate, that is shared with the House of Representatives, to respond insofar as possible, always I hope, to the thinking of the American people. That is highly important.

I join with the chairman of our Water Resources Subcommittee, Senator Moynihan, in our first subcommittee hearing under his able chairmanship. The issue of waterway development in this country is important and one we must carefully examine.

With respect to the Tennessee-Tombigbee Waterway, many issues have been raised in recent years on the validity of this project first authorized by the Congress in 1946. I know there are those who feel strongly both ways on this project. A reading of the

Congressional Record of less than a month ago indicates the depth of the feeling on this issue.

I look forward to testimony we are to receive both from proponents and opponents on this project. I am sure this hearing, as the one to follow on Monday, will prove to be educational and valuable to the members of the Committee on Environment and Public Works as we look at future waterway development in this country. New development is not the only thing we must consider. Rehabilitation and maintenance of our existing inland navigational system and our deep-draft harbors are also important. This country cannot move its products without this balanced transportation system which includes highways, rails, and waterways.

Senator MOYNIHAN. The chairman of our full committee has never said too much for the purposes of the edification of this junior member.

May I point out that we are in fact going to be dealing largely with inland waterways, but the hopper facilities are going to be of special concern to us on Monday, as the chairman has said.

I would like to suggest to our staff that it would be useful if we were to have a legislative history of the process whereby the Tombigbee came not to be included in our tax legislation. I hope it did not suggest that no one expected it ever to be completed. Senator Stennis?

Senator STENNIS. Just let me say this. Thank you, Mr. Chairman.

As one of the delegation, one of the Senators from Mississippi, I know nothing about it being exempt. I made no effort to get it such. It will have to ride with the law, whatever it is.

But as I recall, the law listed the ones that were subject to the tax, and at that time the Tennessee-Tombigbee was not one that was in operation. So it is not named.

But it is certainly my position that it shall be included when it goes into real operation, yes.

Senator MOYNIHAN. Not for nothing have you been in the Senate for three decades. You are quite precise. It was not exempted; it was simply not included—a very different thing, a different thing altogether. You are quite correct.

I would like to ask in conclusion, because I am a little confused about this, just a few things. I won't keep my colleagues any longer because we want to hear from the next panel.

Mr. Gholson, in your statement you say, addressed to me, "I am sure you are familiar with the Hudson River and Buttermilk Channel navigation projects in New York and the impact they have on the economy of your State."

Well, I am and I am not. What is the Hudson River navigation project?

Mr. GHOLSON. Mr. Chairman, all I know about these projects is that they are waterway projects and they are in New York, and I understand they were paid for by Federal funds because they were authorized since 1952.

Senator MOYNIHAN. Now let's just go back again. What is the Hudson River navigation project?

Mr. GHOLSON. Mr. Chairman, all I know about it is that it is a navigation project on the Hudson River. I cannot give you any details of it, but we will be glad to furnish them.

Senator MOYNIHAN. I wish people would not come before this committee and make statements about which they don't have any more information. As far as I know, there is no such thing as the Hudson River navigation project.

Does anybody in the corps wish to tell me otherwise?

Now the Buttermilk Channel navigation project, do you know what that is?

Mr. GHOLSON. I only know it is a navigation project in the State of New York.

Senator MOYNIHAN. It was begun in 1902. It involves a mile and a half of the Brooklyn waterfront. It is not exactly an inland waterway.

Mr. Gholson, I would like to go back to this statement which I have to tell you has concerned me, that the Louisville and Nashville Railroad has poured massive sums, your term, into the thus far futile effort to prevent the waterway's completion. Would you wish to tell me how large, what sums you are referring to? Would you give us the number of the amounts of money involved?

Mr. GHOLSON. Mr. Chairman, I can't give you a number, but I can tell you our expenience which would lead to that.

Senator MOYNIHAN. You can't give us a number, but you know the number to be massive.

Mr. GHOLSON. Yes, sir. I do know it to be massive by standards.

Senator MOYNIHAN. How do you know it is massive if you don't know what it is?

Mr. GHOLSON. Because I know, Mr. Chairman, that this litigation has gone on in its present form since 1976 and that several firms of attorneys and assistants to those attorneys have worked on a virtually full-time basis and that this litigation has taken place in the district courts, in the court of appeals, and is now on a petition to the U.S. Supreme Court.

Senator MOYNIHAN. All right. I see your point. That is a fair point to make.

Mr. GHOLSON. Hundreds of thousands of pages of documents have been presented.

Senator MOYNIHAN. But four lines after the use of the word massive sums you say they have directed their efforts to the Congress and to the media. Would you describe how these massive sums have been directed to the Congress? Is it the brochures you were talking about, the packet of information?

Mr. GHOLSON. Yes, Mr. Chairman.

Senator MOYNIHAN. Perhaps you could explain to me why I did not receive my packet.

Mr. GHOLSON. Mr. Chairman, we can certainly——

Senator MOYNIHAN. Do you have a packet, Senator Simpson?

Senator SIMPSON. No, I do not.

Senator MOYNIHAN. Senator Simpson does not have a packet either. Who has got them and why are they being withheld from their rightful beneficiaries?

Mr. GHOLSON. Perhaps, Mr. Chairman, your packet came to us by mistake because we did obtain copies of these. There are and have been very extensive efforts to——

Senator MOYNIHAN. All right, sir. I won't continue this. I simply mean to say have a care when you come before this committee and

suggest that in any way, directly or indirectly, the expenditure of funds by some private party has affected our inquiry. We are here to concern ourselves with the expenditure of what appears to be $3 billion in Federal funds. There are those who are for it and those who are against it. But we are here to find out why a project that in 1967 was estimated to cost $267 million ends up costing $3 billion.

It is a matter of no interest whatever that there are some groups for or against this as such. Private parties have a right to litigate their business. It is a free country. That is what the courts are there for.

That is not what we do in this Senate and not on this committee of the Senate. I would just like that to be explicitly clear for the rest of the hearing. I don't know that we need bring the matter up again. I am sorry that it was raised in the first instance.

The opposition of other parties is one thing, but to suggest that people who would obtain attorneys to represent themselves in court are involved in some way purchasing outcomes seems to be inappropriate.

Senator SIMPSON. Mr. Chairman, I certainly have always admired the intensity with which you pursued this. Let me just say another reason we should be doing what we are doing is that one-seventh of the corps budget this year is in this project—one-seventh of the entire corps budget in this one project.

That just doesn't track. There are 50 States in this Union. This thing has been laying around for 16 years. No wonder it has. I think it is time to address it. That is what you have done so capably when you took on the GSA, and our committee did that, and the public buildings law, which is our new one, which has corrected serious deficiencies.

The name of the game from here on in is oversight. I am sure glad to be aboard.

Senator MOYNIHAN. Thank you, Senator.

Gentlemen, Mr. Chairman, Mr. Skinner, Mr. Gholson, and Dean McLindon, we thank you very much for your courtesies in coming before the committee. We appreciate your appearing. We will be back with you with informal questions as this inquiry continues on.

Mr. WILKINS. Thank you, Mr. Chairman.

Senator MOYNIHAN. We are now going to hear a panel of five persons of varied backgrounds and interests who appear as opponents of the project from the academic disciplines and other sectors of the economy.

First, Dr. Robert Haveman, professor of economics at the University of Wisconsin. Dr. Haveman, are you an employee of the Louisville and Nashville Railroad?

Mr. HAVEMAN. No, I am not.

Senator MOYNIHAN. Dr. Joseph Carroll who is director of the Transportation Institute of Pennsylvania State University. Dr. Carroll, good morning.

Mr. CARROLL. Good morning.

Senator MOYNIHAN. We welcome you, sir.

Dr. Carol Pfrommer, department of economics, University of Alabama at Birmingham. Dr. Pfrommer, good morning. We welcome you.

Dr. Thomas Claflin, professor of biology at the University of Wisconsin at Lacrosse. Dr. Claflin, good morning, sir, and welcome.

And finally, Richard Briggs, and I suppose in some measure you are an employee of the Louisville and Nashville Railroad.

Mr. BRIGGS. 8.9 percent.

Senator MOYNIHAN. We welcome you.

I think, what with perhaps the random order in which the witnesses are listed, Dr. Haveman, you are first. Would you assume the informal duties of chairman of the panel?

STATEMENTS OF ROBERT H. HAVEMAN, PROFESSOR OF ECONOMICS, UNIVERSITY OF WISCONSIN AT MADISON; JOSEPH H. CARROLL, DIRECTOR, TRANSPORTATION INSTITUTE, PENNSYLVANIA STATE UNIVERSITY; CAROL PFROMMER, DEPARTMENT OF ECONOMICS, UNIVERSITY OF ALABAMA AT BIRMINGHAM; THOMAS O. CLAFLIN, PROFESSOR OF BIOLOGY, UNIVERSITY OF WISCONSIN AT LACROSSE; RICHARD E. BRIGGS, EXECUTIVE VICE PRESIDENT, ASSOCIATION OF AMERICAN RAILROADS; AND DAVID MASSEY, JOURNALIST, KNOXVILLE, TENN.

Mr. HAVEMAN. Thank you, Mr. Chairman. You have already introduced most of the members of the panel. There is one that was overlooked, Mr. David Massey——

Senator MOYNIHAN. Excuse me, sir.

Mr. HAVEMAN [continuing]. Who is a journalist from the city of Knoxville, Tenn.

The way we would like to proceed, Mr. Chairman, is to have Mr. Briggs make an opening statement. He is constrained by time and, as a result, he will speak now, if that is all right with you.

Senator MOYNIHAN. Go right ahead, Mr. Briggs. We welcome you.

STATEMENT OF RICHARD E. BRIGGS

Mr. BRIGGS. Thank you, Mr. Chairman. I would request that my statement be included in the record and I will try and summarize, in the interest of brevity, the highlights.

Senator MOYNIHAN. We will place it in the record. [See p. 180.]

Mr. BRIGGS. Let me first say that the Association of American Railroads represents those railroads that produce about 95 percent of all railroad revenues, employ 92 percent of their employees, and have 94 percent of the railroad mileage.

We are strongly opposed to the Tennessee-Tombigbee Waterway. I would not want this subcommittee to believe that it is simply a matter of Louisville and Nashville being opposed to this project. It is true that that railroad will suffer millions of tons of diversion. They are the biggest losers. They are the nearest in location. And I suspect with those circumstances it is not unusual that they have protested the loudest.

But the railroad industry as a whole objects to this project. I would like to explain in brief form why it is that we are opposed to this project.

First—and there is an obvious self-interest—we are opposed to it because of the massive diversion that it would create from railroads. Some 50 million tons of freight is the final estimate on that,

some 30 million tons of present traffic. Let me put that in perspective.

That is more traffic than 300 out of 320 railroads in this country originate. It is not a small sum of traffic, and it is not without significant problems to an industry, large segments of which are beridden with one major problem: Too much track and too little traffic. So we look very seriously at the problem of diversion.

I might point out that the losses to the railroads of this diversion are not included in any of the benefit costs ratios that you have listened to. In other words, we are counting benefits to specific shippers but we are not talking about losses to railroads.

That is not a loss that railroad's management itself and its stockholders. It is a loss that affects all the remaining shippers on railroads, many of whom do not ship bulk products and cannot use the waterways. Why is that?

Well, in the railroad industry we have a very high level of fixed costs. The smaller our traffic base, the higher the cost to the remaining shippers. So, they have a vital interest.

We are opposed to it because it does not provide for adequate user charges. Let me give an example that may help illustrate some of the complexities of the way this Government has been going at the funding of waterway projects.

Let us assume that you can produce steam coal in West Virginia presently for $30 a ton and haul it to port for export at $6 a ton by rail. Let us further assume in Tennessee you can produce coal of a similar quality for $32 a ton. The cost to move that by barge over the projected waterway—and this is a hypothetical picture, but I am trying to give you the tradeoffs——

Senator MOYNIHAN. By hypothetical, I assume you mean it is a serious estimate, however.

Mr. BRIGGS. Oh, yes. I don't have the costs precise, but the dynamics of the costs will work in the same relationship.

The total cost of moving that coal, including the investment in this waterway, is also $6, but the Government pays half of that. There are no user charges. That coal will go out to export at $35 a ton. The barge that hauled it is going to be benefited. The shipper that produced the coal in Tennessee is going to be benefited. Now the taxpayer is going to pay in general the $3. The shipper in West Virginia is going to lose out. So will the railroads.

What we end up with, without an adequate user charge discipline, is a situation in which you have massive transfer payments.

I agree that this project will inure to the shippers in the general area, some of them. But it will work against other shippers who cannot compete because they have to pay for their full transportation charges and the government is giving their competitions a 50-percent ride. It will also work against the benefit of the remaining shippers of those modes that lose the business.

Senator DOMENICI. Could I interrupt and just ask you, is the terminal point Mobile?

Mr. BRIGGS. Yes, sir.

Senator DOMENICI. What is there at Mobile that will use all of this coal?

Mr. BRIGGS. I am talking about an export coal movement. I was trying to draw the simplest analogy.

Senator DOMENICI. Do you assume that is what it is going to go for?

Mr. BRIGGS. In my case, that will be true. Let's take a domestic analogy.

Let's assume that the coal comes out of Tennessee and it is consumed domestically at some point near the waterway. If in fact the railroads have equal or lower total costs to move that coal as the barges, but the government pays 50 percent of the total cost of moving it by barge through the construction, toll-free, of these waterways, then the railroad is going to lose; and, as a result, the public ends up misallocating resources because it is cheaper when you figure out all of the dollars spent in some instances to move it by rail than it was by barge.

Senator DOMENICI. Let me ask you one question. Assuming it is going to be exported, aren't we even doing worse than you have described? Aren't we subsidizing for a foreign country the price of coal that they buy from us by giving them a free ride to the export?

Mr. BRIGGS. Yes, sir.

Senator DOMENICI. Are any of them asking for that kind of a bargain from what you understand now?

Mr. BRIGGS. No.

Senator DOMENICI. If the coal is going to go down this newly constructed facility to Mobile, is there any possible use, other than for export, that you are aware of for the next 30 years?

Mr. BRIGGS. We have heard a lot about export coal and the rising demand. But I think I ought to make it clear that we are talking about large percentage increases over a very small base.

Last year we only moved two and a half million tons of steam coal to export in this country. Most rosy estimates that I have seen are talking about 100 million tons down the line in maybe 10 to 15 years. So I don't think that the amount of coal that is going to move is going to put any insurmountable strain on our rail facilities.

The big part of coal is going to be domestic. I would assume some of the coal put to Mobile is going to be used domestically. The vast majority of the coal mined in this country is going to be used domestically, there is no question about it, no matter how much of a bonanza we get in the export market.

Senator DOMENICI. Isn't Mobile now importing South African coal?

Mr. BRIGGS. Not that I am aware of. There is a limited amount of coal that is being imported into this country—nowhere near as much as going out—which will give you an idea where we stand vis-a-vis the balance of payments in a competitive nature.

But in some instances there is very cheap coal available in South Africa and in some cases Poland. It is produced at a third of the price of the coal in this country, which gives them a big advantage.

Second, if they can hook up with a freighter that has to make the trip from the United States to Africa to carry phosphate, they can afford to move the coal almost for free. In fact, one could reasonably argue the freighters ought to pay for it because they need it for a ballast.

But there is not much coal being imported. I don't expect that there will be much in the future, unless there is some kind of unusual transportation system.

Senator MOYNIHAN. Are you saying you do not expect to see American coal exports rise?

Mr. BRIGGS. No, I do not think there will be a significant amount of imported coal used in this country. Now again we are talking about a very small base. And I suppose one could conjure up a future scenario where 30 or 40 million tons might come into this country while 150 million were going out, depending upon the logistics of the movement.

We are also opposed to the project because of the inadequate calculation of costs and benefits. I detailed some of those in my statement. One of the grossest inadequacies, of course, is failing to look at the cost to the railroads of this diversion, which ironically are calculated in the benefits of someone else. In other words, the rates benefits alleged to accrue to these shippers by switching to water carriers are factored in but not the losses to the railroad nor the losses to sail-bound shippers.

Let me talk a little bit about the interest rate problem, and leave aside for a moment the disputes over the adequacy of the cost-benefit ratio and just talk about the dynamics of interest rates, because I think it is here that the committee ought to focus some attention.

In 1950 in the railroad industry we had a lot of projects that returned 5 percent on investment, and we made those investments because interest rates were 3 percent. Today, when interest rates to the private sector are ranging between 11 and 15 percent, depending upon the length of the borrowing, and the security of the collateral, we don't make those investments anymore. And if, in fact, you are going to establish a waterways policy that evaluates whether something is a good investment using 3¼ percent—or even I would claim 7⅛ percent as you use for new projects—you are going to find situations where you put into operation entities that could not be put into operation under any sound financial discipline, be it private or public.

We are talking about a 50-year investment, and the interest dynamics on a 50-year investment are horrendous. The ratio of benefits to costs, using the 3 percent on the benefit-cost ratio, again ignoring the disputes which would bring it lower, is a 1.8-to-1 ratio.

Now what happens if interest is calculated at 7¼ percent? The ratio drops below one. What happens if you use the realistic interest rates that the Government is paying for long-term money? You are down to some benefit figure well below a half.

Now under this kind of scenario, the most prudent private management is going to be shafted. It cannot compete with that kind of rationale. And I don't know of a justification, measuring transportation benefits and shipper benefits, leaving aside the nonnavigational purposes which the Congress fully ought to consider, but I don't know how you ought to look at that and say this is a good project if we could borrow money at 3 percent.

Now who wins and who loses? Obviously the taxpayer has to come up with the money to begin with. So he starts off at a net loss. The shipper that uses the waterway service will gain to the

extent he can get a lower rate, but those rates magically seem to be just below railroad rates. The remainder go to the benefit of the barge company.

It is also true similar bulk shippers on railroads who compete in those markets may face a lower railroad rate driven down by the government-subsidized competition, and that, in a limited, narrow sense, is another benefit.

On the other hand, the shipper who does not have competitive waterway service and competes in the market from another place is a big loser. You look at what happened to your salt producers in Michigan who have to compete with miners who are nearer the river. They have to operate on a margin one-third as high as those situated next to the river. And the remaining railroad shippers of other commodities are also hurt. The railroads are obvious losers.

If we had rail industry whose viable segments were making adequate earnings, someone would say, "Well, you will have to make it up somewhere else." I think that kind of cross-subsidization leads to a lot of infirmities in the marketing process, but at least the railroads could remain whole. We are not, as is obvious, in that posture.

Senator MOYNIHAN. Mr. Briggs, if I may say that because we have a large panel here, what you are presenting to us is general propositions with which the subcommittee is familiar, and we are not getting numbers, which is what we need. I wonder if I could interrupt you there and ask we move on to the next panelist so everybody has a chance. Some of the Senators aren't going to be able to come back after lunch. I will be back, you may be sure.

May I first ask, just for the matter of the record, the Louisville & Nashville Railroad, which was introduced as a subject of earlier testimony, is owned, as I understand it, by Seaboard International. Is that right?

Mr. BRIGGS. Seaboard Coastline Industries.

Senator MOYNIHAN. So it is not a struggling little affair in the Mississippi Valley. Seaboard is attempting to acquire the C. & O.; is that right?

Mr. BRIGGS. Technically, Seaboard Coastline Industries is a holding company for two railroads, the L. & N. and Seaboard Coastline. The Seaboard Coastline Industries is merging with the Chessie. They are not taking them over. The two would be joined in a merger.

Senator MOYNIHAN. That is a pretty big railroad.

Mr. BRIGGS. You are talking about a pretty major railroad, probably the sixth largest railroad when you combine the L. & N. and Seaboard Coastline, but one whose earnings have been modest by any standards, even within the railroad industry.

Senator MOYNIHAN. Thank you.

Senator, would you like to say anything?

Senator DOMENICI. No.

Senator MOYNIHAN. Mr. Chairman, tell us your next panelist.

STATEMENT OF ROBERT H. HAVEMAN

Mr. HAVEMAN. I will be your next panelist.

In my comments I would like to make four points to address four issues. Each of these issues is of economic substance. They are as follows.

First, what is it that Congress is in the process of buying in the Tennessee-Tombigbee Waterway? Second, how much of it has been bought? Third, what would Congress lose and what would Congress gain if the project were halted today? And finally, how Congress and this committee got into the pickle which they currently are in.

First then, what is it that the Congress and the Nation is in the process of buying? It seems to me that the best way to think of the Tennessee-Tombigbee Waterway is to think of it in two parts. The first part is the part above Demopolis. What the country is buying there is a chain of locks, 10 locks, a channel cut through a mountain, a torturous set of interconnecting river segments, at a price of $2 billion, of which $700 to $800 million has been spent. That upper part is justified by a benefit-cost ratio analysis with a 1.09 benefit-to-cost ratio, which is based on the most shoddy, inaccurate benefit study that I have seen in 15 years of analyzing Corps of Engineers navigation projects.

Senator MOYNIHAN. We are going to hold everybody to what they say, and we have not had an absence of vigorously asserted views. Do you want to repeat that? The most shoddy, inaccurate—say that again.

Mr. HAVEMAN. I will repeat the entire sentence. It is justified with a benefit-cost analysis which now shows the benefit-cost ratio of 1.09, which is based on the most shoddy, inaccurate benefit study that I have seen in my 15 years of scrutinizing and analyzing Corps of Engineers analyses.

Senator MOYNIHAN. Proceed, Mr. Chairman.

Mr. HAVEMAN. The second part of what the Nation is buying in this project is——

Senator DOMENICI. Could I ask a question?

Senator MOYNIHAN. Please.

Senator DOMENICI. Assume that I don't know that you are an expert. That statement means one thing if you are. It means another thing if you aren't. Are you in the habit and custom of examining over the last 15 years corps cost-benefit assessments?

Mr. HAVEMAN. Yes, sir, I am. In fact, as I suspect you will learn in a moment, like Dr. Carroll sitting next to me, I did my Ph. D. thesis on this. In addition, I have written, as I recall, four books having to do with economic analysis as practiced by the Corps of Engineers, and probably something like 18 to 20 journal articles on this same topic.

Senator DOMENICI. Thank you very much.

Mr. HAVEMAN. The second part of the project that the Nation is buying here is the part below Demopolis. At the present time, what is below Demopolis is a windy, torturous river permitting no more than four-barge tows on a regular basis, a river which a Corps of Engineers official has characterized as a can of worms.

This segment of the river is an integral part of the Tennessee-Tombigbee Waterway. Indeed, 80 to 90 percent of the movements that the corps forecasts for the TTWW must go down this second part of the waterway below Demopolis.

Senator MOYNIHAN. The term movement is not clear. Is that a barge moving or is there a tonnage equivalent?

Mr. HAVEMAN. The statement I would make would have to do with both the number of shipments moving and the tonnage, the total tonnage moving on that water course.

The corps proposes straightening this river by cutting off 46 sharp river bends and doing so with 21 miles of new channels. The total cost of this river redressing is $1 billion.

That project, which is an integral part of the TTWW, has not yet been authorized and no construction has yet begun.

As a result, what we are looking at here is a total project of a $3 billion enterprise, and completion of this project in full is necessary if the corps projected traffic and that of the Black Warrior River which connects with the Tombigbee River is to move on that water course.

As a result of this, the Congress and this committee is in a catch-22 situation. If the top part, which is now under construction and which the corps claims is authorized, is completed, and if no traffic ultimately develops on it, the corps will claim that the bottleneck in the bottom part of the river is the cause of the lack of traffic, and you will be asked to complete the bottom half at a cost of $1 billion.

On the other hand, if the top part is completed, and the traffic that the corps forecasts does develop, then congestion of a substantial sort is going to develop in the bottom part of that river, and again the corps will request this committee, this Congress, and this Nation to complete the bottom half at a cost of $1 billion.

The bottom line, then, of this first point I am making is that if the project is not now halted, the project must be considered the remaking of the entire 450-mile river at $3 billion—a rebuilding justified by the shifting around of what in my view is a trivial volume of traffic to justify each segment in isolation. In some sense it is a classic shell game, but in this case without a pea.

What, then, will be the legacy of the final result of the full construction? The legacy will be first a small, four-to-six-barge auxiliary facility; second, a set of barge movements whose savings will come nowhere close to justifying the real costs of this enterprise; third, an unesthetic replacement for a beautiful natural area; and fourth, a region which was artifically spurred into a trailer camp, motor camp, restaurant, boom town, only to be evacuated when the construction of this project is completed.

The second question I wish to address has to do with how much has been spent and completed of this project. About $750 or $800 million has been spent, all of this north of Demopolis. And as a result of that expenditure, we now have a four-barge tow channel from Mobile on the Gulf to Columbus, a distance of 334 miles. And this channel already has some traffic moving on it. That is where we are today.

The third issue I wish to address has to do with what Congress and the Nation would lose and gain if the project were halted today. First let me look at the losses.

The first loss is the sunk costs of the project. I have said that $700 to $800 million has been spent. But in my view a good portion of that is in the form of recoverable costs.

First of all, $200 million of the $700 to $800 million has been spent to create what I have just described as a four-barge waterway up to Columbus, a waterway which is now moving some traffic. It is not legitimate to take the $200 million that has created that and claim that it has produced nothing. As a result, I would take that $200 million and use that to adjust the asserted $800 million of sunk costs.

Second, there is from $50 to $100 million worth of land now owned by the U.S. Government through purchases by the Corps of Engineers which can be resold. That land as well is not legitimately included as a nonrecoverable sunk cost. As a result, in my view, we are looking at somewhere in the neighborhood of $450 to $500 million of truly sunk, unreeoverable costs, many of which can be viewed as income transfers to construction contractors and their workers, some of whom would have in the absence of this project been unemployed. This in my view is a small amount in comparison with the total $3 billion this project costs which will ultimately need to be incurred if this is to be a viable enterprise.

There is a second loss if this project is halted today. There will be a necessary rundown in the transient level of economic activity in this region. There will be a need for some adjustment assistance as this region is run down due to the termination of the project.

However, I would add that the amount of rundown that will be required and the amount of adjustment assistance that will be required if the project is halted today will be less than the amount of rundown and assistance necessary if the project goes its full $3 billion route and then is terminated and that activity ceased.

In my view, those are the two losses that Congress confronts if this project is terminated.

What are the gains?

The savings of $2.3 to $2.5 billion in future expenditures, a set of expenditures which is a good downpayment on a tax cut, which represents the total bill on a new employment tax credit, if one would want to consider that, or if one would want to consider it, the major portion of the cost of an effective welfare reform.

There is a second gain. I have already mentioned it. We have an effective four-barge waterway constructed up the Columbus, which waterway would stand if the project were terminated today.

A third gain would be the preservation of a unique natural area. And the fourth gain will be that we will have been spared the embarrassment of constructing the largest, largely unused, uneconomic, public works project in this Nation's history.

This leads me to my conclusion; namely, that it is now the time to cut losses, to compensate those that have been inconvenienced and to move on to other activities consistent with the growing and equitable society.

Let me make one final point having to do with how the Congress is in the current fix. This point, Mr. Chairman, has to do with the history of the deception of the Congress by the Corps of Engineers. And I use that——

Senator MOYNIHAN. That is a strong word.

Mr. HAVEMAN. That is correct. I use the word after thinking about it. I will now tell one story that characterizes a portion of this deception.

The story I am telling is verified by a report of the Army Audit Agency, which is the GAO of the Army, in a report that I will submit for the record as part of my full testimony.[2]

The story is this: In 1972, the Corps of Engineers testified that the cost of this project was $386 million. In 1974 they testified that the cost was $732 million. And then in that year a discovery was made; namely, that the real costs of this enterprise would be over $1 billion. This discovery and the basis for it was well known to high officials in the Corps of Engineers—Colonel Wilson, General Lattalia, and General Morris. However, from mid-1974 to January 1976, a conscious decision was made to report a cost on this project of $815 million—a withholding of $344 million of required costs from the Congress.

I cannot imagine that Congress at that time would have proceeded with this project if it had known the full cost and the devastating impact that these full costs would have had on the benefit-cost ratio of the project at that point in time.

Thank you.

Senator MOYNIHAN. We thank you, Professor Haveman. That is, of course, a very serious charge you have made.

Mr. HAVEMAN. Yes, sir.

Senator MOYNIHAN. We will ask the corps to respond, as you would expect.

Mr. HAVEMAN. Please.

Senator MOYNIHAN. Then perhaps we will ask you to respond in turn. I think you have been very precise in your propositions about the project.

I will first ask Senator Stennis, would you like to question Professor Haveman?

Senator STENNIS. Thank you, Senator; not at this time.

Senator MOYNIHAN. Senator Domenici?

Senator DOMENICI. Mr. Chairman, I have none at this time, but I would ask you, if I might, what your plans are with reference to the hearings. Are we going to continue on during the afternoon?

Senator MOYNIHAN. Yes, sir.

Senator DOMENICI. What do you have in mind?

Senator MOYNIHAN. If it is agreeable to you and my colleague, I would like to adjourn at 1 o'clock and resume at 2 o'clock.

Senator DOMENICI. Thank you very much.

Senator MOYNIHAN. Would that be possible for you?

Senator DOMENICI. That will be helpful. I have a conflict. I will just give them that hour. Then it might permit me to be here for the afternoon.

Senator MOYNIHAN. We hope you can be.

We have time for just one more member of the panel until we break for lunch.

Mr. HAVEMAN. The second person, Mr. Chairman, that will be speaking is Dr. Carroll, sitting on my right.

Senator MOYNIHAN. Dr. Carroll, I would think you were Dr. Pfrommer.

Ms. PFROMMER. I am Dr. Pfrommer.

Senator MOYNIHAN. I see. Forgive me.

---

[2]The report referred to was also submitted for the record by the Corps of Engineers and may be found at p. 297.

STATEMENT OF JOSEPH L. CARROLL

Mr. CARROLL. Mr. Chairman, thank you. I appreciate the opportunity to appear before this committee today, since I have had a long interest in the Tennessee-Tombigbee which dates back to the early sixties.

I was pleased to meet Glover Wilkins again, a gentleman I have known for many years and admired. It was his organization that financed my doctoral dissertation which was completed in 1962. I regret we appear on opposite sides of this issue.

First of all, I would like to summarize my written statement, which I would like to submit for the record.

Senator MOYNIHAN. Please do. [See p. 215.]

May I say, something which I should have done—you are Dr. Joseph L. Carroll, director, Transportation Institute, Pennsylvania State University.

Mr. CARROLL. The current controversy reminds me of the one which occurred back almost 30 years ago in 1951 when the House Public Works Committee examined this project and found that it had a benefit-cost ratio of 0.29.

I oppose completion of this project without another such study by an independent agency, such as the General Accounting Office. A study is needed, in my opinion, not only to develop unbiased estimates of the benefits and costs of completing the project but also to determine why the Corps of Engineers has apparently failed to carry out its responsibilities in this regard.

The study I propose would address the following questions: No. 1, why have the cost estimates for this project developed by the corps been so inaccurate? Two, why has the corps reported to Congress and the public project cost estimates known to be incorrect and, in fact, much lower than the actual expected costs? Three, are the navigation benefits claimed for the project by A. T. Kearney, the corps' consultant, and adopted by the corps, valid, or were they developed to insure a sufficient benefit base to cover the skyrocketing project costs?

My testimony will address primarily the last question. Even without the use of documents provided under the corps protective order—and I would urge that this committee inspect these documents, since one of the serious problems attending navigation studies by the corps is the cloak of secrecy that surrounds them, it is clear that the navigation benefits claimed by the corps for the Tennessee-Tombigbee and upon which project justification rests, are illusory.

The navigation benefits claimed for the project are invalid for the following reasons: The economic justification depends very heavily upon coal movements. A movement is an annual tonnage of a specific commodity moving between given origins and destinations. In this project there were 121 movements identified by Kearney and the corps, for which savings were claimed for the total project between Pickwick and Mobile. There is an abundance of evidence that these movements did not and will not materialize as claimed by Kearney and the corps.

The principal reason that coal and other movements won't develop anywhere near the extent assumed by Kearney and required for the benefits needed to justify project completion is that the Tennes-

see-Tombigbee will be a relatively high-cost waterway compared to the Mississippi River. This is because, rather than being a typical locking river with a series of relatively wide and deep pools connected by a few locks, the Tennessee-Tombigbee is for most of its length a shallow, narrow, manmade canal with relatively sharp bends and many locks. As a result, tows on the Tennessee-Tombigbee will be relatively small, slow, and the rates charged correspondingly high.

Senator MOYNIHAN. The rates, if any.

Mr. CARROLL. Pardon me?

Senator MOYNIHAN. The rates, if any. There are no rates contemplated, are there?

Mr. CARROLL. Yes. Rates were constructed for comparing the cost of moving traffic by the Tennessee-Tombigbee with other alternative modes or routes.

As an aside, I came across an article that appeared in the Sunday, April 8, 1979, Commercial Dispatch from Columbus, Miss. I would like to read you a quotation from this. But before I do, I would like for you to know that the benefits upon which the project was justified are based upon the exclusive use of an eight-barge tow throughout the length of the waterway, extending from Pickwick to Demopolis, and a six-barge tow from there on. An eight-barge tow, though, is assumed above Demopolis. There was a movement of soybeans out of the Aliceville Pool which is just above Demopolis. I will quote from this article.

> Warrior and Gulf Navigation Company Fleet Captain Bedford Slaughter, on board for this maiden voyage, said, "It is a good four-barge river." He added that "once the cutoffs were finished, the channel may take six barges."

Senator MOYNIHAN. Could you tell me, as I am not familiar with that river, was the original suggestion that it would be an eight-barge river in effect, or canal, from the Pickwick Pool down to Demopolis and then six thereafter?

Mr. CARROLL. Yes. That is the contention.

Senator MOYNIHAN. It reverses the intuitive suggestion that the river gets wider as it goes toward the ocean.

Mr. CARROLL. Yes, it does.

Senator MOYNIHAN. The Tombigbee River is a narrow and winding river, and they didn't even comtemplate an eight-barge tow. They would drop two barges as they got out of the canal region and into the river region.

Mr. CARROLL. That is correct. The corps realized this somewhat late, having done all of the calculations using an eight-barge tow throughout the entire length of the waterway and contemplating, as the corps did in the fall of 1975, the improvements below Demopolis, which will cost an additional $1 billion and for which there is no authorization.

Senator MOYNIHAN. All of that bend snipping, it would still be designed to produce a six-barge unit.

Mr. CARROLL. Well, the corps assumes that six-barge tows exclusively are used below Demopolis. There is some question whether that river will support all six-barge tow traffic. I don't believe it will.

Senator MOYNIHAN. It is not contemplated that it should be eight.

Mr. CARROLL. Not below Demopolis. Above Demopolis, yes, sir. Where it is contemplated eight-barge tows will operate, Captain Slaughter says it is a good four-barge river.

Senator DOMENICI. Perhaps I am missing something, but why is the captain so relevant? Is that the real versus the theoretical?

Mr. CARROLL. That is correct, sir.

Senator DOMENICI. Is that real credible because one captain says it?

Mr. CARROLL. This confirms the analysis that I have done, Senator, in that the tows that will be used on this river will not be of the size assumed by the corps and its consultant and for which the rates were developed and benefits based. Thus, smaller tows will mean higher rates, lower rate differentials between this waterway and the alternative mode, and lower benefits.

Senator DOMENICI. Which means there is less likelihood they will use it.

Mr. CARROLL. That is correct.

Senator DOMENICI. And the other route is 400 miles longer?

Mr. CARROLL. The Mississippi River? Depending upon where you start, yes, sir. And they use regularly 35-barge tows.

One of the major thrusts of my testimony, which I will get to, is that the Mississippi River is a much superior means for moving much of the traffic claimed for the Tennessee-Tombigbee.

Senator, I might add that you have suggested that the corps was trying to clone the Mississippi River. I would like to point out that the Tennessee-Tombigbee is a very poor substitute and that perhaps a more relevant comparison would be something like this: The Tennessee-Tombigbee is to the Mississippi River as the New York State Barge Canal is to the St. Lawrence Seaway.

Senator MOYNIHAN. That is all right. As long as you don't say anything against the Mississippi River, not before this committee. This committee will not entertain pejorative comments against the Mississippi. It is the case that a 35-barge tow is common now on the Mississippi.

Mr. CARROLL. Yes; for large annual movements. There was a record I believe set when a tow had 63 barges, according to the Waterways Journal. But that is rare.

Senator DOMENICI. Besides, Professor, we don't want you to ruin Senator Moynihan's cloning description.

Senator MOYNIHAN. That is right.

Senator DOMENICI. Please pass over that testimony.

Mr. CARROLL. I am sorry I even brought up the matter.

Senator MOYNIHAN. It is a new technology being developed.

Mr. CARROLL. Continuing on, as contrasted with conditions on the Tennessee-Tombigbee, on the Mississippi the channel is such that very large, fast and economical tows can operate and thus, even though distances from inland points to say the gulf will be much less via the Tennessee-Tombigbee than via the Mississippi River, shippers would have to pay more in many cases.

For example, even using the rates developed by the corps consultants, A. T. Kearney, it is actually cheaper to ship coal from the Grand River Terminal on the Tennessee River via the Mississippi River to New Orleans for export than it would be to ship this coal the far shorter distance down the Tennessee-Tombigbee to Mobile.

In my opinion, full accounting for operating constraints on the TTWW and the Black Warrior-Tombigbee Waterway and for the economies of operating on the Mississippi River will reveal that it may be actually cheaper to ship export coal from origins above the confluence of the Tennessee-Tombigbee and the Tennessee River at Pickwick to New Orleans than to Mobile.

Senator Domenici, you mentioned the corps savings to shippers calculations. You asked whether these accrue to foreigners. The corps savings to shippers calculations totally ignore the nationality of the shipper. Thus, savings claimed for the Tennessee-Tombigbee for import-export traffic can accrue in all or in part to foreign interests.

In estimating navigation benefits, Kearney and the corps were guilty of wholesale violations of corps regulations and generally accepted economic principles.

Senator MOYNIHAN. Now just wait. How did Kearney violate corps regulations? That is an economic consulting firm that works in an office in Chicago, I gather.

Mr. CARROLL. How?

Senator MOYNIHAN. What regulations did they violate?

Mr. CARROLL. They violated the corps engineering regulation 1120-2-114, which specifies the procedures to be followed in computing the navigation benefits for one of its projects.

Senator MOYNIHAN. I see; that kind of regulation.

Senator DOMENICI. Mr. Chairman, since I must leave in a moment, I will return at 2, could I ask Professor Carroll this question?

Senator MOYNIHAN. Please do.

Senator DOMENICI. You indicate basically that one of the errors in the cost-benefit assessment is that it really is not going to be able to carry eight barges. Is there some way that the corps usually uses to avoid this kind of serious miscalculation? I mean if the real world is as you stated it, that is a tremendous error. In fact, in this instance it is by itself enough to even with a 3 percent on your interest for 50 years, amortized, that alone would have brought it below one, would it not?

Mr. CARROLL. I believe it would.

Senator DOMENICI. I would think somebody could run that. But it seems to me that is a 25-percent error, 6 versus 8. How do they make such a serious error as that, if that is really what happened?

Mr. CARROLL. I can't explain how this happens, given the review process and the like. But I would suggest that it may be because there isn't the kind of scrutiny of these projects that they deserve. So perhaps the corps becomes a little careless.

Then again, in this case, this project was started, was under construction, and the costs went out of sight, and the corps was in a very difficult position. The end result was that the corps and its consultant, A. T. Kearney, used operating conditions on the Tennessee-Tombigbee that were the most ideal that could be expected.

Now I don't want to say that an eight-barge tow cannot operate. There would perhaps be the occasional eight-barge tow. But what was assumed was that all tows were of the same size and moving at the same speed. This doesn't account for the mix in tow sizes that will occur in the real world and which will create the problems of

delays and the like and not providing sufficient capacity to move the traffic necessary to justify the project.

Senator DOMENICI. There have not been any significant changes in barges and the like that would justify such an adjustment?

Mr. CARROLL. On the contrary, Senator. There have been some changes in barges that would make the Mississippi River even more attractive.

The dry bulk barges that are being built today are by and large designed to be loaded to up to 11 feet when water conditions permit on the Mississippi River and the other rivers. This would not be possible on the Tennessee-Tombigbee, particularly in the manmade canal that constitutes approximately 70 percent of the length between Pickwick and Demopolis.

Senator MOYNIHAN. The 9-foot canal, is it?

Mr. CARROLL. It is a canal that is supposed to be suitable for the operation of barges loaded to 8½ feet.

Senator DOMENICI. Just one last question, and I will be glad to return for the afternoon. But you say that there isn't adequate review. That may be one notion you offer. I take it then adequate review is in no way related to the time spent in going through everything required for one of these projects.

One of our problems, whether it is this one or any other one, is obviously time spent doesn't cure much because if they take forever, even with long years, you are still suggesting somebody botched the review up here in your opinion. Is that correct?

Mr. CARROLL. I believe that you have a problem, yes, sir. I do believe that is correct. I believe that there is a serious problem when you have the same agency that is responsible for the construction and operation and maintenance of a project doing the economic analysis of the project to determine whether it is feasible; and that, therefore, an independent review is needed.

Senator DOMENICI. Thank you.

Senator MOYNIHAN. If I may ask, you are just about finished, Dr. Carroll?

Mr. CARROLL. I could finish in about 3 minutes.

Senator MOYNIHAN. Finish in 3 minutes.

Mr. CARROLL. Violations of the corps regulations include: One, claiming benefits for hypothetical and highly speculative traffic described as future traffic; two, using hypothetical rather than actual rates being charged shippers for existing traffic movements by alternative modes or routes; three, failing to account for other nontransport costs that represent differences in the quality of service between modes of transportation. And, finally, projecting traffic that cannot materialize because of physical constraints, such as the inability of utility plants to burn the forecasted coal.

Also, Kearney and the corps failed to consider the impacts of projected Tennessee-Tombigbee traffic, such as the loss of benefits on connecting rivers which would be constrained because of Tennessee-Tombigbee traffic.

Senator MOYNIHAN. You mean the choking phenomenon.

Mr. CARROLL. That is correct, sir.

Finally, a final violation was a 10-percent allowance to account for undisclosed traffic, a practice that General Morris himself had disallowed in the case of the Cross-Florida Barge Canal.

Finally, the purported benefits are so speculative and unrealistic as to be totally worthless in determining the value of the Tennessee-Tombigbee Waterway. Based on my own analysis, I would be surprised if the public investment in the Tenn-Tom will return more than 10 to 20 cents on the dollar. This would not come close to justifying the enormous commitment of resources required to complete the waterway as it stands today.

I am confident that if these resources were used instead to improve other transport facilities serving U.S. coal needs, such as enlarging the locks on the lower Tennessee River, or replacing locks on Monongahela or improving east coast coastal port facilities serving the Appalachian coalfields, the return on the Federal investment would be far greater. Thank you.

Senator MOYNIHAN. We thank you very much.

The committee will now recess until the hour of 2.

I am asked to remind the panel that they have only half an hour remaining, in order that there be equal time. But that is not so. You have all the time you want. Then if the proponents wish to come back, they will yield to you. You have all the time you want up to the point where the proponents are being squeezed out. But, more importantly, General Heiberg will be testifying later in the day. So we will hear everybody at such length as is required.

Thank you, Mr. Haveman.

Mr. HAVEMAN. Thank you, Mr. Chairman.

[Whereupon, at 1:13 p.m., the subcommittee was recessed, to reconvene at 2 p.m. this same day.]

AFTER RECESS

[The subcommittee reconvened at 2:10 p.m., Senator Daniel Patrick Moynihan, chairman of the subcommittee, presiding.]

Senator MOYNIHAN. The committee will resume its hearing.

The Chair apologizes for being a moment late. The Senate is running late. Professor Haveman had travel plans which he could not change and very cordially suggested he would be willing to stay over, and I took the liberty of saying we had heard his testimony and it wouldn't be necessary. In his absence, the Chair appoints Dr. Joseph Carroll acting chairman of the panel. You had completed your testimony, sir, so if you would like to pass on to the next member of your panel as you think we should proceed.

Mr. CARROLL. I would like at this time to submit some documents that belong with both Dr. Haveman's and my testimony.

Senator MOYNIHAN. They will be made part of the files on this subject.

Mr. CARROLL. Our next panelist is Dr. Carol Pfrommer.

Senator MOYNIHAN. Dr. Pfrommer, good afternoon, and proceed.

STATEMENT OF CAROL PFROMMER

Ms. PFROMMER. I should like to discuss the value of the Tennessee-Tombigbee Waterway as a regional development strategy.

In 1975 the Appalachian Regional Commission——

Senator MOYNIHAN. You have a prepared statement.

Ms. PFROMMER. Yes, I do.

Senator MOYNIHAN. Would you like to submit it for the record?

Ms. PFROMMER. I believe that there are copies and they have been submitted.

Senator MOYNIHAN. We will place it in the record, and you may proceed to summarize as you wish. [See p. 229.]

Ms. PFROMMER. In 1976 a project study done for the Applachian Regional Commission forecast over 200,000 new jobs would be created by the Tennessee-Tombigbee Waterway. Because the figure seemed high, the Appalachian Regional Commission the next year, in 1977, asked that a second study be done. The second study forecast 20,000 jobs would be created, and yet the proponents of the waterway continue to use the far more sanguine figure that came out of the first study.

The waterway was originally proposed and justified only as a navigation aid, but more recently the project has been hailed as an economic turning point for the Southeast, and as the creator of a dramatic increase in employment and economic opportunity for persons in impoverished sections of Alabama and Mississippi. Although it will neither generate electric power nor provide for flood control, it is even represented as an extension of the Tennessee Valley experiment. It is not. A public facility alone cannot create growth. At best, such projects permit development or remove some impediments to it.

The waterway plan does not address the traditional deterrents to growth in rural Alabama and Mississippi—a poorly educated labor force with low skills and low productivity, an underdeveloped business sector severely hampered by an inadequate internal highway system, and a dispersed rural population scattered thinly across a large area. Although in the parts of Alabama and Mississippi expected to benefit most from the waterway one of every four men in their prime working years, between the ages of 20 and 49, have, at most, an eighth grade education, the project contains no funds for adult basic education. Although the entire Mississippi primary impact area lies outside the Interstate Highway System, and although many of the region's inhabitants do not have dependable transportation to jobs, where those jobs exist, the waterway plans do not include remedies for this problem. Although the area contains few large industrial sites with adequate supplies of utilities and package plants, these development needs are not reflected in project costs. While much local housing is dilapidated, no provision in the project plans is made for improving and increasing the housing stock, to accommodate the projected dramatic influx of workers attracted to the region by the waterway. And, finally, while parts of the area are heavily black, and minorities too often share less than proportionately in development benefits, rigorous assurances that the economic condition of local blacks will be improved are lacking.

But even were these constraints ignored, the impact of the waterway on regional jobs and income is much exaggerated for at least three reasons.

First, there is little evidence that waterways alone induce a significant amount of economic development. Second, the number and type of firms attracted by waterways are limited. And third, industrial sectors using waterways that do not provide hydroelectric power, waste control facilities, or flood control do not usually

employ large labor forces—and we are talking about a labor surplus area—nor do they create linkages, that is, they do not in themselves act to attract additional firms to the area where they are located. I should like to discuss each of these three points very briefly.

The Mississippi River is a lock-free river. It is broader than any channelized waterway, and yet the delta counties bordering it remain among the poorest in the South. Green County in west Alabama is bordered by the Black Warrior River to the west and the Tombigbee River to the east. It is so well served by navigable waterways that it is almost an independent island. Yet for decades Green County has ranked as one of the 10 poorest counties in the Nation. But the notion that industrial locations are induced and development accelerated by the simple existence of a waterway endures.

There is some evidence that the availability of certain water-related services, particularly hydroelectric power and waste disposal facilities, has some effects on a firm's decision to locate in a broad region—for example, in the Mississippi Valley, or the gulf coast, or the Southeast, or the Tennessee-Tombigbee primary impact area. But navigation availability itself is important only for the within region location decision. Because the Tennessee-Tombigbee Waterway's only service is transportation, its effect is more likely to be redistribution of firms already located in the area rather than attraction of new or expanding firms into it. In fact, according to the University of Arkansas' Bureau of Business and Economic Research, this is true of the area around the McClellan-Kerr Waterway in Arkansas and Oklahoma. The bureau states that while there is little evidence of substantial industrial development that can be attributed to the McClellan-Kerr Waterway, most of the new facilities constructed in and around its port areas represent changes in the location of existing firms from adjoining counties or nearby places within counties bordering on the waterway. In fact, for a waterway to induce net increases rather than relocations in regional jobs, it must encourage increased production. It can do this by permitting the exploitation of new resources or by encouraging the production of new commodities or providing access to new markets.

But each of these potential impacts is limited by the second point I should like to discuss, the types of firms that are attracted by waterways. These are basically two types.

Some firms that are sensitive to water in that they use water in the production process rather than for transportation. For them, water is a factor of production, rather like iron ore or labor. Firms in the metals and metal fabricating sectors would fall into this category. But such plants are not likely to locate along a waterway solely on the basis of low-cost industrial water supply. In fact, improved water recycling techniques are making these firms more footloose; they are less dependent on large supplies of water and freer to locate in areas with less abundant water stocks but which do offer them increased incentives in the form of access to markets, to their suppliers, and to the large pools of skilled labor that they require.

Current population densities along the route of the Tombigbee Waterway, unlike that of the Tennessee River in north Alabama, are not sufficient to attract these firms. In addition, area skill levels are much below those of the urban labor forces of northern Alabama.

On the other hand, there are a few industries of the second sort, those that are sensitive to the availability of water for transportation. But even for these barge traffic is mainly competitive for products whose origins and destinations are on the waterway. If the origins and destinations are not on the waterway, then transshipment cost outlays to load the product on a truck or rail car and then to unload it at a dock may negate the barge-haul rate advantages. I would like to quote the Corps of Engineers itself, which notes that "Where overland transportation modes are required to complete the movement, the high cost of transshipment rapidly reduces the competitive low line-haul cost and high capacity of barge operations." This is from the Corps of Engineers' design memorandum of 1976.

In fact, transhipment costs are likely to be high for firms located along the river section and divide cut of the Tennessee-Tombigbee. A good part of the length of the waterway is simply not suited to industrial development. At Demopolis and Amory, Miss., the land along the waterway is swampy. Flood control is not included in the project. Diked segments will not permit easy access to the river along this portion of the waterway. Along the northern divide cut, the mountainous terrain also serves to limit nearby locations.

Still, water transportation-sensitive firms are those most likely to be attracted by the project. Their limited impact, however, on regional well-being and job creation is the basis of the third objection to the waterway as a development strategy.

Industrial sectors sensitive to water transportation have low income and employment generating potential. Efficient use of barge traffic is largely limited to bulky goods with low value to weight ratios: Coal, ores, forest products, clay, concrete, stone, and gravel. These primary products, estimated by the corps to account for at least three-quarters of waterway movements, are typically shipped from the point of production to the final purchaser. Unlike manufactured goods, they do not go through a series of work-up stages between the mine, the forest, or the pit and the point of final sale. Thus, they do not generate multiplied employment opportunities.

In addition, because they do not attract related firms to the area where they are produced, or to intermediate points along their transportation routes, the number of additional jobs they generate in related fields is small. These are low linkage industries. I might note a linkage is an activity that attracts another firm because it provides a market for that firm's product, or because it produces a good that the firm uses in its own production process. An example might be a metal fabricating plant that locates near a steel finishing facility.

But even increased output in these primary product sectors is not associated with proportional increases in regional employment and income. Coal production, for example, is increasingly relatively capital intensive. We are discussing locations in a labor surplus

area. Surface mines, which represent a growing share of all coal production, require more machines and less men to produce a given output than do underground mines. In addition, because mine equipment is often not manufactured in the same place that coal is found, coal revenues tend to leak out of the local economy to manufacturing centers. Dollars earned in mining are less likely to be spent and respent within the community, generating revenues for local businesses, than are dollars earned in manufacturing employment.

It is not these primary product firms, but rather the high linkage firms—metal manufacturing, machinery and rubber plants, with many intermediate production stages and linkages to firms producing related products—that provide real employment increases to an area. But these plants are unlikely to use slow water transportation to import machine parts to an assembly point, or to use canal traffic to ship the assembled machines to market. In conclusion, I should like to say that the waterway will, of course, create some jobs and generate some increases in regional income. However, the appropriate question is not will the waterway create jobs, but rather, how many more jobs might be created through an alternative development strategy? Most waterway impact studies admit that manpower programs, improved highway and internal transportation systems, aggressive industrial recruitment plans, planning and technical assistance and multistate and multicounty approaches to shared problems are necessary to effect real change in the economy. How much more development the waterway can induce if these needs are met and how much it will provide if they are not is the real test of the project's worth. If this Nation has enough faith in the future of the Southeast to invest several billion dollars in it, then the Nation also has the right to be assured that these funds will be spent wisely.

Senator MOYNIHAN. We thank you, Dr. Pfrommer.

Senator Stennis, did you have questions?

Senator STENNIS. Thank you, Mr. Chairman. No questions.

Senator MOYNIHAN. Senator Domenici, I know that you have a bill on the floor and you are going to have to get there.

Senator DOMENICI. Yes, Mr. Chairman, what I would like to do, with your permission, I am going to go down there and offer an amendment. We are going to have a rollcall; there is an hour provided. In the event you proceed in such a manner that you have already questioned General Heiberg, I wonder if you would mind making sure that he is asked to remain so that I will have an opportunity to ask him some questions.

Senator MOYNIHAN. That most certainly will be done.

Senator DOMENICI. I would appreciate that.

Senator MOYNIHAN. Mr. Chairman, who would you like to call on next?

Mr. CARROLL. I would like to introduce Mr. David Massey.

Senator MOYNIHAN. Mr. Massey, good afternoon.

STATEMENT OF DAVID DYAR MASSEY

Mr. MASSEY. Thank you, Senator. I have a prepared statement I would like to submit for the record, and my remarks will be to summarize that statement and expand on it.

Senator MOYNIHAN. Without objection, it will be included in the record. [See p. 249.]

Mr. MASSEY. My particular interest in the Tennessee-Tombigbee Waterway began in 1977, when I first heard of the A. T. Kearney projection for coal movements over the canal out of the Appalachian coalfields. At that time I was a reporter for a weekly newspaper in Whitesburg, Ky.—the Mountain Eagle—which is in the middle of eastern Kentucky.

Senator MOYNIHAN. Prize-winning Mountain Eagle.

Mr. MASSEY. Right.

Along with two other coal reporters, I obtained research funds to look into the socioeconomic impacts of the waterway. We looked at a number of different aspects of it, including the coal production. Our funds were obtained through two private groups, including the Center for Community Change here in Washington.

One of the questions we had as we began this was what potential could the waterway have for coal development in Appalachia? If it could have a lot, the Tenn-Tom could be a real boon to mining families in the mountain mining region, who have suffered through a long history of boom-and-bust coal economy.

Unfortunately, our research and interviews with coal experts in the southern field indicate that the waterway will have—well, I should say will have nowhere near the effect that A. T. Kearney seems to expect, and, therefore, will have little effect on coal employment in the region.

Just by way of summary, the Kearney study projected 28 million tons of commerce would move over the waterway during the first year of operation. 18.4 million tons of that would be down-bound coal; of that amount, 9.9 million tons would be domestic steam coal produced in western Kentucky, southern Illinois and adjacent areas, and the remaining 8.5 million tons would be produced in northern Alabama and southern Tennessee.

What I would like to testify to and what I particularly investigated is the accuracy of the 7.2 million tons which A. T. Kearney said would come out of southern Tennessee. From our interviews with coal operators in that region, we found that on specific movements out of specific terminal areas along the Tennessee River, we got these comments that the corps is pipedreaming, that there is no hope for this kind of tonnage, that the predictions are bullish, and that they are entirely out of reason.

Now, what I want to do is summarize briefly the reasons that these industry officials and industry observers made these statements.

In the first place, this 7.2 million tons of coal would be metallurgical quality coal bound to Mobile and for export through the McDuffie Island coal terminal in Mobile. Kearney could not have predicted in 1975 that the bottom would drop out of the metallurgical coal market, but that is, in fact, what has happened, for a variety of reasons; and there is no real hope, according to knowledgeable people in the industry for recovery of that market for at least another 5 years. Of course, all of the right analysis done on this 7.2 million tons was done on the expectation of a strong export market.

Another problem has to do with extraction of coal in this area. The coal seams in the coal-bearing counties of southern Tennessee and northeast Alabama are thick, irregular and hard to mine. Bill Allison, president of Tennessee Consolidated Coal Co., which is a subsidiary of A. T. Massey—of no relation—Coal Co.—unfortunately of no relation—which is the second largest exporter of coal in the United States, has this to say about the minability of coal in the region. He points out that the coals in the Walden's Ridge area in southern Tennessee, which is one of the main areas in the Kearney prediction goals, have been drilled, redrilled and are still being drilled to try to get a pattern, but there have never been economically large blocks of contiguous coal reserves that are economically minable. Now, there is coal there, but if not economically minable coal, it is going to stay there.

This leads to a further problem, which is a problem of limited reserve. The Corps of Engineers commissioned a study by the 3-R Corp. a couple years ago to look at the availability of coal in the southern Appalachian region that could conceivably move over the Tenn-Tom—not only southern Appalachia, but this is what I am interested in. What they did was to look at the Bureau of Mines' reserves base and then to refine that base to come up with their own estimate for what could be minable reserves; and because of the irregular seams in southern Tennessee and northeast Alabama, they found that over the 10-year period from 1977 through 1986 Tennessee's coal production will actually decline from 10.3 million tons production in 1977 to 10 million in 1986. Now, it goes up, but then it comes back down, because the reserves are being mined out.

Another problem has to do with terminal facilities. Even if one assumes that the market is in place and that the coal exists in sufficient minable blocks, there is considerable question as to the capability of terminal facilities on the Tennessee River to handle the huge increase in coal movements that Kearney claims. For example, the Kearney report states very specifically that terminal and port facilities were assumed to be provided where justified by traffic volumes. Now also since they conducted their study, there has been considerable local opposition to terminal development on the Tennessee River. A terminal facility at Bridgeport, Ala., was killed due to local opposition. One such origin point listed by Kearney was Oak Ridge. That was to be a coal, rail and truck to barge transshipment facility at Milton Hill Reservoir that has recently been killed in the TVA due to environmental considerations.

Also, one of the things that should be stressed here is that a large percentage of the coal movements analyzed by Kearney were not current movements. They are future, speculative movements, and during the time they were looking into this there was a lot of speculation going on in southern coalfields as to new coal development. One of the major ones is Amax Coal Co., which had intended to export 1 million tons a year from reserves that it owned at that time in Sevier, Blount and Van Buren Counties. The Tennessee Water Quality Control Board denied Amax a permit to mine that coal, and the laws and regulations which were in effect at that time have not changed. Dale Studer, who is president of the Sequatchie Valley Coal Corp., told me that the Board's decision has

quite a severe impact on the way that major producers look at southern Tennessee.

Now, all of this notwithstanding, there has been a suggestion made in some of the testimony that has been submitted to you that the steam coal market might be able to pick up the slack where the metallurgical market has fallen, and I would just like to address myself to that question briefly.

First of all, I am talking about the export market for steam coal.

First, the rate analysis conducted by Kearney was conducted on existing or speculative new forms of export metallurgical coal, not steam coal. We are talking about steam coal now. We are talking outside of the navigation benefits calculated for the corps by A. T. Kearney. Even if we try to talk about steam coal moving out of southern Tennessee to export through Mobile, the same extraction problems exist, the same limited reserves exist, the same problems with terminal facilities exist, and the increase—the dramatic increase—in production that would be required between now and 1986 to meet the corps' predictions would be even more of a problem particularly for steam coal than they would be for metallurgical coal. You are talking about going from 1.5 million tons a year in the Chattanooga area to 7.2 million tons metallurgical, and basically in southern Tennessee right now we are producing—I am not sure I can tell you the exact figure, but 99 percent of the steam coal being produced in this region now is consumed either by Southern Services or by TVA. So presumably any export coal would have to be new production. So we are talking about a brand new ball game.

In summary, what we have here is we have a dead metallurgical market—nearly dead—significant extraction problems, limited reserves, a lack of adequate terminal facilities, and a set of water quality regulations that limit large strip mining operations in southern Tennessee. The Tenn-Tom alone can simply not overcome all these other factors important for coal development. From my point of view, all of this is very unfortunate. It is bad news for the 35,000 to 40,000 miners presently out of work in the Appalachian coalfields, despite the fact we are increasing in coal production. A record year last year; we expect 800 million tons this year. There has been tremendous dislocation of miners in the Appalachian fields and miners are out of work, 35,000 to 40,000 of them are. In my opinion, whatever other problems the Tenn-Tom might have, it could be justified perhaps if it could be proven that the Tenn-Tom would put those men and women back to work. Unfortunately, this just doesn't appear to be the case.

Senator MOYNIHAN. Thank you, Mr. Massey.

Senator Stennis?

Senator STENNIS. Thank you, Mr. Chairman. I have no questions.

Senator MOYNIHAN. I believe that means Professor Claflin is our last panelist, a professor of biology, a welcome invasion to our hearings. We welcome you, sir.

STATEMENT OF THOMAS O. CLAFLIN

Mr. CLAFLIN. Thank you. I have a report that I have submitted for the record.

Senator MOYNIHAN. It will be so recorded. [See p. 256.]

Mr. CLAFLIN. I will be very brief in summarizing that report, Mr. Chairman.

I have been, in one way or another, associated with the Tennessee-Tombigbee Waterway now for approximately 6 years. I guess in reply to Mr. Gholson's reference this morning to the L. & N. Railroad, our research center at the university has received approximately a quarter of a million dollars in contract funds from the Corps of Engineers in the last 7 years or so, and I would guess that we trust in our objectivity.

My reason for being here is to discuss three of four points concerning recreation and fish and wildlife benefits, or the claims of benefits, and certainly to urge and to implore the committee to make some very careful comparisons between what the corps claims and what the real world situation is concerning those benefits and claims.

The first category has to do with the claim of creating 10 reservoirs that would have high quality recreational and fish and wildlife use benefits. In reality, if one examines those reservoirs closely—the pools—in at least seven of them, between 43 and 65 percent of the total reservoir at the time of construction will be 4 feet deep or less. Add to that, to compound that problem, the problems associated with the movement of commercial traffic on those pools and resuspension of sediments, which, incidentally, have never been addressed in an environmental impact statement at the tonnage now being projected, it is not very difficult to foresee the rapid degradation and relatively high rates of eutrophication that will occur. And if the Tennessee-Tombigbee Waterway behaves like other waterways—and there is no reason to think it won't—many of those shallow pools will have virtually no fish and wildlife benefits, no recreational benefits certainly before the end of project life, simply because vast areas of those pools won't even be accessible by boat.

Senator MOYNIHAN. Could you help the Chair here. The reservoirs are not in the nature of lakes through which the channel passes, but rather are holding reservoirs for sending water into the channel; is that it?

Mr. CLAFLIN. The reservoirs, as I refer to them, are the navigation pools.

Senator MOYNIHAN. By which you mean a lake through which the navigation channels flow.

Mr. CLAFLIN. That is correct.

Senator MOYNIHAN. But on the edges they will be very shallow, is that the point?

Mr. CLAFLIN. That is right.

Our analyses were made using the corps area capacity curves in their general design memoranda, and the analyses are relatively simple to make. But the claim of high quality recreational use reservoirs simply is false.

The next category has to do with environmental enhancement. The word enhancement is used quite a few times in the corps documents. Mr. McLindon, in fact, in the 1972 trial, referred to, regarding environmental enhancement, the creation of shallow water for species that are losing their habitats, or the creation of nature scenes with dredged material, and I contend that that is

utter nonsense. History again tells us wherever dredged material is spoiled or placed in the natural environment that the net impact is negative and enhancement simply doesn't happen.

The Council on Environmental Quality in 1977 recognized this when they stated that the Tennessee-Tombigbee Waterway project has more drawbacks from an environmental point of view than any other ongoing corps project. That was in 1977.

The third category has to do with a process called waterlogging. Waterlogging has to do with the changes in groundwater levels in and around the project lands. In the environmental impact statement, the corps contends that the waterlogging problems could be characterized as being localized and insignificant, and yet, based on some data that were gathered by the U.S. Geological Survey—and Fish and Wildlife Service contends the same—there have been identified 122,000 acres excluding the divide cut section where waterlogging could occur. The corps further substantiates this in 1979, in part, by revealing that for the Gainsville pool along, approximately 45,000 acres of the land will either be waterlogged or undergo a water table change of zero to 2 feet.

Senator MOYNIHAN. Do you want to explain that to the subcommittee? I am not familiar with the idea that when you create one of these reservoirs, you have waterlogging. What is waterlogging?

Mr. CLAFLIN. Mr. Chairman, that implies simply that water saturates the ground around the project area and changes or elevates the groundwater levels. Now, just a note perhaps about the effects of waterlogging, in other waterway projects across the country, it has been demonstrated time and time again that alteration of vegetation patterns occurs commonly, tree mortality increases, depending, of course, upon the species. But the Fish and Wildlife Service has concluded that a severe alteration of the vegetation patterns in this project area will occur, and they should be considered as an environmental cost rather than a benefit. Waterlogging simply hasn't been addressed, but new data certainly reveal it is going to be a problem.

Finally, my last point deals with mitigation. In October of 1979, the Jackson office of the Fish and Wildlife Service submitted a Fish and Wildlife Coordination Act report to the Mobile District Corps of Engineers Office. I have a copy of that here, Mr. Chairman, that I would like to submit for the record.

Senator MOYNIHAN. I wish you would; we would be happy to include it for the record. [See p. 262.]

Mr. CLAFLIN. Briefly, this is what the report said. Let me precede this with one quick statement.

The corps at that time rejected the idea that the report constituted a mitigation report under the auspices of the Fish and Wildlife Coordination Act, presumably because the report was supportive of what many people had been saying about the project a long time, and the report was certainly supportive of many questions that the corps faces in litigation. The report recommends that the Corps of Engineers mitigate losses by the acquisition of 118,000 acres of wetland forest, and that the corps further in mitigating losses provide funds for management of that land throughout the project life. The Fish and Wildlife Service estimated the cost of acquisition at $38.6 million and the cost of operation of $367,000 per annum.

Well, unfortunately, Mr. Chairman, in July of 1980, the Atlanta Regional Office caved in and they changed the status of the report from a Fish and Wildlife Coordination Act mitigation report to what is now termed a planning aid. We feel that the mitigation report should be a very integral part of the planning process and design process. It is really unfortunate after 10 years the area office who presumably knows, or is most familiar with the project, developed the courage to submit such a report, only to be negated 10 months later. At this rate the mitigation report may not even be submitted prior to the completion of the project.

The situation is very clear that the picture painted by the corps regarding fish and wildlife benefits is not reflective at all of the real world situation, and I think we need to look at history to teach us that lesson. We have a lot of textbooks on environmental damages in waterway projects across the country.

Thank you.

Senator MOYNIHAN. We thank you, sir. It is a very refreshing and attractive thing to have one in your field interested in this one, and obviously there is a great deal to learn and to follow.

I take it that the waterlogging problem is one where you have relatively well drained soil which supports a certain kind of flora and fauna and that changes in the consequence of becoming a grisly, damp soil or marshy soil.

Mr. CLAFLIN. That is right, Mr. Chairman. If the flora and fauna of any given area is there for a reason, an ecological reason changes it, due to soil type or water moisture content, very substantial changes in the water content of soil can result in drastic changes to the area.

Senator MOYNIHAN. Mr. Chairman, do you have any questions for the panel?

Senator STENNIS. I thank the Senator. I do not have anymore. I read most of the statements. They have very good statements.

Senator MOYNIHAN. They have very good statements indeed.

I would just like to remark to Dr. Pfrommer that I was in the State of New York in the Governor's office in the 1950's when the Saint Lawrence Waterway finally came into being, and the hydroelectric resources from that, the two great dams up there were brought on stream. I know New York had anticipated that there would be a new sort of small Ruhr Valley going along the Canadian-American border there, and nothing happened. Half the power went to one small aluminum plant, and thank goodness General Motors was producing an aluminum engine block at that time. I wouldn't want to say, but the number of jobs was surprisingly small. It was in the thousands. It didn't seem to have any effect along the waterway itself, nor, to my knowledge, has it yet—nothing like they envisioned. It is a conduit. Traffic moves along the system. There is no need for it to stop, particularly if it is bulk traffic going elsewhere. Bulk cargo moving elsewhere doesn't produce much along the waterway. It might; it might not. I don't want to claim greater knowledge than I have, which will be evident to the panel.

We have heard some very fine testimony from you. We have heard some professional testimony, which is important to us. I wonder if I could ask the panel if it would have the goodness to

send us your curricula vitae, because we would like to establish your professional standing we might even hear about the prize-winning Mountain Eagle as one—and thus know who we are hearing from.

We thank you, particularly Dr. Carroll. I am glad to know the Corps of Engineers has been supportive of your center. I assume that at Penn State, like any other academic institution, you are quite capable of distinguishing the sources of your support from the nature of your research. That is why you are at those universities. I am surprised that anybody would suggest otherwise. I am not only surprised, but I am visibly displeased.

I wonder if those of you who can might be able to stay on a bit. We are going to hear from General Heiberg. Mr. Wilkins and his colleagues, you have some equal time coming if you like, which you don't have to use. But we had a general notion each panel would use about the same amount of time. It is not unusual for the second panel to take longer than the first panel. But equity is our objective, and if we can only do it by measuring time, we will do so.

Is there any final remark you would like to make?

Thank you all for your courtesy in coming and preparing testimony in advance. It has been a great service to the committee.

Now, we have the honor of hearing from Major General Heiberg, who is, of course, the Director of Civil Works for the Corps of Engineers, and a distinguished soldier and engineer, a man we are very proud to have before this committee.

You are bringing a colleague, General. Perhaps I could ask you to introduce your colleagues.

STATEMENT OF MAJ. GEN. E. R. HEIBERG III, DIRECTOR OF CIVIL WORKS, U.S. ARMY CORPS OF ENGINEERS, ACCOMPANIED BY JAKE LANKHORST, DEPUTY COUNSEL; ALEX SHWAIKO, CHIEF, PLANNING DIVISION; AND ED COHN, ECONOMIST

General HEIBERG. Thank you, sir. I will bring with me, if I may, three colleagues to make sure I am responsive to the questions that come along.

Senator MOYNIHAN. You are entitled to as large a panel as anybody else around here. And you are on our side, if you remember; we are all part of the U.S. Government here.

Before you continue, am I correct in thinking that this may be one of the last occasions that we hear from you in the present job? Are you going to be transferring over to some other?

General HEIBERG. Sir, I hope not.

Senator MOYNIHAN. Well, good, so do we. Stop right there. Don't waste another word. We are delighted.

General HEIBERG. I thought maybe you were telling me something.

Senator MOYNIHAN. No, we heard you might go out and take over Southeast Asia, or something like that.

Please proceed.

General HEIBERG. Thank you, sir.

Just in response to that, Senator Baker this morning referred to Brigadier General Robinson, who was then in the room; he is leaving tomorrow for Dallas for a field job down there.

Senator MOYNIHAN. Good for him. That is the way, you leave Washington and go out and handle the troops.

General HEIBERG. He is handling Corps of Engineer troops, consisting mostly of civilians.

Mr. Chairman and Senator Stennis, I am pleased to meet with you to discuss the Tennessee-Tombigbee project, and I am delighted that Senator Domenici is looking forward to having me here when he gets back.

With me, on my left, the Deputy Chief Counsel of the Chief of Engineers, Mr. Jake Lankhorst; on my right, Mr. Alex Swaiko, who is my chief planner in the civil works side of the corps, and my resident economist, Mr. Ed Cohn.

Senator MOYNIHAN. Welcome to the committee.

General HEIBERG. Sir, what I would like to do is make a few remarks on things I am reasonably sure will interest you. I have a short statement that I would like to submit for the record.

Senator MOYNIHAN. We will put that in the record. [See p. 274.]

General HEIBERG. Thank you.

I would also like, with your permission, to put the comments I was going to ask General Robinson to make on the specific issue of affirmative action in the record.

Senator MOYNIHAN. Please do. [See p. 285.]

General HEIBERG. Sir, you asked that I read the recent Senate testimony regarding this project and be ready to discuss the——

Senator MOYNIHAN. The Senate debate.

General HEIBERG. Yes, debate. And I also looked at the House, which had two debates which occurred about a week before that. I also listened to numerous discussions of the project, both in the news media and here this morning and earlier this afternoon. Many of the issues, as I am sure you know, have been recurring in a couple of lawsuits which have been filed most recently against the project in 1976.

I would like to make informally one side observation of interest. When we heard the second panel this morning, Mr. Briggs, I noted, was deeply concerned about perhaps 30 or 50 million tons of traffic that might be diverted from the railroads to the waterways. A couple of the other panel members were saying that there would be no traffic generated at all. I would also note as an observer of the Corps of Engineers navigation business, in relation to Professor Carroll's comment about the Mississippi taking all, or most of the traffic, I do have to note the port of New Orleans, and many industries on the main stem of the Mississippi support the Tennessee-Tombigbee Waterway. I think there is a very strong feeling throughout the industry that there will be a lot of traffic generated, and folks on the Mississippi River who presumably wouldn't get all this traffic wouldn't be losers because they support it. I thought, as a side comment, it made some sense.

Senator MOYNIHAN. The chair rules the two propositions cannot be simultaneously so.

General HEIBERG. Where that leaves us, I am not sure, but I would like to make a few comments on what I think are three or four elements we heard this morning and early this afternoon that must be addressed by the corps at the outset.

Most of the allegations and concerns that we have heard have been addressed by the Federal courts. Specifically, I would like to make one point with respect to the extensive discussion you had just before lunch on the river south of Demopolis, the lower part of the river system that everybody agrees is not part of the authorized project. The Tennessee River to the north of the project, as well as all the principal waterways connecting with the Tennessee River, in 1966 as well as today, are at least 300 feet wide, with a depth of at least 9 feet, and lock sizes that are no less than 110 by 600 feet. In other words, they match the Tenn-Tom project as it is being constructed. To the south, the natural channel widths in the Black Warrior Tombigbee Waterway from Demopolis to Mobile—were in 1966 and are today, for the most part, greater than 300 feet throughout most of its length. The 1966 reanalysis recognized a need for duplicate locks on the Black Warrior-Tombigbee at the Demopolis and Coffeeville locations in the 21st Century, when the projected traffic for those locks was expected to reach capacity.

In that connection this morning Captain Slaughter was mentioned relative to his movement of four towboats on a portion of the Black Warrior-Tombigbee Waterway. Now, when he made that report, he was in the Gainsville pool, which is part of the Tennessee-Tombigbee project. Last year, when he made that projection, that pool had not been dredged to the depth it is being dredged to now as part of the project. We opened it for some experimental movements for those who wanted to try it. His company tried four barge tows. It was not ready for four or six barge tows at that time. This is not part of the project below Demopolis, but a part of the present authorized Tennessee-Tombigbee project. That is the very important distinction. We also read the Mississippi papers, and, in fact, we did check with his firm, and found they are now using six barge tows below Demopolis, and in this year expect to have 60 percent of their movements on six barge tows below Demopolis. So the 60 percent is a growth over what they were using before simply by economics. They were once using four barge tows in this part of the waterway, but the soybean business has been good. I must add we have an affidavit in court to this effect, as we do to most things we will be discussing.

The next thing I would like to discuss concerns the effect of the discussions of what was described as the AAA—that is the Army's GAO. We listened to some comments on the AAA by Dr. Haveman this morning. I wanted to put the AAA into context.

First, the study by the AAA of this project was done at the express request of the Assistant Secretary of the Army—civil works—and the current Chief of Engineers, who was then the Director of Civil Works. A report was made back to them as is done with all these AAA investigations. The role of the AAA should be put it into context. The AAA auditors are not expert in waterways or legislation, but outsiders—outsiders to our business. They spend time looking at tanks and rifles and analyzing the place of women in the Army, things of that nature. Occasionally, we do get their help; in most cases it is an internal matter. In this case, a report was made and I would like to put that entire report and the fact they made their recommendations at the request of the current Chief of Engineeers in the record.

67-591 O—80——8

Senator MOYNIHAN. We would be happy to put that in the record. [See p. 297.]

While we are here, as you know, a very strong statement was made by Professor Haveman. He used the word "deception." This subcommittee cannot let that kind of statement go by and not ask the responsible persons—I take it you reject the charge of deception.

General HEIBERG. Yes, sir, we do reject the charge of deception. The Chief of Engineers, General Morris, personally provided affidavits and testified in court disputing this charge of deception. It was not borne out. In fact, sir, most of the allegations we have heard this morning have been tested in Federal court. The corps has not lost a major argument. In fact, we have not had a ruling against us so far in court.

Senator MOYNIHAN. But there was a question of an estimate of $1.4 billion and a reporting of $815 million.

General HEIBERG. Yes, sir.

Senator MOYNIHAN. What was that all about?

General HEIBERG. The allegation is the corps deliberately misled the Congress about the increased cost. Again, Congress was informed in 1975 that the fiscal 1976 benefits and costs were outdated and a revised cost of $1.4 billion was provided to Congress before the fiscal 1976 appropriation. In mid 1975 it became apparent that cost increases were greater than in the 1972 to 1974 time frame that had been anticipated on major items of work, and I will talk about the reasons for that in a moment. Public documents generated by the corps for the express purpose of informing Congress of escalating costs are being used out of context. The objective of the corps has been, from the beginning, to be certain that Congress knew about the cost increase. Sir, when we surprise the Congress with a cost increase it does not do us well if we haven't done it this right way. There was no desire to do that because we, in the end, of course, have to pay the bill for that. That is just human.

A Federal cost estimate going back to the $815 million was presented to Congress in support of the fiscal 1976 budget request. Part of this estimate was based on conceptual design and part of it based on actual bids received from contractors. Congress was informed in 1975 that the fiscal 1976 benefits were outdated and were being reanalyzed. We didn't have the numbers decided as an institution at that point. A cost estimate of $1.4 billion was reported to the Appropriations Committees of Congress before the 1976 appropriations legislation was finalized by Congress, and included in the executive branch support of the fiscal 1977 budget request. This cost was a result of reanalysis based on more detailed design of all project features. General Morris in his deposition for the Federal court, when the allegation came up, discussed this at length. It was accepted by the Court in 1978 and there haven't been any further questions that I have heard about. There is an issue of credibility in whether you believe we intended to deceive. I would like to pass on from that. I am saying we did not. The way we function as an institution it sometimes takes awhile for us to make a decision. We do not like going from $815 million to $1.4 billion, and we took some time to make sure the numbers were firm. What I understand happened—and I was not there watching

from the inside—was that preliminary material used in trying to determine the right numbers was used out of context. I think that is where the problem came.

Now, what drove this large increase? We were in an earlier stage of inflation, perhaps not as fierce as we see now, but the 1974–75 period was a stage of inflation. There were some design changes that were made, and this is typical of our business. As we get from the conceptual to the specific, we always find out more things that we have to do. That is an unfortunate part of an engineer's work, but it happens not just to the corps, but it happens to us all.

Now, something we were using that we did change later, was the use of a rule of thumb. We were using cost indices from the Engineering News Record, an engineering journal used throughout the engineering field. It became apparent to the corps and many other users that these indices were insufficient to take care of the problems not only caused by inflation, but also the first of two rounds of major fuel escalation. No other industry is perhaps more affected, except maybe transportation, than the horizontal construction industry, which is heavily fuel dependent. Major diesel purchases are required for the horizontal construction business, the essence of the Tennessee-Tombigbee project. Cost escalation was not a problem just with the Corps of Engineers, it was a problem across the country, and reflected by all major construction projects. It happened in the home building industry, it happened wherever construction was going on. That was the first fuel cost push.

We had some of this problem again last year. It was my job, with some trepidation, to go back to the Congress some 6 months ago and ask for a supplemental appropriation of a fairly large amount of money because we frankly ran out of funds, going back again to fuel escalation costs. But the 1974–75 period was the first time it happened.

Sir, I think your time would best be served if I may use the strong support I have both legally and economically here to answer other questions you would like to zero in on.

Senator MOYNIHAN. Let's just do that, and let's first ask Senator Stennis if you would like to ask any questions.

Senator STENNIS. Thank you, Mr. Chairman. I was interrupted. You might have gotten into this below Demopolis concept when I wasn't listening, but I think I heard all you said.

I would like to ask a general question, Mr. Chairman. It is repetitious for the hearing, but I think it is highly important.

Your analysis of the improvements below Demopolis, now and into the future. As I see it, it has a future cost whether there is going to be any Tennessee-Tombigbee as such now, whatever we do. And another thing, it wasn't clear to me, a witness said this was to accrue and would be needed in 1997 and in another place I think they said 1987. Which one of those is correct?

General HEIBERG. Do you mean when it appears it will be necessary?

Senator STENNIS. Yes, when will it be necessary to do the work?

General HEIBERG. Sir, 1991, is the current projection, that is when the capacity of the waterway below Demopolis will be reached.

May I build on your question to make a more general comment about below Demopolis?

Senator STENNIS. Yes.

General HEIBERG. Sir, the Corps of Engineers is the steward of the Nation's waterways. We get a lot of grief from that perhaps, but it is a very important job, and one of our jobs as steward of the nation's waterways is to make sure we bring to the attention of the Administration and the Congress problems that we have or we foresee in the future. That is how we bring future problems to light. We have seen one for some time, that if the Tennessee-Tombigbee, as authorized, is built as projected, some time it will be appropriate—1991 is what we say at this time—to make some improvement. But let me add we have the same situation in other sections of the inland waterways, because conditions change. For example, the Monongahela, the Gallipolis project, Winfield lock on the Kanawha, lock and dam 26, on which after 5 years in litigation we were finally allowed to go ahead, the Gulf Intercoastal Waterway, and on the industrial canal portion of the Port of New Orleans. All of these have limitations that we have identified and have been trying to get fixed for years and years. That is our job. Part of it is because waterway traffic has exceeded our projections made years before. As we see problems develop, we bring them to the attention of the President and Congress, and that is what we have been doing with the waterway below Demopolis. We believe that traffic will grow and the waterway will reach capacity by 1991.

Senator STENNIS. Well, there has been a suggestion here that your figures have been made wrong on purpose, therefore deceiving in other fields. It seems to me your calling this new development, a future development, to our attention is clear cut policy prior; instead of deceiving, you are giving advance notice.

General HEIBERG. Yes, we are giving advance notice. I will be the first to admit our projections aren't always great. I will also say our projections, are often low. I will discuss this with you on Monday, sir, and talk about the entire navigation system. A recent example of this occurred on the McClellan-Kerr Arkansas River project, where our projections were conservative. This project went into operation nine or ten years ago, and in the intervening time the traffic has been growing faster than we projected.

Senator MOYNIHAN. If Senator Stennis would allow me to make clear, we have the point in the record, the below Demopolis extension, the "snipping" as it was called, a rather nice image, which is estimated to cost in the neighborhood of a billion dollars now, you speak of as a project that should be undertaken at the end of the century, or completed at the end of the century?

General HEIBERG. Just to make sure——

Senator MOYNIHAN. Are we going to be asked in the next five years to say new authorization, or are you saying some day when none of us here is present, except for Senator Stennis who will still be here?

General HEIBERG. First, sir, the waterway below Demopolis is already part of the Black Warrior Tombigbee project. It is in operation We see that this portion of the Black Warrior-Tombigbee

Waterway will limit the growth of the combined Tenn-Tom-BWT traffic sometime early in the 1990's.

Our projections for growth were made in 1975. We now believe that there will be a huge growth of demand on the world coal market for steam coal. The use of steam coal is what is going to be huge in the future, as was apparent from the discussions at the Venice summit. Our European trading partners said they are going to double their use of steam coal, if they are able. That will put a demand on the United States for steam coal that I don't think was well foreseen in 1975.

You also ask about cost, the $1 billion figure. The first cost on the channel improvements and duplicate in the waterway below Demopolis is $323 million. The addition of inflation through the construction period, and this is the first year we have been allowed to do that, brings this cost for the lower river modifications to $960 million. The inflation allowance accounts for $853 million of the $3 billion ultimate project costs. With the permission of the office of Management and Budget—and I believe encouragement—this year we included the inflation factor to recognize the numbers are going to grow in the years ahead. The cost of the lower river modifications with inflation through the construction period is $960 million. If we use our previous procedure, the cost would be shown as $323 million.

Mr. SHWAIKO. If I might just clarify this 1991 date. There are two elements to the constraints in the downstream Black Warrior-Tombigbee. One relates bends and curves in the river and bridge clearances. The other constraint involves an issue of duplicate locks. The combined Black Warrior-Tombigbee and Tennessee-Tombigbee traffic would get up to the initial constraint created by the bends, curves, and bridge clearances in 1991, so something would have to be done then to increase the capacity. The next constraint would occur in 1997 when the capacity of the locks at Coffeeville and Demopolis would be reached, so at that time duplicate locks would be needed.

Senator MOYNIHAN. Sorry to have interrupted, Senator Stennis.

Senator STENNIS. No; thank you; you covered it, and it is much plainer to me. As I understand, you are going to be back on Monday anyway, General.

General HEIBERG. Yes.

Senator STENNIS. That is all I have now. Thank you.

Senator MOYNIHAN. Of course, on Monday we are going to be talking about water transportation in its entirety as it is to be impacted by the Venice Summit.

It would be helpful, General, if we could get from you some kind of a scenario or several alternative scenarios of what construction is involved below Demopolis—I guess at Demopolis the Black Warrior and Tombigbee come together.

General HEIBERG. Yes.

Senator MOYNIHAN. And then the remainder of the river is the Tombigbee all the way down.

General HEIBERG. Yes.

Senator MOYNIHAN. If you could give us some idea of what sequences that could take place that would require that work below. Obviously there are three or four possibilities, and there are

probably some you haven't thought of. We are asking having completed the upper portion, will we thereupon be properly told about the lower portion. It is obviously not immediately in sequence, but it might be. It may be the steam coal production changes your time table.

General HEIBERG. I have a personal opinion that is very likely to happen over the next 10 years, that that push is going to be immense.

Senator MOYNIHAN. Ten years haven't happened.

General HEIBERG. Even our projections don't handle what happens over the last half year, with the tremendous interest nationally and internationally in the demand aspects for steam coal.

Senator MOYNIHAN. You discussed the question of availability of steam coal in the region that Mr. Massey seemed not confident about.

General HEIBERG. Yes, sir, that comes to the point on whether you believe what he has been saying or believe those studies we have that show, in fact, that the demand on both Midwest and Eastern coal is going to provide large supplies of coal in the United States.

Senator MOYNIHAN. You are going to be talking about that Monday.

General HEIBERG. Yes.

Senator MOYNIHAN. We can withhold there.

On your projection, now that you are using an inflation factor in your costs, which is obvious at the time you did, otherwise you are deemed to have appeared to have underestimated things, are benefits going to be adjusted accordingly? It can't be just a separate multiple phenomenon, can it?

General HEIBERG. Unfortunately, perhaps based on what we have heard and the challenges we have had, I am not involved with the corps economist. I happen to be an engineer. That is why I brought economists with me. We do have economists, and I would like Mr. Cohn to say something about that. But I would just say as an engineer, and not an economist, that my general feeling is that particularly in a time of high inflation, that the benefit side does not come along in a way that reflect what we all expect is probably going to happen in the long run. We see the cost, and particularly in the industry I am in, the construction industry, we see immediate effects on cost increases, but we see it slower on the benefits side. Even saying that, I must note the benefits on the project have visably grown over the past few years.

Senator MOYNIHAN. Mr. Cohn.

Mr. COHN. We have always taken account of past inflation on both the cost and benefit side in the budgetary information provided Congress. For the fiscal year 1980 budget we included a projection of future inflation of costs; we did not include a projection of future inflation of benefits. It is, of course, improper to compare costs with future inflation to benefits without future inflation. Therefore, the benefit-cost ratios presented in budgetary data include no future inflation, either in benefits or in costs. To answer simply: there is no inflation in our benefits.

Senator MOYNIHAN. That deals with that. There is one question which I do want to ask you about, and that is this whole matter of

the Mississippi as an alternative. We have had some fun kidding about what this project is. But, in the main, if I grasp the import of this, it has as its primary purpose taking coal out of Appalachia and getting it into industrial uses in the United States or abroad. That is it, isn't it?

General HEIBERG. Yes.

Senator MOYNIHAN. We have moving coal here.

General HEIBERG. Coal is by far the biggest mover.

Senator MOYNIHAN. And there could be some soybeans, and so forth, but you wouldn't build a project of this enterprise to move soybeans; trucks and rail would do that. What about the Mississippi as the existing route?

General HEIBERG. Of course, the Mississippi is there, and the Mississippi takes much of this coal now, and, as we heard from our friend from the railroad, so do the railroads, which leads me to a side point that as you build on coal exports, if that is what is going to happen, or the increased use of steam coal in the United States, which is happening, that there is a thought that I subscribe to that we will need more transportation from both rail and water. I think our transportation system is going to be greatly taxed, because to move coal is a difficult and challenging thing in the decade ahead. However, as I mentioned earlier, sir, there is no thought that I get on the Mississippi. I used to work down there in New Orleans while this was still a raging argument and up here in Washington on the Tenn-Tom. The support in Mississippi is every bit as strong for the Mississippi River as for the Tennessee-Tombigbee as a logical improvement. The point is to save the distance that otherwise would have to be traveled, to save the distance and cost of the coal that would have to travel by more expensive means or more circuitous route. A sizable amount of coal will be used in southern Alabama and Florida. If it has to go by the Mississippi, it has a longer route.

Senator MOYNIHAN. I assume that when you calculate the benefits of water transportation for coal, you recognize there is an alternative, so the net benefit is the cost of the long way around minus the cost of the short way around; that difference is then compared to rail transportation.

General HEIBERG. Yes, sir. As an example, and it is one of the more severe ones, but transit time from the Pickwick pool to Mobile would be about 4 days if you go the Tennessee-Tombigbee, and it is 10 or closer to 11 days by the Mississippi.

Senator MOYNIHAN. There is a nice number, 4 as against 11. Then the question is, is it worth $2 to $3 million over the amount, the number of trips involved? Both Mr. Swaiko and Mr. Cohn are professionals at that.

Mr. COHN. You have stated it correctly. There are alternative means of movement other than rail—truck, barge, various combinations that are looked at and the least expensive of those become the benefits of the Tenn-Tom.

Senator MOYNIHAN. Well, that I think about concludes our line of hearing. At this point, Senator Stennis, are there further questions you would like to ask?

Senator STENNIS. I believe not now. I was thinking back to see if there was any point I have overlooked.

Senator MOYNIHAN. If you have shared my impression, I am going to want to spend the weekend with this material. We have learned a lot from expert witnesses.

I am going to have to ask you, sir, if you would let me recess for 5 minutes and ask Senator Domenici whether he expects to be here. He is on the floor longer than he anticipated. Maybe he would be available to raise questions on Monday. We will get to him on the floor directly if we could recess for 5 minutes. We will either let you get back to your drawing board as a simple engineer, who doesn't know anything about economics, just likes to build things, and at which point we will either adjourn for the day or I will have to ask you to stay on a little bit. We are looking for a much more extensive hearing on Monday.

We will recess for 5 minutes. Senator Stennis, I don't know if you wish to stay.

Senator STENNIS. I like what you said about looking this over some more. I want to look it over some more, and if I have questions I hope I can get to them Monday.

Senator MOYNIHAN. General, we are not finished on the floor with the matter that Senator Domenici has. He can't be sure when he will be here. Would you be prepared to be here at the opening—you are going to lead off Monday morning.

General HEIBERG. I will be here.

Senator MOYNIHAN. If you would not mind, Monday's hearing will begin by the conclusion of today's hearing with Senator Domenici's questions.

Is that agreeable to you?

Senator STENNIS. Yes, Mr. Chairman. You did understand my request that perhaps I might want to ask more questions.

Senator MOYNIHAN. This subcommittee is available to you at any time.

Senator STENNIS. Thank you.

Senator MOYNIHAN. I would like to ask, nonetheless, Mr. Wilkins, before I adjourn, is there some further remark you would like to make?

Mr. WILKINS. Mr. Chairman, I think we have said everything we wanted to say. We have submitted quite a few documents on the coal movements, one from the Western coal States that states we will have coal movements. We do have a lot of documents.

Senator MOYNIHAN. We want the whole record. The record will be held open to August 8. If that turns out to be difficult, we will extend it.

Mr. WILKINS. These have already been turned in.

Senator MOYNIHAN. Then that is no problem at all.

General, if I may thank you, Mr. Cohn, Mr. Swaiko, Mr. Lankhorst. I would like to thank all of our panelists. It is one of those matters that has not been resolved to anyone's entire satisfaction. We are going to try in this subcommittee to be as objective as we can. If we are successful, it will be owing to the efforts and candor and openness in disagreement which we have heard today. That is how we make up our minds in hearing all judgments.

General Heiberg, it has been a particular pleasure and honor to this committee to have you here. You relieve us greatly. We were told you were going to be transferred to build the Saharan Canal.

Now we know we have you with your simple, plain, straightforward engineering approach to these matters, without which this Corps of Engineers would be much the less an organization than it is. We thank you very much, gentlemen.

We have had the particular honor of having the presence of Senator Stennis, who has been working on this subject for 20 years. It is an auspicious occasion.

Senator STENNIS. Well, the whole subject matter throughout has been of interest. I look upon it as perhaps the most constructive thing I have ever been able to get in.

Senator MOYNIHAN. With that, the committee will adjourn until Monday morning.

[Whereupon, at 3:30 p.m., the subcommittee recessed to reconvene subject to call of the Chair.]

[Statements and other material submitted for the record follow:]

Supplementary Statement by Gerald J. McLindon
to the Subcommittee on Water Resources of the Senate
Committee on the Environment and Public Works, Oversight
Hearings on the Tennessee-Tombigbee Waterway

May I express to the Subcommittee my appreciation for the opportunity to appear at the hearing on the Tennessee-Tombigbee Waterway to testify to the processes and findings of the environmental studies made and incorporated in the design and operation plans for the Waterway. The purpose of the hearings is to provide the Subcommittee with factual data and reasoned projections, so that they in their turn, considering all aspects of the matter before them, may make wise and deliberate recommendations to the Senate and the Congress.

In this context I feel it is incumbent upon me, as a participant in the hearings and as Chairman of the Board of Environmental Consultants for the Tennessee-Tombigbee Waterway, to offer further testimony to the Subcommittee in response to the testimony of Dr. Thomas O. Claflin and Carol Pfrommer, which are a part of the record of the hearings.

Addressing the presentation by Dr. Thomas O. Claflin, the testimony offered by him states that he was testifying "...to apprise the committee of the recreational, fish and wildlife benefits that the Corps claims for the project, and to point out why these claims are greatly overstated."

Several of Dr. Claflin's statements offered in testimony cover many facets of the project design, each in itself very complex, which are run together, often in one paragraph, to appear self explanatory, justifying the

conclusions drawn. In order to respond to these statements it is necessary to provide a rational structure to the topics covered, and discuss each in its proper perspective.

Therefore, let me take each of the many topics and try to provide a very brief response to assist the committee in evaluating all testimony presented.

> "The COE claims that the construction of a series of reservoirs on the Tombigbee River will provide vast recreational resources along the project length."

The Corps has recognized that the construction of the Waterway for navigation purposes provides the opportunity for recreation facilities.

The impoundments, of varying sizes and accounting for some 42,000 acres of water surface over the 232 miles of the project, will offer increased opportunities for boating, fishing, water skiing and similar water oriented activities. Part of the recreation potential will be provided by the presence of impoundments giving sufficient depth of water for these activities on a year round basis, as opposed to the pre-project condition of fluctuating water levels, with low water flow coinciding with recognized high use demand periods.

The recreation potential will be increased by the availability of access roads, boat launching ramps and supporting appurtenances such as parking areas, camping, fishing piers, beaches and similar facilities. There is no question that the project will increase the availability of areas for water use in recreation.

In addition to this, the project provides some 13,000 acres for land

based recreation in 49 designated public use areas. The range of activities proposed includes camping, picnicking, nature study areas, overlooks, organized games, hiking, biking and horse riding trails and other active and passive recreation.

The determination of the types and location of recreation facilities are the result of coordinated studies by the Corps, the State and federal agencies and embodied in the States Comprehensive Outdoor Recreation Plan. These plans consider existing resources, and project demands based on population size and preference for recreation activities. The recreation proposed for the project addresses some of the unmet needs within the local regions which appropriately orient to water use. Further, the project allows for additional recreational facilities on a cost-share basis or the lease of lands for recreational facilities, when such developments are consistent with the safe and proper use of the Waterway.

In summary then, the recreation uses provided are consistent with the needs of the area, including those of the visitors who will be drawn to the locality by the presence of water and land based recreation facilities.

The use of the word "vast" depends on one's perspective. The additional recreation provided is very significant in an area now bereft of such facilities by virtue of physiographic and economic conditions. The Corps is not engaged in a battle of superlatives, but is concentrating on meeting the needs of the nation within its mission as expressed by the Congress of the United States.

> "In fact, the Corps' own data indicate that the reservoirs at the time of their formation, will be small shallow pools with navigation ditches through them. Significant portions of the reservoirs will not even be accessible by boat due to shallow water. Given the stated sediment-trapping capabilities of the reservoirs (Corps of Engineers data), this problem will be severely compounded during the life of the project. One must remember, that the Corps plans to excavate 149 million cubic yards of earth, which is more than was excavated in the Panama Canal project."

As Dr. Claflin points out, the Corps did not overstate the types of impoundments being provided by the project nor should the colorful language used by Dr. Claflin imply that the impoundments are less than they are. The phrase "small shallow pools with navigation ditches through them" is not calculated to portray the impoundments as they will be. The Design Memoranda, supporting environmental studies and recreation projections, all recognize that the pools vary in depth according to the "lift" provided at each lock and the terrain in which the lock is situated. In a relatively flat terrain such as is found in this region of the country, portions of any impoundment, natural or manmade, will be shallow towards the shoreline. This is not to say they will be unproductive. Indeed to do so would be to deny the value of the swamp, marsh and wetland areas, which environmental groups everywhere are making valiant efforts to preserve.

The impoundments will provide expanses of open water of sufficient depth to permit free and safe access and use for recreation purposes. In the impoundment areas, sections of the existing river channel will remain virtually untouched, thereby providing greater water depths in some parts of the

impoundments. Where needed, the navigation channels will be dredged on long gently curving alignments thereby shortening the passageway through the impoundments and reducing the potential for conflict between through navigation and recreational use of the reservoirs.

The fact that portions of the reservoirs will not be accessible by boat was recognized from the outset. This is reflected in recommendations by Federal Fish and Wildlife Service and State Fish and Wildlife Agencies that portions of the impoundments not be cleared of standing timbers, as a means of improving fish habitat and supporting some bird populations. These recommendations have been incorporated in the design of the impoundments and added to by the provision of 'fish attractors' which are areas where tree stumps and some brush have been left in place to improve fish habitat. While structuring these habitats in shallow areas, the impoundments still provide very suitable, sizeable and non-conflicting areas for both water recreation and navigation.

The statement by Dr. Claflin recognizes that the information on sediment-trapping capabilities of the reservoir is from Corps' data. These same data have been given very full and careful consideration in the location and design of the impoundments. It has been recognized from the first phases of design that some sediments will be deposited in the shallow, slack water areas of the reservoirs, and that these areas will progress through the change from swamp to marsh to wetlands. Indeed this is what happens in nature and

the sequence can be readily observed on the Tombigbee River following each flood stage. In the reservoirs these depositions may be compared with delta formations and as such contribute to the support and diversity of wildlife. The concept, which is the subject of scientific papers, is well understood by the Corps staff and was instrumental in arriving at decisions on water and contiguous land uses in the impoundments.

The statement by Dr. Claflin appears to ignore the fact that the part of the plan for operation and maintenance of the project is for periodic dredging of the navigation channels. The areas in which these dredge materials will be placed were selected in consultation with the U. S. Fish and Wildlife Service and they provide enough space for the dredge materials expected to be generated throughout the life of the project. Further, these disposal areas are designed to complement wildlife habitat in the area.

Most of the sediments will result from the dynamic nature of the river and was present in the pre-project condition. The project will slightly reduce, but not eliminate the sedimentation resulting from bank erosion. The Corps and U. S. Soil Conservation Service have urged concerned agencies and individuals in the region to improve the practice of erosion control on agricultural, recreation, forest, sand and gravel and construction programs which now contribute to sediments through erosion of soils. Therefore, it is inaccurate to arrive at the conclusion that sedimentation will compound the problems of boat access during the life of the project. In the waterway recreational and navigational uses have been projected giving full cognizance

to deposition of sediments in the impoundments, river and canal segments.

It is not clear as to how the excavation of 149 million cubic yards of earth relates to recreational use of the impoundments or the production of sediments. However, because the topic is mentioned perhaps it should be pointed out that the soils excavated are being disposed of in areas selected with the help of Fish and Wildlife Agencies and in a manner which assures control of soil erosion and safeguards against soils re-entering the waterway.

The next series of statements are again directed in part to shallow pools and sediments.

> "For example, in seven of the ten proposed pools, from 43% to 65% of the entire pool will be four feet deep or less at the time of construction. To further compound the problem, if the Corps' traffic projection materialize, the continued resuspension of bottom sediments by passing towboats, and their redistribution, will further add to the loss of depth. In addition the drawdown and surge, the wakes generated by these large vessels will create unsafe conditions for small boat operation. This has been shown to be the case in larger waterways, even where these effects are partially damped out due to larger reservoirs."

The topic of the use and treatment of the shallow areas has been dealt with above except to point out that depths of 4'0" do not preclude the use of the water for boating, fishing or other recreational pursuits. Indeed it is in such areas that bream and sacalait abound. According to studies on other reservoirs there is great diversity of small fish in the shallow areas, and important nursery habitat.

The resuspension and redistribution of bottom sediments by passing towboats appear to be somewhat inconsistent. Presumably if this sediment

is redistributed in areas where it will decrease the depth of the water, then it will not be available within the navigational channels for resuspension. The Corps recognizes the impact of tows on bottom sediments and has incorporated this knowledge into the design and operation of the impoundments.

The impacts of flow of the river at dam and low flow structures, and intake and surges from lockages is a feature of every inland navigation project using locks and dams. Such areas are marked by buoys and flagged barrier chains or cables with printed notices. The condition is one with which people in this region of the country are quite familiar. The effect of wakes from towboats is also known and the Corps, in conjunction with the U. S. Coast Guard and the Red Cross, places emphasis on safe operation of all boats on all waterways. The statement appears to ignore the fact that each impoundment has several "fingers" and there are many bendways in the river in which there will be no navigation channel for tows, but which are eminently suitable for small boat operation.

The next paragraph is perhaps the most colorful in the entire statement. It begins:

> "In short, the picture that the Corps portrays concerning these reservoirs is misleading."

Dr. Claflin admits that much of the data used in reaching his conclusions is derived from the Corps. The Corps' staff is a multidisciplinary team including people well educated in the natural sciences, archeology, design and

engineering. The depiction of these people engaged in a conspiracy to mislead the public is ludicrous. Having worked with these staff members for close to ten years, I can assure the committee that these are very knowledgeable professionals, fully aware of all facets of their work, totally dedicated to the concept of reducing environmental impacts resulting from this project and making every endeavor to mitigate such impacts whenever possible. No staff member would be a party to misleading the public and each is a champion for his area of expertize in the total team effort. Indeed were any attempt made to mislead the public the roar of indignation from these same staff members would resound across the nation. To indicate otherwise is to render a great disservice to a totally professional group.

If this assurance were not enough of itself, and it should be, as Chairman of the Board for Environmental Consultants let me state most forcefully that the members of the Board would not countenance any attempt to mislead the Congress or the public. The members of the Board enjoy national and international reputations in their fields and they would never sully their reputation by any attempt at deception.

The continuing statement by Dr. Claflin is worthy of thoughtful consideration by the committee.

> "Indeed, the shallow sediment-laden reservoirs will no doubt be transformed into inaccessible, vegetation-laden ponds with a navigation channel cut through the length of it."

A lengthy paper could be written rejecting this portrayal of the waterway.

Instead I point to the Black Warrior Waterway which is in proximity to the Tenn-Tom. The Black Warrior has been impounded for 80 years and in its present conformation for 20 years. This waterway has been developed and operates as a series of locks and dams with depth and conformation of impoundments, pool level differential, the spacing between locks, and the nature of the land through which it passes very similar to Tenn-Tom. The Black Warrior Waterway has been in operation for many years, yet none of the disasters and near disasters depicted by Dr. Claflin have occurred nor will they occur on Tenn-Tom. Perhaps the Acid Test would be to suggest to shippers, fishermen, hunters, boaters and other users of the Black Warrior that the lock gates be left open and the river allowed to return to its original condition. The outcry resulting from such action would leave no doubt as to the success of these impoundments.

> "The structure and species composition of the sport and commercial fish communities will change due to the conversion to an impounded condition. There is no basis whatsoever on which to make a claim that '"enhancement"' of the aquatic resource will occur. Mr. McLindon's reference to the creation of shallow water for species that are losing their habitat, or the creation of '"nature scenes"' with dredge spoil is shear (sic) and utter nonsense."

The Environmental Impact Statement made it clear that there would be a conversion of fish species in the impoundments and a great effort has been made to design them so that they will support the lake fisheries. The Fish and Wildlife agencies have rendered invaluable services in achieving this objective.

The next statement supposedly refers to positions I have taken, but in fact refers to three or more issues. The "creation of shallow water for species that are losing their habitat" presumably refers to the building of riffle areas in the tail race of dams, which are generally on undisturbed or unnavigable sections of the river, as habitats for species requiring shallow swift flowing rivers. While many years ago such construction was seldom contemplated, observations of work in Holland convinced me that the concept had validity. This idea received the full support of Dr. Dan Nelson, an eminent ecologist who served as a member of the Board of Environmental Consultants from 1971 until his death in 1975. Carrying the theory one step further, I have projected that raising the bed of streams entering the pools under impoundment conditions would simulate depth and substrate of the natural streams and similary provide habitat for those species which prefer shallow flowing streams. These theories have been proven in the field and are the subject of continuing study at research institutions and universities. The concept of creating habitat and transplanting fish is now a recognized practice.

> "or the creation of "nature scenes" with dredge spoil is shear (sic) and utter nonsense"

I do declare that "nature scenes" is an unlikely quote to attribute to me. However, if I did indeed use these words it must have been because I was very tired when writing the paper. The phrase "nature scenes" is one which might be attributed to 17th and 18th century landscape gardeners and

has all the connotations of a stage set--which is anathema to my practice of design. That point aside, the use of dredge materials to form islands and the deposition of dredge materials on land are both well accepted methodologies which can add to habitat resources. The concept is based on the study of natural islands in rivers, lakes and coastal areas and the natural over-bank deposition of sediments following high flood stages on rivers. Many scholarly studies have been prepared on the topic of islands built with dredge spoil. To draw attention to the Corps' interest in and development of such facilities I refer the committee to the following studies.

> Colonial Birds Nesting on Manmade and Natural Sites in the U. S. Great Lakes, Corps Technical Report D78-10 Water Experiment Station authored by W. C. Scharf, Gary Shugart and Michael Chamberlain.
>
> Development and Avian Habitat Management on Dredge Material Islands, Corps Technical Report DS78-18 Water Experiment Station, authored by R. F. Roots and M. C. Landin.
>
> "Wading Birds and Wetlands Management", authored by M. C. Landin and presented in the Proceedings of the U. S. Forest Service, Third Non-Game Bird Symposium held in Atlanta in 1977.
>
> "National Perspective of Colonial Waterbirds Nesting on Dredge Material Islands", authored by M. C. Landin and reported in the Proceedings of the North American and Natural Resources Conference, Phoenix, Arizona 1978.

The use of the dredge materials in land spoils is also proving to be very successful and such areas on the Tenn-Tom are being carefully monitored to track the process of natural succession. If indeed these concepts are "shear (sic) and utter nonsense" then I am proud to share the heresy with many eminent natural scientists.

> "We must learn from history that the construction of shallow impoundments results in the disruption of the riverine communities."

It has long been known that the construction of impoundments on rivers, shallow or deep, will result in disruption of riverine communities. The Environmental Impact Statement for Tenn-Tom stated this fact quite clearly. It should also be acknowledged that impoundments result in other types of natural communities, which offer diversity in the ecological system and offer benefits to the human element of the natural system.

Waterlogging

Dr. Claflin states:

> "The potential problems associated with waterlogging have been recognized by the U. S. Geological Survey and the Fish and Wildlife Service, but have been dismissed by the Corps as "localized and insignificant." The Corps (First Supplement Environmental Report, Vol. IV, Appendix A 1975) identified approximately 122,000 acres that would be subject to potential waterlogging. This was also recognized by the FWS in their October 1, 1979 report to the Corps concerning potential impacts on fish and wildlife. The vastness of this area that will be waterlogging was substantiated by the Corps in 1979, when they measured and identified in excess of 45,000 acres that would be affected by ground water level changes for the Gainsville pool alone. Gentlemen, this hardly seems "localized" and "insignificant." The FWS further recognizes the seriousness of this problem by stating "This process can severely alter the vegetation composition of an area over the life of the project."
>
> It has been well-established that the types and distribution of terrestrial animals in any habitat are largely dependent upon the types of vegetation found there. Changes in these patterns due to waterlogging (tree mortality, etc.) spark a chain of events, mostly importantly changes in the total plant and animal community structure. This can hardly be considered "enhancement." On the contrary, were the forested wetlands

> to be altered due to waterlogging, (which they do (sic) doubt will) the loss of high-value deer, turkey and other woodland game habitat that support approximately 4,000 man-days of hunting in the East Fork area for example, should certainly be considered as a cost rather than a benefit."

It should be noted that in the paragraph that "...122,000 acres that would be subject to potential waterlogging" two sentences later becomes "The vastness of this area that will be waterlogging (sic) was substantiated by the Corps in 1979..." (emphasis added).

To clarify the issue let me state the correct sequence of events. The Corps of Engineers requested the United States Geological Service (USGS) to make an analysis of the potential for waterlogging in the project area. In its report the survey presented a small scale map on which was outlined an area along the Tenn-Tom where it was considered that there was a potential for waterlogging. The area indicated logically included the river and impoundments which will indeed be under water, and those areas where a rise in the ground water level seems a likely consequence of the impoundment of the reservoirs. Whether this rise in ground water level will actually result in waterlogging or saturation of the surface soils depends to a large extent on the topography of the area.

Lands which are close to or below the level of the impoundment could be waterlogged, depending on the type of soil and bedrock formation. Where there is chalk there will be no effect on ground water levels, or any waterlogging. Where the material is sand and/or gravel the ground water level will rise for a distance from the impoundment. The rise does not imply

waterlogging. For instance if the land surface is 5 or 10 feet above the new high ground water level, there will be no appreciable change in surface conditions or vegetation. Where the land surface dips close to the new high water table the conditions will range from increased surface soil moisture, which can sustain vegetation, all the way to full waterlogging where water reaches or covers the root zones of plants. This will cause a change in vegetation resulting in the creation of wet meadows and wetlands. In this change most existing vegetation will be replaced by water tolerant vegetation. Both wet meadows and wetlands are highly desirable habitats for a variety of wildlife.

It should be made very clear that the rise in the ground water table does not of itself imply waterlogging and in fact can be beneficial where shallow wells are used for domestic and irrigation water. The increased water provides a dependable source in place of fluctuating levels normal to ground water dependent on surface water penetration and feed from streams which have low flow in the dry season.

The study of ground and artesian waters and the potential for waterlogging has been studied very systematically by the Corps in cooperation with the USGS, state surveys, and several consultants, and these studies have been carefully reviewed by Dr. Philip Lamoreaux, a member of the Board of Environmental Consultants and a pre-eminent international authority on all aspects of the water regime. Studies following the impoundment of the Gainsville pool have been properly evaluated by two authorities and waterlogging

has been found to be insignificant.

In studying the alignment of the waterway, the Corps gave full consideration to the forested wetlands in the vicinity of the East Fork and Mackeys Creek. The decision was made to avoid these areas by building a canal overland in a series of impoundments now known as the Chain of Lakes. As part of this design, working in consultation with State Fish and Wildlife Agencies, the Corps will build a series of low flow structures to sustain stream flow and soil moisture in the forested wetlands. The effect of rise in water table projected for this portion of the waterway, plus the low flow structures will maintain the forested wetlands in their present condition. Dr. Claflin's surmise that significant quantities of the forested wetlands will be altered by waterlogging is not correct.

To garner the extent to which the Corps gives consideration to environmental matters, it is interesting to note that in this same area a proposal was advanced to eliminate a lock structure. The proposal was rejected because, among other considerations, the ensuing construction and deepening of the canal could have drained the surrounding lands and possibly damaged or destroyed part of the forested wetland.

In reaching the figure of 122,000 acres of potential waterlogging, Dr. Claflin used as his base a report, "First Supplemental Environmental Report-Continuing Environmental Studies-Tennessee-Tombigbee Waterway: Predicted Effects of the Tennessee-Tombigbee Waterway on the Hydrologic Environment-Mississippi-Alabama. The report was authored by

John Van Brahana and others. In a sworn affidavit dated 18th day of July 1980, Dr. Brahana states in part:

> "5. Based on the fact that Claflin's calculations were based on a map not intended to quantitatively define the area of waterlogging precisely, his conclusion that 122,000 acres will be waterlogged is not justified."

Mitigation

Dr. Claflin refers to a report by the U. S. Fish and Wildlife Service concerning wildlife mitigation. The Board of Environmental Consultants has reviewed this report which, to my understanding, is actually a preliminary draft report rather than a final product.

Dr. Stanley I. Auerbach, a member of the Board and a sage and noted ecologist who has served as President of the American Ecological Society, after reviewing the report stated:

> "This report is deficient as a technical document purporting to deal with scientific data derived from objective investigation and analyses. The first 35 pages contain inaccuracies, invalid assumptions, unsupported allegations relative to presumed damage, and presents an overall distorted judgement on the potential long-term impact of the project on wildlife."

The Board is working with the Corps in seeking to correct the deficiencies in the draft report and in completing the overall Wildlife Mitigation Study in a timely fashion.

Testimony of Dr. Carol Pfrommer

The testimony presented by Carol Pfrommer is thoughtful and thought provoking and I pray that the Congress will give due deliberation to the

underlying theme of the testimony, which is that as a nation we have not yet found a way to eliminate illiteracy or poverty which plagues the cities and the rural areas of this country, nor have we provided equal economic opportunity across the nation.

While Dr. Pfrommer's points are well made, I find myself in disagreement with some of the sequences and a few conclusions she puts forward. The questions of costs and the economics have been dealt with by General Heiberg. Let me respond to other pertinent issues.

The project is and will continue to be a navigational project programmed for a time when this nation must make greater use of coal as an energy resource in the domestic market, and as an export commodity to maintain a balance of payments. Traditionally we have considered technology and agricultural products, primarily grains, as our major exportables. Recent years have shown that for a variety of reasons, not the least of which is an apparent inability to forecast futures in technology and energy, the manufacturing and technical exports have become jaded. A scenario described by the Office of Technology Assessment indicates that agricultural production will fall short of our needs as we enter the 21st Century. The picture of a short fall in food production portrayed by that office will be exacerbated if any large volume of grain products are converted into alcohol as a substitute energy source. With high energy prices, in any competition between grain for energy or grain for export or even home consumption, one does not have to be a wizard to predict that grain for energy will invariably

outbid grain for food. Hopefully, energy conservation and development of alternate resources will stave off this situation, but it does represent one of the possible alternative futures.

The Tennessee-Tombigbee Waterway is planned and designed to provide a needed waterway which will reduce shipping time of bulk products to the Gulf and the intracoastal waterway anywhere from 3 to 11 days, depending on the points of origin and destination. The mode of shipping is the most energy efficient of our present systems of transportation of bulk cargoes. The waterway interconnects the rivers and waterways in the eastern and midwestern coal producing areas. Not only is the waterway a viable project, but in terms of future security and national economic stability, it is a vital link in a system of inland waterways serving domestic and foreign markets.

With the existence of the waterway, is it wrong to think in terms of regional development as a paralleling program to assist in correcting the depressing economic and social conditions pertaining in the area? Having spent years working with small towns, I know full well that the spirits of the people in poverty areas are often low, very low. For years they have looked for that one program or project which indicates change; gives them some small realization that somebody out there knows they exist and has some concern for their future. This phenomenon was illustrated many times as the Interstate Highway Program developed. As Dr. Pfrommer correctly projects, that the achievement of success in secondary developments is

largely dependent on the quality and integrity of local leadership. But without the catalyst, urgings to do better, to make the community attractive for business and industry seldom brings a productive response from the community. Let there be no doubt that the building of the Tenn-Tom has sparked the regional identity and raised the level of anticipation and interest to the point where development programs become possible.

In her paper Dr. Pfrommer correctly states that the project does not address problems of illiteracy, better technical and general education, the provision of decent housing and community amenities. That is indeed the case, and I thank God that there is no super agency of government to address all of these problems. What must be recognized is that the Corps is doing all within its power and mission to encourage those agencies, local, state and federal, to attend to these matters and to capture the spirit of the communities and states in a massive program to upgrade conditions in the region.

Within the project the Corps has implemented a very successful program for employment of minorities in construction. The goal now is to phase all workers back into the local economy as construction reaches completion. As a result of relocation of bridges and other public facilities, roads are being improved, sewage disposal plants are being built and some thought is being given to the future. Again the degree of improvement must not be exaggerated, for all it represents is a small beginning. Nor must we

scoff at small beginnings. I recall working with one southern community which had little in the way of amenities, was totally dispirited and yet had the potential for development. I tried every method I knew to pull the community together and to get them to explore the future. Everything seemed to fail. Finally I convinced a garden club that they should plant a small triangular island at an intersection at the entrance to the city. As it turned out, that insignificant little project was the beginning of a change in community attitude, which resulted in very substantial changes in the ensuing years.

While it is true that waterways do not attract large numbers of industries using the waterway, nevertheless the development of port facilities normally includes an industrial park complex with water, rail and highway connections, fire services, and water and other utilities. It is the existence of the industrial park which usually attracts the first developments. In those communities where the port represents the first attempt at an industrial park, it is not unusual to find that within two to five years a second industrial park establishes in the vicinity and indeed may draw the majority of industries.

In the Little Rock Port Authority property there has been an investment of some $60 million in plants since the port opened in 1969. Few of these actually use water transportation--yet the waterway is operating at a level far above that which had been predicted. With a waterway serving

successfully as a primary transportation route, which was the original objective, the industrial development is a side benefit resulting from the existence of port facilities and other industrial parks along its length.

It is not unusual for industries in the locality to move into port or other industrial parks. But in moving they do not duplicate existing facilities. The move normally represents an expansion, employing more people. In many cases the new plant, being more efficient, results in increased productivity and a more saleable product, so that a second and even third expansion often occurs within a ten-year period.

When seeking sites the major factors being considered by the industrialist are:

1. Access to markets
2. Access to raw materials
3. Personal preference of management
4. Availability of labor
5. Land costs
6. Living conditions in the community
7. Labor costs
8. Low transportation rates

The arrangement of priorities changes, depending on the type of industry, and other items may be factored in.

The observation that waterways do not attract industries with high income and employment generating potential is not quite true. For instance, a study of industrial developments along the lower Mississippi River will show that there is a concentration of high income and high employment generating plants. Many employees are traveling from 20 to 50 miles a day to reach the place of employment. What is more germane to the discussion

is that in any underdeveloped area of the country, on or removed from a waterway, with conditions such as are found in the upper Tenn-Tom region, the normal pattern is for low to medium employment and medium income industries to establish first. The development becomes incremental as the community progresses. Indeed I know of two cases where industries with high employment and paying high incomes, although well pleased with the industrial facilities in an underdeveloped area, refused to locate there because their presence would throw the local economy into absolute turmoil and a portion of the poor and elderly would be subject to hardships even greater than those which they had experienced. It would be wishful thinking to believe that large, high income industries will move into the rural or small community areas of the region, although they may well move into the larger cities.

A point to be borne in mind is that a major portion of American industry has reached a stage of obsolescence in manufacturing processes. Once the greatest producer and marketer of steel, now we are not competitive. Even on the linkages in production, it often turns out that first phase work is done in America, phase two in a foreign country and phase three back in America. The recycling industries new to the industrial scene are only just developing. Over the next twenty years there will be major changes in processes which will require relocations and entirely new linkages. If the states and localities make the effort, it is fair to project that the Tenn-Tom region can expect consideration from these industries. But industry seldom

comes begging for sites. Rather it is up to the states and communities to go after the industries.

The observations on illiteracy and general, technical and commercial education made by Dr. Pfrommer are true. Unfortunately, they are not limited to the Tenn-Tom region. It is estimated that there are 23 million people in the country who cannot read or write. Despite all efforts to boost educational achievement, it is a sad fact that general achievement in all areas of the country is dropping. Malcolm Muggeridge once observed that the more money we spend on education the less education we get. I hope this is not the case, but certainly we must improve the quality of education from the elementary through the college levels and the major ingredient required seems to be the will to accomplish.

While I agree with Dr. Pfrommer on the need for general education and dexterity training reflecting a variety of skills, I cannot agree on the establishment of programs to train workers in specialized skills likely to be needed by industry prior to the industry locating in the area. Far too many training programs have been based on anticipated jobs which were not realized and the result was high cost of training, a frustrated student group and accelerated out-migration. The states must have the capability to offer skills training programs as new industries come onto the horizon. Remember it may take from two to five years from the day when it is decided to locate in an area until the opening of a plant. This is normally more

67-591 O—80——10

than enough lead time for specialized skill training.

It is not my intention to write a dissertation on industrial development policies and techniques. Sufficient to say that steps are being taken to prepare for local and regional growth and overall improvement of the economic and social conditions in the Tenn-Tom region. The brunt of this task must fall on the shoulders of community and state leaders.

As early as 1973 the Board of Environmental Consultants for Tenn-Tom called for a total planning effort in the region of the waterway involving the states. Noting that the urban problems facing us are the results of uncoordinated, unimaginative and apathetic approaches to urban and rural development, the Board stated

> "This is a time for giants, for persons who have the courage of their convictions and are able to see the tremendous possibilities in the waterway region. Here is a unique opportunity to create new towns out of old ones and institute new patterns of development reflecting the innate dignity of man in harmony with nature. Small thinking at this time can only result in the perpetuation of obsolete patterns of settlement."

In response, with the authorization of Congress, in 1974 the Corps initiated the "Corridor Study" of 18 counties. At the request of the Governors of the affected states, the study has since been expanded to include 48 counties in an area extending from Paducah, Kentucky to Mobile, Alabama in the region of the Waterway. This is a coordinated study with the Corps, states and counties and the Tenn-Tom Waterway Development Authority participating. Again it is a beginning. We should not expect this study to answer all the urgent and cogent points raised by Dr. Pfrommer. But there is

now a regional structure, a gathering of information, a forum for discussion, a group to set goals and objectives and an organization upon which to build in seeking implementation. In its deliberations the group would do well to analyze the concerns expressed by Dr. Pfrommer.

The achievement of local improvement and development must proceed with all conscious effort. But it is not a question of the Tenn-Tom Waterway or local improvements. One is a needed national waterway which can also serve the localities. The other is a national imperative to give to all people an opportunity to share in a great heritage. The either or proposition reminds me of the poor rural resident who came down the town's main street with one foot shod and the other bare. Seeing this, a friend cried, "Hey Luke, I see you've lost a shoe." Sadly Luke replied, "No, Bert, I found one." What is our approach on the Tenn-Tom Region? Do we take away the shoe that was found, or do we help search for a matching shoe?

AFFIDAVIT

Gerald J. McLindon, being duly sworn, deposes and says:

1. I reside at 635 Riveroaks Place, Baton Rouge, Louisiana. On June 30, 1980 I retired from Louisiana State University (LSU) with the rank of Dean Emeritus and Professor Emeritus. Prior to retirement I held the position of Dean of Futures Studies, a science devoted to the study of alternative actions and their consequences on the future development and well being of the nation, including the conservation and enhancement of the natural and manmade environments. From September 1966 to April 1980 I was Dean of the School of Environmental Design at LSU. The title of the School was changed to College of Design in July 1979. A copy of my vitae is attached.

2. I have been a member of the Board of Environmental Consultants for the Tennessee-Tombigbee Waterway (TTW) since 1971 and I am currently serving as Chairman of this Board. My involvement with environmental issues relating to the TTW have been continuing and extensive. One of my first assignments as a member of the Board was to review the Environmental Impact Statement (EIS) for the TTW and I stated that in my opinion the EIS had recognized all of the significant environmental impacts associated with the Tennessee-Tombigbee

Project. In 1972, I testified in the Federal District Court about my involvement with the Project up to that time. The main emphasis of my testimony was on the continuing environmental study process that had been adopted by the Corps and how the process was being implemented,seeking measures to reduce identified environmental damage and to provide further environmental protection and enhancement. At that time designs of various components of the TTW while defined were not yet refined, and I saw this as an opportunity to incorporate measures into the project in the interest of improved environmental quality. For example, certainly the disposal of large quantities of excavated material was recognized as a situation which would require innovative approaches to obtain environmentally acceptable solutions. I testified concerning certain concepts which could be employed for the Divide Cut Section of the TTW and presented a scale model and sketches to the court in an effort to better explain these concepts.

3. Since the trial I have been extensively involved in the development of the TTW. As a member of the interdisciplinary Board of Environmental Consultants I have attended some 27 regular meetings of the Board, each extending over three days, and six of which have been detailed in-the-field inspections by the full Board, of works in

progress or contemplated, pilot, study, and research projects, and established and operating sections of other waterways. In addition I have participated as a consultant on specific issues on a number of other occasions. These required in-the-field inspections, evaluation of reports and similar matters. Therefore, I have had an opportunity to observe firsthand the measures that were and are being implemented and their environmental effects.

4. Also as a member of the Board I have participated in the evaluation and development of a number of design refinements including the disposal measures for the Divide Cut and River Sections and the Chain of Lakes concept in the Canal Section. The final designs for these components have evolved utilizing an interdisciplinary approach and as a member of the Board I can state that the environmental implications were given full consideration and served as a primary objective in the selection of the designs and construction methods adopted.

5. I have reviewed the First and Second Supplemental Environmental Reports for the waterway and the environmental studies contained therein. In addition I have been briefed and have engaged in interaction with the other Board members on ongoing environmental study efforts which include but are not limited to existing land use, wildlife mitigation, ground water, waterlogging, revegetation, cultural properties, aesthetic treatments,

recreation facilities and Tennessee-Tombigbee Corridor Study. I have provided guidance and input into these studies in the areas of my expertise and experience and have considered the individual and cumulative effects of the information developed from all of these study efforts.

6. I have also performed independent study and provided special consultation on the disposal measure concepts. I have assisted the Corps environmental staffs in the application of the design arts as well as providing input on such matters as erosion control and revegetation. The disposal measures that are being utilized for the Divide Section are essentially refinements on the plan that I testified to in 1972. The onsite field inspections I have made reveal that the method being used to place excavated materials is environmentally sound and actually offers opportunities for wildlife mitigation and enhancement. Indeed the studies prepared by the Corps and the techniques being used represent the highest state of art and serve as outstanding examples for other works of a similar nature throughout the nation.

7. Based on: (1) my experience in the field of environmental planning, (2) my direct involvement in the continuing environmental studies process, (3) my review of the project design document and environmental study reports, (4) my personal inspection of the ongoing

construction activities, and (5) my involvement as a member of the Board of Environmental Consultants--I can unequivocally state that the TTW is being developed in a manner, which in my opinion, truly exemplifies the spirit and intent of NEPA. In keeping with the stated goal of minimizing the environmental impact of the project, the Corps of Engineers have undertaken or caused to be undertaken studies and research which are far and above what one would reasonably expect for a project of this type. I can further state that as a result of these studies, design and/or construction no new significant environmental impacts have been discovered which were not considered in the EIS or in the previous litigations. The continuing environmental studies have served to expand upon and further define the identified impacts, but have not brought forward any significant new issues. All of the design refinements that have been implemented on the waterway have been subjected to the scrutiny of the Corps environmental staffs, other federal and nonfederal agencies and the Board of Environmental Consultants. These design refinements meet the overall objectives of minimizing environmental damage and providing environmental protection and enhancement. I am convinced that history will prove that the TTW is an outstanding example of what can be gained from implementation of good interdisciplinary planning and that these works in total will contribute

substantially to the quality of life for people and to environmental enhancement.

Gerald J. McLindon

Sworn before me this
15th day of July 1980.

John N. Damara
Notary Public

STATEMENT OF JAMES A. SKINNER
PRESIDENT, HERBERT MATERIALS, INC., NASHVILLE, TENNESSEE

BEFORE

THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN
WATER RESOURCES SUBCOMMITTEE OF THE
SENATE COMMITTEE ON PUBLIC WORKS AND THE ENVIRONMENT

JULY 25, 1980

MR. CHAIRMAN, I AM JAMES A. SKINNER, PRESIDENT OF HERBERT MATERIALS, INC. OF NASHVILLE, TENNESSEE.

MY CORPORATION IS A POTENTIAL USER OF THE TENNESSEE-TOMBIGBEE WATERWAY. WE WILL SHIP OUR COMMERCE ON THE WATERWAY AND OUR BARGE TOWING COMPANY PLANS TO MOVE SHIPMENTS ON THE WATERWAY.

THE TENN-TOM WILL BECOME ONE OF THE BUSIEST WATERWAYS IN THE NATION. IT HAS ALL THE ATTRIBUTES OF A VIABLE INLAND WATERWAY. IT IS NOT A DEAD-END WATERWAY. IT CONNECTS AT ITS NORTHERN END WITH A VAST INLAND WATERWAY SYSTEM THAT SERVES MID-AMERICA. ON ITS SOUTHERN END IT HAS DIRECT ACCESS TO DEEPWATER PORTS. BECAUSE OF THIS CONNECTING LINK, IT DOES NOT SERVE ONE OR TWO STATES LIKE MOST WATERWAYS BUT WILL BENEFIT SOME FOURTEEN STATES. I HAVE ATTACHED TO MY STATEMENT A TABLE LISTING THE ESTIMATED TRANSPORTATION SAVINGS ACCRUING TO EACH OF THESE STATES. THE TENN-TOM ALSO HAS GREAT POTENTIAL TO GENERATE ADDITIONAL COMMERCE BECAUSE OF INDUCED DEVELOPMENT WITHIN THESE STATES.

I AM VERY CONCERNED THAT SO MUCH ATTENTION IS BEING GIVEN TO THE ALLEGATIONS MADE AGAINST THE TENN-TOM BY L & N RAILROAD AND ITS HANDFUL OF DETRACTORS. THESE ALLEGATIONS HAVE BEEN ACCEPTED AND PRINTED IN THE MEDIA AS FACT WITHOUT ANY CONSIDERATION GIVEN TO THE UNDERLYING MOTIVES OF THE RAILROAD IN FIGHTING THE WATERWAY.

THOSE SO-CALLED EXPERTS EMPLOYED BY L & N RAILROAD WHO CLAIM THE WATERWAY WILL NOT BE USED EITHER DO NOT UNDERSTAND HOW THE TRANSPORTATION INDUSTRY AND PRIVATE ENTERPRISE WORK OR THEY ARE PURPOSELY TRYING TO MISLEAD THIS COMMITTEE, THE CONGRESS AND THE PUBLIC.

THE ECONOMIC JUSTIFICATION OF THE TENN-TOM IS BEING ATTACKED BECAUSE OF ALLEGED STATEMENTS FROM A HANDFUL OF COMPANIES. WE, IN PRIVATE INDUSTRY, RECOGNIZE THAT ALL OF THE WATERWAY SHIPMENTS IDENTIFIED IN 1975 DO NOT NECESSARILY STILL EXIST TODAY. WE ALSO KNOW THAT OTHER MOVEMENTS THAT WILL USE THE WATERWAY HAVE MATERIALIZED DURING THE FIVE YEARS SINCE THE 1975 STUDY WAS CONDUCTED. MOVEMENTS OF COMMODITIES CHANGE DUE TO COMPETITION AND MARKET CHANGES.

I HAVE WITH ME TODAY STATEMENTS FROM A NUMBER OF COMPANIES WHO UNEQUIVOCALLY STATE THEY WILL USE THE WATERWAY

AND IN MOST CASES HAVE IDENTIFIED SPECIFIC MOVEMENTS WHICH WILL USE THE WATERWAY WHICH WERE NOT IN EXISTENCE IN 1975.

IF I HAD THE TIME AND FELT IT NECESSARY, I COULD HAVE BROUGHT WITH ME HUNDREDS OF SIMILAR STATEMENTS. HOWEVER, SUCH A WRITE-IN CAMPAIGN WOULD SERVE NO REAL PURPOSE FOR THIS COMMITTEE. BUT THE SAME GOES FOR THE OPPONENTS WHO ARE PARADING THE NAMES OF A FEW COMPANIES BEFORE THIS COMMITTEE AND THE PUBLIC THEY CONTEND WILL NOT USE THE WATERWAY. I AM SURE THAT THOSE THAT HAVE BEEN LISTED BY THE OPPONENTS ARE THE ONLY ONES THEY COULD FIND OR THE LIST WOULD HAVE BEEN LONGER.

I CAN CERTAINLY UNDERSTAND WHY A COMPANY WOULD NOT PUBLICLY COMMIT ITSELF TO THE TENN-TOM STILL SEVERAL YEARS FROM COMPLETION. IF ONE OF MY COMPANIES WAS SOLELY DEPENDENT UPON RAIL FOR TRANSPORTATION, I WOULD NOT TELL THEM THROUGH THE MEDIA THAT I INTENDED TO SWITCH TO THE WATERWAY WHEN IT'S AVAILABLE. THAT WOULD GUARANTEE THAT I COULD NEVER EXPECT TO GET THE BOXCARS OR OTHER SERVICES I NEEDED.

THE DEMAND FOR FUEL EFFICIENT AND COST EFFECTIVE TRANSPORTATION OF BULK-TYPE COMMODITIES IS EVEN GREATER

THAN IN 1975. FUTURE DEMANDS FOR COAL, ALONE, WILL BE MORE THAN ENOUGH TO JUSTIFY THE TENN-TOM.

IN 1975, THERE WAS NO DEMAND FOR THE EXPORT OF STEAM COAL. NOW THERE IS. I HAVE LETTERS FROM LEADING COAL COMPANIES WHO STATE THE LOW-COST TRANSPORTATION PROVIDED BY THE TENN-TOM IS ESSENTIAL TO INCREASED COAL PRODUCTION IN THE AREA SERVED BY THIS WATERWAY. I ALSO HAVE A STATEMENT FROM THE ALABAMA STATE DOCKS DESCRIBING THE FACILITIES THE PORT OF MOBILE HAS UNDERWAY OR PLANNED TO ACCOMMODATE 20 MILLION TONS OF COAL EXPORTS ANNUALLY.

THE GREATEST SINGLE IMPACT ON THE NEED FOR THE TENN-TOM IS THE PENDING DEREGULATION OF THE RAIL INDUSTRY, WHICH WAS NOT CONSIDERED IN THE 1975 ESTIMATE OF BENEFITS. THE RAILROADS ARE ALREADY LICKING THEIR CHOPS OVER THE PROSPECTS OF RAISING RAIL RATES, PARTICULARLY FOR COAL THEY ARE NOW SHIPPING FOR CAPTIVE CUSTOMERS. THAT IS THE REASON THAT THE HALLS OF CONGRESS ARE NOW FILLED WITH REPRESENTATIVES OF UTILITIES AND OTHERS WHO WANT SOME SAFEGUARDS TO PRECLUDE INDISCRIMINATE RATE INCREASES.

I HAVE ATTACHED TO MY STATEMENT A COPY OF A JULY 22ND ARTICLE IN THE WALL STREET JOURNAL ON THIS MATTER. BY COIN-

CIDENCE, THE ARTICLE INCLUDES A VERY CALLOUS STATEMENT BY AN OFFICIAL OF SEABOARD COASTLINE, THE PARENT COMPANY OF L & N, STATING THAT THE PUBLIC BE DAMNED WHETHER THEIR PROPOSED RATE INCREASES PRICE COAL OUT OF CONTENTION AS AN ALTERNATIVE FUEL SOURCE TO OPEC OIL. IN SOME CASES, COAL RATES HAVE ALREADY BEEN INCREASED 44 PERCENT DURING THE PAST YEAR.

GIVEN THE EXCELLENT PROSPECTS OF DEREGULATION, IT IS NOT DIFFICULT TO UNDERSTAND WHY L & N IS SPENDING SO MUCH TIME AND MONEY TO STOP THE TENN-TOM. AND THAT IS.... TO ELIMINATE COMPETITION. WE MUST HAVE BETTER COOPERATION BETWEEN RAIL AND WATERWAYS IF WE ARE GOING TO MEET THE NATION'S FUTURE TRANSPORTATION NEEDS. THE KIND OF COOPERATION NEEDED IS EXEMPLIFIED IN A STATEMENT I HAVE FROM THE NATIONAL DUMP TRANSPORT INDUSTRY ASSOCIATION. THIS TRUCKING ASSOCIATION, HEADQUARTERED IN OHIO, FULLY SUPPORTS THE TENN-TOM AND ENDORSES ITS EARLIEST COMPLETION.

MR. CHAIRMAN, I SURELY HOPE THAT THIS HEARING TODAY WILL ENLIGHTEN THIS COMMITTEE ON THE IMPORTANCE OF THE TENN-TOM TOWARD MEETING OUR FUTURE TRANSPORTATION NEEDS... BUT JUST AS IMPORTAN T, THAT YOU FULLY RECOGNIZE THE REAL MOTIVES OF THE L & N RAILROAD IN TRYING TO KILL THIS PROJECT.

THANK YOU.

JUL 18 1980

15 July 1980

Tennessee-Tombigbee Waterway

First year (FY 1987) navigation benefits allocated by state, with 50 percent being assigned to each state where traffic originated and 50 percent to each state where traffic terminated. Benefits are those in effect as of 30 September 1979.

No.	State	1st Year Project (1987) Benefits
1	Alabama	$ 37,456,000
2	Florida	4,122,000
3	Illinois	9,155,000
4	Indiana	269,000
5	Iowa	113,000
6	Kentucky	3,253,000
7	Louisiana	3,165,000
8	Minnesota	454,000
9	Mississippi	5,494,000
10	Missouri	282,000
11	Ohio	73,000
12	Pennsylvania	257,000
13	Tennessee	17,670,000
14	West Virginia	276,000
	Total Benefits	$82,039,000

STATEMENT FOR

THE HONORABLE DANIEL MOYNIHAN, CHAIRMAN

WATER RESOURCES SUBCOMMITTEE OF THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

My name is George C. Lessig. I am Assistant Transportation and Distribution Manager for Bowater Southern Paper Corporation (Bowater) which operates the largest newsprint mill in North America. Bowater is presently producing newsprint and offset grade printing papers at an annualized rate of some 650,000 net tons. Bowater is situated at Calhoun, Tennessee which is Mile 18 on the Hiwassee River, a year-round navigable tributary of the Tennessee River System.

I have been with Bowater 25 years. During this time I have been actively involved in its past and current barging program to supply newspapers and printing plants located either at ports on the inland system, or accessible to these ports by rail and truck. Bowater will continue to have an inseparable interest in the inland waterways system and the Tennessee-Tombigbee Project because of our manufacturing location.

Bowater has been barging paper since 1955. In 1958, we constructed a specialized barge loading facility at Calhoun and made major use of the port facilities at Houston, Texas for a number of years to serve customers in coordinated barge/truck deliveries. In 1966, we shipped 36,684 net tons through the Port of Houston, which moved as far distant as Dallas and San Antonio.

An era of cheap diesel fuel and the proliferation of irregular route specified commodities carriers resulted in the abandonment of our barging program in favor of direct trucking to customers in the Gulf States.

The realization of a completed Tennessee-Tombigbee Project would recreate the conditions Bowater needs to return substantial and fuel-inefficient highway movements back to barge. For example, Bowater has contracts to supply paper to the following:

Port	Net Tons Annually
Houston and 20 mile radius	30,000
New Orleans	32,000
New Orleans and 60 mile radius	12,000
Corpus Christi	9,600
Brownsville (For export to Mexico)	16,000
TOTAL	99,600

As a practical matter, some 50,000 tons a year of this business would again be committed to either direct barge or barge/truck for several reasons.

First, the distance via the Tennessee-Tombigbee would be 500 miles shorter to Houston than the present route from Calhoun via the Tennessee, Ohio, and lower Mississippi Rivers. In terms of value, some $4.60 a ton less freight plus vastly improved barge utilization for the carrier. Similar across-the-board savings would apply at New Orleans, Corpus Christi, and Brownsville.

Secondly, we would have opportunity to phase out what has become a costly long-haul trucking program to continue to serve accounts in Texas and Louisiana.

In the final analysis, two premises evolve in Bowater supporting the Tennessee-Tombigbee Project.

Bowater is committed by long term contract to sell the aforementioned tonnages. Unfortunately, the nature of our business compels us to make extensive use of long-haul trucking. It has become imperative, in my opinion, that distribution practices conserve fuel. Short-haul truck deliveries from ports can achieve enormous fuel savings over a period of time, and still enable Bowater to fulfill its commitments.

67-591 O—80——11

Next, Bowater would not necessarily become the benefiter of any savings created in lower barge rates. These monies would be passed along to area stevedoring companies and localized transportation firms engaged in the handling and distribution of our paper.

Bowater favors the completion of the Tennessee-Tombigbee waterway and would urge that funds continue to be allocated to the project.

George C. Lessig

George C. Lessig
Assistant Transportation and
Distribution Manager

GCL:dh

HERBERT MATERIALS
INCORPORATED

W. G. BUSH and COMPANY-
HERBERT MARINE TERMINAL
T. L. HERBERT & SONS, INC.
CUMBERLAND & OHIO CO., INC.
GLEASON CLAY PRODUCTS
SANGRAVEL CO.
HERBERT BLOCK CO., INC.

July 10, 1980

STATEMENT FOR THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN OF WATER RESOURCES SUBCOMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS:

Mr. Chairman, I am Richard A. Warden, Senior Vice President-Operations of Herbert Materials Incorporated. My company is located in New Johnsonville, Tennessee on the Tennessee River and is in the business of sand, gravel and marine terminal operations.

We are very supportive of the early completion of the Tennessee-Tombigbee Waterway, and plan to utilize its low cost transportation facilities when the waterway is completed.

The inherent advantages of the Tenn-Tom of providing the shorter transportation route for barges, the most energy efficient mode, guarantee this waterway to be one of the busiest in the nation. By connecting our vast inland waterway system with the Eastern Gulf of Mexico, some 14 states can benefit from this waterway. The waterway will eliminate approximately 586 river miles of the present access to the Gulf of Mexico and specifically the Port of Mobile from our plant at New Johnsonville, Tennessee.

My company presently plans to ship about 300,000 tons of sand and gravel from New Johnsonville to the Mobile area. Without the Tenn-Tom, this tonnage will not be transported since rail cars for this quantity of material cannot be procured and the rates are much more expensive by rail than they would be by using water when comparing existing rail rates to the present cost by barge on similar waterways.

By using Tenn-Tom, this commodity could be shipped at a savings of about $6.20 per ton. This movement was not known in the early studies of the Tenn-Tom as aggregates were not in short supply as they are today in the Gulf Coast area; therefore, these transportation savings have not been included in the benefits now estimated for the waterway by the Corps of Engineers.

HERBERT MATERIALS
INCORPORATED

This is only one example of the transportation benefits offered by the Tenn-Tom. Our business, and that of our clients, is greatly dependent upon future economic and market conditions, therefore, it is somewhat difficult to precisely predict the full extent of our use of the Tenn-Tom, but we know two of our largest customers at our terminal facility plan to use the waterway. The Tenn-Tom will be of significant benefit to my company and others in Middle Tennessee for shipping bulk type commodities. It will, undoubtedly, become a vital link for the Eastern and Middle Tennessee area to the Gulf.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway.

Richard A. Warden

RAW/sw

TEXTILE CUTTINGS • IRON & STEEL SCRAP • NON-FERROUS METAL SCRAP

Steiner-Liff Iron & Metal Co.

MAILING ADDRESS P. O. BOX 1182
PHONE 242-3553

710 SOUTH SECOND STREET
NASHVILLE, TENN. 37202

July 14, 1980

STATEMENT FOR THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN OF WATER RESOURCES SUBCOMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS:

Mr. Chairman, I am Mitchell S. Magid, Vice President and Co-owner of Steiner-Liff Industries. My companies are located in Nashville, Tennessee and are in the business of processing scrap iron and steel, nonferrous metals and textile waste. We also manufacture two products in the operation of our textile waste plant.

We are very supportive of the early completion of the Tennessee-Tombigbee Waterway, and we plan to use as much as possible its transportation facilities when the waterway is completed.

We are presently shipping approximately one-third of our productive capacity of scrap iron and steel via barge. Some of the scrap goes to domestic steel mills and some is sold for export to Europe and Japan. When barging to the southern ports, particularly New Orleans for export, we very often find ourselves at great risk in meeting loading schedules with vessels, and in the past, we have on occasion either incurred excessive demurrage expense, or, on the other hand,

have literally "missed the boat!" This has somewhat dampened our enthusiasm to move scrap via waterways. With the advent of the Tenn-Tom, a new option will be open to us. For one thing, the distance to Mobile, Alabama is approximately 600 miles closer than New Orleans, and we, therefore, can coordinate with a greater degree of certainty the arrival of cargoes for loading in vessels. Also, the opening of the port of Mobile through the Tenn-Tom Waterway gives us an additional opportunity to secure vessels in case there are none at the port of New Orleans. This has happened to us in the past when we were able to make a sale but could not accept because there were no vessels scheduled for arrival at the port.

The Tennessee-Tombigbee Waterway also may open up an additional opportunity for us to move scrap to Birmingham via a combined barge/rail movement. At the present time, we are limited to rail shipments and the increasing cost has put us in a somewhat less competitive position in the southern segment of our scrap collection area. We believe that 1,200 gross ton barge shipments at a lesser combined freight rate will put us in a more competitive position.

Another area that will open to us is the shipment of textile fiber waste for export via barge. We presently have to move fiber inland by rail with loading into vessels for export to Europe. The excessive combined freight rates have caused us to miss many markets. We believe that with the opening of the Tenn-Tom, we can bring lash barges up to our own dock on the

Cumberland River and load bales of our product for direct shipment to Europe at a much more advantageous freight rate which, in turn, would give us increased opportunities to consummate sales.

Finally, we believe that through the Tenn-Tom Waterway, we will be able to make more rapid delivery of scrap iron sold to domestic consumers to the south of us, which, in turn, enhances the prospect of our getting additional orders.

For the reasons stated above, and the firm conviction that the general welfare and development of our trading area will be broadened and strengthened, we heartily endorse the concept of the rapid completion of the Tennessee-Tombigbee Waterway. We feel confident that in our own company we will increase our water freight shipping anywhere from twenty-five to fifty percent more than at present, and we believe that there will also be a significant increase in bulk shipments throughout our whole area.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway.

Mitchell A. Magid

Mitchell S. Magid

Babcock & Wilcox

Power Generation Group
West Point, MS 39773
Telephone: (601) 494-1323

July 18, 1980

Mr. William B. Barrett
Executive Director
North Ms. Industrial Development Assn.
103 East Broad Street
West Point, Mississippi 39773

Reference: Your letter of July 14 requesting Assistance for the Tennessee-Tombigbee Waterway Project.

Dear Bill:

With regard to the referenced letter, the nature of our product, the traffic pattern of raw material shipped to us by our vendors, and our knowledge of the cost advantages projected once the Tennessee-Tombigbee is in operation, indicates that only in a select and few instances would it be economically justifiable for us to use our nation's inland waterway system as a primary means of transportation. However, should the economic advantage of shipping by waterway significantly multiply in the years ahead as a result of rising energy prices, there is no generic reason that would preclude us from converting to a combination of barge, rail and truck shipment. In that case it could be economical to ship all or a part of the 80,000 tons of material that flows to and from our facility each year on the Tenn-Tom.

If we can be a further assistance, please do not hesitate to contact us.

Very truly yours,

Bill

W. M. Farrell
Plant Manager

WMF/ewh

ROAD MAINTENANCE SUPPLY, INC.

POST OFFICE BOX 1096
SUITE 129 SUN-n-SAND MOTOR HOTEL
JACKSON, MISSISSIPPI

OFFICE PHONES { 948-3121 / 354-2501

NIGHT PHONES { 825-6390 / 924-5098

CRYSTAL SPRINGS { 892-1737 / 892-1709

July 17, 1980

THE HONORABLE DANIEL P. MOYNIHAN,
CHAIRMAN WATER RESOURCES SUBCOMMITTEE
OF THE SENATE COMMITTEE ON ENVIRONMENT
& PUBLIC WORKS

Mr. Chairman, My name is Gregory L. Root. I am Vice President of ROAD MAINTENANCE SUPPLY, Inc.. Our company is located in Jackson, Mississippi and is in the construction materials business. We are currently shipping crushed stone products(Rip Rap, Concrete aggregate and Agricultural limestone) by truck within our economic range out of Tishomingo County, Mississippi.

We have invested a great deal of time and money in developing this business and have anticipated the tremendous market that will be available to us upon the completion of the TENN-TOM Waterway.

From the market studies we have made in the last 10 years, this waterway will open up a 2 million ton plus per year market that we have been unable to reach previously due to the high cost of rail and truck transportation. We have already made tenative commitments with a major barge company for transportation of our products to points of delivery from New Orleans across the Gulf Coast and well down the west Coast of Florida.

We have had numerous inquiries from industries requiring limestone for use in conjunction with new coal & lignite burning energy production.

Since most of the new market area we are considering has not had economical access to our products, a cost savings figure is impossible to calculate. We can however give an example of a potential savings. The transportation cost by rail of crushed stone to Gulfport & Biloxi, Miss. averages $8.00 to $9.00 per ton. We are advised that the barge cost to these points will be at least $2.00 to $3.00 dollars per ton below this.

It is our opinion that the main problem with the TENN-TOM Waterway will not be one of benefit to cost ratio but more likely will be one of congestion due to it's inability to handle the volume of traffic created by this much needed connection to the Gulf and the International market.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway

BATTERIES METALS

USED STEEL & PIPE
FOR EVERY PURPOSE

SCRAP IRON

member

M. COHEN IRON & METAL CO.
P. O. BOX 23346
724 SOUTH SECOND STREET
NASHVILLE, TENNESSEE 37202

Phone Area Code 615
254-9404

July 16, 1980

Mr. James A. Skinner
President
Herbert Materials, Inc.
1136 Second Avenue
Nashville, Tennessee 37208

Dear Mr. Skinner:

I am Vice-President, of M. Cohen Iron & Metal Company. My company is located in Nashville, Tennessee, and is in the business of processing scrap iron and metal.

We are very supportive of the early completion of the Tennessee-Tombigbee Waterway, and plan to utilize its low cost transportation facilities when the waterway is completed.

The inherent advantages of the Tenn-Tom of providing the shorter transportation route for barges, the most energy efficient mode, guarantee this waterway to be one of the busiest in the nation. By connecting our vast inland waterway system with the Eastern Gulf of Mexico, some 14 states can benefit from this waterway.

My company plans to ship sizable tonnages of scrap iron from Nashville to Mobile. Without the Tenn-Tom, this tonnage would be transported by rail. The rail freight is more than twice the barge freight. Also, equipment availability is much greater for barges than cars.

This is only one example of the transportation benefits offered by the Tenn-Tom. Our business, as well as others, is greatly dependent upon future economics and market conditions, therefore, it is somewhat difficult to precisely predict the full extent of our use of the Tenn-Tom, some six years away from its completion. Nevertheless, we do know that the Tenn-Tom will be of significant benefit to my company and others in Mid-America for shipping bulk type commodities. It will undoubtedly, become a vital link in our national transportation system.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway.

Sincerely,
M. COHEN IRON & METAL CO.

Larry

Larry S. Cohen
Vice President

HOPKINSVILLE ELEVATOR CO., INC.

GRAIN DIVISION
P. O. Box 767
Hopkinsville, KY 42240
Phone 502-886-5191

CLARKSVILLE RIVER TERMINAL
P. O. Box 2367 New Providence Station
Clarksville, TN 37040
Phone 502-431-6952

SUPPLY DIVISION
P. O. Box 95
Hopkinsville, KY 42240
Phone 502-886-2588

July 14, 1980

Mr. James A Skinner, Jr., President
Herbert Materials Incorporated
P. O. Box 2870
Nashville, Tenn 37219

STATEMENT FOR THE HONORABLE DANIEL P MOYNIHAN, CHAIRMAN OF WATER RESOURCES SUBCOMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS:

Mr. Chairman, I am Jerry Leenerts, Treasurer and General Manager of Hopkinsville Elevator Company, Inc. Our company is located in Hopkinsville, Kentucky and Clarksville, Tennessee and is in the business of buying and shipping grain.

We are very supportive of the early completion of the Tennessee-Tombigbee Waterway, and plan to utilize its low cost transportation facilities to reach Mobile markets when the waterway is completed.

The inherent advantages of the Tenn-Tom of providing the shorter transportation route for barges, the most energy efficient mode, guarantee the waterway to be one of the busiest in the nation. By connecting our vast inland waterway system with the Eastern Gulf of Mexico, some 14 states can benefit from the waterway.

Our company is presently shipping about 120,000 tons of grain from Clarksville, Tennessee to the Gulf at New Orleans. Without the Tenn-Tom we are unable to utilize the markets in the Mobile area unless shipment is made by rail which is impractical due to the freight rates. Presently the cost of rail shipments to the Mobile market area is thirty eight cents per bushel. By using the Tenn-Tom, this grain could be shipped at a savings of about eight cents per bushel.

This is only one example of the transportation benefits offered by the Tenn-Tom. Our business, as well as others, is greatly dependent upon future economic and market conditions, therefore, it is somewhat difficult to precisely predict the full extent of our use of the Tenn-Tom, some six years away from its completion. Nevertheless, we do know that the Tenn-Tom will be of significant benefit to my company and others in mid-America for shipping bulk type commodities. It will, undoubtedly, become a vital link in our national transportation system.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway.

Sincerely,

Jerry Leenerts

Jerry Leenerts
Treasurer and General Manager

EXAMPLES OF POTENTIAL SHIPPERS ON THE TENNESSEE-TOMBIGBEE WATERWAY

*Excerpted from: Public Meeting on the Tennessee-Tombigbee Waterway, Alabama and Mississippi, Held at Columbus, MS on 29 March 1977, by the U. S. Army Corps of Engineers, Mobile, Alabama District.

The following are a few examples of potential shippers* on the Tennessee-Tombigbee Waterway:

HARBERT CORPORATION, BIRMINGHAM, ALABAMA. To ship 600,000 tons of aggregate and agriculture limestone and 2.5 million tons of coal. Their Pride, Alabama coal handling facility to be modified for Tenn-Tom coal shipments. Facility can unload barges, blend coal and load unit trains at rate of 12 million tons annually.

MISSISSIPPI CHEMICAL CORPORATION. Largest fertilizer manufacturer in South. Plans 50,000-ton storage facility with 100,000-ton throughput per year; will yield an $11,500,000 savings to a quarter million farmers and an estimated overall dollar savings of $15,000,000.

SOUTHERN IMPERIAL INC., TUPELO, MISSISSIPPI. Plans to ship 5000 tons the first year via Yellow Creek or Fulton, Mississippi port on Tenn-Tom.

REVERE COPPER AND BRASS INC., SCOTTSBORO, ALABAMA. Primary aluminum division with production capacity of 110,000 tons of aluminum annually, use water transportation now (Tennessee River). Plans to double-triple capacity based on Tenn-Tom.

RICO LIQUIDS INC., ALICEVILLE, ALABAMA. Plans to construct seven-barge slip and industrial park on 347-acre site on Tenn-Tom and in 1977 had invested more than $300,000. (Since then, the port has been constructed and in operation since 1979.)

BOWATER SOUTHERN PAPER CORPORATION, CALHOUN, TENNESSEE. Largest newsprint mill in North America, says completion of Tenn-Tom Waterway would mean a savings of $3.25 a net ton in freight costs for shipments going to Corpus Christi, Texas; Pensacola, Panama City, and Tampa, Florida.

Examples of Potential Shippers on
The Tennessee-Tombigbee Waterway
Page 2

ARNOLD INDUSTRIES, STARKVILLE, MISSISSIPPI. Needs Tenn-Tom to move raw materials and goods to enhance operation.

BRYAN PACKING COMPANY, WEST POINT, MISSISSIPPI. (A subsidiary of Consolidated Foods) Largest meat packers in southeastern U. S. Intends to use Tenn-Tom to ship to Gulf of Mexico. (They are one of the largest canned meat exporters to Puerto Rico.)

AIRCO ALLOYS, MOBILE, ALABAMA. Headquartered in Mobile with plants at Calvert City, Kentucky, Mobile and Burnside, Louisiana. Plans $15 million-plus expansion based on Tenn-Tom.

HOOKER ELECTRO CHEMICAL, COLUMBUS, MISSISSIPPI. Plans to ship raw materials and finished product on Tenn-Tom and plans plant expansion.

BREECO INDUSTRIES. With $5 million plant investment in Tombigbee Lightweight Aggregate Corporation, plans additional expansion if Tenn-Tom is built.

UNITED CEMENT COMPANY, ARTESIA, MISSISSIPPI. Multimillion dollar investment with $8 million annually in payroll, goods, taxes and services located here because of Tenn-Tom

VULCAN MATERIALS COMPANY, BIRMINGHAM, ALABAMA AND JACKSON, MISS. Plans to ship goods by Tennessee-Tombigbee Waterway.

These are examples of expressions of support from organizations and groups in the Tennessee-Tombigbee area*:

SOUTH MONROE COUNTY MISSISSIPPI PORT AUTHORITIES announce: Mississippi Chemical Corporation and Mississippi Federated Cooperatives have issued letters of intent to construct private port facilities on the Tenn-Tom; five other potential, but unnamed, candidates are negotiating. They project:

Mississippi Chemical Corporation	75,000 tons
Kerr-McGee	100,000 tons
Mississippi Federated Cooperatives	120,000 tons
Small farm agencies	800 tons
Bunge Corporation	40,000 tons
Wheat farms	126,000 tons
Pulpwood	225,570 tons
Tenn-Tom Coop (of Gold Grist Corp)	125,000 tons
TOTAL	812,370 tons

Examples of Potential Shippers on
The Tennessee-Tombigbee Waterway
Page 3

WEST ALABAMA PLANNING AND DEVELOPMENT DISTRICT projects 168,015 acres of soybean production valued at $61 million to move on waterway in 1986 from Greene, Hale, Pickens and Bill Counties, Alabama.

MID-SOUTH TELEPHONE COMPANY (nine Mississippi counties) has $1,650,000 expansion based on Tenn-Tom.

COLUMBUS-LOWNDES MISSISSIPPI INDUSTRIAL FOUNDATION has invested over $500,000 in land and development in anticipation of Tenn-Tom.

HUNTSVILLE, ALABAMA officials testified the city was building 10 million gallon sewage treatment plant to accommodate anticipated industrial development related to Tenn-Tom and that a number of new industries have already been attracted.

MISSISSIPPI COMMISSIONER OF AGRICULTURE JIM BUCK ROSS says Alabama and Mississippi have a 1 million additional acreage potential for soybean production, which would require ten new elevators.

ARCH MINERAL CORPORATION
500 NORTH BROADWAY
ST. LOUIS, MISSOURI 63102

TELEPHONE
(314) 231-1010

July 21, 1980

To Whom It May Concern:

Arch Mineral Corporation strongly believes in the importance of economic development and growth for the United States. Arch also strongly believes in supporting the maintenance of high environmental standards.

One of the most important economic development projects under construction in our country is the Tennessee-Tombigbee Navigation Project. In addition to the importance of this project to the south central United States, this project is of great importance to our entire nation. We are convinced that the opening of this vital new artery will allow the economic movement of millions of tons of coal from the coal fields of Ohio, Kentucky, West Virginia, Tennessee, Illinois to the Gulf of Mexico. It is crystal clear to those in the energy business that there is a very large export market of coal developing in Europe. The completion of the Tennessee-Tombigbee Navigation Project will allow this coal to be transported from mine to oceangoing port for further shipment to Europe at a deliverable price that will be competitive with coal from Australia and South Africa.

This project must be fully funded to be completed on schedule in 1985. We need it today.

Without the economic savings afforded by this navigation project, the costs of transportation might not allow American coal to compete in the European market. We are in a position to assist European nations to attain a much greater independence of the Middle Eastern oil producers. At the same time we will be creating new jobs in our country, contributing toward a balance of trade.

Sincerely,

Lee McKinney
Assistant to the President

LMmbw

WEST KENTUCKY COAL OPERATORS' ASSOCIATION, INC.

Ramada Square - P.O. Box 771
Madisonville, Kentucky 42431
(502) 825-3898

PRESIDENT
STEPHEN JONES

BOARD CHAIRMAN
JAMES T. LUDWICZAK

July 18, 1980

To Whom it May Concern:

On behalf of the West Kentucky Coal Operators Association and coal operators all over Western Kentucky, I would like to express our positive position on the continued development of the Tennessee-Tom Bigby Water Ways Project.

As one must be aware, the least expensive way to transport massive amounts of coal is by barge. Millions of tons of coal are moved each year by barge from West Kentucky to ports and utilities. The access to these ports and utilities and the development of other ports were made possible through the Tom Bigby Project and other similar programs.

In this age of the energy problems with oil, this country has no alternative but to develop its coal resources which also must include adequate transportation; one of the best modes we feel is the barge.

I also feel that this development must be continued because we need and are using the system now. Future coal markets are expanding now and will reach a production scale that this industry has never experienced before. Utilities that are presently burning oil are being required to change to coal, opening new markets to the Southeast. These new markets must have access to water transportation in order to serve their needs better at the least expense. There are also many new markets from over seas being developed that we in the coal fields will need again to use adequate water ways to service these markets.

In summary, we again request that this project be continued without delay. This will not only help our economy as well as the country's, but will also make us more energy independent, and help put our national security in a better position.

Yours Very Truly,

James T. Ludwiczak
Chairman of the Board
West Kentucky Coal Operators Association

je

BOARD OF DIRECTORS

Vice - Chairman
Jerry Frost
Denton Coal Co.

Technical Advisor
Homer Crabtree

Secretary - Treasurer
Roderick J. Tompkins
Tompkins & Sanford CPAs

Donald Bowles
Charolais Corporation

Robert Lane
Cyclone Coal Corporation

Keith Smith
Circle S Coal Co., Inc.

Mark Rust
Golden "R" Coal Co., Inc.

Gene Stahmier
Harrison Construction Co., Inc.

T. K. Jessup
T. K. Jessup, Inc.

Glenn Larkins
Larkins Coal Co., Inc.

Bill Vaughn
Margarita Fuels, Inc.

Alan Rodgers
Norton Coal Corporation

Jack Bellamy
Pyro Mining Co.

Sue Poole
Reclamation Services Unltd.

Bennie Roberts
Roberts Brothers Coal Co., Inc.

ALABAMA STATE DOCKS DEPARTMENT
MOBILE

Robert M. Hope
Director

July 16, 1980

P. O. Box 1588
MOBILE, AL. 36601

ALABAMA STATE DOCKS

SCOPE OF EXPANSION - TENNESSEE-TOMBIGBEE

In an effort to position the Alabama State Docks facilities at Mobile for the handling of increased traffic through the Port generated by the Tennessee-Tombigbee Waterway, expansions and renovation projects have been instituted in the last four years at all Docks operating facilities.

The Bulk Material Handling Plant located at the confluence of Three Mile Creek and the Mobile River on the northern end of the Docks has been under a renovation and refurbishing project for the last three years. Part of the project has been financed with a portion of the $45 million Bond Issue and part has been financed out of the State Docks General Fund. Improvements at the Docks Bulk Material Handling Plant include the purchase and construction of two 1500 ton per hour unloading towers, repair and upgrading of conveyors and transfer structures, replacement of approximately 1600 ft. of Dock, upgrading of power systems at the Bulk Material Handling Plant and the institution of a dust control system at the plant. Total expenditures at the Bulk Material Handling Plant after completion of all phases of the projects now in progress will total approximately $22 million.

The Bulk Material Handling Plant at the Alabama State Docks generates an average of 6 million tons a year of imported ores which arrive at the Port by ocean-going vessels with the cargo dispatched from the Port by rail and barges. During the Alabama State Docks fiscal year 1979 the Bulk Material Handling Plant loaded 628 river barges for interior movements.

67-591 O—80——12

The Alabama State Docks Grain Elevator has been involved in the expansion project of the last three years which includes the construction and equipping of a new high speed head house, dust control systems, additional truck and rail car dumps, and accessory improvements which total approximately $15 million.

In anticipation of increased grains moving on the Tennessee-Tombigbee with destination at the terminal elevator in Mobile, the Grain Elevator has recently converted 800,000 bushel meal house to grain storage which increases the overall storage capacity at the Grain Elevator up to 3,100,000 bushels. During fiscal 1979, the Grain Elevator unloaded 358 barges which originated at interior river locations and terminated at the terminal elevator at Mobile, and plans are now under way for a $20 million expansion to this facility which would include a new river berth, high speed ship loading equipment and dust control device.

Recent renovation and expansion projects in the Wharves and Warehouses Division of the Alabama State Docks include the construction and utilization of a new lumber warehouse costing $600,000, a new roll-on/roll-off berth costing approximately $500,000, and expansion and construction project at Pier No. 2 for the handling of container vessels amounting to $2.1 million and the acquisition of a container crane costing $2.6 million.

With a specific eye to increased barge traffic after completion of the Tennessee-Tombigbee, renovation was recently completed at Pier North C which included a new concrete Dock costing approximately $2,360,000 and the conversion of a rubber-wheeled crane to rail mounts for utilization on that particular Dock. A paved storage area and the installation of a bottom dump pit and conveyor system which has now been completed and is used for loading river barges was accomplished for $923,000.

McDuffie Island export coal terminal is involved at the present time in a $15 million expansion which will include an additional barge unloader, an additional stacker reclaimer, the construction of two additional storage pads which will increase ground storage capacity to 1,100,000 tons and the intergraded material handling conveyor system, and the installation of a loop track for handling unit trains of coal. This project is scheduled for completion by September 1981. During the fiscal year 1978, McDuffie Terminals unloaded 1778 barges. Engineering will begin

in the near future on Phase III expansion at McDuffie which will include a second dock and ship berth, high speed loading and discharge equipment, additional storage pads, a third stacker/reclaimer, a second rail car dump and possibly rail and barge loading machinery which will give the plant the flexibility of an import as well as an export facility. Projected cost is $40 million.

As additional preparation for the completion of the Tennessee-Tombigbee Waterway, the Alabama State Docks purchased in 1976, 143 acres of prime water front property from the Illinois Central Gulf Railroad. The State Docks paid $11 million for this property which represented the last large parcel of Mobile River front property available in the Docks area and is vitally important to the expansion of the Alabama State Docks facilities in that it is directly contiguous to the McDuffie Island parcel containing approximately 600 acres and lies just off the Mobile Ship Channel.

The newly acquired property also lends itself to development for barge handling facilities in that a portion of the property surrounds the north end of Garrows Bend and provides a protected water area off of the river.

At this time the Alabama State Docks has under consideration the development of its Industrial Canal area which lies on the west side of the primary facilities of the Alabama State Docks for deployment as barge loading and unloading facilities upon completion of the river system. With these plans in mind, the State Docks began approximately three years ago a program to replace the existing railroad bridge over Three Mile Creek which at the present time provides for a horizontal clearance of only 52 ft. At present plans are under way to replace the swing span bridge now in position with a new bascule lift bridge which will provide upon installation a horizontal clearance of 80 ft. and an unlimited vertical clearance. It is felt that with this improvement on Three Mile Creek the usage of the Industrial Canal area for barge loading/unloading facilities will be greatly enhanced.

Continued planning and additional purchases of water front parcels in the south Garrows Bend area to provide future expansion properties and areas for the handling

of river barges anticipated with the completion of the Tennessee-Tombigbee Waterway are under way at this time, and will, of course, continue in the future. To date, renovation and new construction projects completed, under way or projected total $140 million.

The Corps of Engineers project with the initial completion of the Tennessee-Tombigbee approximately 15 million tons of cargo terminating at the Port of Mobile and approximately 3 million tons of cargo originating at the Port and the Alabama State Docks Department is making every effort to be in a position to handle the influx of this new tonnage.

Sincerely,

Robert M. Hope
Director

RMH:ss

STATEMENT OF: WM. T. JOHNSTON
PRESIDENT
NATIONAL DUMP TRANSPORT INDUSTRY ASSOCIATION
RANDOLPH, OHIO

DANIEL PATRICK MOYNIHAN, CHAIRMAN OF THE WATER RESOURCES SUBCOMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENTAL AND PUBLIC WORKS

JULY 21, 1980

ENERGY AND INFLATION "COMBAT" WITH WATER TRANSPORTATION

SERVICED BY THE TRUCKING INDUSTRY

We represent a major industry whose services are related to energy. One of our main commodities hauled in semi dump trailers is coal. Our coal here in Ohio is of a high sulfur content. What we need is to get this coal to market, utilize the "Blending" process, and help with balance of world trade by exporting. In order for this to be feasible, we need water transportation to the Gulf from the Appalachian area.

The Tennessee Tombigbee Waterway is the solution to our problem, with one exception, the time element. We need the completion date to be as soon as possible and priorities put in their proper perspective.

The National Dump Transport Industry Association (DTIA) held a meeting on February 6, 1980, with Ohio Valley Improvement Association, Inc. (OVIA), Midland Enterprises Inc., and Cravat Coal Company. Basically, we discussed this very problem and we all are in agreement, the completion of the "Tennessee Tombigvee Waterway" CAN'T BE SOON ENOUGH.

There are many port developments along the Tennessee Tombigbee Waterway, here I would like to state some facts on one of these ports, the Gateway to the

Waterway, the Port of Lyon County, Eddyville, Kentucky.

We will base this on truck hauls per working day.

Commodities;

Coal - 670 loads, 25 ton per load.

Grain - 20 loads, 15 ton per load.

Stone - 12 loads, 20 ton per load.

Fertilizer - 7 loads, 20 ton per load.

Agricultural Lime - 1000,000 tons per year.

Our industry feels honored to service a feasible means of transportation such as water, but all modes of transportation are needed. We have to learn and want to work together to accomplish the complete network of transportation.

Wm. T. Johnston

WM. T. JOHNSTON
President
National DTIA

THE WALL STREET JOURNAL,
Tuesday, July 22, 1980

Railroads' Bid to Sharply Increase Rates For Carrying Coal May Win in Congress

By ALBERT R. KARR
Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON—The railroad industry's effort to improve its finances by sharply raising rates for carrying coal may score a big success in Congress this week.

The House is expected to vote in the next few days on a bill to substantially deregulate railroads. It would allow rail carriers to raise all their rates more freely.

Rep. Bob Eckhardt (D., Texas), plans to offer a series of amendments aimed at limiting that rate-making freedom, especially for coal. But the railroads say they are confident they can defeat them and win an undamaged regulatory rollback.

The debate will reflect a currently raging issue. Railroads and their backers say the industry is entitled to sizable rate boosts on coal because its finances are shaky. They add that raising charges for coal hauling is one way roads can improve earnings.

But coal-using electric utilities contend that by raising rates sharply, railroads are unfairly taking advantage of a monopoly in carrying coal. They also assert that the rate increases undercut the nation's effort to become more energy self-sufficient by converting to coal from imported oil.

If the rail industry gets the kind of rate freedom it seeks, officials believe it will permit them to go still further to improve their fortunes by boosting coal rates. They've had fair success so far, with the Interstate Commerce Commission approving big rates rises, many of them in the 10% to 40% range over the past two years or so.

These increases have angered utilities. But ironically, railroads say that while the ICC has been permitting rate increases that give the industry a better return on investment than the average for all their business, the rate boosts still aren't enough.

They are arguing that coal-hauling rates have been so low, especially for Western coal, that huge increases are justified. They also say that factors other than rail rates, such as the price of coal itself, have been more important in affecting the rates utilities charge their customers.

The railroads further contend that there isn't any evidence that rail-rate boosts have held up conversion to coal from oil. "The ICC has let coal rates go up and the world hasn't come to an end," says an official of Seaboard Coast Line Industries Inc., parent concern of one group of railroads with considerable coal-hauling business.

The financial difficulties of a number of railroads in recent years also are helping the industry in its fight for deregulation. Rep. Edward Madigan (R., Ill.), noting rail bankruptcies in the Northeast and Midwest, said during recent House debate, "Either we solve the problems of the railroad industry with this (deregulation) bill, or this problem spreads on to the West and to the Southwest as well."

Mr. Eckhardt and the utilities in the South and Southwest take a different view. The House Oversight and Investigations Subcommittee, which he chairs, recently issued a report saying, in part, that the ICC has allowed "rampant" rate rises for coal, discriminating against "captive" utilities. The utilities add that Western roads lured them with low quotes for carrying coal, then boosted rates sharply when the unsuspecting utilities' business was assured.

The Senate already has passed a bill giving the railroads much of the rate-making freedom they are seeking.

Statement of

Richard E. Briggs
Executive Vice President
Association of American Railroads

Before Subcommittee on Water Resources
Senate Committee on Environment and Public Works

ADDITIONAL FUNDING FOR TENNESSEE-TOMBIGBEE WATERWAY

July 25, 1980

My name is Richard E. Briggs and I am Executive Vice President of the Association of American Railroads(AAR). Members of the AAR operate 94 percent of all railroad mileage, employ 92 percent of all U.S. railroad workers, and account for 95 percent of all U.S. railroad revenues.

America's freight railroads are opposed to additional spending of taxpayers' money for the Tennessee-Tombigbee Waterway. We are opposed because the principles involved are a root cause of the ills plaguing this nation's railroads. Continuing to base transportation policy on those principles threatens to destroy substantial segments of the private-sector taxpaying railroad industry.

The purpose of my appearance before this Subcommittee is to explain how unrecompensed Federal spending on Tenn-Tom affects the ability of freight railroads to provide adequate rail service to the great majority of shippers who do not have a barge alternative. And I want to explain how a continuation of a piece-meal approach to water projects is only going to cause railroads to seek massive subsidies of their own.

More specifically, America's freight railroads believe Tenn-Tom to be a monument to the failure of existing water policy. We believe that the existing water policy threatens the future viability of private sector railroads. And, we believe that if Congress would establish a more efficient water policy, which is committed to a restoration of competitive equity, allowing all modes to compete based upon least resource cost, the general taxpayer would be relieved of having to provide unnecessary subsidies to mature modal competitors -- railroads included.

Railroads do not deny they have received Federal aid in the past. All modes of transportation have received Federal aid at one time or another. That is not at issue. What is at issue, and what this Subcommittee and the Congress must deal with, is the question: Where do we go from here? Do we continue providing massive subsidies to the barge industry, and risk having to nationalize railroads at an additional Federal expense of billions of dollars yearly?

Tenn-Tom is a particularly bad example of the consequences of our existing water policy which does not require full cost recovery for public expenditures nor adequate benefit-cost analysis.

Because beneficiaries do not face financial discipline in the design and construction of Tenn-Tom, there is incentive to overconsume and waste resources. This tendency is reflected in Tenn-Tom's ballooning costs, which have escalated from $323 million in 1972 to current cost estimates of $3 billion.

Tenn-Tom is unable to withstand the test of unbiased benefit-cost analysis. It is a project where:

1) The interest rate remains at 3 1/4 percent, even though other water projects are today judged by a 7 1/8 percent interest rate, and the private sector, which competes with these projects, faces an interest rate in excess of 11 percent today.

2) The benefits have been shamefully inflated. According to Coal Week Magazine, if coal left Southern Tennessee at the rate the Corps predicts because of this project, all recoverable reserves would be gone in 15 years, well before the 50-year economic lifespan of the project. Hammermill Paper Co., Weyerhauser Corp., Aluminum Co. of America, Kentucky Energy Development, and numerous other companies say that the Corps' estimates of tonnages they will ship via the waterway are vastly inflated, and even fabricated. In some cases, the Corps projects large coal shipments from mines which do not exist, to power plants that have long-term contracts with suppliers who couldn't make use of Tenn-Tom if they wanted.

3) The Corps has ignored, as a cost, negative impacts upon other modes, even though the U.S. Water Resources Council and independent Corps consultants stress the importance of such modal impacts on the total transportation capabilities of the nation. Most benefits from this project flow from traffic to be diverted from existing transportation modes, even though that traffic will be diverted not on the basis of lower resource costs, but because of Federal subsidies which allow users to escape relevant resource costs.

The Corps of Engineers predicts that one-third of all Tenn-Tom traffic will be siphoned from railroads. The Corps says this is good, that it is a benefit, because shippers will enjoy lower rates. But, overall, there

will be no resource cost reductions. While a few select shippers will benefit from projected lower rates, general taxpayers across the nation are being called upon to subsidize this regional benefit. There will be no increase in the total amount of goods and services produced. There will only occur a series of transfers.

1) Monies are being transferred from taxpayers to build the facility.

2) Barge lines, which escape the costs of having to build and maintain the facility, will enjoy some of the transfers without having earned it.

3) Bulk shippers using the new waterway will enjoy some of the transfer, if barge lines pass on some of the escaped resource costs, but absent regulation, barge lines will probably reduce rates only enough to keep them below rail rates.

4) Some bulk shippers with access to the waterway will also enjoy a transfer from railroads, which will reduce some water-competitive rates in an effort to retain their traffic. But the lower rates will have no more to do with lower resource costs than the lower barge rates have to do with lower resource costs.

5) Bulk shippers without access to the waterways will become less competitive as they will not enjoy the lower barge rates nor the lower water-compelled rail rates. Rail shippers who do not ship bulk commodities may be called upon to cross-subsidize water-competitive traffic.

6) Finally, additional pressure will be placed upon already meager rail profits. Railroads will have the options of seeking higher rates from non-water competitive commodities; reducing the quality and quantity of rail service; seeking additional line abandonments; filing for bankruptcy; and/or applying for Federal aid to compensate for the damage done by the Federal aid to its competitors. And all this will occur simply because Congress is allowing a mature form of transportation to escape relevant resource costs. But the costs do not disappear -- they are merely paid by the general taxpayer.

America's freight railroads do not oppose legitimate and lawful competition. Competition from modes whose rights-of-way are built and maintained by the public treasury, but who refuse to pay adequate user charges, are not legitimate competitors, and such policy threatens our entire free-enterprise system.

The consequences of this type water policy on railroads are that rail earnings decline still further, discouraging investment in rail capacity vitally needed to maintain and improve service quality. Though some with vested interests in water projects may be insensitive to this consequence, rail shippers are not -- and most shippers of bulk materials do not have access to waterways and must depend upon rail transportation. As rail investment declines, the public begins to clamor for government investment in, and government takeover of, freight railroads.

America's freight railroads have moved record amounts of coal, both for export and domestic consumption, this year, and railroads continue to make record capital investments to expand rail capacity for future demand. The building of duplicate rights-of-way, at government expense, to compete with railroads, threatens to increase the total resource costs of moving coal, and threatens the ability of future railroad expansion necessary for the great majority of shippers -- coal and otherwise -- who have no barge alternative.

The freight railroad industry, however, remains optimistic that Congress is prepared to alter past policy favoring unrecompensed aid to a healthy barge industry. In 1979, America's freight railroads invested $3.3 billion, the highest in railroad history. More than $1 billion of that figure was for roadways, terminals, and yards -- also a record. The investment was made despite an industry return on net investment of 2.68 percent, the 25th consecutive year that industry return on net investment has been below

our costs of capital.

The inequities of that past policy are:

1) America's freight railroads build and maintain their own rights-of-way. The general taxpayer builds and maintains the rights-of-way for barges, and barge lines have never repaid a penny to the general taxpayer.

2) America's freight railroads invest in and maintain their signals and other traffic control devices. The general taxpayer provides navigation aids and ice-breaking services to the barge industry at no cost to barge operators.

3) America's freight railroads pay significant ad valorem taxes on rights-of-way to school districts and local communities. Barge operators pay no such taxes on their taxpayer supplied rights-of-way.

Such policy allows barge operators to escape relevant resource costs by transferring those costs to the general taxpayer. By escaping those costs, barge operators can reduce rates and divert freight from modes which may, in fact, have lower resource costs. This results in a rise in total resource costs of the freight transportation system as a whole. The process creates regional inequity by subsidizing shippers who have access to shallow draft navigation by those who do not; and, overall, is inflationary because it entails the inefficient use of scarce resources.

This Subcommittee is familiar with the number and scope of railroad bankruptcies in recent years. How much longer can the remaining private sector railroads continue to operate while the Federal government authorizes and appropriates billions to clone the Mississippi River?

Competitive equity requires dependence upon market forces for not only ratemaking, but modal investment as well. I've mentioned that the rail industry's

return on investment has not exceeded its cost of capital in 25 years. Citicorp, last April, showed railroads dead last in 1979 on return on net worth among 73 industries. Significant portions of the railroad industry are sick, in large part, because our healthy highway and water competitors are receiving unnecessary subsidies from the public treasury. And we are sick because almost every facet of our operations are subject to some form of restrictive regulation, while almost 93 percent of all barge freight and 56 percent of all highway freight is totally exempt from economic regulation.

The U.S. Department of Transportation, in a study performed for the Congress in 1977, showed that between World War II and 1975, the general taxpayer had provided almost $11 billion to the barge industry for construction, operation, and maintenance of rights-of-way. The annual civil works appropriation for navigation projects now exceeds $600 million annually, and Senator Domenici has projected that this appropriation will reach $1 billion annually in a few short years.

The barge fuel tax scheduled to go into effect October 1, will recover only about 6 percent of the FY80 navigation appropriation of almost $600 million. Recoveries for FY81 under the fuel tax have been previously projected at $30 million.

Can you imagine the Burlington Northern coming before this subcommittee to plead for a $116 million authorization for a new coal line in Wyoming, to be built entirely at taxpayer expense with no reimbursement? Can you imagine the Southern Railway asking for a $48 million grant for an automated classification yard in North Carolina? Congress would reject such proposals out of hand. Yet, the barge industry appears regularly to seek public funding for what are essentially comparable projects.

Tenn-Tom is nothing but a new right-of-way to allow barge operators to cut costs in the movement of coal and other bulk commodities. But while Burlington Northern went itself to the capital markets for $116 million to build its 116-mile Orin to Gillette coal line in Wyoming, the barge industry was seeking $3 billion from the general taxpayer for its right-of-way between Tennessee and the Gulf. While the Southern Railway competed in capital markets for $48 million for its new Spencer classification yard in Linwood, N.C., to ease rail bottlenecks, the barge industry was seeking $805 million from the general taxpayer for a new lock and dam at Alton, Ill., to ease its bottlenecks.

Are the barge lines willing to pay user charges to reimburse the taxpayers for the $3 billion that is being committed to Tenn-Tom? Proof of benefits exceeding costs is, of course, willingness to pay such costs. Freight railroads pay user charges to operate on the Northeast corridor, which is owned and operated by the wholly-nationalized Amtrak. When users can escape relevant costs, there is incentive to overconsume and demand more than is economically efficient. To my knowledge, not a single Corps study has been made to determine if existing rail capacity can handle projected future tonnage increases, or if investment by railroads in expansion of their facilities can be accomplished at less resource costs than public investment in waterways, such as Tenn-Tom.

The President has proposed bold new programs to reduce our nation's dependence upon foreign oil, and to increase our exports of abundant coal reserves. America's railroads are expected to play an important role. Indeed, our railroads can move that coal from the mines to the power plants or export docks. We have the capacity to move a lot more, and when the capacity becomes strained, we are prepared to make the necessary investments to handle increased demands. I have already mentioned the magni-

tude of railroad capital investment last year in anticipation of this new traffic.

However, we cannot continue to invest if our investments are not able to earn a return sufficient to allow us to maintain existing plant and attract even more new capital for expansion. Building a $3 billion waterway solely at taxpayer expense which will siphon $53 million per year in revenues from the Louisville and Nashville Railroad is not a public policy decision consistent with keeping America's freight railroads strong.

Because the Corps of Engineers has engaged in what we believe to be unlawful methods to justify Tenn-Tom, and because Tenn-Tom represents what we believe to be a shocking example of what is wrong with this nation's water policy, America's freight railroads oppose any additional funding and recommend the project be halted immediately. In the alternative, we recommend the Corps of Engineers be required to perform a lawful and comprehensive benefit-cost analysis, and that beneficial users of the project, if it is completed, be required to pay, through user charges, the full public costs of the project.

In anticipation of questions relating to past and present Federal aid to railroads, as well as the railroads' ability to handle the projected large increases in coal shipments, I have with me prepared sample questions and responses to certain questions which have arisen in the past. I wish for them to be included in the record.

Thank you for the opportunity to share our concerns with you.

ANSWERS TO ANTICIPATED QUESTIONS

Question No. 1: HAVEN'T RAILROADS THEMSELVES BEEN RECIPIENTS OF CONSIDERABLE HANDOUTS FROM THE PUBLIC TREASURY?

In a 1977 report on public aid to rail transportation, the Department of Transportation concluded that for all categories of Federal aid through 1975, railroads have more than paid back the Federal government. The components of past Federal aid included surveys for rights-of-way between 1824 and 1838; remission on duties for imported railway iron in the mid-1800's; land grants from 1850-1871; railroad use of timber, stone, and earth in building rights-of-way in the 1800's; and four separate Federal loans between the Civil War and Transportation Act of 1958.

DOT found the total value of all Federal aid to railroads through 1975 to have been $859.5 million (another $938.5 million was primarily for research for high-speed passenger trains, grants to Amtrak, and operating and administration expenses for FRA and USRA, none of which benefited freight railroads). At the same time, DOT found that through compensating rate discounts to the government (required as a provision of land grants until 1946), and special taxes for which no aid had been received, the railroads repaid more than $6.1 billion, or more than $7 for each dollar of aid received.

An indication of the detail with which DOT sought evidence of past Federal aid to railroads is found in the identification of $75,000 worth of aid from early surveys for rights-of-way between 1824 and 1838. The conclusions of DOT were similar to the conclusions of the Board of Investigation and Research, established by Congress in 1940 also to investigate past Federal aid

67-591 O—80——13

Question No. 2: ISN'T IT TRUE THAT THE RAILROADS CANNOT HAUL THE AMOUNTS OF COAL AWAITING SHIPMENT?

The railroads can and are meeting the demands of coal shippers, but the answer needs to be separated for both export and domestic coal, as the problems pertaining to the movement of each are dissimilar.

The largest export coal facility in the world is operated in Norfolk, Virginia, by the Norfolk and Western Railway. For seven full days in May, the facility operated at less than 50 percent capacity, and has been operating at under 85 percent capacity most of the year. Meanwhile, the press continues to report massive delays involving coal ships, called "colliers". How, then, can massive delays result when the coal facility is operating under capacity?

While coal may appear to be homogeneous, it comes in numerous grades, depending upon its origin. Whether for metallurgical or steam purposes, coal must be mixed according to special formulas of the buyer. Since buyers and/or transshippers have the responsibility for ordering the correct quantities of each grade directly from mines in many states, and coordinating order cycle times, and since colliers cannot be loaded until all grades are on hand, massive nontransportation logistics problems have developed. Also creating logistics delays have been early and late arrivals of ships, again a result of poor coordination by the buyer or transshipper. Railroads have no control over a buyer's failure to order all his grades of coal on time, a mine's failure to ship as promised, or a buyer's failure to ensure colliers are positioned at the proper time and place consistent with pre-arranged delivery schedules. These problems have been exacerbated by the entry of many new foreign buyers and transshippers.

Where our capacity needs to be expanded, we are able and willing to do so

as long as our investments in additional capacity can earn reasonable returns. It should not be overlooked that despite reported increases in coal traffic at Norfolk, the N&W still expects its total 1980 Norfolk coal dumpings to be 4 million tons below its 1970 record of 34 million tons. Also, Chessie plans to reopen another coal pier in Newport News and expand its Baltimore facility. Union Pacific, meanwhile, is establishing an export movement of coal for Japan via Long Beach, California, and dumped the first 50,000 tons in June. Clearly, the major limiting constraints to export coal movements are not under the control of the railroads.

As for domestic rail coal capacity, the railroads estimate that a 60 percent increase in coal production in the United States by 1990 would represent only a 20 percent increase in rail freight business. Given the fact that lead times on the opening of new mines are far greater than lead times for ordering and obtaining rail equipment or upgrading rail facilities, there is no reasonable basis for contending that railroads cannot keep pace with even the most optimistic projections for increased coal production. A 1976 DOT study concluded that increased rail coal traffic would help, rather than hinder, the movement of other commodities, and would not place unmanageable strain on rail capacity. An independent study by the Hudson Institute concluded railroads should be able to increase haulage as fast as mines can increase production. Orders for open top hoppers over the last four years exceeded 68,000 and the total capacity of the hopper fleet increased by 7.5 per cent. The railroads added almost 2,000 locomotives to their fleet in 1979, 600 more than in 1978, and nearly one-third of the total locomotive fleet is less than 10 years old. The railroad problem of recent years has been too much track and too little capacity. Increased movements of coal can be of significant assistance in solving that problem.

Question No. 3: AREN'T THE RAILROADS CHARGING EXHORBITANT RATES TO MOVE COAL?

The average cost of moving coal on Burlington Northern out of the Powder River Basin is 1.1 cents per ton mile. Nationwide, coal moves, on the average, at 2 cents per ton mile. By comparison, the average BN rate for grain transportation is 2.8 cents per ton mile, for iron ore it is 3.1 cents per ton mile, and for all commodities (in general) it is 3.3 cents per ton mile. As a percentage of the delivered price of coal at destination, rail rates have declined from 38.4 percent in 1969 to 25.8 percent in 1979. Often, it is distance that makes the total transportation charge appear high. For example, while most western coal rates are considerably lower, on a per ton-mile basis, than rates for other commodities, the average western coal haul is more than twice as long as in other parts of the country, which causes the total transportation cost to appear high.

Also, there is no merit to charges that 85 percent of all rail-hauled coal is captive. Such a statement overlooks competition among railroads, among different coal-producing areas, and among different sources of energy, as well as mine-mouth generating capability. The use of Federal dollars to build waterways for the purpose of forcing coal transportation rates down, does so only by transferring the costs of the waterway to the general taxpayer and railroads. Such policy does nothing to reduce resource costs, but it does impact adversely upon rail profits and the ability of the railroads to meet the future demands of all shippers -- especially those without waterway alternatives.

TESTIMONY OF
DR. ROBERT H. HAVEMAN

My testimony will address two areas of concern expressed by the Subcommittee. The two issues are closely related. The first is whether the Congress will be required to appropriate and spend over $2 billion of additional tax monies in order to complete the waterway and make it a useful project. These expenditures include $1.3 billion on the project north of Demopolis, Alabama and $1 billion on the project segment between Demopolis and Mobile.

The second issue relates to the level of benefits which can be achieved if the project is completed only to Columbus, Mississippi. Stated another way, the question involves what benefits and costs are involved in halting the project at its present stage of completion, which would provide, with the expenditure of a relatively small additional amount of monies, a navigation project from Mobile, Alabama to Columbus, Mississippi. This distance is approximately 334 miles. In fact, as stated rather proudly by the Tennessee-Tombigbee Waterway Development Authority, the stretch of the project is already open to limited navigation and several shipments of soybeans have been completed.

With respect to the first question, the Corps of Engineers itself now refers to the "ultimate" project as being a waterway from the Tennessee Review to Mobile. In its latest appropriation request, the Corps estimates that this "ultimate" project will cost $3 billion. The costs are split at Demopolis, Alabama. North of that point on the

Tombigbee River, the project is estimated to cost $2 billion.

The portion of the project south of Demopolis -- to Mobile -- will cost approximately $1 billion. It is this southern half of the project -- which the Corps admits is unauthorized by Congress -- which needs to be examined very carefully. Any authorization for this portion of the project, of course, would originate in this Subcommittee.

The issue of the necessity for this additional billion dollar project has a curious history. In 1975, in order to offset the skyrocketing costs*/ of the northern half of the project, the Corps commissioned a new analysis of the navigation benefits of the project. Dr. Carroll has testified regarding the spurious nature of many of these claimed benefits.

After including the false navigation benefits and concocting equally untenable employment and recreation benefits for the project, the Corps was able to inch the benefit-cost ratio back over the line -- to 1.09 to 1. However, the "discovery" of the additional 20 million tons of traffic moving down the project onto the River below Demopolis created another problem. Suddenly the Corps realized that this part of the River was too tortuous and narrow to permit the passage of such massive volumes of traffic, expecially when combined with the projected 16 million tons of traffic pouring onto the River from the Black Warrior tributary. One Corps employee referred to

*/ See my later testimony for a discussion of how these costs were withheld from Congress.

this part of the River as being more twisted than a "barrel full of snakes." I have included several aerial photographs of the River which confirm this description.

Thus, the Corps developed a plan for enlarging the channel below Demopolis and expanding the size of the locks to accommodate the combined traffic. The cost of that portion of the project was estimated originally to be $319 million. Like everything else with this project, however, the cost grew rapidly. The estimate is now $1 billion -- this is the additional billion dollars project which the Corps characterizes as the "ultimate" project.

Thus, if the Tenn-Tom above Demopolis is completed and the traffic which is essential to justify its construction materialize, the additional billion dollar construction below Demopolis becomes imperative. Indeed, the former Deputy Chief of the Corps of Engineers stated that the construction of this portion of the project is "directly attributable to the Tennessee-Tombigbee" above Demopolis. Once again, the "camel's nose" approach to transportation planning will have prevailed.

On the other hand, if the traffic on the northern part of the project fails to materialize, it is inevitable that this Subcommittee will be presented with the ultimate Catch-22 argument that the work below Demopolis is essential to make the northern half operate efficiently.

Thus, either way, the Corps will no doubt claim that the work below Demopolis is essential to the efficient operation of the overall project, and that the additional billion dollars is justified. Appallingly, at that stage, the Corps will then claim that the $2 billion spent above Demopolis is a "sunk cost" and cannot be charged against the purported benefits for the downstream work. The Corps will have succeeded in shifting around a set of non-existent navigation benefits to create a massive waterway out of whole cloth. This is a shell game without a pea.

Assuming the traffic on the Tenn-Tom above Demopolis materializes as visualized by the Corps, there can be no doubt that the billion dollar downstream improvements are inevitable. In the absence of such work, a barge jam of masssive proportions will exist on the lower River.

And it is important to point out that there exists significant local opposition to this downstream work. Many landowners in the area are concerned about the effect on their livelihoods, and a number of land and timber companies are opposed to the project because of the potentially devastating effect on their natural resources. They have joined together in an organization called the Southwest Alabama Protective Association to ensure that their rights are not infringed by the Corps' proposal to construct the downstream navigation improvements.

Thus, when the Corps returns to this Committee for authorization of the downstream work -- as inevitably they shall -- the picture will not be rosy. These landowners -- who are being told repeatedly by the Corps right now that their lands are not needed, and that the downstream work is unnecessary -- will oppose that expansion of the project with a vengeance. And well they should after such deception. In addition, the State of Alabama has pointedly refused to undertake any expenses which are necessary to relocate or reconstruct highway bridges in the downstream area. This refusal, incidentally, is consistent with the abysmal lack of financial support from the States of Mississippi and Alabama for bridge relocations on the project north of Demopolis. They have been bailed out to the tune of $86 million by Federal legislation which was carefully masked to make them the sole beneficiares of this dole.

Thus, after a very careful review of literally thousands and thousands of Corps documents, it is my best professional opinion that the Corps will be required to spend an additional $2.3 billion in order to make the Tennessee-Tombigbee Waterway sufficiently viable to even suggest that it will be competitive with the Mississippi River and railroads for the movement of large volume commodities. This $2.3 billion, of course, does not count the loss of revenues which will be incurred by both the railroads and facilities on the Mississippi River should the diversion of traffic materialize.

The reality, of course, is that the Tenn-Tom is obsolete before it is completed. It is a narrow, shallow, heavily-locked waterway that is unsuitable for the large tow configurations and heavily-powered modern equipment that plies the Mississippi, Ohio and Tennessee Rivers. Downbound barges, once they have navigated this anachronism to Demopolis, will suddenly be faced with a river as "twisted as a barrel of snakes" which has at least 46 bends of insufficient width to permit passage of mere 8-barge tows. Thus, the inevitability of the downstream, billion-dollar works.

Given the necessity of expending another $2.3 billion to complete this project, an obvious question arises regarding the consequences of halting the project now. What are the benefits of such an action? What are the costs? What are the useable and the recoverable costs? These are serious questions which deserve a forthright response.

First, we must begin with the reality that not spending the remaining $2.3 billion constitutes a real savings of that amount in both theoretical and practical terms. The reality is that this $2.3 billion is then available to be employed in other productive uses for the nation, either in the form of private investment through equivalent tax relief, or in the form of public investment in alternative economic interprises. If the money is to remain in the area, an examination should be required of alternative investments which could achieve far greater results for long term

economic growth and employment of minorities and the poor.

Thus, the $2.3 billion can constitute a true savings to the nation.

The money which has been spent -- approximately $800 million -- also deserves to be examined carefully. Such an examination reveals that a substantial portion of this money is either recoverable or useable.

For example, the Corps has nearly completed the navigation channel from Demopolis, Alabama to Columbus, Mississippi -- a distance of 117 miles. This work has involved the construction of the Demopolis navigation channel, the Gainisville Lock, Dam, Reservoir and navigation channel, and the Aliceville Lock, Dam, Reservoir and navigation channel. As the sponsor of the project has proudly pointed out, this work has opened the project for limited navigation, and the movement of small tonnages of agricultural products has commenced.

The cost of this work has been approximately $200 million. Thus, the $800 million spent on the project can be reduced by this $200 million when calculating non-recoverable costs.

In addition, there are many items of project cost which are recoverable. For example, the Corps has acquired approximately 100,000 acres of land in fee and permanent easements from local landowners for the project. These lands, if sold on the open market, could bring at least

$29 million according to Corps estimates. However, it should be noted that the purchase price of these lands was $46.5 million. One wonders why the resale value is $17.5 million less than the purchase price in a time of rapidly-escalating land values.

I believe there is substantial reason to conclude that the Corps is undervaluing the lands in order to protect themselves for litigation from former landowners. In my judgment, the lands acquired for the project, if sold on the open market at today's prices, could well bring $70 million.

In addition, according to Corps data, an additional $5 million is useable or recoverable from recreation facilities, cultural resources and permanent operating equipment. These are:

Recreation facilities.....	$ 617,700
Cultural resources.....	3,933,500
Permanent operating equipment..	339,900
TOTAL	$4,891,000

This additional $5 million in recoverable costs, when added to the $70 million in land values and the $200 million invested in the project to Columbus, totals $275 million. Thus, the total net sunk costs in the project amount to approximately $525 million.

This unalterably "sunk" cost was expended largely north of Columbus, Mississippi in construction of the upriver locks

and the massive Divide Cut between the Tennessee River and the headwater of the Tombigbee River. In economic terms, it is an unrecoverable cost.

However, the real question is whether another $2.3 billion of good money should be spent merely because $500 million in sunk costs presently exist.

It has been said about other ventures of this type that "if you fall into a hole, you don't save face by staying there."

Congress has faced tough decisions before. The Cross-Florida Barge Canal was nearly one-third completed when it was halted in 1971. The supersonic transport aircraft similarly was halted for sound economic and environmental reasons.

It is time for another such decision. The Tenn-Tom is a long way from the point of no return. Over $2 billion remain to be spent. However, every annual appropriation further ties the hands of Congress. Every dollar spent inevitably requires larger and larger expenditures.

Now is the appropriate time for Congress to halt the project for a realistic assessment of its benefits. A series of shallow, lonely weed-infested reservoirs connected to an earthen trench larger than the Panama Canal will be a sad legacy for a Congress which is justifiably concerned with energy efficiency, balancing the budget, and sound transportation planning.

One final matter needs to be addressed. This is a serious question which deserves the careful scrutiny of this Committee and the Congress. It involves the withholding of known cost increases from the Congress in order to avoid their emotional impact and to give a false picture of the true benefits and costs of the project.

Early in the construction of the project, it began to be beset with skyrocketing costs.

In 1972 the estimated project cost was $386 million. By 1974 that cost had grown to $732 million. Then, in late 1974, the Corps discovered that the project costs had soared to over $1 biillion. However, the project benefits had not kept pace with the costs, and the benefit-cost ratio for the project was below unity.

At that point, the Corps realized the hazard of reporting such a massive increase in costs to the Congress. The decision was made to withhold the cost increase.

On October 7, 1974, General Le Tellier, the Division Engineer for the South Atlantic Division, received a staff memorandum which stated that the Federal costs were then known to be over $1 billion, but that as figure of only $732 million had been reported to Congress. It continued:

> In view of the above the project could well have some problems in Congress this year. I believe there is a strong possibility of Congress directing a special economic study as a direct consequence of such changes in cost and B/C.

* * *

Mr. Belcher, SADPB-E advises that in regard to

benefits, we have gone about as far as we can without new field data and that it would require a minimum of 18 months for a creditable new field study and economic reanalysis.

6. Such a step as initiation of an economic reanalysis would, of course, give ammunition to project and Corps opponents. Unfortunately, we will have problems along that line no matter which way we go.

A senior official of the Corps put this matter very succinctly in November 1974:

Recommend the matter of rising (spiraling) construction costs be of secondary consideration and not made a major factor in any new releases. This is a very critical matter and we have been told not to discuss this aspect until OCE [Office, Chief of Engineers] completes a presentation to appropriate people.

On November 14, 1974, Colonel Drake Wilson, District Engineer for the Mobile District, wrote to the L&N railroad and stated that the project cost was only $732,000,000. This figure was reported to the L&N notwithstanding the full knowledge within the Corps that the cost had exceeded $1 billion at that time.

On December 20, 1974, the Chief of the Programs Division, Civil Works Directorate received a memorandum from his staff stating that the project cost then exceeded $1 billion. The memorandum further stated:

I would recommend we hold the Federal cost under $1,000,000,000. Say $975,000,000. Considering the size of the estimate, $975 million is no less accurate than $1 billion and has less emotional impact.

On January 6, 1975, the Chief of the Program Development Office prepared a memorandum for the record which stated:

1. Richard Smith called...and advised that Steinberg had discussed subject estimate with General Morris and that he (Smith) had discussed it with Engineering Division, OCE.

2. In both instances [i.e., General Morris and the Office of the Chief of Engieners] it was decided that, since we were doing a new economic analysis, we should hold off on the big cost increase until an integrated economic report is completed and submitted. The report should address both benefits and costs.

3. The estimate to be used is $815,000,000 which includes the increased ICG Railroad cost. A new PB-3 backing up this estimate is to be submitted ASAP. Previously approved estimate is $732,000,000.

Thus, the Corps of Engineers - having full knowledge that the project cost had exceeded $1 billion - chose to concoct and report a lower cost estimate of $815,000,000.

Indeed, the Army Audit Agency - the internal GAO of the Army - found in a detailed, but unreleased, report that the Corps had withheld $344 million in known cost increases from the Congress in order to avoid the "emotional impact" and the effect upon the benefit-cost ratio. The Agency stated:

> Although the estimate of $1.159 billion was prepared in accordance with procedures outlined in Engineer Regulations, a decision was made to report an estimated cost of $815 million ($759 million plus $32 million for supervision, administration, engineering, and design, and $24 million for railroad bridge locations). If the total cost estimate had been reported, the projects' benefit/cost ratio would have been significantly less favorable.
>
> A memorandum, prepared by SAD on 6 January 1975, stated that OCE had decided that a big cost increase should not be submitted to the Secretary of the Army until a new economic report, which would address both benefits and costs, was completed. Reporting an estimated project cost of $1.159 billion during fiscal year 1975 would have shown that the project might be only marginally justified from a benefit/cost standpoint. Consequently, the PB-3 reflected a conservation cost of $815 million.

The decision to withhold the known cost increase from Congress was made by the Chief of Engineers, General John W. Morris. The figure was sent to Congress in January, 1975.

In June, 1975, a memorandum was prepared by Mr. William Hearrean, economic branch, South Atlantic Division, analyzing the benefit-cost ratio using the concocted $815,000,000 figure and the true $1.2 billion cost. The memorandum stated that the B/C ratio using the true cost was 0.93, well below the level required for continuation of the project. In further confirmation of this fact, General Ernest Graves stated, through his delegee, on October 21, 1975 that:

> it appears that the authorized alternatives [for the project] have a BCR less than 1 and the only alternatives with a BCR greater than 1 include downstream improvements which are not currently authorized.

In the face of this realization that the benefit/cost ratio had sunk below unity, the Chief of Engineers made a series of final decisions designed to salvage the project.

First, in February, 1975, the Chief reported a cost figure for the project which was known to be inaccurate. Fully apprised of the fact that the project cost was over $1 billion, the Corps nevertheless reported a cost figure of only $815 million to the Congress and to the plaintiffs. The reason for this was obvious -- if the known costs of the project had been reported, the benefit-cost ratio would have been below unity, and construction of the project would have been halted. In the words of General Graves, they would have had a "very serious problem."

I respectfully urge that this Committee examine all the "very serious problems" facing the Tenn-Tom project, and recommend that it be halted for a thorough reassessment of all issues by an independent third party. Unfortunately, Tenn-Tom is merely the most flagrant example of an agency being required to wear too many hats. The Corps of Engineers possesses extraordinary expertise in some areas. But they should not be required to advance the cause of waterway construction at the same time that they conduct the construction activity. The adage prohibiting service to more than one master is applicable with full vigor here.

ATTACHMENTS TO MR. HAVEMAN'S STATEMENT

TENN-TOM VS MISSISSIPPI RIVER

QUESTIONS AND ANSWERS

1. Question: What is the distance from Paducah, Kentucky (at the confluence of the Ohio and Tennessee Rivers) to New Orleans, Louisiana via the Mississippi River?

   Answer: 908 miles.

2. Question: What is the distance from Paducah, Kentucky to Mobile, Alabama via the Tennessee-Tombigbee Waterway.?

   Answer: 664 miles.

3. Question: What would be the average travel time for barge tows moving from Paducah, Kentucky to New Orleans?

   Answer: 6.4 days.

4. Question: What would be the average travel time for barge tows moving from Paducah, Kentucky to Mobile via the TTWW?

   Answer: 6.4 days.

5. Question: What are average speeds for tows that would move from Paducah, Kentucky to New Orleans?

   Answer: (1975 data):
   4.5 miles per hour on the Ohio River.
   6.0 miles per hour on the Mississippi (including backhaul speed).
   (1979 data):
   7 to 10 miles per hour on the Mississippi.

6. Question: What are the average speeds for tows that would move from Paducah, Kentucky to Mobile via the TTWW?

   Answer: (1975 data):
   4.3 miles per hour.

7. Question: What are the average barge tow sizes that would move from Paducah, Kentucky to New Orleans?

   Answer: (1975 data):
   13.5 barges on the Ohio River.
   25.0 barges on the Mississippi.
   (1979 data):
   25 to 30 barges on the Mississippi.

8. Question: What are the average barge tow sizes for tows that would move from Paducha, Kentucky to Mobile via the TTWW?

   Answer: 13.5 barges on the Tennessee River to Pickwick at the northern end of the TTWW.
   8 barges down the TTWW.
   6 barges down the river below Demopolis to Mobile.

9. Question: What is the total number of locks that a tow would be forced to negotiate between Paducah, Kentucy and New Orleans?

   Answer: Two locks, both located on the Ohio River. But even these would be avoided except in times of low water. When the water is high, the tows simply pass over the top of these locks.

10. Question: What is the total number of locks that a tow would be forced to negotiate between Paducah, Kentucky and Mobile via the TTWW?

    Answer: Fourteen locks. Two on the Tennessee River, ten on the TTWW, and two on the river below Demopolis.

11. Question: What would be the average cost of moving a barge from Paducah, Kentucky to New Orleans via the Mississippi River?

Answer: Using the data relied upon by the Corps and its contractor in 1975, the average cost per barge would be $3473, or $2.48 per ton.

12. Question: What would be the average cost of moving a barge from Paducah, Kentucky, to Mobile via the TTWW?

Answer: Using the data relied upon by the Corps and its contractor in 1975, the average cost per barge would be $4554, or $3.25 per ton.

CONCLUSION:

Given the advantages the Mississippi has over the TTWW, it would cost roughly $.77 more per ton in 1975 dollars to move a barge tow from Paducah, Kentucky to Mobile via the TTWW than to move the same tow from Paducah to New Orleans via the Mississippi River.

FACTS AND FIGURES ON THE USEFULNESS OF THE TTWW

1. The attached table is based on the data used by the A.T. Kearney Company in preparing the 1976 Reanalysis of the Tenn Tom project. Sepcifically, it relies upon the Kearney model which was constructed for use with respect to traffic movements of 50,000 tons per year or more. Relying upon the Kearney assumptions, the table shows that it would be $.77 per ton cheaper to move from Paducuah, Kentucky, at the confluence of the Ohio and Tennessee Rivers, to New Orleans, than to move from Paducah to Mobile via the Tenn Tom.

2. These negative results with regard to the Tenn Tom would become even more pronounced if the Kearney data had been accurate and if more recent data were taken into account. For example:

   (a) As the table shows, Kearney assumed that the average tow size on Mississippi would be 25 barges. Currently, the average hovers between 25 and 30 barges. Use of the higher average would tend to make the Mississippi route even more attractive vis a vis the Tenn Tom.

   (b) As the table shows, Kearney relied upon an average speed of 6.0 mph on the Mississippi. The current average on the Mississippi is between 7 and 10 mph. Again, the higher average speed would make the Mississippi more attractive vis a vis the Tenn Tom.

(c) The Corps of Engineers is giving consideration to deepening the navigation channel of the lower Mississippi (south of Cairo, Illinois) to 12 feet. The Tenn Tom is of course restricted to nine feet depth.

(d) The New Orleans district of the Corps of Engineers has reportedly recommended that the navigation channel of the Mississippi from Baton Rouge south be dredged to a depth of 55 feet.

(e) It would be extremely expensive to enlarge the capacity of the Tenn Tom. Any deepening of the channel would be very expensive, given the divide cut portion of the project. Moreover, optimal operating conditions (including the assumption of 24 hour a day operation, 365 days a year) have been the basis for the Corps' projections.

RIVER SEGMENT	MILES	NO. OF LOCKS	AVERAGE TOW SPEEDS (MPH)	AVERAGE TOW SIZE (BARGES PER TOW)	TOW TRANSIT TIME (DAYS)	A.T. KEARNEY ESTIMATED RATE (1975 DOLLARS) DOLLARS PER BARGE	DOLLARS PER TON
A. Paducah to Mobile							
1. Tenn River	215	2	4.3	13.5	2.1		
2. TTWW	232	10	4.3	8	2.2		
3. BWT (below Demopolis)	217	2	4.3	6	2.1		
TOTAL	664	14	-	-	6.4	4554*	3.25*
B. Paducah to New Orleans							
1. Ohio River	47	2**	4.5	13.5	0.4		
2. Mississippi River	861	0	6.0	25.0	6.0		
TOTAL	908	2	-	-	6.4	3473*	2.48*

* Includes Kearney Vol. II - Table A-7, Table A-8, Table A-9 assumptions, using ATK constructed model for movements of 50,000 tons per year or more.

** These two locks only used during low water.

In 1976, following an audit ordered by the Assistant Secretary of the Army, the Army Audit Agency concluded that:

> According to available records, about $344 million in known cost increases were not reported in the fiscal year 1975 PB-3 estimate. The records show increased costs were not reported in order to reduce the "emotional impact" of any big cost increase and to negate the effect that increase would have on the project's benefit/cost ratio.

The 1976 report prepared by the AAA, which has never been publicly released by the Army, stated that:

> About $344 million of costs were not reported in the fiscal year 1975 cost estimate.
>
> * * *
>
> Although the estimate of $1.159 billion was prepared in accordance with procedures outlined in Engineer Regulations, a decision was made to report an estimated cost of $815 million ($759 million plus $32 million for supervision, administration, engineering, and design, and $24 million for railroad bridge locations). If the total cost estimate had been reported, the project's benefit/cost ratio would have been significantly less favorable.
>
> A memorandum, prepared by SAD on 6 January 1975, stated that OCE had decided that a big cost increase should not be submitted to the Secretary of the Army until a new economic report, which would address both benefits and costs, was completed. Reporting would have shown that the project cost of $1.159 billion during fiscal year 1975 would have shown that the project might be only marginally justified from a benefit/cost standpoint. Consequently, the PB-3 reflected a conservative cost of $815 million....

TESTIMONY OF

DR. JOSEPH L. CARROLL

Mr. Chairman:

I appreciate the opportunity to appear before the Subcommittee today. I have had a long interest in the Tennessee-Tombigbee Waterway. In fact, my doctoral dissertation in 1962 was on the project. The project has had a long and tortured history both in and out of Congress.

Some of my testimony to day will involve the indentification of specific companies. I wish to be absolutely clear that the data and conclusions relating to these firms were derived independently, and not from documents supplied from the Corps under the protective order. However, it is my understanding that the material covered by the protective order have been supplied to the Congress voluntarily by the Corps, and that the position has been taken by counsel that the protective order is thereby waived.

In 1951, the investigative staff of the House Public Works Committee conducted an intensive study of the Tennessee-Tombigbee Waterway. I find that their report is a remarkably accurate prologue of the current controversy surrounding the project. Indeed, the House Public Works subcommittee, upon the recommendation of its staff, calculated the benefit-cost ratio at 0.29 to 1 and relegated the project to the deferred category.

Another interesting aspect of that 1951 investigation was the controversy surrounding the width of the waterway. The Committee questioned whether the Corps was attempting

secretly to expand the project width from 170 to 300 feet, and thereby massively increase its commodity-carrying capacity.

The Corps, however, on April 23, 1951, responded to this assertion as follows:

> The Tennessee-Tombigbee Waterway is authorized for a width of 170 feet. To increase this width to 300 feet would require additional authorizing legislation by the Congress....The authority delegated to the Chief of Engineers by Congress to make necessary modifications of authorized projects does not extend to major increases in project scope, such as that which would be involved in widening the Tennessee-Tombigbee Waterway.

Nevertheless, in spite of this explicit promise to the Congress, the Corps never returned to this Committee for authorization of the 300-foot channel. Rather, relying upon a one-sentence approval of the Secretary of the Army for merely planning the 300-foot project, the Corps simply began construction of the 300-foot waterway in 1972.

The project continued to be beset with economic difficulties. In 1972 the estimated project cost was $386 million. By 1974 that cost had grown to $732 million. Then, in late 1974, the Corps discovered that the project costs had soared to over $1 billion. Rather than report the enormous increase to Congress, the Corps decided to concoct a project cost figure ($815 million) which the then-claimed benefits could sustain, and embark upon another study which would develop the benefits necessary to offset the new cost estimates.

As reflected in numerous Corps documents, the sole purpose of the economic restudy was to identify new navigation benefits to offset the skyrocketing project costs. For example, in a memorandum from the Chief of Planning, South Atlantic Division to the Division Engineer dated October 10, 1975, it was stated:

> Data for the benefit determinatin from both A.T. Kearney and Corps personnel must be available by 10 October. These will be combined with appropriate cost data to produce the desired B/C by the 15th. [emphasis added.]

And again, in a memorandum to C.G. White from Owen D. belcher, dated 16 October 1975, it was stated:

> By late summer of 1974 new cost estimates based on bid experience for construction to date indicated that a current reevaluation was needed if project feasibility was to be supported.

With this mission firmly planted in mind, the Corps retained a trusted economic consultant, A.T. Kearney, to conduct the restudy. Their instructions were to survey a broad range of prospective shippers on the Tennessee-Tombigbee to identify from that group specific companies who would ship commodities on the waterway to calculate the amounts of tonnages to be shipped, and to then arrive at the savings which could be attributed to the project. These savings would then become the navigation benefits of the project which would be submitted to Congress.

In 1976, the Corps formally accepted and adopted the new navigation benefits, and publicly reported such figures in its 1976 Economic Reanalysis.

The figures were astonishing. They showed that the navigation benefits for the project had jumped from $32 million to $67 million in less than three years. Not surprisingly, given the purpose of the restudy, these new navigation benefits pushed the project back over the feasibility line -- to a ratio of 1.09 to 1. The restudy concluded, among other things, that purported initial coal movements had increased from less than 2 million tons to over 18 million tons in a single year.

Navigation Benefits

The procedures to be followed by the Corps of Engineers in estimating project benefits are set forth in Section 7(a) of the Department of Transportation Act of 1966, and in Corps of Engineers regulation ER 1120-2-114, Waterway Improvement Studies - Navigation Benefits, a copy of which is attached. These mandated procedures are quite specific and include the following tasks:

(1) By means of a field survey identification of potential traffic through analysis of existing freight movements in the tributary area;

(2) Screening of potential movements to eliminate those not susceptible to diversion to the waterway;

(3) For the movements remaining, comparison of the actual rates shippers are paying for transportation with the rates expected to be charged on the proposed waterway, all other associated costs (e.g. inventory, warehousing, materials handling, etc.) being considered;

(4) For each movement applying the estimated savings to the base year tonnage to derive base year benefits;

(5) For each movement projecting benefits over the life of the project.

(6) Summing the benefits and then, using a specified interest rate, obtaining average annual project benefits.

Thus the traffic and savings claimed for the benefits base are required by Corps regulations to be based on existing traffic in the tributary area for which the savings are determined by comparing actual rates being charged with estimated rates via the waterway.

Aside from the fact that rate savings to shippers inevitably include income transfers such as between railroad stockholders or shippers, and the benefited waterway shippers, what can be said of the benefits claimed by the Corps for the Tennessee-Tombigbee? First, the Corps consultant, A.T. Kearney, paid scant attention to the Corps regulations. Most notable among the wholesale violations of ER 1120-2-114 is the inclusion in the benefit base of "future" traffic and savings. This traffic, according to Kearney, consists of "movements planned for the future from such activities as new facilities, penetration into new markets, development of new sources of raw materials...." (A.T. Kearney, Vol. II., p. VI-2), and accounts for over one-half of the 1986 tonnage. The inclusion of future traffic involves double-counting at best, and pure speculation or worse.

By using hypothetical rather than actual rates for existing movements -- a clear violation of Corps regulations -- Kearney and the Corps were able to claim rate savings in key

instances where use of the acutal rate being paid would have shown that the present route being used was less costly to the shipper than the TTW routing. It was by this means that savings on substantial tonnages of coal were claimed.

Movement of large volumes of coal are absolutely essential to the economic justification of the TTW, accounting for over one-half of the tonnage and savings claimed by the Corps. There is an abundance of evidence, however, that very little if any of the coal traffic projected by Kearney and the Corps will materialize. For example, two "future" movements of coal to Alabama Power's Greene County plant near Demopolis account for over $20.6 million of the $86.6 million in average annual navigation benefits claimed in 1978. Projected by Kearney to commence in 1976 and 1977, these moves have never developed and are not likely to since the company plans on continuing to barge coal a short distance down the Warrior River to the plant. Furthermore, the savings claimed were signifcantly bloated by Kearney's use of a hypothetical barge rate for the Mississippi River routing rather than the actual rate the shipper was paying. Also, Kearney's projected coal tonnage being shipped to the plant exceeded by a large amount the plant's existing and planned future coal-burning capability.

Movements of coal to two plants operated by Gulf States Power were also improperly included in the benefit base and account for $3.4 million in benefits. Savings for the

movement of Ohio River coal to the company's plant at Pensacola are based on a hypothetical rate via the Mississippi River. If Kearney had used the actual rate the shipper was paying as required by law and Corps regulations, there would have been no savings. In the case of the plant at Panama City, all of coal requirements since 1976 have been met with South African coal under long-term contract.

Three coal movements in the benefit base accounting for $13 million of shipping savings were discovered by the Corps to be non-existent. Two of these movements were described by Kearney as "existing" even though in both cases the companies were no longer in business in 1977.

The seven coal moves described above account for approximately 40 per cent of the tonnage and savings claimed by Kearney and the Corps. These moves are still in the benefit base, being used to maintain the B/C ratio in excess of unity and therefore to qualify the project for additional funding. There are good reasons for believing that the remaining coal movements are equally unlikely to materialize, particularly those originating on the Tennessee or Clinch Rivers above Chattanooga where exceedingly small locks are encountered. My conclusions are based on an article in Coal Week appearing February 12, 1979, which is attached, what has been reported in the Congressional Record concerning a DOT-DOE energy study soon to be released, and my own analysis.

The claimed coal movements are not the only ones that are suspect. I have carefully analyzed all of the TTW movements. Using only Corps documents and the public Kearney reports, I can state with a considerable degree of confidence that savings claimed for non-coal traffic are also dramatically overstated. My conclusions are confirmed by interviews with potential shippers which have been published and are being submitted for the record.

Finally, you should know that for every navigation benefit dollar claimed, an additional 10 cents was also included in the project benefits to account for "undisclosed traffic." General Morris himself refused to allow this 10% "contingency allowance" in the Cross-Florida Barge Canal economic study (done by A.T. Kearney, incidentally), and it certainly has no business in the benefit base for the TTW.

Tow Operating Limitations on the TTW

Proponents of this project are quick to point to the substantial savings in waterway distances between selected points afforded by the Tennessee-Tombigbee. There are indeed significant distance savings, but they are not nearly so important as they may seem. It is, after all, the cost of transporation that really matters, and the cost of operating on the TTW is going to be quite high when compared to the cost of operating on the lower Mississippi.

Contrary to what the Corps would have you believe, the TTW is not at all comparable in quality to the canalized

rivers with which it is frequently compared, the upper Mississippi and Tennessee Rivers, for example. Compared to these "locking rivers" the TTW is narrow, shallow and twisting. Virtually all of the existing navigable rivers in this country are composed of a series of slack water reservoirs that are relatively wide and deep throughout most of their length, the navigation channel approaching its authorized minimum dimensions only as you approach the upstream locks. The TTW, in constrast, is primarily a cross-coutnry, man-made canal which for approximatley 70 per cent of its length is limited to its design dimensions, i.e. between 280' and 300' wide at the bottom and 12' deep.

These size limitations will seriously affect tow speeds. Imagine, if you will, what it would be like if the canal were only slightly larger than the tow cross-section; it would be like pushing a piston in a cylinder. Over much of its length the cross-sectional area of the canal is only about 4 times that of the design tow. A loaded 8-barge tow under these circumstances is not likely to be able to travel at much more than 4 mph. In contrast, the maximum speeds attainable by the same tow in one of the reservoirs on, say, the Tennessee River would likely be 1 1/2 times or so faster.

Empty tows will be able to move faster than this, of course, but this creates another problem. Research in Europe where canals (as opposed to locking rivers) are common indicates severe bank erosion problems resulting from

light (empty) tows traveling a maximum speeds. This research suggests that under the heavy -- virtually saturated -- traffic conditions hypothesized by the Corps immediately upon completion of the TTW canal, protection along most of its length will be required in order to prevent the washing away (and the subsequent need for removal by dredging) of the banks. This will be an expensive proposition.

The straightening of the navigation channel which occurred in 1975 and reduced the distance from Demopolis to Mobile from 253 to 232 miles added additional man-made restricted channel to the waterway. I would like to point out, too, that even with all of the straightening, the bends widths on the TTW do not meet current Corps criteria and thus impose restrictions on tow travel.

Another serious impediment on the TTW is the large number of locks. Locking time and delays at locks constitute an important part of the total travel time -- and the cost -- on the TTW. In the 215 mile journey from the northern terminus of the TTW to the Ohio River, tows encounter only two locks and travel for most of the distance in the wide and deep Kentucky Lake as well. By contrast, on the 232 mile TTW, 10 locks are encountered. Kearney and the Corps minimize the impact of the large number of locks by blandly (and erroneously) assuming that all tows using TTW are sized to maximize lock throughput.

This and other unreasonable assumptions concerning

operating conditions on the TTW resulted in very low expected rates and therefore high savings. Furthermore, the Corps did not account for the very severe operating constraints imposed by the BWT below Demopolis. Since this issue is addressed by Dr. Haveman in his testimony, I will only say that my analysis of bend restrictions, lock capacity and other impediments to navigation such as those imposed by high water and swift currents in the winter time indicate tha the existing waterway below Demopolis simply cannot accommodate its own traffic as well as that forecast for the TTW. Since I am equally certain that the actual TTW traffic will be only a fraction of that forecast and upon which economic feasibility depends, it seems likely to me that the constraints below Demopolis will be used as an excuse for the failure of the TTW traffic to develop. Following will be intense pressure upon this Committtee to support the removal of those constraints by investing an estimated $1 billion below Demopolis.

The Mississippi River Alternative

Without the Mississippi River, the TTW might make sense. But given this attractive alternative, the TTW is bound to fail by any reasonable standard of success. Certainly the navigation benefits claimed for it are dramatically overstated.

The Corps failed to attribute to the Mississippi River all of the advantages it possess over the TTW. For

example, tow sizes and speeds assumed for the Mississippi are not as large or fast, respectively, as might reasonably be assumed for, say, the large volume coal movements claimed for the TTW. Further, no consideration is given to the fact that conditions on the Mississippi (and other rivers) regularly permit barges to be loaded to greater drafts than will be possible on the TTW. Of course no locks are found on the river below Cairo, and channel conditions permit the use of very large towboats wilh sufficient horsepower to move at relatively high speeds even upstream. Incidentally, those few individuals who continue to maintain that the TTW offers a "slack water" alternative for the upstream movement of Mississippi River equipment simply don't understand the situation. This would never happen except under exceedingly rare circumstances.

As a result of the failure of the Corps to account adequately for the operating constraints on the TTW and the advantages of large tow operations on the lower Mississippi, the rates that were constructed for the former tend to be too low, ano for the latter too high. But even the Kearney rate estimates for large volume movements of dry bulk commodities such as grain and coal indicate that such commodities can move more cheaply between Ohio and upper Mississippi RIver points and New Orleans than between the same points and Mobile. Indeed, West Kentucky coal originating at the Grand River coal terminal at mile 25 on the

Tennessee River can move more cheaply to New Orleans than to Mobile according to rates developed using the Kearney rate model! If more realistic operating conditions for both the Mississippi and TTW routing were incorporated into the model, I am convinced that large volume moves of export coal originating anywhere along the Tennessee River could be transported more cheaply via the existing river systems to port facilites along the lower Mississippi River than to Mobile via the TTW. If the navigation channel from Baton Rouge to the Gulf of Mexico is deepened to 55 feet as the New Orleans District is reportedly going to recommend, then the lower Mississippi gateway for coal exports would be enhanced even more.

Incidentally, this Committee ought to be concerned with the possibility that the same traffic used to justify the Tennessee-Tombigbee will be used in developing the navigation benefits for additional improvements on the lower Mississippi such as the channel deepening mentioned above. It would be a pity if the non-existent coal movements described above were used twice.

Included with my testimony is a paper prepared by me and an associate three years ago in which alternative assumptions concerning operating conditions on the TTW and Mississippi River are examined. The purpose of our study was to see how sensitive the project benefits and B/C ratio were to various sets of assumptions. We concluded that even with the absurdly low 3 1/4% discount rate and the Kearney

traffic base and projections, the project would return at best only 60 to 70 cents in benefits for every dollar expended. Since that time I have received additional data and done more analysis. Now I conclude that the actual benefits resulting from the project will be considerably less. I would be surprised if the navigation benefits actually resulting if the project is completed will exceed 10-20% of those currently claimed.

TESTIMONY OF

Carol Pfrommer
Department of Economics
University of Alabama in Birmingham

Southern Regional Development and the
Tennessee - Tombigbee Waterway

The proposed Tennessee - Tombigbee waterway is part of a water transportation route extending from the interior of the United Stated to the Gulf of Mexico. The waterway, as currently defined, is a 232 mile series of lakes, locks, and dams through which the U. S. Army Corps of Engineers plans to link the Tennessee River with the Tombigbee at Demopolis, in west Alabama. South of Demopolis, the Tombigbee follows a convolute path to Mobile and the Gulf. Present plans for the waterway include a 40 mile divide cut to connect the two rivers in northeastern Mississippi, a 44 mile canal paralleling the Tombigbee to the South, and a 148 mile improved river section terminating in Demopolis.

The waterway was authorized by the U. S. Congress in 1946. When initial construction funds were appropriated in 1971, project costs were estimated to be $323 million. Five years later the estimate had risen to $1.6 billion, almost five times the original figure. During the same period, the forecast of average annual benefits expected to accrue per dollar invested in the project fell from $1.60 to $1.08, even when discounted at the 3¼ percent rate used by the Corps.[1] Project costs have continued to mount and in 1979 were estimated to be $1.8 billion. (These figures do not include the additional expense of the as yet unauthorized work needed on the lower Tombigbee, below Demopolis.)

Originally proposed and justified as a navigation aid, the project has been transformed by its proponents into a regional development strategy. Hailing the waterway as an economic turning point for the southeast, the Tennessee - Tombigbee Waterway Development Authority, a five state agency sponsoring the project, compares it to the Tennessee Valley Authority experiment (although it will neither generate electrical power nor provide for flood control) and estimates that it will create 86,000 jobs in Alabama and Mississippi alone. In 1976, a project study done for the Appalachian Regional Commission forecast that the waterway would generate up to

200,000 new jobs in its primary impact area (parts of Alabama, Kentucky, Mississippi, and Tennessee) by the year 2000, and add $3 billion to regional incomes.[2] It is true that the waterway will traverse a poor part of the country, one that needs assistance if it is to provide good jobs and decent incomes to its inhabitants. But there are no economic panaceas. A public facility does not create growth; at best, it permits development or removes some impediments to it. The waterway does not address the traditional deterrents to growth in the area--a poorly educated labor force with few skills and low productivity, an underdeveloped business sector severely hampered by an inadequate highway system, and a dispersed rural population. Although in the parts of Alabama and Mississippi expected to benefit most from the waterway one of every four men between the ages of 20 and 49 years has at most an eighth grade education, the project contains no funds for adult basic education. Although the entire Mississippi primary impact area lies outside the interstate highway system, and although many of the region's inhabitants do not have transportation to job sites (where jobs exist), waterway plans do not include remedies for these problems. Although the area contains few large industrial sites with adequate supplies of utilities and package plants, these development needs are not reflected in project costs. While much local housing is dilapidated, no provision is made in project plans for increasing the housing stock and improving other community amenities to accomodate the large number of new employees expected to be attracted to the region by waterway proponents. Finally, while parts of the area are heavily black, and minorities share less than proportionately in development benefits, rigorous assurances that the economic condition of local blacks will improve are lacking.

But even were these constraints ignored, the impact of the waterway is much exaggerated, for at least three reasons. First, there is little evidence that

waterways induce a significant amount of economic development. Second, the number and type of firms attracted by waterways are limited. And third, industrial sectors using waterways that do not provide hydroelectric power, waste control facilities, or flood control do not usually employ large labor forces or attract related firms to the areas where they are located. Eact of these points is discussed briefly.

Although the delta counties bordering the lock-free Mississippi River, broader than any channelized waterway, remain among the poorest in the south, the notion that industrial locations are induced by the simple existence of a waterway endures. In fact, newly constructed waterways may be far less likely to attract industry to a region than to encourage the relocation of existing firms within the region. This appears to be true of the $1.2 billion McClellan-Kerr waterway in Arkansas and Oklahoma. According to the Bureau of Business and Economic Research at the University of Arkansas, there is little evidence of substantial industrial development in the area that can be attributed to the waterway:

> Three score (60) or more new--or relatively new-- facilities have been constructed in and around the port areas; but the point to be emphasized here is that these new developments are mostly changes in the location of existing plants, they are relatively small by most standards, and very few of the new plants are really water transportation oriented.[3]

In general, the availability of waterway-generated hydroelectric power and waste disposal facilities do appear to affect the manufacturing firm's choice of location among major geographic areas such as the southwest, the Mississippi valley, or the gulf coast. But navigation itself is important only in the within-region location decision. As in the case of the McClellan-Kerr project, the redistribution of firms already in the area seems more certain than the attraction of new or expanding ones into it.[4] For the waterway to induce net increases in regional employment it must provide transportation cost savings sufficient to increase production.

This is possible only if the waterway permits the exploitation of new resources, causes a change in the commodities produced (waterways provide greater transportation savings for some products than for others), or encourages the penetration of new markets. But each of these potential impacts is bounded by the second point, the types of firms attracted to waterways.

A limited number of industries is sensitive to the availability of water. They are basically of two types: industrially water-intensive ones--those that use water in the production process rather than for transportation--such as steel and paper; and those to which cheap water transportation is important, including coal and other primary products. Firms in neither type of industry are likely to locate along a waterway solely on the basis of low-cost industrial water supplies or cheap transportation. Labor costs, market advantages, and access to raw materials are important determinants of the optimal plant location, particularly among water intensive industries. Firms in these sectors are frequently large, requiring highly skilled labor forces. They most often settle in or near major urban agglomerations. The high paying metals and chemical firms that have located in northern Alabama have done so not only because of the Tennessee River, but because the area is densely settled and because a large, skilled pool of labor lies within easy commuting distance. Current population densities along the route of the Tennessee - Tombigbee waterway are not sufficient to attract these firms, while area skill levels are below those they require. In addition, water costs make up a small and declining portion of these firms' production outlays; improved water recycling techniques have made them less dependent on large supplies of water and freer to locate in water scarce regions.[5]

Industries considered to be water transportation sensitive are few. One waterway impact analysis concludes that "water transportation appears to rank low on the list among other location factors considered to be critical. Even where it is ranked as critical within a commodity group, the percentage of all firms that

share that same ranking tend to be small."[6] The statement is based on the results of a 1971 sample of 2,616 firms conducted by the Public Works and Economic Development Administration. The aim of the survey was to determine major locational preferences for new or expanding facilities. Of the firms surveyed, 200 considered water transporation to be critical or significant in the choice of plant location. Interestingly enough, however, even among these water transportation sensitive firms, transportation efficiency was outranked as a critical location factor by access to distributors, customers, and markets, while the proportion of the 200 firms that considered water transporation a critical location factor was exceeded by those that considered rail service, highway access, and natural gas availability critical. Once again, it appears that water transportation becomes a primary locational factor only within a region, while even water oriented firms attempt to minimize transportation costs across more than one mode. Barge traffic is most competitive for products whose origins and destinations are on the waterway. If they are not, then transshipment costs--outlays to load the product on a truck or railcar and then unload it at the dock--may negate the barge haul rate advantages. The Corps itself notes that

> Where overland transportation modes are required to complete a total movement... the high cost of transshipment rapidly reduces the competitive low line-haul cost and high capacity of barge operations.[7]

Third, industrial sectors attracted by waterways are not among those with high income and employment generating potential. Perhaps most important as an indicator of the waterway's inability to encourage rapid economic advances in its primary impact area is the commodity group considered most sensitive to water transportation costs. Efficient use of waterways is limited to bulky goods with low value to weight ratios whose shipping times are not important. The Corps of Engineers estimates that about three quarters of all commodities expected to move on the waterway

are coal (accounting for 65 percent of downstream traffic), ores, forest products, and clay, concrete, and stone.[8] These are primary products, typically shipped from the point of production to the final purchaser. Unlike manufactured goods, they do not go through a series of intermediate working up stages between the mine, forest, or pit and the point of final sale. Thus, they do not attract new firms involved in the production process to the area where they are produced or sold, or to intermediate points along their transportation routes. This limits the number of new jobs that are likely to be attributable to the waterway. But even increased output in these sectors is not associated with proportional increases in regional employment and income. Coal production, for example, is increasingly relatively capital intensive and less labor using. Surface mines require more machines and less men to produce a given output than do underground mines, and the former represent a growing share of all coal production. Additionally, because mine equipment is often not manufactured in the same place that coal is found, coal revenues "leak" out of the local economy to manufacturing centers; dollars earned in the mining sector are thus less likely to be spent and respent within the community, generating revenues for local businesses, than are dollars earned from employment in manufacturing.[9] Benefits that accrue to capital using sectors in a labor surplus region and to activities insulated from the local economy may have little impact on the levels of area employment and income (although they may lead to a less equitable distribution of income).

It is the industries that do have a series of intermediate production stages that generate the sort of growth the waterway proponents forecast. The metals and metal fabricating firms, chemical plants, and rubber producers all purchase a large number of inputs from other manufacturers and sell most of their output, as well, to other industries rather than directly to consumers. Such high linkage sectors

encourage firms producing related products to locate near their own plants. (A linkage is an activity that attracts another firm because it provides a market, or demand, for the firm's product or because it produces commodities, or supplies, that the firm uses in its own production process. An example of the former is the tin can manufacturer who locates near a food processor. An example of the latter is the metal fabricating plant that locates near a steel finishing facility.) High linkage manufacturing industries encourage the development of clusters, or agglomerations, of firms. They provide far greater employment opportunities than does the production (and transportation) of coal, timber, gravel and other primary products. But these modern industrial sectors, with their high linkages and numerous working up stages, need easier access to inputs and markets, both inter-industrial and consumer, than do firms in technologically less demanding areas. Their distribution centers are located where access to retailers is easy. They are not likely to use slow water transportation to import machine parts to an assembly point or to use canal traffic to ship the assembled machines to market. These firms are not dependent on bulky primary products; they are not tied to an area because they need coal, or water power, or other natural resources. The more advanced the firm, the more footloose, or locationally flexible, it is. Its location decision is based far less upon access to raw materials than upon the size and skills of the local labor force, the adequacy of all means of communication and transportation, and even such community amenities as schools, recreational facilities, and an adequate stock of housing for its workers. The waterway provides no real advantage to these rapidly growing, high linkage, high technology firms. It is unrealistic, and even deceptive, to state that industrial agglomerations can and will be promoted by such a project.

The waterway will, of course, create some jobs and generate a increase in regional income (although the extremely large disparities among forecasts of waterway generated employment and income in themselves are enough to indicate that dramatic changes in area well-being due to the project are not certain. Of two studies commissioned by the Appalachian Regional Commission, one projects employment

gains of 20,000 jobs and income increases of a half billion dollars as a result of the waterway; the other estimates that over 200,000 jobs will be created and that regional income will rise by three billion dollars.) However, the appropriate question is not, "Will the waterway create jobs," but rather, "How many more jobs might be created through alternative investments?" The cost of chosing one development strategy over another is not only financial; the opportunity cost of the choice must be considered. Opportunity cost is the value of goods foregone, of development not achieved, of jobs not created because one strategy is chosen over another. Assume, for example, that a sum of money is available to promote employment. The money may be spent in two ways. If twenty jobs can be created by expending the funds in one way, and twenty-five jobs can be created by the expenditure of the same amount of money in a second way, then the opportunity cost of choosing the first strategy is the additional five jobs not created. While the ability of the waterway to generate jobs and income has been analyzed, it has not been compared with the potential of other development strategies. Most waterway impact studies admit that manpower and education programs, improved highway access and internal transportation systems, aggressive industrial recruitment programs, better community facilities, planning and technical assistance by governments and other authorities such as the Appalachian Regional Commission, and multistate and multicounty approaches to shared problems are necessary for the project to effect real change. But how much more development the waterway can induce if these needs are met, and how much it will provide if they are not, is the real test of the project's worth. This is very different from assuming, as too many forecasts do, that the waterway and these additional programs will induce growth. If the nation has enough faith in the future of the southeast to invest several billion dollars in it, then the nation also has the right to be assured that these funds will be spent wisely.

Despite claims that the waterway can stimulate regionwide prosperity, all parts of its impact area are not equally likely to grow, at least not all at once.

Funds invested in a place teetering on the brink of an economic take-off are more certain to spur self-sustaining growth than the same amount of money spent in a less developed area. Still, any good regional development strategy must identify the different needs of the richer and the less developed communities it contains, and set realistic goals for each. For example, while cost efficiency might direct capital investments to already developing industrial areas, such as northeastern Mississippi, poorer places can be provided with a foundation for future growth by assuring residents training in skills most in demand in growing places and transportation to jobs in their plants. The following pages are devoted to a summary of some alternative growth and development strategies applicable to the region. Many have been effected in southern states enjoying or verging on healthy growth. Others have been implemented or tested on a broader national scale. Again, while these are proposed as alternatives to the waterway, it should be remembered that the most optimistic forecasts of that project's impact assume, often explicitly, similar undertakings. The suggested programs are reviewed under two headings: assistance to people, and assistance to industry and places. Because programs to upgrade the labor force usually do not have the high start-up costs that capital investments entail, and because they can be effected more quickly (the lag between the decision to invest in a plant and the actual start of construction can be a long one), human resources programs are discussed first. Among those considered are adult basic education, vocational skills training and retraining, improved transportation to work and study places within the region, and assistance in rationalizing internal migration patterns.

Assistance to People

First, adult basic education programs are badly needed. The low educational achievement of the area's prime age male labor force implies that many cannot read

and figure well enough to qualify for any but the most menial jobs. Manufacturers considering a location in a developing area are often more concerned with the ability of new employees to read, write, and cipher reasonably well than with the availability of specialized skills.[11] General knowledge is transferrable knowledge; it broadens the worker's range of job choices (industrially and geographically) while it permits flexible work assignments to the employer. Better schooled workers are better able to read instructions and use measuring devices; they are also more likely to understand the requirements common to all manufacturing jobs--promptness and regular attendance at the work place. These are particularly desirable labor force characteristics in areas changing from agricultural to industrial economies.

Second, a comprehensive area manpower training plan must be instituted to complement basic education improvements. Too often, area vocational programs emphasize instruction in declining or low income fields such as agriculture and home economics while mechanical skills in demand in growing sectors are not taught or are taught on a less than industrial scale. In 1978, it was reported that

> On the Tennessee - Tombigbee a critical shortage of skilled workers is evident....The prevailing view among the Corps of Engineers, the contractors, the Minority Peoples Council, Recruitment and Training Program, and the unions, is that there is simply not enough skilled labor within the impacted area to meet the demands of the Waterway for either black or white workers.[12]

The labor shortage referred to is for the construction phase; the scarcity of skill training programs for permanent post-waterway construction jobs is not critical--it is almost total. There is, in fact, no comprehensive program to recruit and train area workers in skills currently in demand or in those likely to become important to future growth, with or without the waterway. Not only

are middle and long range labor needs undefined, but there is little coordination of educational effort among state, industrial, and union representatives to alleviate immediate and obvious skill shortages. Trade unions object to maintaining training programs in an area as openly hostile to organized labor as northeastern Mississippi while open shop contractors are similarly disinclined to cooperate with the unions.[13]

And yet, the area is not without some of the resources necessary to a sound training program. Existing institutions can be used to meet most program needs, avoiding the high start-up costs of most capital investment projects. The Alabama and Mississippi primary impact area contains seventeen two-year colleges and fourteen four-year colleges. These facilities, as well as area vocational schools and high schools can be used evenings and weekends to provide local residents with basic and specialized skills. The only capital investment required would be adequate vocational instruction equipment.

Then, the experience of a neighboring state, Georgia, can be reviewed for applicability to the area. The state maintains a network of twenty-five area vocational-technical schools located within commuting distance of over 90 percent of its population. Courses taught are geared to current industrial demands. Training coordinators at each school may set up courses in specific fields at the request of firms in their area or firms interested in locating there. Because of this and other programs, the state Department of Industry and Trade is able to attract out of state firms that boost the earnings of state workers, rather than those that would suppress tendencies for them to rise. Georgia actively recruits and continues to attract electronics plants, chemical firms, and metal working industries that pay high wages and upgrade worker skills. In addition, the state encourages these firms to locate in nonmetropolitan areas, where employment needs are greatest.

Third, an improved local highway system is needed. Within-region access is closely related to the efficacy of manpower training programs and the ability of trainees to stay on the job after training. In the case of the waterway, a 1973 program to train carpenters for the project was less effective than it might have been because

> None of the individuals (trainees) owned a car. After the training program, jobs were available but individuals could not get to the job for lack of transportation.[14]

Commuting to work problems are not limited to rural areas, of course. Nonetheless, the greater distances and more dispersed populations involved sharpen rural transportation problems. Inability to commute easily lessens access to training programs and other services while it narrows the local labor market, reducing the supply of workers available to the large employer.

Again, solution to the problem need not involve heavy capital expenditures. In 1974, South Carolina tested an innovative transportation system in ten rural development districts. Sixty-two vehicles, a third of them bought second hand, were used to provide transportation to rural residents enrolled in manpower training programs. While the pilot project was aimed at lessening trainee absenteeism, it was flexible enough to provide transportation services to rural persons not enrolled in these programs as well. By 1975, the federally funded project's fleet of passenger vans was carrying 462 manpower enrollees to school each day, as well as an additional 108 other passengers.[15] This sort of program seems particularly well suited to the waterway impact area. Because some parts of the region, such as Lee county, have tight labor markets while nearby places provide only limited job opportunities, a rural transportation system such as that being tested in South Carolina would provide job seekers with access to work within reasonable commuting times.

Fourth, more aggressive programs to match the unemployed with jobs in nearby places must be established. The disadvantaged, in particular, often lack information about job openings. They are sometimes unfamiliar with public employment services, or even hostile to them, for these have been accused in the past of "creaming," or concentrating their job finding efforts on behalf of the best qualified. One innovative rural job finding program, begun in 1971, shared offices with the agricultural extension service, a familiar agency to most rural households. The additional cost of providing employment information through a recognized local agency was found to be less than that of establishing new offices and new agencies.[16] Other community outreach programs can work with the employment services; state job bank information can be given wider dissemination; and public service announcements on local radio and television stations can be used to match current job openings with available workers.

Finally, a modest relocation effort should be considered in areas where, despite education and skill training programs, commuter facilities, and job information centers, a willing worker is unlikely to find continuing full-time employment at decent wages. An informal information network to help persons interested in short moves within the area find jobs can be supplemented with programs to assist movers in finding housing, schools, adult night classes, and other community facilities in the new location.

Assistance to Industry and Places

Any rational industrial development strategy must determine the type of industry that would most benefit the area and the assets the region has to offer firms in those sectors. In the first case, economic growth may require a change in the community's economic base. Employment in poor areas is often concentrated in natural resource based sectors: coal mining in central Appalachia; subsistence

agriculture in much of the primary impact area. These are poor bases for sustained growth. No matter how plentiful the resource, it will eventually be depleted. Perhaps more important, because extractive industries export the product to other areas for processing, few local linkages to other sectors are developed to maintain growth once the resource is exhausted. Because growth in the trade and service sectors usually follows population growth, most rural development strategies concentrate on attracting small to medium size manufacturing enterprises that are relatively labor intensive and that do not require highly specialized skills.[17] In the second case, while the community may have no control over certain locational factors, such as proximity to major markets or important raw materials sources, other regional characteristics can be modified to make the area more attractive to firms.[18] Those reviewed in this section are business facilities and community attitude. It should be noted that many of the proposals suggested in this chapter require individual, local, and regional action. While development strategies are increasingly held to be within the federal sphere, federal assistance stimulates and complements community efforts; it does not take their place. Too often, regional development projects benefiting the few are presented as panaceas for local economic ills because the wider community has ceded up responsibility to a narrowly based hierarchy.

To determine what might make the area more attractive to business, a first step would be to ask business what it wants. Plant managers in recently located firms should be asked what made them chose the area, what would make it more attractive and what are major drawbacks to expansion. They should be asked whether firms to which they sell, and the firms from which they buy, would be interested in expanding into the area. These linkages with other sectors should be studied, and emphasis placed on attracting firms with ties to those already in the area.

Diversification from an already established economic base, no matter how small, is more likely to occur, and to occur quickly, than that based on the attraction of firms unrelated to existing facilities. Locally desired linkages can provide important guidance to agencies charged with area development.

Second, complete information on the characteristics of industrial sites must be made immediately available to interested firms. This should include topographic maps of each site, including its location in relation to the floodplain if the site is near the river; shape; current zoning information; ownership; access to paved feeder roads, highways, and rail spurs; industrial water supplies; natural gas lines; package plants; and the location and type of nearby plants.

Third, areas sufficiently large for industrial parks must be reserved for future development before they are fragmented among uncoordinated uses. If a well-located site is large enough that its development would afford a significant increase in local employment, then capital subsidies in the form of improved facilities might prove profitable community investments. For example, gas or water lines might be enlarged, rail spurs extended, or package plants constructed. Large firms might find these costs small relative to the total expense of establishing a plant, but the expense would be beyond the means of small firms with limited assets.

Fourth, intraregional cooperation should be encouraged. In the sparsely settled waterway impact area, few communities are large enough to attract big plants. But small places without their own facilities can benefit by cooperating with larger towns rather than competing with them for a limited number of potential settlers. Business prospects can be shown several regional sites, increasing the likelihood of winning the plant. The host community as well as those within

commuting distance benefit.[19] In fact, the larger commuting fields and labor markets required to support major enterprises are important externalities of regional cooperation.

A waterway does not enlarge the pool of labor available to interested firms. Neither does it provide the access to local markets important to smaller firms, enterprises far more likely than major concerns to distribute to nearby places. But the latter are also at a marketing disadvantage. The impact area lies within a rough parallelogram whose apexes are Jackson, Memphis, Nashville, and Birmingham. No major highway connects the two growing Jackson and Nashville SMSA's; Memphis and Birmingham, slower growing but large potential markets, are not connected by a limited access highway. Thus, small and large firms suffer from the region's poor highways. A good internal road system must be a far more important locational feature to the small firm than the waterway while, except for exporters of coal and similar bulky products, large producers would benefit more from access to major metropolitan markets than to the port of Mobile. Both roads within the region and those tying the area to broader markets need to be improved.

Then, there is a sense in which community amenities must be considered business facilities. Because firms are increasingly footloose, the quality of local schools, recreation, and housing becomes an important location criterion. At present, the proportion of houses in West Alabama and Alabama - Tombigbee without plumbing ranges from 30 percent to over 50 percent. An even greater share must be considered inadequate. Poor housing, particularly in the middle price range, makes it difficult for firms to attract managerial and professional workers to less developed areas. New businesses will increase the demand for middle and lower income housing.

Finally, to say that communities must want growth before growth can occur may seem a statement of the obvious. But perhaps no factor is more sorely needed in poor areas than aggressive local leadership. In the years this writer has been analyzing depressed places she has found community leaders too often to consist of reactionary landholders, businessmen suspicious of newcomers, monopoly bankers unwilling to take even modest risks, and industrial powers so fearful of the impact of new firms on local wages, and of the unions they sometimes bring with them, that bids for new plants are sometimes refused.[20] Because community attitudes are not easy to measure, their effect on area growth is frequently ignored, or mentioned only in passing, by planners. But they are important to firms.

There is a "business grapevine;" complacent attitudes and satisfaction with the status quo are not only powerful disincentives to firms seeking a plant site--they make other disadvantages of an area loom larger. Certainly, some depressed areas are committed to industrial development. Some are represented by dynamic civic leaders. The Tupelo Community Development Foundation has played a pivotal role in attracting jobs to that small city, almost isolated by poor transportation facilities. But too many other communities are not willing to accept the changes growth demands. Yet no other issue may be more important. It is more difficult to change a society's mentality than to provide it with a sewerage treatment plant. But the cost-conscious, hard-headed businessmen waterway proponents hope to attract to the area weigh more than dollars in their balances. The pervasiveness of overly conservative and complacent leadership in lagging parts of the sunbelt indicates that retraining may be needed elsewhere than on the assembly line. Requiring state and local development office plans to be made public, particularly when coupled with the requirement that persons charged with development either be elected or be responsible to an elected official, can promote more

progressive attitudes. At the least, it can give local persons a voice in the definition the community gives to development.

In summary, a feasible development plan must be based on a realistic appraisal of the growth potential of what has been designated as the waterway's primary impact area. Some parts of the region can benefit from capital incentives and public facilities. Others lack the sizeable and skilled labor force and the market potential to profit from a very large project at present. In these places, attempts must be made to attract relatively labor intensive industries while the employability of the work force is upgraded.

The projects proposed here cannot and should not be effected everywhere in the region at once. Different parts of the area have different needs. Some programs, such as adult basic education, can be effected quickly and cheaply. Others, such as intraregional access roads, are long term projects. But in every case, the standard against which each development alternative, including the waterway, must be judged is, "How does this action affect the employability and the well-being of the people of this area?"

Notes

1. "Tennessee - Tombigbee Waterway, Supplement to the Project Design Memorandum, Restudy of Project Costs and Benefits: Economic Reanalysis Summary," Mobile District Corps of Engineers, 1976, p. II - 6. (Mimeographed.)

2. Potential Development Opportunities of the Tennessee - Tombigbee Waterway (Washington, D.C.: Hammer, Siler, George Associates, 1976), pp. a, b.

3. Charles W. Howe, "The Effects of Water Resource Development on Economic Growth: The Conditions for Success," Natural Resources Journal, October, 1976, 16 (4), p. 949, citing L. Belzung and M. Sonstegaard, Regional Response Through Port Development: An Economic Case Study on the McClellan-Kerr Arkansas River Project--A Report to the U.S. Army Corps of Engineers by the Bureau of Business and Economic Research, University of Arkansas (january, 1973), p. 38.

4. Ibid, p. 941.

5. Charles W. Howe, "Water Resources and Regional Economic Growth in the United States, 1950-1960," Southern Economic Journal, April, 1968, p. 478.

6. Supplemental Baseline Projections and Impact Analysis for the Tennessee-Tombigbee Waterway Project (Chevy Chase, Md.: Jack Faucett Associates, Inc., 1977), p. 67.

7. "Supplement to the Project Design Memorandum," op. cit., p. I - 10.

8. Ibid., p. 29.

9. F.K. Schmidt-Bleek and J.R. Moore, "Statement on Benefit/Cost Evaluation of Strip Mining in Appalachia," Appalachian Resources Project, The University of Tennessee, Knoxville, 1973, pp. 8 - 9. (mimeograph.)

10. See the Hammer, Siler, George and Faucett studies cited above.

11. Carol Pfrommer, "Employer Assessment of Assisted Labor Mobility: A Study of the STAR Project" (Austin, Texas: Center for Economic Development, The University of Texas, 1973), p. 39. (Mimeographed.)

12. Curtis Toews, Kenneth Johnson, Kathryn Baker, Thomas Till, Walter Davis, and John Cornman, Rural Jobs From Rural Public Works: A Rural Employment Outreach Experimental and Demonstration Project, Phase Two (Washington, D.C.: National Rural Center, Inc., 1978), p. 40.

13. Ibid., pp. 48 - 49.

14. Toews, et al, op. cit., p. 44.

15. Ibid., pp. 150 - 156.

16. John H. Cumberland, Regional Development Experiences and Prospects in the United States of America (The Hague: Mouton, 1971), p. 84.

17. Edgar M. Hoover, The Location of Economic Activity (New York: McGraw-Hill Book Co., Inc., 1963), p. 247.

18. Tweeten and Brinkman, op. cit., p. 248.

19. Tweeten and Brinkman, op, cit., pp. 251 - 52.

20. Douglas Sease, "Yankee Go Home?" Wall Street Journal, Feb. 10, 1978: and Carol Pfrommer, "Alternative Growth Strategies for Eastern Kentucky" (Austin, Texas: unpublished Ph.D. dissertation, The University of Texas, 1975), pp. 151 - 54.

TESTIMONY OF

DAVID DYAR MASSEY

BEFORE THE WATER RESOURCES SUB-COMMITTEE

OF THE SENATE COMMITTEE ON ENVIRONMENT & PUBLIC WORKS

JULY 25, 1980

My name is David Dyar Massey, and I live in Knoxville, Tennessee. I am employed as business manager of a community newspaper. As a journalist I have worked as a reporter for the prize-winning Mountain Eagle in the East Kentucky coalfields and as an occasional stringer for a number of other publications, including Coal Week and Chemical Week, both published by McGraw-Hill. Over the last two years I have participated in an exhaustive research project on the socio-economic impacts of the Tennessee-Tombigbee Waterway. The research project was funded by the Center for Community Change in Washington, D.C. CCC recognized that except for isolated newspaper and magazine articles, no in-depth, independent investigation had been conducted into the controversies embroiling this largest water project in the nation's history. Today I wish to direct my comments to just one aspect of the Tenn-Tom which I investigated -- the prospective movements of coal over the waterway.

In 1974, in response to a dramatic $500 million increase in the cost of the Tenn-Tom, the Mobile District commissioned the

Chicago-based Kearney Management Consultants to conduct a new study of the canal's navigation benefits. In early 1976 the Kearney firm issued its "Evaluation of the Transportation Economics of the TTW," which produced some startling figures. Whereas the Corps' previous economic study had indicated that the bulk of Tenn-Tom commerce would be upbound chemicals, Kearney estimated that the major movement will be downbound coal. This change in direction and commodity turned out to be crucial for the survival of the waterway.

Kearney estimated that 28 million tons of commerce would move over the Tenn-Tom during its first year of operation, which at that time was 1986. Sixty-five percent of the total commodity flow -- 18.4 million tons -- would be down-bound coal orginating in western Kentucky, southern Illinois, northern Alabama, and East Tennessee. Kearney's coal traffic estimate was the single most important factor that kept the Tenn-Tom's benefit-cost ratio above unity.

More than half of the coal tonnage -- 9.9 million tons -- would originate in northern Alabama and southeastern Tennessee, Kearney claimed, and would find its way to the export (presumably metallurgical) market through McDuffie Island Terminal at Mobile. Kearney said some 7.2 million tons of coal would orginate in the Chattanooga area -- northwestern Georgia, northeastern Alabama, and southeastern Tennessee. Most of my interviews were conducted with coal operators, sales agents, and other industry observers about the potential for 7.2 million tons of coal originating in the Chattanooga BEA economic area and moving over the Tenn-Tom. The majority of them indicated rather

strongly that Kearney had over-estimated the coal production potential for this area. Few coal industry executives share Kearney's opinion about the ability of the Tenn-Tom to induce new coal production. Says a former vice president of Consolidation Coal Company:

> The Tennessee - Tombigbee Waterway will not stimulate as much new coal production, in my opinion, in East Tennessee and Alabama as envisioned by the Army Corps of Engineers... perhaps this particular waterway will repay its costs in the long run but not by Alabama-Tennessee Coal.

The Corps is "pipe dreaming" if it anticipates 7 million tons of coal moving on the TTW out of southern Tennessee's Sequatchie and Walden's Ridge areas, according to Bill Allison, president of Tennessee Consolidated, a subsidiary of A.T. Massey Coal Co. (no relation to me) and one of the largest export metallurgical coal producers in the southern mountains.

Pete Serodino, the largest marine contractor on the Tennessee River, says the Kearney figures "would mean every ton of coal produced in this area would have to go to Mobile, and I just don't see that happening." Serodino builds barge terminals, barges, and tugboats. He says that the 3.5 million tons of coal Kearney estimated would originate in the Graysville, Tenn., area is "entirely out of reason" and declares there is "no hope" for the three million tons the firm said would be barged from Chattanooga.

Allison, Serodino, and the other coal industry experts pointed out that whatever potential the waterway might hold for

stimulating new coal production can easily be offset by a number of factors: the relative strength or weakness of the export market, extraction problems, lack of adequate preparation plants and terminal loading facilities, and the quantum leap in production that would be required for Kearney's predictions to come true.

PRODUCTION REQUIREMENTS

In 1977, the entire state of Tennessee produced just over 10 million tons of coal, most of it in the northeast. Southern Tennessee (primarily one firm, Tennessee Consolidated) produced just over one million tons of export coal. Two other companies produced another half million tons of export coal in NW Georgia, NE Alabama, and SE Tennessee. Kearney's 7.2-million-ton scenario, then, would require a 500 percent increase in export coal production from the Chattanooga BEA area in the span of seven years. Dale Studer, president of the Sequatchie Valley Coal Corp., which produced 300,000 tons of steam coal in southern Tennessee in 1977, observes:

> Seven million tons of coal seems to me to be a considerable amount of coal to be coming out of the southern Cumberlands. I doubt very much there could be that mush coal produced by 1986. There certainly would have to be a doubling or tripling of coal production in the state, because not all of it is going down that canal.

Yet Tennessee's annual production of coal will actually decline from 10.3 million tons in 1977 to 10 million tons in 1986,

according to a study commissioned by the Mobile District in 1978. In its "Coal Resources Study for the TTW," the 3-R Corporation cited "the limited amount of minable reserves contained in Tennessee." (pp. 56-58)

Rudy Lane, president of Arrow Transportation, one of the largest commercial barge lines operating on the Tennessee River, says that the Corps' and Kearney's estimates for southern Tennessee "are not that fantastic. There are enough reservers in those fields to last practically indefinitely." This is true for southeastern Kentucky, but 3R's study for the Mobile District shows this is not the case for southern Tennessee.

The Bureau of Mines' (BOM) demonstrated reserve base (Jan. '76) in the 10 coal-bearing counties of southern Tennessee totals 257 million tons. In its resources study for the Corps, 3R "refined" BOM's estimates of "coal reserves" to calculate the "recoverable or minable reservers" that could potentially move on the Tenn-Tom. The 3R study shows that these same ten counties have 109 million tons of recoverable coal. If coal leaves southern Tennessee at the rate Kearney estimates, all of that region's current recoverable reserves would be depleted in 15 years or around the year 2,000 -- well before the end of the 50-year economic life of the canal.

EXTRACTION PROBLEMS

While a significant portion of the coal reserves in southern Tennessee are metallurgical quality coal, the seams themselves are thin, irregular, and hard to mine. The same is true in northern

67-591 O—80——17

Alabama. Bill Allison of Tennessee Consolidated says the coal beds in the Walden's Ridge area, which includes the Dayton and Graysville origin points listed by Kearney,

> have been drilled and re-drilled and are still being drilled to try to get a pattern to them, but there have never been economically large blocks of contiguous coal reserves that are economically minable. Now there is coal there, but if it is not economically minable coal it is going to stay there.

TERMINAL FACILITIES

TVA navigation department officials say that if all proposed barge terminals are approved and built, there will be adequate facilities to handle Tenn-Tom tonnage. TVA's and private operators' best estimates for flow-through capacity for all existing and proposed terminals from Harriman, TN., to Stevenson, Ala., fall short of 7.2 million tons, however. (This excludes two facilities which are running TVA steam coal at capacity.) Moreover, a proposed terminal facility at Bridgeport, Ala. received so much opposition that a permit was denied. Local opposition has been raised to other proposed terminal as well. These factors indicate that Kearney may be assuming too much when it says that "terminal and port facilities are assumed to be provided where justified by traffic volumes."

PREPARATION PLANTS

Currently there is only one coal preparation facility operating in southern Tennessee, and it is owned by Tennessee Consolidated.

Allison feels there are not enough continuous blocks of mineable coal in the region to justify economically the expense of facilities to handle seven million tons annually. The total through-put capacity for two proposed plants is less than one million tons.

Because of all of these, coal industry officials seriously doubt there will be a dramatic increase in coal production as a result of the Tennessee Tombigbee Waterway. While reserves not now anticipated might move over the waterway to destinations not yet certain (such as steam coal-fired power plants), such additional movements have not been subjected to a rate analysis. Therefore, speculation on the possibility of other coal movements to make up for the suggested deficiencies in the Kearney data does not assist us in determining the benefit-cost ratio of the waterway. Only a new economic study and transportation rate analysis could provide that information.

TESTIMONY OF

DR. THOMAS O. CLAFLIN

My name is Thomas O. Claflin. I reside in LaCrosse, Wisconsin. I am a professor of Biology at the University of Wisconsin and am Director of the River Studies Center of that institution, a position that I have held for 9 years. I am familiar with the ecological aspects of the TTWW project. My familiarity stems from reading the many documents related to the project and by site visitations to the Tombigbee River.

Throughout the development and early construction phases of the project, there have been numerous design changes that are presently the subject of litigation. Therefore, I will not discuss these with the committee. My reason for being here is to apprise the committee of the recreational, fish, and wildlife benefits that the Corps claims for the project, and to point out why these claims are greatly overstated.

The COE claims that the construction of a series of reservoirs on the Tombigbee River will provide vast recreational resources along the project length. In fact, the Corps' own data indicate that the reservoirs at the time of their formation, will be small shallow pools with navigation ditches through them. Significant portions of the reservoirs will not even be accessible by boat due to

shallow water. Given the stated sediment-trapping capabilities of the reservoirs (Corps of Engineers data), this problem will be severely compounded during the life of the project. One must remember, that the Corps plans to excavate 149 million cubic yards of earth, which is more than was excavated in the Panama Canal project.

For example, in seven of the ten proposed pools, from 43% to 65% of the entire pool will be four feet deep or less at the time of construction. To further compound the problem, if the Corps' traffic projection materialize, the continued resuspension of bottom sediments by passing towboats, and their redistribution, will further add to the loss of depth. In addition the drawdown and surge, the wakes generated by these large vessels will create unsafe conditions for small boat operation. This has been shown to be the case in larger waterways, even where these effects are partially damped out due to larger reservoirs.

In short, the picture that the Corps portrays concerning these reservoirs is misleading. Indeed, the shallow sediment-laden reservoirs will no doubt be transformed into inaccessible, vegetation-laden ponds with a navigation channel cut through the length of it. The structure and species composition of the sport and commercial fish communities will change due to the conversion to an impounded condition. There

is no basis whatsoever on which to make a claim that "enhancement" of the aquatic resource will occur. Mr. McLindon's reference to the creation of shallow water for species that are losing their habitat, or the creation of "nature scenes" with dredge spoil is shear and utter nonsense. We must learn from history that the construction of shallow impoundments results in the disruption of the riverine communities.

Waterlogging

The potential problems associated with waterlogging have been recognized by the U.S. Geological Survey and the Fish and Wildlife Service, but have been dismissed by the Corps as "localized and insignificant." The Corps (First Supplement Environmental Report, Vol. IV, Appendix A 1975) identified approximately 122,000 acres that would be subject to potential waterlogging. This was also recognized by the FWS in their October 1, 1979 report to the Corps concerning potential impacts on fish and wildlife. The vastness of this area that will be waterlogging was substantiated by the Corps in 1979, when they measured and identified in excess of 45,000 acres that would be affected by ground water level changes for the Gainsville pool alone. Gentlemen, this hardly seems "localized" and "insignificant." The FWS further recognizes the seriousness of this problem by stating "This process can severely alter the vegetation composition of an area over the life of the project."

It has been well-established that the types and distribution of terrestrial animals in any habitat are largely dependent upon the types of vegetation found there. Changes in these patterns due to waterlogging (tree mortality, etc.) spark a chain of events, most importantly changes in the total plant and animal community structure. This can hardly be considered "enhancement." On the contrary, were the forested wetlands to be altered due to waterlogging, (which they do doubt will) the loss of high-value deer, turkey and other woodland game habitat that support approximately 4,000 man-days of hunting in the East Fork area for example, should certainly be considered as a cost rather than a benefit.

Mitigation

The Fish and Wildlife Service in their October 1, 1979 report to the Corps clearly states their concern for the loss of fish and wildlife resources within the adjacent boundaries.

They calculated their compensation requirements with two alternative assumptions.

1. No management on divide section lands, and

2. Management on that land (19,530 acres currently under consideration by the Corps).

Given the assumption that these lands will be provided for habitat management, the compensation requirement is 961,388 acres (in-kind, habitat for habitat) or 699,177 acres

of forested wetland. If, on the other hand, intensive management programs are to be implemented on the acquired land, (and the cost of the management program is assumed by the TTWW project), the requirements are:

150,976 acres (in kind) or

118,809 acres (forested wetland).

The FWS estimated costs for such a management program are $38,612,900 for acquisition and $367,300 for the annual operation (based on 1979 conditions). This was the recommended plan of the FWS. That agency also recommended that specific deficiencies in information concerning other impacts (non-terrestrial) be satisfied and incorporated into the project planning process. It is anticipated that these studies would likely identify further project impacts that would require additional compensation.

This report was issued by the Jackson Area Office of the Fish and Wildlife Service in accordance with the provisions of the Fish and Wildlife Coordination Act to insure that adverse impacts upon fish and wildlife resources will be minimized by effective planning and careful project design. The Corps however rejected the idea that the report constituted a Coordination Act report since it was supportive of several of the legal challenges that they currently face.

Unfortunately, on July 2, 1980, the Atlantic Regional Office of the FWS overrode the interpretation of the Jackson Area Office defining the report as merely a "planning aid" report, stripping it of its FWCA mitigation report status.

It is unfortunate that finally after 10 years, the FWS area office, (who presumably is most familiar with the project) developed the courage to submit a mitigation requirement analysis only to be negated 10 months later.

At this rate, the mitigation report, an internal part of the planning process, will not be submitted prior to the completion of the project itself. The situation is clear; that the recreational and fish and wildlife benefits are grossly overstated, and that the losses which will accrue due to construction of the project are certainly understated. The Fish and Wildlife report of the Jackson Area Office should be adopted and finalized immediately.

TENNESSEE-TOMBIGBEE WATERWAY NAVIGATION PROJECT

ALABAMA AND MISSISSIPPI

Fish and Wildlife Coordination Act Substantiating Report

Submitted To Mobile District

U.S. Army, Corps of Engineers

Mobile, Alabama

Prepared By:

Field Office

Division of Ecological Services

Decatur, Alabama

Released From:

Jackson Area Office

Jackson, Mississippi

September 1979

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
200 EAST PASCAGOULA STREET, SUITE 300
JACKSON, MISSISSIPPI 39201

October 1, 1979

DRAFT

Colonel Robert H. Ryan
District Engineer
U.S. Army Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

Dear Colonel Ryan:

This letter and the accompanying Substantiating Report constitute the official report of the U. S. Fish and Wildlife Service relative to the potential impacts on fish and wildlife resources to result from the authorized and under construction Tennessee-Tombigbee Waterway (TTWW) project. The preparation and submittal of this report is in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). The intent of the Coordination Act is to insure that adverse impacts upon fish and wildlife resources are minimized. Effective planning and careful project design is the key to minimizing adverse impacts. Where adverse fish and wildlife impacts persist, in spite of efforts to avoid such impacts, the Act provides for the inclusion of special conservation features. Examples of conservation features include the storage and release of adequate downstream flows from reservoirs to maintain stream fisheries, the creation of marsh areas through careful spoil placement or construction of low dikes, and the establishment of fish hatcheries to insure adequate stocking of lakes and streams where natural spawning conditions are impaired. A frequently proposed conservation feature involves the acquisition of especially productive fish and wildlife areas for dedication to fish and wildlife conservation. Public access to and utilization of conservation lands and waters is basic to the conservation concept.

The attached report includes an analysis, using the Habitat Evaluation Procedures (HEP) developed by the U. S. Fish and Wildlife Service, of the terrestrial impacts attributed directly to the project. A traditional man-day and dollar value analysis of the terrestrial impacts has also been incorporated. Due to a lack of sufficient data, project impacts other than direct terrestrial impact expected from the TTWW project have been discussed only superficially and were not used in the calculation of compensation measures required for adverse fish and wildlife impacts to be minimized.

ii

The TTWW project was authorized by the River and Harbor Act of 1946, to provide a waterway connecting barge traffic from the Tennessee, Ohio, and Upper Mississippi Rivers to the tidewater port of Mobile, Alabama. Project boundaries extend from Pickwick Lake on the Tennessee River at a point near the Tennessee/Alabama/Mississippi state lines, generally southward to Demopolis, Alabama. From Demopolis south, barge traffic will be routed down the existing Black Warrior-Tombigbee Waterway (BWT) to Mobile Harbor, on the lower Tombigbee River. The specific project area is approximately 253 miles long and encompasses 104,935 acres. Structural measures associated with this project include ten lock and dam units of varying size, over 200 miles of channelization, and 45 miles of levee construction.

The fish and wildlife impacts thus far identified as being associated with the TTWW project will not be restricted to project boundaries. Impacts will be realized as far downstream as Mobile Bay. Briefly, these impacts will include:

(1) Significant losses of valuable marshes and shallow water bottoms in Mobile Bay resulting from harbor expansion necessitated by the additional TTWW barge traffic. Losses have been estimated at 4,000 acres by the U. S. Department of Commerce. In addition to this expansion related impact there will be an increase in the volume of sediment which must be handled via maintenance dredging operations. Such material will result in the need for additional disposal sites in a wetland complex where all remaining areas are highly productive fish and wildlife habitats.

(2) Losses of large acreages of forested wetland habitat adjacent to the lower Tombigbee River associated with the widening and realigning of the BWT project. This widening is necessary to accommodate additional barge traffic from the TTWW project. Corps of Engineers' documents reveal that as much as 3,400 acres of this valuable wetland habitat will be lost.

(3) Waterlogging, the hydrologic phenomenon of raising groundwater levels, is expected to occur inside and outside of the project boundaries. This process can severely alter the vegetative composition of an area over the life of the project. The U. S. Geological Survey has identified an area of approximately 122,000 acres where waterlogging is expected to occur.

(4) Extensive waterway related development is projected to occur along the waterway once it is complete. This development, in most instances, will be situated in floodplain areas of high fish and wildlife value. No acreage figures are available for assessment of this impact. However, the Corps of Engineers has initiated a study aimed at identifying future development activities and impacts.

(5) The aquatic environment will suffer substantially from increased turbidity levels associated with the advent of barge traffic.

(6) Direct losses of terrestrial habitat due to project facilities and construction will be substantial. Over 40,000 acres of the project area will be inundated upon project completion. More than 28,000 acres of this is highly productive forested wetland while the remaining 13,151 acres is low to moderate value terrestrial habitat. The remaining project lands (over 63,000 acres) will experience varying degrees of habitat quality degradation (between minimal and almost total) due to the TTWW project.

Of the six categories of impact, only the last (number 6) has enough compiled data to allow in-depth analysis. Significant data gaps currently exist and must be filled before the total picture of TTWW fish and wildlife related impacts can be viewed. Because of this lack of sufficient data, only the direct impacts on the terrestrial environment were utilized in determining the compensation requirements presented in this report. The other categories of impact (numbers 1 through 5), although discussed generally in this report, cannot be specifically analyzed until sufficient data exists. Such further analysis, supplemental to this report, is necessary if a complete analysis of fish and wildlife impacts and associated compensation requirements is to be presented to the Congress for consideration.

The Habitat Evaluation Procedures (HEP) were utilized in conjunction with a man-day analysis in developing the compensation requirements presented in this report. We must again reiterate that this analysis and the resultant compensation figures are for terrestrial impacts occurring directly from the project and do not take into account aquatic, downstream, or indirect impacts. The methodologies utilized in the HEP and man-day analyses are presented in detail in Appendices A and B, respectively, and will not be discussed here.

To replace the losses identified through the HEP analysis, the acquisition of additional lands for dedication to and potential intensive management for wildlife conservation and public use and benefit is requested. Habitat unit increases on the recommended special acquisition lands will be the result of either an intensive management program or a basic habitat protection and natural succession based option. Obviously, the identified impacts can be offset through the acquisition of fewer acres where intensive management capability is provided as an integral part of project responsibility. However, in the event that adequate funding for such intensive management measures is not provided as an integral part of overall project cost, the much larger acreage figure required is provided. The result of this overall analysis is presented in Table A.

Table A. Compensation Requirements According to the HEP Analysis 1/

		Without Management 2/ (Acres)	With Management 3/ (Acres)
Assuming No Management on Divide Section Lands 4/	In-kind Compensation 5/	1,191,343	182,166
	Forested Wetland Compensation 6/	761,435	129,388
Assuming Management on Divide Section Lands 4/	In-kind Compensation 5/	961,388	150,976
	Forested Wetland Compensation 6/	699,177	118,809

1/ - Discussed in detail in Appendix A.

2/ - Assuming no management practices are implemented. Habitat unit increases will result from natural succession only. For a further explanation see the text and Appendix C of the Substantiating Report.

3/ - Assuming an intensive management program will be implemented on the acquired lands and the cost of this program will be a part of project expense. Further discussion of the management program and the estimated cost is presented in Appendix C.

4/ - The Corps of Engineers is currently considering making 19,530 acres of Divide Section project lands available for wildlife management purposes. This consideration was included in the analysis. However, because a final decision has not been made, the analysis was performed assuming the with and without management situation. For further explanation see the text of the Substantiating Report.

5/ - Assumes habitat unit losses from a particular habitat type are replaced by habitat unit gains from the same habitat type. See Appendix A for further details.

6/ - Assumes habitat unit losses from all habitat types are replaced by habitat unit gains from a single habitat type, namely forested wetlands.

v

As previously mentioned, an additional analysis using the man-day approach was also performed on this project. Man-day utilization of fish and wildlife resources is based on the ability of that resource to support utilization on a sustained yield basis. Therefore, this analysis uses this premise and only those increases in man-day usage rates which can be biologically justified are acceptable. As can be seen in Table B, the resulting compensation requirements are similar to those presented using the HEP analysis.

The principal weakness in the man-day type of analysis is its inability to capture the true value of the resource being impacted and thus the economic worth of providing for the compensation of such adverse impacts. The man-day analysis captures principally the impacts upon the so called "game" species and generally fails to address the many intangible values of the diverse assemblage of wildlife species and habitats being impacted. The ultimate calculation of impact when utilizing the man-day analysis is based upon the assignment of a dollar value to each type of use activity impacted. Unfortunately, the man-day values available for assignment to such losses are still based upon interim values contained in the Principles and Standards (Principles and Standards for Planning Water and Related Land Resources, Federal Register, Volume 38, No. 174, September 10, 1973) and are poorly representative of the true value, economic or otherwise, of the total resource base being lost. We reject the validity of the dollar value attainable through the man-day analysis procedure as being representative of the value of the fish and wildlife resources being impacted. Certainly, the loss of wetlands, for example, is of much more importance to the nation than can be shown through an estimated reduction in the number of man-days of waterfowl hunting and presently associated dollar values foregone by such hunting opportunity loss.

The HEP analysis procedure is based upon a determination of the overall value of the habitats involved to a wide variety of wildlife species, both game and non-game. It is a method whereby impacts to a wide variety of habitats and animal species can be quantified and then offset through implementation of specific conservation measures. It has as its foundation the recognition that fish and wildlife resources and their habitats are of value to the nation in more than mere economic terms. As such, the result of the HEP analysis should be recognized as a more appropriate justification of the need for compensation measures than is the result of the man-day based economic analysis.

By applying dollar values to the man-day analysis, using the interim values presented in the Principles and Standards for Planning Water and Related Land Resources, it can be determined that the TTWW project will cause the annual loss of approximately $285,817 worth of man-day utilization of the terrestrial habitat. This figure does not take into account losses to the fishery or losses associated with the indirect impacts discussed earlier. By implementing the compensation requirements presented earlier, this loss can be offset. The approximate cost

Table B. Compensation Requirements According to the Man-Day Analysis 1/

		Without Management 2/ (Acres)	With Management 3/ (Acres)
Assuming No Management on Divide Section Lands 4/	In-kind Compensation 5/	1,194,091	187,477
	Forested Wetland Compensation 6/	725,459	122,147
Assuming Management on Divide Section Lands 4/	In-kind Compensation 5/	964,868	156,346
	Forested Wetland Compensation 6/	676,574	113,916

1/ - Discussed in detail in Appendix B.

2/ - See footnote 2, Table A.

3/ - See footnote 3, Table A.

4/ - See footnote 4, Table A.

5/ - See footnote 5, Table A.

6/ - See footnote 6, Table A.

of the compensation requirements (including acquisition, development, operation, and maintenance cost) are presented in Table XI of the Substantiating Report. These cost figures are estimates because acquisition lands are currently unidentified. Once authorization is obtained and specific lands identified, more specific cost figures can be developed.

After reviewing the HEP analysis of the TTWW project, along with other potentially damaging impacts associated with the project, we recommend that the Corps of Engineers submit this letter and accompanying report along with any specific companion documentation made necessary by present procedure, through established channels to the Congress. Such submittal should occur as soon as possible though recognizing that as subsequent impacts become defineable additional compensation requests will be necessary. Our joint recommendation should be for the acquisition of approximately 118,800 acres of floodplain forested wetlands, in addition to the 19,530 acres of Divide Section lands currently being considered for wildlife conservation designation, for dedication to wildlife conservation and public use. The recommendation would include specific provision for the inclusion of development, operation, and maintenance costs as a project feature. If the provision of development, operation, and maintenance funds to be required for intensive wildlife conservation efforts to take place is not included in your recommendation, the acreage which would be required if habitat losses and associated lost carrying capacity for wildlife species involved is to be compensated would increase to almost 761,450 acres. The estimated costs associated with the 118,800- acre option is $38,612,900 for acquisition and initial development and $367,300 for annual operation and maintenance. These costs figures are based upon 1979 conditions. Consequently, provision would need to be made for updating the operation and maintenance cost projection during the life of the project. Furthermore, because of the widespread distribution of beneficiaries of the project, coupled with the advanced stage of project implementation and sponsor commitment, the funding of measures to compensate for adverse fish and wildlife impacts should appropriately be considered as a Federal responsibility. Refer to Table XI of the Substantiating Report for further reference to cost projections.

Implementation of the forested wetland acquisition recommendation will compensate the terrestrial impacts expected to accrue directly from the TTWW project. As for the other project impacts discussed previously, we recommend that the Corps of Engineers initiate studies aimed at filling various information deficiencies and incorporate the results of these studies into project planning. Specific deficiencies have been discussed previously and are further documented in the text of the Substantiating Report. In addition, these studies will likely reveal project impacts which have not been compensated, thus warranting further effort to compensate for yet to be defined adverse project induced fish and wildlife impacts. The Corps of Engineers should also use this information, along with other information obtained subsequent to publication of the Environmental Impact Statement (1971), in updating that statement.

67-591 O—80——18

As a final recommendation, the Corps of Engineers should take added precaution in fulfilling their obligations under the Endangered Species Act to those species listed, proposed for listing, or being reviewed for possible proposed listing under the Act. Authorities most familiar with the species of freshwater fishes and bivalve mollusks being reviewed for possible listing believe present evidence indicates that continued construction of the Tenn-Tom Waterway could either render extinct or greatly impact several of these species. Under the Endangered Species Act, it is the responsibility of the action agency to determine the actual presence of listed species and the anticipated impact of the project on those species determined to be present. In view of the fact that species which are presently proposed for listing and species which are currently being reviewed for possible proposals could become listed species during the construction period of the project, it is our recommendation that your project impact analysis address these species along with the species already listed. Should the Corps of Engineers determine the presence of listed species and anticipate an impact from the project, then they are required to request of this Service the initiation of consultation proceedings aimed at determining if the expected impact will jeopardize the continued existence of that species. Every possible precaution and any possible project plan or construction activity modification which would retain in a natural condition reaches of the Tombigbee River should be employed. Such is appropriate in recognition of the presence of such diminished or restricted species regardless of the fate of the listing process.

A complete listing of the species involved along with their legal status is contained in the Substantiating Report.

In conclusion, if the Federal government is to recognize and compensate for the adverse fish and wildlife impacts of the Tennessee-Tombigbee Waterway, the preceding recommendations must be fully incorporated into the project.

Sincerely,

Stephen W. Gard
Acting Area Manager

SADPD-R (15 Apr 80) 1st Ind
SUBJECT: Policy Issues on Mitigation Studies for the Tennessee-Tombigbee Waterway Project

DA, South Atlantic Division, Corps of Engineers, 510 Title Building, 30 Pryor Street, SW, Atlanta, Georgia 30303 1 JUL 1980

TO: District Engineer, Mobile

1. A meeting was held on 8 May 1980 in the Fish and Wildlife Service (FWS) Regional Office, Atlanta, Georgia, to discuss the above subject. Discussions with FWS personnel at the meeting resulted in the following decisions concerning the issues in the basic letter:

a. The report will be identified as a planning aid report furnished under the provisions of the Fish and Wildlife Coordination Act.

b. Elements such as the indirect impacts and various allegations will be reviewed jointly with FWS personnel who will make appropriate revisions based on factual information available.

c. Greater consideration will be given to alternative mitigation measures when the other phases of the report are prepared. This will be done concurrently with appropriate Corps personnel.

d. Resolution of various technical issues by FWS field personnel and Mobile District personnel should continue.

2. It was proposed that every effort be made to use as much of the present report as possible to comply with the requirements of Phase I and as much of Phase II of the scope of work as agreed upon by the FWS and the Corps. This should be accomplished by Mobile District and the appropriate FWS office. The scope of work should then be revised to identify the remaining work and this work renegotiated. You should proceed as rapidly as possible with this aspect.

3. This office should be kept informed of further actions taken in the mitigation studies.

FOR THE DIVISION ENGINEER:

Marvin W. Rees

2 Incl
nc

MARVIN W. REES
Colonel, Corps of Engineers
Deputy Division Engineer

CF:
Region IV, FWS (Mr. Dick Huber)

Regional Director, FWS, Atlanta, Georgia

Tennessee-Tombigbee Waterway Project

Area Manager, FWS, Jackson, Mississippi

This is in response to your memorandum dated April 15, 1980, which requested assistance in seeking resolution of the problems that have developed between the FWS and the Mobile District Engineer relative to our October 1, 1979, draft report on subject project.

We have reviewed [illegible] information provided by your [illegible] and have met informally with the staff of the South Atlantic Division Engineer (SAD). On the basis of our review of available information and discussions with SAD personnel, you are instructed to take the following action:

1. Revise the October 1, 1979, draft report to [illegible] that it is a planning aid [illegible] provided under the authority of the Fish and Wildlife Coordination Act (FWCA). [illegible] state that the report does not represent the final views of this agency under provisions of the FWCA on mitigation needs brought about by the project.

2. Discuss the [illegible] indirect project impacts with Mobile District [illegible] and make appropriate revisions to the existing draft report depending on the facts made available during these discussions.

3. Proceed to develop appropriate study plans with the Corps in order to complete these III studies as soon as possible.

[illegible]

bc:
Field Office, FWS, [illegible], Decatur, AL

BAUMEISTER:my 6/24/80

TRANSCRIBED FOR CLARITY

Regional Director, FWS, Atlanta, Georgia

Tennessee-Tombigbee Waterway Project

Area Manager, FWS, Jackson, Mississippi

This is in response to your memorandum dated April 15, 1980, which requested assistance in seeking resolution of the problems that have developed between the FWS and the Mobile District Engineer relative to our October 1, 1979, draft report on subject project.

We have reviewed pertinent information provided by your office and have met formally with the staff of the South Atlantic Division Engineer (SAD). On the basis of our review of available information and discussions with SAD personnel, you are instructed to take the following action:

1. Revise the October 1, 1979, draft report to indicate that it is a planning aid report provided under the authority of the Fish and Wildlife Coordination Act (FWCA). Also clearly state that the report does not represent the final views of this agency under provisions of the FWCA on mitigation needs brought about by the project.

2. Discuss the potential indirect project impacts with Mobile District personnel and make appropriate revisions to the existing draft report depending on the facts made available during these discussions.

3. Proceed to develop appropriate study plans with the Corps in order to complete Phase II studies as soon as possible.

bc:
Field Office, FWS, ES, Decatur, AL

BAUMEISTER: my 6/24/80

Major General E. R. Heiberg III
Comments Before Senate Subcommittee on Water Resources
Committee on Environment and Public Works
July 25, 1980

Mr. Chairman and members of the Committee, I am pleased to have this opportunity to meet with you to discuss the Tennessee-Tombigbee Waterway (TTWW) project. I have from the Chief of Engineer's staff our Deputy Counsel Mr. Jake Lankhorst, Mr. Alex Shwaiko, my chief planner, and Mr. Ed Cohn, our economist. The Chairman asked that I read the recent Senate testimony regarding this project and to be ready to discuss recent criticisms of the project here today. I have read the Senate deliberations of June 28, 1980, as well as those in the House of Representatives on June 18th and 24th; I have also noticed the occasional discussions of the project in the news media. I appreciate this opportunity to testify on the controversies surrounding this project. Many of these issues have been recurring since a lawsuit was filed against the project in 1976; in fact, much of what I have read in the news media repeats allegations contained in legal briefs filed by the plaintiffs in the litigation. Many (if not most) of these allegations have already been dismissed by the Federal Courts.

The genesis of this project begins with reports completed in 1939 and contained in HD 269, 76th Congress. This document contained a recommendation for construction of a navigable waterway of dimensions that would permit modern, and efficient barge line operations between the Tennessee and Tombigbee Rivers to "connect two growing and industrialized

sections of the country and afford an interchange between two large transsystems viz, the Ohio and Upper Mississippi and the Gulf Intracoastal Waterway." The preliminary design of the waterway as described in HD 269 was based upon available traffic projections and the size of the tow then expected to use the waterway. That 1939 design recognized that the projections merely "measure with some degree of accuracy the probable traffic for the proposed waterway in the reasonably near future."

A review of the HD 269 led to the findings published in HD 486, 79th Congress, and formed the basis for the authorization enacted July 24, 1946. The Chief of Engineers recommended that the project be approved substantially in accordance with the general plan presented in this report, "with such modifications thereof as in the discretion of the Secretary of War may be advisable." The flexible language in HD 269 was maintained in HD 486. Thus the waterway was to be built "so as to provide a channel of not less than nine feet in depth and a minimum bottom width of 170 feet in river and canal sections and 150 feet in the divide cut." The plan set forth was to provide for construction of a "canalized channel and locks of standard dimensions, to permit a transit of tows of normal size without breaking formation." (The underling is mine.)

Subsequent to authorization, preconstruction planning proceeded until discontinued in 1951. In 1957, Congress mandated a restudy of the project resulting in a report to Congress in 1962. Congress mandated still another restudy in 1965. This study, designated as the 1966 Supplement to the General Design Memorandum, also reevaluted the economics of the project and considered the relative merits of a 200-foot width channel and

a 300-foot width channel between Pickwick pool on the Tennessee River and Demopolis, AL, on the Tombigbee River. Both widths were found to be economically justified, and the study recommended construction of a waterway at a 300-foot width to provide for greater safety and increased economy in two-way traffic movements. This 1966 reanalysis assumed the movement of two-way 8-barge tow traffic on the Tennessee-Tombigbee Waterway, while recognizing the existence of certain constraints in the Black Warrior Tombigbee Waterway (BWT). These constraints were recognized and used for benefit calculation purposes.

The Tennesse River to the north and all principal waterways connecting with the Tennessee River in 1966 and today, are at least 300 feet wide, with a depth of at least nine feet, and lock sizes are no less than 110 by 600 feet. To the south, the natural channel widths in the BWT from Demopolis to Mobile were in 1966 and are today, for the most part, greater than the authorized width of 200 feet. Indeed, this waterway is greater than 300 feet wide throughout most of its length. The 1966 reanalysis also recognized the need for duplicate locks on the BWT at the Demopolis and Coffeeville locations in the year 2010, when the projected traffic for those locks was expected to reach 28 million tons.

In 1966, the Chief of Engineers requested tentative approval from the Secretary of the Army to enlarge the TTWW waterway to 300 feet, with final approval based upon the consideration of comments of proponents and opponents of the waterway. A public announcement of 3 November 1966 stated that the reanalysis had determined that the project was economically justified at a width of 200 feet or 300 feet, but best

justified at 300 feet. On 30 March 1967, Secretary of the Army, Stanley R. Resor, approved an increase in the width from 170 to 300 feet, and the Economic Reanalysis was then forwarded to the House and Senate Appropriations and Public Works Committees advising of the project justification and the recommended 300-foot channel width. This change in width did not alter the scope, purpose, or plan of improvement from that authorized. Subsequently, Congress approved allocation of available funds to resume planning of the project. On December 31, 1969, the Secretary of the Army recommended that the project be included as a new construction start in the President's 1971 Fiscal Year Budget. This recommendation was accepted and forwarded to Congress as part of the President's request for "new start" construction funds for FY 71. The justification sheet accompanying this request specified that the width was to be 300 feet, an increase from the "minimum bottom width of 170 feet" referred to in the authorizing document.

Each year from FY 1971 through FY 1980, Congress has appropriated funds for the construction of the waterway at the project width of 300 feet. The authorization status of the Tenn-Tom was carefully scrutinized by the Federal Courts in the lawsuit which the Louisville and Nashville Railroad filed in 1976, challenging the legal authority for many features of the project including the channel width. Both the Federal District Court and the U.S. Court of Appeals for the Fifth Circuit have upheld the Corps of Engineers and dismissed the allegations of the railroad concerning those authorization issues.

In 1975, the Corps initiated a reanalysis of the project to present cost and benefits on an equivalent basis - i.e., same time frame. The A. T. Kearney Co., an internationally known management consultant firm, headquarted in Chicago, was retained to study the benefits to be derived from the project. The information derived from that study established that the tonnage projections were significantly higher than the projections used in the 1966 study. For example, the projection for the first year of operation in 1985 was 28 million tons. This level was not reached in the 1966 study until the year 2010. It then became apparent that improvements to the BWT might be desired, and these improvements have since been reported annually as the "ultimate" project. We have been careful not to include these improvements in the project under construction. We know that it is necessary to complete studies and to seek Congressional authorization of this separable element for a national decision that such improvements are necessary and justified.

Benefits attributable to the TTWW are for the most part based on savings to shippers moving commodities by the waterway as opposed to the next least costly mode. The 1975 reanalysis was conducted in full compliance with professionally accepted standards of economics. The data from the 1975 study was used in an economic analysis which resulted in a favorable benefit-cost ratio for the 232-mile waterway. Commodity projections and benefits have not taken into account the tremendous recent interest in steam coal exports. I note that several foreign groups recently have expressed interest in improvements for both inland navigation and our coastal harbors to facilitate these exports. There is continuing interest

in this area. During President Carter's recent trip to Venice, our major European trading partners pledged to double their use of steam coal over the next decade...which would have an immense influence on coal export pressures.

Extensive effort has been and continues to be exerted during planning, design and construction to maximize environmental protection and enhancement. Our program of continuing environmental studies is monitored by a board of private environmental consultants and considers, among other things, erosion control, water quality, aquatic species, wildlife habitat, disposal area design and cultural resource evaluation. The efforts of that board have resulted in numerous improvements in our plan. I confess we may not have done a good job of telling the nation about those extensive improvements. Some of the specific items the board and the Corps have done to fit this massive project into the environment include: resiting of Columbus Lock and Dam to protect Plymouth Bluff, a valuable paleontological site; realigning of other project features to preserve or protect important cultural resources or vegetative communities; providing low-flow structures for water quality improvement; implementing special disposal measures for the excavated material; conducting extensive vegetative studies to insure proper restoration of disturbed areas; providing modification to Bay Springs Lock in the interest of water quality; and adopting the Chain-of-Lakes concept in the Canal Section. Where appropriate, plans and specificatons include special environmental provisions to insure environmental protection during construction.

The project will also have a substantial influence on the course and direction of regional development. The regional effects have not been quantified, and are not counted in the benefits. However, there will be beneficial effects on the region's income, employment, population, economic base, and social development . An ongoing study, the Tennessee-Tombigbee Corridor Study will identify the options for economic development and help local planning organizations plan for the wise use of area natural resources. The study is scheduled for completion in late 1984.

The project as authorized and being constructed is economically justified and based on October 1979 prices is estimated to cost $1.925 billion. Federal costs are estimated to be $1.760 billion, and non-federal costs are $165 million. Through Fiscal Year 1980, about 50% of the federal funds have been allocated ($877 million of $1.760 billion). The authorized project is 46% physically completed, with about 190 miles of the 232 miles of the channel either completed or underway (82%).

A barrage of charges have been made against this project. Most simply are inaccurate, or misleading, or both. I want to highlight some of them before closing.

The project cost is almost never quoted properly. The $3 billion cost often cited includes not only the unauthorized improvements on the BWT but future inflation costs through the construction period of $853 million. This year, at the request of OMB, we included for the first time inflation costs in our reporting. It is true that the cost of the "ultimate"

project (which has no legal standing) did go from $2 billion to $3 billion in one year, as alleged, but that charge fails to recognize the inclusion of $853 million for the newly provided future inflation estimate, and the cost of downstream improvements subject to further study and authorization. The project under construction is economically justified and will operate effectively without downstream improvements.

Project costs have increased considerably since construction was initiated in FY 1971, when the federal cost estimate was $323 million. However, the allegation of a tenfold increase in cost is simply not accurate. The $323 million cost compares with a Corps of Engineers cost now of $1.650 billion, about a fivefold increase. Almost half of this increase is due to the effects of price level changes. Cost estimates have always been prepared in accordance with applicable criteria and represented the best estimate based on information available at the time. Cost increases have been reported and explained at least annually to Congress.

The Corps is accused of deceiving Congress by using an unrealistic interest rate of 3 1/4%. This rate is established by the Water Resources Development Act of 1974, and we have complied with these Congressionally mandated procedures. I might add that there is a popular notion that the discount rate for benefit-cost analysis should reflect greatly inflated market interest rates. That is absolutely wrong, and makes no economic sense.

The allegation that many of the projected traffic movements are illusory is an appealing argument, but one lacking in real substance. Shippers generally do not plan for anything as uncertain or as far into the future as a new waterway, nor do they often wish to have their plans known. Interviews in economic analyses are designed to determine commodity origins, destinations, and the transportation mode and cost. If a significant economic savings can be demonstrated for a movement with the waterway, it is included in the traffic base. Out of 1,000 companies interviewed, our consultant, the A. T. Kearney Company, identified 121 movements with potential for achieving significant savings using the waterway. This defined the economic base that was projected over the life of the project using the accepted standards for economic studies. Economic studies are based on economic theory, not on the intentions of shippers, however sincere they may be at the time of the survey. Decisions on the planning of a waterway must be dictated by projected marketplace conditions using sound economic theory and not by opinions obtained in interviews. It is also not surprising or significant that some companies interviewed in 1975 are now out of business or have changed their plans. Our studies establish the conditions at one point in time, to form the basis for decisions about going forward with a project. We do not subtract from our base survey, nor do we add to it as new conditions develop. Projections are made from the base, and not from individual movements. Incidently, it is alleged that a specific movement of 8 million tons of coal in the initial year of operation is a fictitious movement. That too, is an inaccurate figure. The largest movement of coal projected for the initial year was 3.6 million tons.

Historically, the types of commodities developed in economic studies do not necessarily match those that actually occur, because of the time lag between studies and construction, and the volatility of the marketplace. But waterways do produce benefits, and projections of tonnage made in planning studies are generally exceeded. I will tell you more about this at the hearing next Monday.

One final area of challenge I would like to address relates to the local cooperation requirements and the performance of the local sponsors in meeting their requirements. The States of Alabama and Mississippi have been meeting their obligations on schedule, allowing the Corps to proceed with construction in an orderly fashion. To date, they have expended or committed $133.8 million, almost 80% of the total non-federal relocation costs of $165 million. It has been alleged that Federal Highway Act funds provided a bailout for the states. This charge fails to consider the circumstances under which this funding was provided. Since 1946, the requirements for bridge, highway, and utility modifications have changed. The increase in waterway width, and modern standards for bridge construction have increased costs far beyond what was anticipated in 1946. In addition, navigation projects authorized since 1952 provide Federal participation in highway bridge modification costs in accordance with the cost sharing principles of Section 6 of Public Law 67-647, as amended, commonly referred to as the "Truman-Hobbs Act." Passage of the Federal Highway Act of 1976 was an effort to provide a measure of equity to the local sponsors, by treating the project similarly with those currently

being authorized. Federal funds in the amount of $89.5 million have been provided, but the fact remains that the States' commitments of $44.3 million is a sizeable local investment.

The Tenn-Tom project has been reviewed thoroughly by the Federal Court system in two major lawsuits brought by opponents of the project. In the first suit, brought in 1971, the Federal Trial Court and the Court of Appeals upheld the Corps' environmental impact statement, including the economic analysis, as legally sufficient. As I stated earlier, in the second lawsuit, both the trial court and the Court of Appeals have ruled against the project opponents on the authorization issues; we are now seeking summary judgment on the remaining economic and environmental counts of the second lawsuit. I am confident that all remaining substantive issues also will be found in favor of the Government's position.

Finally, the project was reviewed in 1977 as a part of the President's review of major water resources projects. The recommendations from that review were: to continue, but develop a method so that waterway users pay a fair share; stress efforts to minimize and mitigate adverse environmental impacts; and assure proper employment opportunities for local residents and minorities. Additionally, I would like to point out that this project has been selected by the President for his Rural Initiatives Program.

There are many areas you will want to discuss in more detail; and I am here for that purpose. I want to provide factual information concerning the issues so that you will be better able to understand the project on its merits.

STATEMENT OF BRIGADIER GENERAL HUGH G. ROBINSON

MINORITY PARTICIPATION IN THE

TENNESSEE-TOMBIGBEE WATERWAY PROJECT

Efforts to increase minority participation in the Tenn-Tom project have been undertaken in a number of areas.

In 1976 an Affirmative Action Plan was developed which established percentage hiring goals in each craft utilized on the Project. These goals are to be progressively increased each year. Current 1980 goals are 27-30%. These goals are being met generally in the more southerly portions of the project, but we are having difficulty in the northern areas due to low minority populations.

Training classes have begun in a number of crafts to provide basic apprenticeship skills in order to assist minorities to qualify as skilled personnel in various crafts utilized on the project. This has been undertaken in conjunction with the Department of Labor and local unions. The results have been mixed in that many graduates of the program have been hired by firms not working on the project; but the basic objective of assisting minorities is being achieved.

Various efforts have been undertaken to increase minority business participation. We have vigorously pursued the program to implement Section 8(g) of the Small Business Act of 1954, as amended, in cooperation with the Small Business Administration (SBA). There is a small inventory of qualified 8(a) firms in SBA's listing. The Corps has also pursued an aggressive subcontracting approach, whereby contractors are given percentage goals of their

67-591 O—80——19

total subcontracting which is to be awarded to minority firms. This program has been fairly successful. The overall dollar volume is not large relative to total project costs, due to the nature of the work, but many small minority firms have been given opportunities. There are few minority firms in the area with the capability to undertake large scale construction work due to the large capital outlays required for equipment, etc.

The Corps has pursued a vigorous minority architect engineer program. This program has been reasonably successful and has been approached on both a subcontracting basis as well as prime contract awards and joint ventures with minority firms.

The South Atlantic Division has also taken a significant role in the Tennessee-Tombigbee Affirmative Action Committee (TTAAC) which was established by the Federal Regional Council. Many of the problems the minority community faces in being able to participate in a significant fashion are beyond the scope of legal authority of the Corps. However, T-TAAC has served to bring together the many Federal, State and Local agencies and groups which collectively can take effective steps to resolve the many difficult problems in this area.

As you may recall, sir, we are providing annual reports on this program to Senator Randolph's committee, under the provisions of the Water Resources Development Act of 1976. Those who know of the scope of this program are aware that we have been setting an example to be followed by other Federal Agencies in the area of assistance to minority workers, women workers, and minority firms.

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

REPLY TO
ATTENTION OF:

DAEN-CWP-A

24 JUL 1980

Honorable Daniel Patrick Moynihan
Chairman, Subcommittee on Water Resources
United States Senate
Washington, D.C. 20510

Dear Senator Moynihan:

This is in response to your July 17, 1980, letter to the Assistant Secretary of the Army for Civil Works requesting attendance at a hearing on July 25, 1980, and requesting certain information in writing concerning the Tennessee - Tombigbee Waterway project.

In accordance with your request, I have attached the following information:

(1) A table listing each contract on the Tennessee - Tombigbee Waterway that has been let to date, together with the final or estimated cost of each contract, the type of contract, the funds expended as of June 30, 1980, for each contract, and the expected pay-out by fiscal year for those still underway; and

(2) A copy of a clause that is included in all continuing contracts, identified "CC" in the attached table, relating to future Congressional appropriations.

I would like to point out that: a) there are no major contracts scheduled to be awarded between now and September 30, 1980; however, there is a scheduled bid opening on September 11, 1980, for Lock D and Spillway, estimated cost of $65,564,000; and b) if all contract work was halted as of September 30, 1980, approximately $250,000,000 would not be expended.

In regard to what portions of the project are presently usable or could be made usable at negligible cost, there are currently two. One portion includes restricted navigation along 110 miles of the River Section from Demopolis to the mouth of the Luxapalila Creek at Columbus, Mississippi. The restrictions consist of width limitations at the several bridges which require relocation and along the portions of the navigation channel where the necessary widening and cutoff construction are incomplete. The restrictions at some locations

24 JUL 1980

DAEN-CWP-A
Honorable Daniel Patrick Moynihan

limit the size of the tow to two or possibly three barges due to width limitations in the natural river bends. An additional cost of $8,343,000 after FY 1980 would increase this portion of the waterway to project dimensions.

The other portion of the waterway usable for navigation includes 6.5 miles of channel from the Tennessee River to Highway 25 in the Yellow Creek Embayment area of the Divide Section. An additional cost of $2,000,000 would open up an additional 5,000 feet of channel to project dimensions south of the Yellow Creek Embayment.

Lastly, in regard to the amount of property on which significant work has not begun and thus would be available for sale, if the project was halted, I would like to note that as of July 1, 1980, a total of 90,902 acres have been acquired, consisting of 70,427 acres in fee and 20,475 acres in easements. It is estimated that 46,524 acres (32,603 fee and 13,921 easements) have been directly affected by construction activities (locks, spillways, dikes, new channels, etc.) which would render them unrecoverable for any use similar to pre-project conditions. It is also estimated that 9,866 acres (5,433 fee and 4,433 easements) of land have been altered by construction activities (deposition of dredge material, reservoir clearing, and public use facility development) but are recoverable with some loss in utility value. Therefore, of the lands acquired to date, approximately 34,512 acres (32,391 fee and 2,121 easements) have not been directly affected by construction activities and could be recovered and returned to prior use.

Sincerely,

2 Incl
As stated

E. R. HEIBERG III
Major General, USA
Director of Civil Works

TENNESSEE - TOMBIGBEE WATERWAY
CONTRACTS COMPLETED AND UNDERWAY

Contract	Current Working Estimate 1/ ($000's)	Type Contract Lump Sum or Continuing Contract	Earnings through 30 Jun 80	Scheduled Earnings Remainder of FY 80	Earnings by Fiscal Year FY 81	FY 82	FY 83	FY 84	FY 85	FY 86 2/
Demopolis										
Alabama Great Southern RR Bridge	11,280	CC	1,600	1,337	4,567	3,000	776			
Agreement with Southern RR	370	LS	-	50	100	150	70			
Plantation Pipeline	1,430	CC	1,345							
Rattlesnake Bend Cutoff	2,682	CC	2,682							85
Phase I Dredging	5,965	CC	5,965							
Phase II Dredging	4,250	CC	4,250							
Phase III Dredging	8,660	CC	8,660							
Gainesville										
Purchase of AT&N Bridge	3,530	LS	3,550							
Removal of AT&N RR Bridge	150	LS	150							
Black Warrior Electric	10	LS								10
Alabama Power Company	6	LS	6							
Reservoir Clearing	2,400	CC	2,223							175
Lock	20,645	CC	19,840							805
Spillway	15,585	CC	15,320							265
Lock Retrofit	500	CC	415	15						70
Chine Bluff Public Use Facilities	600	CC	563							37
Damsite & Lower Pond Public Use Facilities	1,280	CC	700	312	100					163
Big Creek Cutoff	3,105	CC	3,070							35
Phase I Dredging	8,300	CC	7,900							400
Phase II Dredging	9,700	CC	8,816	634						250
Riotao Lock Approaches	105	LS	105							
Landscaping of Dikes & Mounds	80	LS	45							
Stoplog Barges	746	CC	746							35

TENNESSEE - TOMBIGBEE WATERWAY
CONTRACTS COMPLETED AND UNDERWAY

Contract	Current Working Estimate 1/ ($000's)	Type Contract Lump Sum or Continuing Contract	Earnings through 30 Jun 80	Scheduled Earnings Remainder of FY 80	Earnings by Fiscal Year FY 81	FY 82	FY 83	FY 84	FY 85	FY 86 2/
Jonesville										
Supervisory Control and Data Acquisition	300	CC	270	10						20
Mikeville										
Agreement with ICGRR	1,660	CC		45	415	415	415	370		
Alabama Power Co,	20	LS	20							
Mississippi Valley Gas	660	CC	466	34						160
TVA	200	LS	12	88	100					
4-County Electric	325	CC	7	43	100					175
Reservoir Clearing	3,100	CC	2,990	110						
Diversion Channel	1,620	CC	1,620							
Lock and Dam	49,555	CC	48,621	401						533
Lampalila Public Use Facilities	1,600	CC	600	658	342					
Phase I Dredging	10,000	CC	3,700	1,155	3,710					1,435
Phase II Dredging	6,100	CC	3,560	499	1,663					378
Supervisory Control and Data Acquisition	300	CC	236	64						
Sanitary System for Lock	150	LS	105	5						40
Emergency Work (8 Contracts)	1,800	LS	1,287	113	400					
Columbus										
TVA	870	LS	17	83	400					370
South Central Bell	95	LS		40	40					15
City of Aberdeen Electric	90	LS	24	11	45					10
Reservoir Clearing	2,600	CC	1,800	420						380
Lock and Dam	49,955	CC	44,943	2,322	1,290					500
Training Dikes	1,300	CC	1,300							

TENNESSEE - TOMBIGBEE WATERWAY
CONTRACTS COMPLETED AND UNDERWAY

Contract	Current Working Estimate 1/ ($000's)	Type Contract Lump Sum or Continuing Contract	Earnings through 30 Jun 80	Scheduled Earnings Remainder of FY 80	Earnings by Fiscal Year FY 81	FY 82	FY 83	FY 84	FY 85	FY 86 2/
Aberdeen										
SL & SF RR Embankments	12,300	CC	6,700	2,434	2,100	1,066				
SL & SF RR Bridge	12,645	CC	2,371	2,450	4,000	1,824				
Mississippi Valley Gas	700	CC	514	36						150
TVA	270	LS	19		225					26
Monroe County Electric	40	LS	30		10					
Lock and Dam Contract I	38,805	CC	32,888	2,292	2,280					1,345
Lock A										
SA & SF RR (Design)	740	CC			740					
Monroe County Electric	320	CC	15	35	150					120
TVA	310	LS		50	100					160
Mississippi Valley Gas	770	CC	463	12						295
Excavation Contract BA-1	5,500	CC	4,949	356	100					95
Excavation Contract A-1	5,000	CC	2,850	1,543	607					
Lock and Spillway	25,000	CC	22,089	1,181	1,000					630
Test Excavation	2,900	CC	2,900							
Lock B										
Texas Eastern Pipeline	4,340	CC	1,461	1,401	800					
Excavation Contract B-1	16,000	CC	3,400	2,277	5,063	4,260				678
Lock and Spillway	36,000	CC	19,184	4,954	8,110	3,752				1,000

TENNESSEE - TOMBIGBEE WATERWAY
CONTRACTS COMPLETED AND UNDERWAY

Contract	Current Working Estimate 1/ ($000's)	Type Contract Lump Sum or Continuing Contract	Earnings through 30 Jun 80	Scheduled Earnings Remainder of FY 80	Earnings by Fiscal Year FY 81	FY 82	FY 83	FY 84	FY 85	FY 86 2/
Lock C										
Excavation Contract C-1	8,890	CC	620	2,400	4,060	630				1,180
Lock and Spillway	36,000	CC	8,100	3,960	13,395	9,360				1,185
Lock D										
TVA	280	LS			40					240
Excavation Contract D-1	20,000	CC	7,100	4,400	7,410	590				500
Test Program at Lock	1,250	LS	1,205							45
Lock E										
Excavation Contract E-1	6,000	CC	865	675	2,290	1,710				460
Test Program at Lock	950	LS	750							150
Lock Access Road	1,400	CC	985	393	22					
Excavation (by National Park Service) for a portion of Pool E	2,100	LS	2,100							

TENNESSEE - TOMBIGBEE WATERWAY
CONTRACTS COMPLETED AND UNDERWAY

Contract	Current Working Estimate 1/ ($000's)	Type Contract Lump Sum or Continuing Contract	Earnings through 30 Jun 80	Scheduled Earnings Remainder of FY 80	Earnings by Fiscal Year FY 81	FY 82	FY 83	FY 84	FY 85	FY 86 2/
Bay Springs										
Cemeteries	25	LS	25							
Tishomingo County Electric Power Association	53	CC	53							
South Central Bell	5	LS	5							
Lock and Dam	82,184	CC	16,677.6	5,421.1	19,639.5	25,048.8	15,397			
Surveying and Monumentation	60	LS	60							
Intervisable Boundary Line Marking	35	LS	35							
Initial Lock Excavation	1,432	CC	1,432							
Permanent Operating Equipment	53	LS	53							
Divide Cut										
Mount Gilead Road	549	LS	549							
Walkers Crossing of Southern Railway	430	CC		100	330					
Southern Railway Agreement	3,860	CC	300	60	3,220	50	50	50	50	80
Southern Railway Construction	18,000	CC	8,000	2,740	5,460					1,800
ICG RR - Roadway with Bypass	9,800	CC	9,651	25	124					
ICG RR - Roadway with Yellow Creek Bridge	5,677.7	CC	5,677.7							
ICG RR - Waterway Bridge	10,400	CC	7,600	970.8	900					929.2
ICG RR - Signals, Equipment and Installation	184.2	LS	184.2							
ICG RR - Signals and Relays	29.4	LS	29.4							
ICG RR - Communications	240	LS	232.2	7.8						
ICG RR - Access to Communications Site	143.5	LS	143.5							
ICG RR - Reimbursement Agreement & Deferred Maintenance	3,620	CC	2,120	30	1,150	100	30	30	30	130
Cemeteries	2.8	LS	2.8							
TVA	648	LS	637.5	10.5						

TENNESSEE - TOMBIGBEE WATERWAY
CONTRACTS COMPLETED AND UNDERWAY

Contract	Current Working Estimate 1/ ($000's)	Type Contract Lump Sum or Continuing Contract	Earnings through 30 Jun 80	Scheduled Earnings Remainder of FY 80	Earnings by Fiscal Year FY 81	FY 82	FY 83	FY 84	FY 85	FY 86 2/
Divide Cut (Cont'd)										
AL-MS Natural Gas	650	CC	645	5						
Tishomingo County Electric Power	607	CC	587	20						
South Central Bell Telephone	80	LS	77.3	2.7						
Mid South Telephone	75	LS	75							
Tolcum-Cairo Water Association	9.6	LS	9.6							
Dredging Yellow Creek Embayment	8,514.5	CC	8,514.5							
Test Dewatering, Section 4	1,460.1	LS	1,460.1							
Test Excavation, Section 2 & 2A	2,869.5	CC	2,869.5							
Dewatering Section 4, Phase I	1,122.8	LS	1,122.8							
Artesian Relief System, Section 4	2,385.6	CC	2,385.6							
Sections 4/2A/Plug	300,000	CC	91,835.7	24,155.8	61,000	64,000	40,000	19,008.5		
Section 4A.	38,800	CC	38,800							
Section 3A	23,200	CC	20,200.2	2,999.8						
Section 2	32,000	CC	23,650.4	3,750	2,500	500			1,599.6	
Trenching Sections 4 & 1	4,666.6	CC	4,666.6							
Sections 4B & 1	41,000	CC	39,761	1,239						
Replacement Ramp at Goat Island	100	LS	100							
Cultural Resources (27 contracts)	9,060.5		2,549.1	697.4	3,964	1,850				
TOTAL	1,075,291.8		613,866.3 3/4/ 5/6/	81,537.9	164,161.5	120,305.8	56,738	19,458.5	1,679.6	17,544.2

1/ Includes contract amount plus an amount to cover modifications, overruns, and claims.

2/ Remaining contingencies for modifications, overruns, and claims.

3/ Shut down costs estimated at approx. $130 million will be added to compute sunk costs

4/ Does not include engineering and design, supervision and administration, lands and damages, etc. Total approx. $167.5 million.

5/ 30 Jun 80 sunk costs (include 3/ & 4/) = $911.3M

6/ 30 Sep 80 " " (") = $1.01 billion

SP- CONTINUING CONTRACTS (1977 OCT OCE): (a) This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservations of funds from future appropriations. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

(b) (1) The sum of $ _____ has been reserved for this contract and is available for payments to the contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds will be reserved for this contract.

(2) Failure to make payments in excess of the amount currently reserved or that may be reserved from time to time, shall not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (d) and (e) below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to reserve sufficient additional funds therefor.

(c) (1) The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The contracting officer will promptly notify the contractor in writing of any additional funds reserved for the contract.

(2) If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the contract during the fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

(d) (1) No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. The contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, for the Renegotiation Board, as in effect on the first day of the delay in such payment.

(2) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the contract to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

(3) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

(e) If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the contractor, by written notice delivered to the contracting officer at any time before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

(f) If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, after notice to the contractor, to reduce said reservation by the amount of such excess.

U. S. ARMY AUDIT AGENCY

AUDIT REPORT: SO 76-408 17 SEPTEMBER 1976

REPORT OF AUDIT

TENNESSEE-TOMBIGBEE WATERWAY PROJECT

U. S. ARMY CORPS OF ENGINEERS

SOUTHERN DISTRICT, USAAA
Atlanta, Georgia

FOR OFFICIAL USE ONLY

AUDIT OF TENNESSEE-TOMBIGBEE WATERWAY PROJECT
U. S. Army Corps of Engineers

TABLE OF CONTENTS

		Page
PART I -	SUMMARY	
	A. Purpose and Scope	1
	B. Background	1
	C. Summary Results of Audit	3
	D. Suggested Actions	5
	E. Discussions with Responsible Officials	6
PART II -	DETAILS OF AUDIT	
	1. Cost Estimates	7
	2. Additional Costs-Known and Contingent	9
	3. Excluded Costs	11
	4. Validity of Cost Estimates	13
	5. Estimating Procedures	17
	6. Contracting Methods	21
	7. Project Configuration	23
ANNEXES -		
	A. Maps of Tennessee-Tombigbee Waterway	27
	B. Modifications Necessary Downriver from Demopolis to Mobile, Alabama	29
	C. Status of Work Completed and in Progress at 31 March 1976	31
	D. Preplanning Funds	33
	E. Project Cost Changes	35
	F. Graphic Comparisons of Actual Bid Experience with ENR Index	37
	G. Status of Design Memorandums	41
	H. Changes in Quantities of Major Cost Items by Major Feature	47
	I. Construction Contracts Awarded as of 31 March 1976	49

PART I

SUMMARY

A. *PURPOSE AND SCOPE*

At the request of the Assistant Secretary of the Army (Civil Works) we made an audit of the Tennessee-Tombigbee Waterway Project. The audit included (i) a review of significant changes in project configuration, quantities of major items, and cost estimates and the reason for the changes, (ii) a review of annual project cost estimates to determine that all known increases were reported, (iii) an analysis of cost estimating and contract award procedure to determine degree of compliance with applicable regulations, and (iv) the development of suggestions to improve cost estimates and project management. Also, as requested, we compiled a record of significant changes from fiscal year 1967 (1 July 1966) to fiscal year 1976 in:

-Project cost estimates (PB-3's).

-Project configuration (design changes).

-Quantities of major cost items such as concrete, steel, excavation, and real estate.

-Unit prices of major items.

The $263 million referenced in the audit request was the project estimate at 1 July 1965, for fiscal year 1966. Our review started with the 1 July 1966 estimate (fiscal year 1967) because it was the basis for reinstating the project and commencement of funding. Audit work was performed at the Office, Chief of Engineers (OCE), the South Atlantic Division (SAD), and the Mobile and Nashville Districts. All audit work was made in accordance with generally accepted auditing standards and included a review of all pertinent records which were available as of 31 March 1976. Data relating to States' cost participation include actions taken through 31 August 1976.

B. *BACKGROUND*

1. Congress authorized the project with the passage of the Rivers and Harbors Act of 1946. Construction funds, however, were not provided at that time. Advance planning, including field exploration work, proceeded until 1951 when an investigative staff of the House Appropriations Committee concluded that the Tennessee-Tombigbee project was not economically sound. All planning funds were revoked and the project was placed in a "deferred-for-restudy" category.

2. The project remained in this category for 16 years. After two restudies in 1962 and 1966 the project was determined to be

economically sound. It was funded again in 1967 and preconstruction planning resumed. The 1966 restudy and the estimated project cost prepared for fiscal year 1967 showed that the project's cost would be about $289 million.

3. The existing project consists of three major sections: 168 miles of channel in the Tombigbee River above Demopolis (River Section); a 44-mile long canal running roughly parallel to the East Fork of the Tombigbee River (Canal Section); and a 40-mile long cut through a dividing ridge (Divide Section). In total, a lift of 341 feet is to be accomplished by 10 locks and 5 dams. (Annex A, page 28)

4. In December 1972, construction began at the lowermost structure, the Gainesville Lock and Dam. As of 31 March 1976, about 27,600 acres (26 percent) of the real estate required for the project had been obtained and 12 major construction contracts amounting to about $160 million had been awarded. Overall, about 17 percent of the project's current estimated cost had been either expended or is under contract (Annex C, page 31). Physical construction of the project is currently estimated to be about 8 percent complete and the entire Waterway is scheduled to become operational in calendar year 1986.

5. A restudy of project costs and benefits, Economic Reanalysis Summary, dated 12 February 1976, recognizes that downriver navigation work not now authorized is required before full capacity of the waterway system can be achieved. The work involves:

-Constructing duplicate locks at Demopolis and Coffeeville, Alabama to accommodate forecasted traffic from the Black Warrior River and the Tennessee-Tombigbee Waterway.

-Improving the existing navigation channel on the Tombigbee and Mobile Rivers downstream from Demopolis (217 miles), which is inadequate for the predicted volume of traffic and eight-barge tows—the size tows that the Tennessee-Tombigbee Waterway project is designed to carry. Improvements include (i) a total of 16 cutoffs, (ii) 28 bend or channel widenings, and (iii) 3 bridge modifications (Annex B, page 29).

The total estimated cost of the Waterway at October 1975 prices, including additional downstream work, as shown in the 1976 Economic Reanalysis, is $1.818 billion in Federal and non-Federal funds. The forecasted benefit/cost ratio, including costs and benefits of navigation and construction work downriver, is 1.3 to 1. Without the downstream improvements, the forecasted benefit/cost ratio is 1.08 to 1.

C. *SUMMARY RESULTS OF AUDIT*

The project was authorized based on a conceptional design, without benefit of sufficient detailed engineering and planning. Project cost estimates have increased about $1.071 billion (470 percent) since fiscal year 1967. Because of the complexity of the work and the status of its completion, there are still many unknowns. Construction is about 8 percent complete and only 26 percent of real estate requirements have been acquired. As a result, there is a high degree of uncertainty in the estimate of total project cost at this point in time. The cost estimate of $1.360 billion in Federal funds prepared in October 1975 for the fiscal year 1977 appropriation cannot be considered as a realistic estimate of the Waterway's ultimate total cost.

-The $1.360 billion cost estimate was based on then current prices and does not provide for any cost escalation to project completion. We could not verify the reasonableness of cost estimates because records did not always include informational data or show the rationale for the use of the data.

-The $1.360 billion cost estimate did not include the added cost of work south of Demopolis to achieve the ultimate potential of the Waterway. In the project Reevaluation Study, completed in February 1976, Federal cost was increased by $215 million for presently unauthorized work.

-The States of Mississippi and Alabama are responsible for highway relocations and bridge construction along the Waterway. The current estimate for the work is $220 million ($180 million for Mississippi and $40 million for Alabama). Currently, these States have bond authorizations of $75 million to provide funds currently needed.

-Records showed that about $344 million of costs was not included in the fiscal year 1975 cost estimate for the fiscal year 1976 appropriation.

-Inflationary adjustments for price increases either were not made on an annual basis for project cost estimates or, when made, did not reflect actual market conditions.

-Some changes in procedures and methods of contracting could result in reduction of costs.

Current Cost Estimate. The cost estimate of $1.360 billion (effective October 1975 for fiscal year 1977 appropriation) does not reflect, realistically, the cost of the Waterway to completion. The estimate, prepared in accordance with OCE's established policy, is

based on 1975 prices and assumes that the project will be completed as designed. Inflation alone through 1986 could substantially increase the costs. The $167 million estimate to excavate the Divide cut of the Waterway alone could increase significantly, due to changes in both quantity and price.

Additional Known Costs. The cost estimate of $1.360 billion does not include the cost of constructing duplicate locks at Demopolis and Coffeeville, Alabama and required navigational improvements in the river channel south of Demopolis to Mobile. These improvements are necessary if the Waterway is to reach its forecasted potential (benefits). Current estimates prepared by the Corps show that this work will cost about $215 million in Federal funds. However, the estimate is preliminary in nature because of lack of detailed engineering and construction data in this part of the river.

Contingent Costs. The States of Mississippi and Alabama are responsible for bridge construction and required highway relocations along the Waterway. The original estimate for this work was $27 million; however, due to cost escalation the current estimate is $220 million. Estimates for 1976 show that Mississippi's share of the cost is $180 million; while the cost to the State of Alabama will be about $40 million. The State of Mississippi has approved a $40 million bond issue and the State of Alabama has authorized a $35 million bond issue to cover work initially required. These States may request some Federal funds under the 1976 Federal-Aid Highway Act for these relocations.

Excluded Costs. About $344 million in costs was not included in the fiscal year 1975 cost estimate. If the total cost estimate had been reported, the project's benefit/cost ratio would have been significantly less favorable.

Validity of Cost Estimates. We could not, with any degree of accuracy, verify the validity of cost estimates except for items already purchased or on contract. Unit prices, lump sum costs, and quantity figures contained in detailed cost estimates were either not referenced to source documents or the rationale for using the prices and quantities was not made a part of the official records.

Estimating Procedures. Only a limited amount of engineering and design work had been done when the fiscal year 1967 cost estimate of $289 million was prepared. Numerous configuration changes have occurred during the project's life and most of the changes increased the estimated cost. Most of the changes in cost were attributed to more detailed engineering planning, and could have been reflected

in earlier PB-3's if appropriate financial resources had been made available during preauthorization studies or increased contingency allowances were authorized. Cost estimates for fiscal years 1967 through 1970 were understated by $28, $14.5, $21.2, and $40.5 million, respectively, because price leveling factors were not used. Factors were used for fiscal years 1971 through 1975 but costs were still understated because the factors did not reflect actual market conditions.

Contracting Methods. Some savings could be realized by requesting bidders to submit whole and part proposals when work could be logically segmented.

Project Configurations. Changes from the original configuration have contributed to delays and increased costs.

Details of audit are shown in Part II of this report. Annexes A through I show data relative to the Waterway and include (i) the location of the major feature items of work, (ii) preplanning work that was done prior to the project's reauthorization, (iii) major cost changes since the project was reinstated in fiscal year 1967, and (iv) the current status of work.

D. *SUGGESTED ACTIONS*

To provide for more realistic cost estimates, improve project management, and perhaps minimize criticism for future cost increases, it is suggested that:

1. Permission be requested from the Office of Management and Budget to include expected inflationary increases in estimating cost of a project to its scheduled completion date. In arriving at the estimates, consider other potential cost increases, workload capabilities, and expected annual funding. These data would be in addition to budget data now provided by the PB-3.

2. Construction price level indexes be developed throughout the Corps. Such indexes should be based on Corps' construction cost experience and be used to update PB-3 estimates when current bidding experience is not available.

3. Increased contingency allowances in cost estimates during the early stages of a Civil Works project be authorized or sufficient resources for preauthorization studies be provided to ensure that estimates prepared depict the cost of each feature more accurately.

4. Whole and part solicitations be used for physically separable project segments, each proposal be evaluated individually, and contracts be awarded on the basis of the most favorable price(s) received.

5. An official project file be established to present a complete history of each large Civil Works project and the basis for estimated quantities and unit prices be supported and made a part of the official file.

E. DISCUSSIONS WITH RESPONSIBLE OFFICIALS

Comments were obtained from the Office, Chief of Engineers and were considered in the finalization of the report. Also, the contents of the report were discussed with officials of the South Atlantic Division, and the Mobile and Nashville Districts.

U. S. Army Audit Agency

PART II

DETAILS OF AUDIT

1. Cost Estimates

At 31 March 1976, design memorandums covering virtually all major features of the River Section were complete (Annex G, page 41). Estimates from the design memorandums, along with contract award amounts, were reflected in the fiscal year 1976 PB-3. We feel the cost estimates for the River Section should be fairly accurate, except for future increases in the cost of material and labor, and refinements in quantitative requirements. However, the cost of construction in the Canal and Divide Sections remains uncertain. Most of the design memorandums for the Canal Section and the Divide Section had not been approved at the time of our review (Annex G, pages 44 and 45).

Based on past history, cost will probably increase when general design memorandums (GDM's) and feature design memorandums (FDM's) are prepared for the major features of the two sections. The actual cost of excavation in the Divide cut remains uncertain. The cut, 40 miles long, 280 feet wide, and 12 feet deep will be made through a ridge (27 miles wide) to the Pickwick Pool on the north flowing Tennessee River, via its tributary, Yellow Creek (Annex A, page 28).

Three test pits are currently being excavated in the cut to further evaluate the characteristics of material for future excavation contracts. As these pits are completed and a better definition of the soil composition is determined, changes in costs may develop. Increased costs have already been experienced on the dredging contract for the Yellow Creek Embayment currently in process. In this instance, an estimated overrun of about 49,000 cubic yards of rock excavation is anticipated. If the contractor is paid for the overrun at his bid price, the project's cost will increase about $864,500.

Current procedures do not require that the estimated cost of Civil Works projects be projected to scheduled completion dates. PB-3 estimates include only the cost of a project at one particular point in time. For example, the $1.360 billion reported in the fiscal year 1977 PB-3 for the Tennessee-Tombigbee Waterway was based on current design and 1975 prices. No attempt is made to project realistically the Waterway's cost to its scheduled completion date—1986.

If past economic conditions are indicative of the future, inflation alone will increase the project cost significantly. To ensure that the overall costs of completed projects are realistically estimated and to minimize public criticism for drastic cost increases in the future, we believe that a method should be devised, in addition to the PB-3 estimate, to prepare forecasts of project costs to scheduled completion dates, based on the Corps' ability to place work, coupled with forecasts of annual funding levels that can be expected from Congress. In the present inflationary environment, delays in construction can be expected to be costly.

2. Additional Costs—Known and Contingent

Although construction is not presently authorized, the Corps recognizes the requirement to construct additional locks at Demopolis and Coffeeville, Alabama and to widen certain sections of the Tombigbee River between Demopolis and Mobile (Annex B, page 29). The current estimate of Federal funds for this work is $215 million. In addition, the Federal Government may be requested to assume a portion of the $220 million in non-Federal cost for state bridge and highway relocations in Mississippi and Alabama. These States, at the present time, have made provision for a total of $75 million to cover the work currently required.

Additional Known Costs. On 12 February 1976, the Corps made an economic reanalysis of the Waterway. This study revealed two constraints which will prevent the Waterway from being used to its maximum capacity—the navigation channel downriver from Demopolis and the single lock systems at Demopolis and Coffeeville. The Waterway from the Pickwick Pool south to Demopolis is designed for eight-barge tows, which require a channel 300 feet wide. The navigation channel downriver from Demopolis to the port of Mobile, a distance of about 217 miles, is less than 300 feet wide and can accommodate a maximum of six-barge tows. To use the larger tows on the lower part of the river, a total of 16 cutoffs, 28 bend or channel widenings, and 3 bridge modifications, estimated to cost about $102 million, will be necessary.

This segment of the river will be used mutually by traffic from the Black-Warrior River as well as traffic from the Waterway. Due to the combined use of this segment of the river, the capacity of the existing Demopolis and Coffeeville locks will not accommodate the volume of traffic expected on the Waterway. Consequently, an additional two locks, estimated to cost about $113 million, will be required to alleviate the bottleneck which will occur once the Demopolis and Coffeeville locks reach their capacities. Discussion with representatives at OCE disclosed that a decision has not been made as to whether the required work will be performed under the scope of the Tennessee-Tombigbee Waterway, or whether a new project authorization will be obtained. Consequently, a cost increase of about $215 million in Federal funds to the Tennessee-Tombigbee project exists if total potential benefits from the project are to be realized. This additional cost was presented to Congress and OMB during the fiscal year 1977 Appropriat Hearings.

Contingent Costs. Agreements with th tates of Mississippi and Alabama required each State to relocate h ays and construct bridges over the Waterway. Such agreements nece ate the construction of 10 bridges in Mississippi and 3 in Alabama. fiscal year 1967, the estimated bridge construction and highwa elocation costs for

Mississippi and Alabama were about $20 and $7 million, respectively. Like estimated Federal costs, State costs have escalated rapidly. Estimates for fiscal year 1976 show that costs in Mississippi are now about $180 million, while Alabama's costs increased to about $40 million. As of 30 August 1976, the State of Mississippi had authorized a bond issue of $40 million and the State of Alabama had approved a $35 million bond issue. Although both States agreed to pay the costs of bridge construction and highway relocations without the use of Federal funds, some efforts are being made to obtain Federal assistance.

The Federal-Aid Highway Act was signed by the President on 5 May 1976. This Act authorizes the Secretary of Transportation to use up to $100 million of Federal funds in fiscal years 1977 and 1978 to construct or reconstruct any public highway or bridge across any Federal public works project when there has been a substantial change in requirements and cost of such highways or bridges since the project was authorized, and when such increased costs will work an undue hardship on local interests. There have been substantial changes in the configuration and cost of the Waterway. Consequently, the Federal Government may be requested to pay a portion of the remaining $145 million needed for highway relocations and bridge construction.

3. Excluded Costs

About $344 million of costs was not included in the fiscal year 1975 cost estimate. Mobile's total cost estimate contained three options, which were:

-$759 million - This estimate was basically the cost shown on the fiscal year 1974 PB-3 ($623 million), escalated to current price levels. This estimate included only the costs of work in approved design memorandums.

-$1.004 billion - This estimate included price leveling, approved design changes, and design changes submitted but not approved.

-$1.159 billion - This estimate included all approved and unapproved design changes. Also, unit prices used to arrive at the estimated cost reflected current market conditions.

Although the estimate of $1.159 billion was prepared in accordance with procedures outlined in Engineer Regulations, a decision was made to report an estimated cost of $815 million ($759 million plus $32 million for supervision, administration, engineering, and design, and $24 million for railroad bridge locations). If the total cost estimate had been reported, the project's benefit/cost ratio would have been significantly less favorable.

A memorandum, prepared by SAD on 6 January 1975, stated that OCE had decided that a big cost increase should not be submitted until a new economic report, which would address both benefits and costs, was completed. 1/ Reporting an estimated project cost of $1.159 billion during fiscal year 1975 would have shown that the project might be only marginally justified from a benefit/cost standpoint. Consequently, the fiscal year 1976 PB-3 reflected an estimated cost of $815 million. It should be noted, however, that the costs presented in Mobile's third option (estimate) were reflected in the fiscal year 1977 PB-3 ($1.360 billion).

1/ *Rather, it was decided to insert the following into the justification data furnished the Congress: "Benefit estimates have been revised and updated based on increased tariffs and revised projection factors which reflect the future commerce expected to move over the Waterway. Current estimates are based on field traffic survey data collected in 1964 and reflects base year conditions as of 1963. Due to the recent rapid escalation of transportation and construction costs and the lengthy period since the 1963 field survey, an economic reanalysis based on new field traffic surveys, current freight rate analysis, and updated construction costs has been initiated. The results of this analysis will be available in January 1976."*

in the area ranged from 5.2 percent of the construction cost for Gainesville and Smithland to 13 percent of the cost for Aliceville. Supporting data were not available to show how the 1.5 percent was derived or why the percentage was used.

-The detailed estimate for the Bay Springs GDM also showed that 407,000 cubic yards of concrete were required for lock walls and sills. This quantity, times a unit price of $40 per cubic yard, resulted in an estimated cost of $16,280,000. The only documentation in the files to support the unit price was a statement by the estimator: "use $40 per cubic yard."

In most instances, the only support for the unit prices and lump sum costs were statements by estimators to use certain figures. The only documents furnished us were abstracts of bids. The abstracts, however, contained a wide range of unit prices for specific items of work and neither District, Nashville nor Mobile, had an established procedure as to how the abstracts were to be used. Some examples were:

		Unit Price	
Item	Unit of Measurement	Used to Prepare Estimates	Shown on Bid Abstract
Foundation Preparation	S/Yd	$ 8.00	$6.89, $15.00, $12.50, $8.00, $10.00, and $7.50
Excavation, Rock	C/Yd	6.00	$10.00 and $4.90
Concrete Lock Floor Paving	C/Yd	80.00	$128.90, $56.80, $45.82 $119.13, $117.30, $43.98, and $83.66
Grouted Riprap	C/Yd	60.00	$63.50, $75.00, $80.00, $40.00, and $65.00
Miscellaneous Concrete	C/Yd	150.00	$194.55, $68.79, $129.70, $181.58, $166.01, $264,59, and $92.21

An estimator can select any unit price based on an abstract without documenting the basis for the selection. Since extremely large quantities are involved in some of the feature items, even a small variance in unit prices could have a significant impact on the project's estimated cost. For example:

-The GDM for the Divide cut estimated that 161,000,000 cubic yards of common excavation would be removed. By changing the unit price of the excavation by only $0.05, the estimated cost of the project could fluctuate by about $8 million.

-The estimated quantity of compacted fill in the Divide cut as shown in the FDM was 137,450,000 cubic yards. By either increasing or decreasing the costs of the compacted fill by only $0.05, the estimated project cost could fluctuate by $6,872,500.

Because of (i) the wide variance of unit prices for specific items on abstracts of bids, (ii) the absence of any set procedures on how the abstracts were to be used, and (iii) the absence of specific source documentation, we could not, with any degree of reliability, verify the validity of the unit prices used by the Districts in preparing GDM and FDM estimates.

Quantities of Major Items. Significant changes in quantities of major items have resulted since 1966. To determine reasons for changes in quantities of major items included in the design memorandums, we selected five items for review. These items were (i) reinforcing steel, (ii) structural steel, (iii) excavation, (iv) concrete, and (v) real estate. The costs associated with these items represented about 63 percent ($857 million) of the total estimated project cost. The net changes in the quantities since 1966 were:

Items	Unit of Measurement	Increase (Decrease) 1966-1976
Reinforcing Steel	Ton	(21,995)
Structural Steel	Ton	7,454
Excavation	Cubic Yard	94,573,330
Concrete	Cubic Yard	503,004
Real Estate	Acres	24,144

Details relating to the changes over the 10 fiscal years are shown on Annex H, page 47. Documentation supporting the changes were either not prepared, not retained, or not portrayed in a manner that would permit an independent evaluation. For example, we requested documentation supporting the quantities of major items used in preparing the fiscal year 1967 PB-3. Personnel at the Districts informed us that the information was no longer available. We also requested documentation supporting the excavation quantities included in the GDM and FDM prepared for the Divide cut. District personnel provided us with the computation sheets used in preparing the detailed cost estimates included in the design memorandums. However, the methods used in deriving the quantities in the GDM were not always consistent with those used in determining the quantities for the FDM. Accordingly, reconciliations between the GDM and FDM could not always be made.

An analysis of the computations showed that some quantities shown in the design memorandums differed from those shown in the computation sheets. For example, a quantity of 238,500 cubic yards of rock dredging was shown in the Divide cut GDM; the computation sheets disclosed an additional quantity of 61,500 cubic yards. Quantities included in the FDM showed 6.8 million cubic yards for excavation and backfill for diversion ditches; the computation sheets for the FDM disclosed that 11 million cubic yards were required.

The position of the South Atlantic Division and the Nashville and Mobile Districts concerning documentation was that estimates were judgmental and not derived mechanically. As a result, the figures used in the estimates could not be referenced to specific source documents. They maintained that it was not standard practice for estimators to provide a complete record of their thought process in arriving at each figure. We were also informed that the quantities of items were generally determined by a variety of methods, ranging from highly computerized takeoffs of plans and drawings to rough approximations based on a sketch or simplified geometrical relationships, and that drawings supporting some quantities used in the estimates were no longer available. Even though most source documents needed for an independent evaluation were not available, the Division and Districts felt that by reviewing the project as a whole "a knowledgeable engineer could substantiate the reasonableness of any figure."

5. Estimating Procedures

The procedures used by the Corps in preparing estimates for Civil Works projects do not lend themselves to the accurate reporting of a project's estimated cost during the early stages of the project or to the projected completion date. Preauthorization studies and cost estimates for Civil Works projects are based on a limited amount of survey and investigative work and the results are mostly conceptual rather than detailed designs. After authorization of the project and receipt of advance engineering and design funds, more exhaustive investigation and design studies are undertaken to define the location, capacities, and types of structures more specifically. The original estimates for complex projects do not reflect realistic cost data because the project estimates are not based on comprehensive engineering and fieldwork. As additional investigative work is completed and changes are identified, the original cost estimate is continually updated through the preparation of general design memorandums (GDM's) and feature design memorandums (FDM's).

Regarding the Tennessee-Tombigbee Waterway, this factor contributed to the significant increases in the project's cost estimate. The $289 million reported in fiscal year 1967 was based primarily on a limited survey of the scope of work. Our review of expenditures from 1947 to 1966 showed that $1.1 million was spent intermittently during the 20-year period to conduct preliminary surveys (Annex D, page 33). With these funds, several alternate plans were developed, benefits for each plan were derived, and cost estimates were prepared. Throughout our review, it was evident that the preplanning phase of the project was inadequate. For example, the requirements for real estate and relocations were determined from maps developed in 1938. Also, some items were omitted erroneously from the fiscal year 1967 project cost estimate. Some of the design changes brought about in later GDM's and FDM's could have been included in initial design documents if appropriate resources had been made available for more detailed engineering prior to the start of construction.

To ensure that estimates prepared during the early years of a project depict the cost of each feature more accurately, some changes in the Corps' planning and estimating procedures are needed. One method of ensuring more accurate cost estimates during the project's early stage would be to change the contingency allowances used for Civil Works projects. Currently, for projects costing more than $10 million, EM 1110-2-1301 allows an additional 15 percent of the estimated cost to be included in the PB-3 for contingencies. Because of the limited amount of investigative and survey work performed in the preauthorization stage, and the many unknowns, it does not appear that 15 percent is sufficient. Another method to ensure more accurate cost estimates would be to increase the

amount of resources (funds, personnel, and time) allotted to preliminary surveys. By increasing the resources, more thorough design studies could be made and the features of the project would be defined more specifically so as to minimize unknowns and permit preparation and reporting of more accurate estimates.

Project Cost Estimates (PB-3's). The PB-3 is a detailed breakdown of the total estimated project cost. It provides basic cost information necessary for preparation of budget requests to Congress and the determination of economic justification. Formulation of the PB-3's rests primarily with the districts; however, the estimates are reviewed by the division which submits recommended programs to the Chief of Engineers. To ensure that realistic estimates are formulated, each district and division must ensure that the PB-3's reflect accurate and up-to-date cost and design data.

Our review of the PB-3's prepared for the Tennessee-Tombigbee Waterway (Annex E, page 35) showed that (i) the project's estimated cost in fiscal year 1967 was understated about $28 million, (ii) the PB-3's prepared from fiscal year 1967 through fiscal year 1975 were not updated to reflect current cost trends, (iii) about $344 million in known cost increases was not included in the fiscal year 1975 estimate, and (iv) the project's current estimate (fiscal year 1977) may increase during future years due to refinements in the scope of work and inflation.

Fiscal Year 1967 Cost Estimate. The fiscal year 1967 PB-3 was understated by about $28 million because 1958 pricing data were used and the cost of clearing and grubbing was omitted. In December 1975, the Mobile District made a reevaluation of project cost (which also included the portion to be accomplished by the Nashville District) reported on the fiscal year 1967 PB-3. This reevaluation was based on the assumption that all quantities used in developing the estimate were accurate. Accordingly, the review centered around the use of appropriate unit prices and omissions in the scope of work. Details were:

Feature	Project Section	Costs Shown in FY 67 PB-3	Recomputed Cost	Difference
Lands and Damages	River, Canal and Divide	$ 11,900,000	$ 13,057,000	$ 1,157,000
Dams	River	16,400,000	17,737,150	1,337,150
Locks	Canal and Divide	53,600,000	59,040,898	5,440,898
Channels and Canals (rectifications, cutoffs, etc.)	Canal and Divide	78,100,000	97,989,700	19,889,700
Total		$160,000,000	$187,824,748	$27,824,748

The original estimate differed from the recomputed cost because 1958 pricing data were used in the fiscal year 1967 estimate. Using recent historical data, the Mobile District found that some of these unit prices were conservative and inconsistent with bidding experience available at the time the PB-3 was prepared. For example, when the estimate was prepared, a unit price of $40 a cubic yard was used as the cost of concrete for spillway piers. Bidding experience in 1966, however, disclosed that $45 a cubic yard was a more realistic price. Mobile's estimators also found that a higher unit cost was appropriate for common excavation in the Canal and Divide Sections. This, coupled with omission of clearing and grubbing, resulted in the understatement of about $28 million in the fiscal year 1967 PB-3.

Current Market Conditions. Project cost estimates submitted from fiscal years 1967 through 1975 were not always adjusted to show increased material and labor costs. When preparing the annual PB-3's, each district is required to adjust the previous estimate to reflect current market conditions. This procedure is known as price leveling and is done either by applying a construction cost index or by using actual unit prices obtained from current bidding experience. The latter method is preferred when data are available. If such data are not available, the application of cost indexes published in the Engineering News-Record (ENR) is acceptable. Our review showed, however, that some costs were not price leveled. For example, price level increases of $14.5 and $33.7 million were applicable to fiscal years 1968 and 1969, respectively, and were not reflected in the PB-3's. The Mobile District partially corrected this understatement during fiscal year 1970 by applying a 3-year escalation factor of 24 percent to all costs on the PB-3 except for lock structures. An 8-percent escalation factor was applied to the cost of lock structures. Although the multi-year escalation increased the PB-3's by about $34 million, we believe the estimate still was understated by at least $40.5 million. During the next 5 fiscal years (1971 through 1975) the cost indexes published in the ENR were applied to previous estimates and the increased costs shown in PB-3's. Our review, however, showed that the published ENR indexes did not reflect the area's actual market conditions (Annex F, page 37). For example, bidding experience in 1972 showed that reinforcing steel cost $500 a ton. Updating the 1967 cost base using the ENR indexes provided a unit price of $450 a ton.

The ENR indexes are designed to disclose general purpose construction cost factors. Such factors are developed using a weighted aggregate of constant quantities of structural steel, portland cement, lumber, and common labor. The ENR cost indexes do not specifically include earthwork (excavation) as a separate cost item which comprises about 37 percent, or about $503 million, of the current estimated cost of the Waterway. Our review of excavation costs showed that the costs remained fairly compatible to the ENR indexes (equipment, labor, and fuel costs) until 1972, when petroleum and equipment costs escalated significantly. In

addition, common labor rates rather than skilled are used in computing the Construction Cost Index. Complex engineering projects such as the Tennessee—Tombigbee require a large number of skilled personnel, such as heavy equipment operators. Consequentiy, much of the cost increases reported during fiscal years 1975 and 1976 actually reflect increases experienced as early as 1972. The use of actual prices based on contract bid experience would have provided a more accurate basis for reporting the estimated cost of the Waterway.

6. Contracting Methods

Construction work on the Waterway is expected to be accomplished by 162 construction contracts. The status of contract awards at 31 March 1976 was:

District	Construction Contracts Awarded	Construction Contracts To Be Awarded
Mobile	9	119
Nashville	3	31
Total	12	150

For the 12 contracts awarded, we reviewed the procedures used by the Districts in the preparation and review of the plans and specifications, methods of contracting, issuance of contract modifications, and the extent of competitive bidding on each of the contracts. We concluded that more favorable contract prices could possibly be obtained by requesting bidders to submit whole and part proposals for work which is physically separable. Overall, we found that sufficient competition was obtained on all initial contracts awarded to date.

Work Requirements and Invitations for Bids (IFB's). Construction costs could possibly be reduced by using a different method of defining work requirements and advertising the work for bids. On the Tennessee-Tombigbee Waterway, the Districts have considerable flexibility in establishing work requirements. One contract can be awarded for a major feature or the same work can be performed by multiple contracts. Exercising this flexibility, the districts can issue IFB's which request prospective bidders to submit price proposals for the total work specified in the IFB's as well as for specifically defined portions of the work. Then each proposal can be evaluated and award of the contract(s) made on the basis of the most favorable proposal or combination of proposals. Our review disclosed that more favorable contract prices may have been obtained if such an award practice had been used. For example:

-Work on the Waterway at Gainesville, Alabama required the construction of a spillway, lock, and canal. To expedite construction on the Waterway, this work was performed under two separate contracts. Contract DACW-01-73-C-0044 involving $18.5 million was awarded on 22 September 1972 for the construction of the lock and canal. Construction of the spillway was accomplished by contract DACW-01-74-C-0049 which was awarded on [illegible] December 1973 for $14.2 million. Since both construction sites were located within one-half mile of each other, it was possible that the [illegible] could have been accomplished more economically if one contrac[illegible] been awarded. For example,

67-591 O—80——21

each contractor required mobilization costs totaling about $1.35 million. Also, several duplications in requirements for equipment, supplies, concrete plants, and personnel were generated with the award of two contracts. The Corps has considerable flexibility in funding Civil Works construction contracts. Funds can be switched from project to project and funds have to be obligated for only the amount of work to be accomplished during any specific fiscal year. Therefore, it does not appear that the availability of funds precluded this work from being combined on one contract to take advantage of indicated cost savings.

Massive Contracting. For the 12 construction contracts awarded, we did not identify any instances where a large number of contracts awarded in the local areas contributed to higher prices. Economic conditions in the area were such that a sufficient amount of competition was involved in each of the contracts awarded. Also, contractors from numerous states submitted bids for work on the Waterway. The number of bidders and their geographical locations on each of the 12 contracts is shown on Annex I, page 49.

7. Project Configuration

As a result of additional detailed planning, many changes have been made to the project's original configuration. Supplement 1 to the general design memorandum (GDM), 30 June 1966, provided the Waterway's basic configuration. This document set forth a plan requiring the construction of 10 locks and 5 dams. Channel widths of the project were to be 200 feet in the River and Canal Sections and 180 feet in the Divide Section. The channels were to be maintained at a depth of 9 feet in the River Section and 12 feet in the Canal and Divide Sections. The first major configuration change to this plan took place in March 1967 when the Secretary of the Army approved an increase in the width of the Waterway to 300 feet. A general description of other configuration changes which occurred are contained in the following paragraphs.

River Section. Extensive design changes were made in the River Section. As stated earlier, four locks and dams will be constructed in this Section. They will be located in Gainesville, Alabama; Aliceville, Alabama; Columbus, Mississippi; and Aberdeen, Mississippi. The general features presented in the 1960 and 1966 design memorandums were that all locks would consist of concrete-gravity sidewalls, sills, and guide walls. Three of the four locks were to be constructed on timber pile foundations. The remaining structure, the Gainesville lock, was designed for a rock foundation. All four dams were designed as earthfill structures with concrete-gravity, gated spillways. The lowermost structure on the Waterway (Gainesville lock and dam) is located about 265 miles above the mouth of the Mobile River. Currently, this feature consists of a lock, an approach canal, a combination gated fixed-crest spillway, abutment walls, and a system of overflow and nonoverflow dikes.

Major changes in Gainesville's configuration since 1966 were brought about by the Gainesville GDM, June 1969, and the feature design memorandum (FDM) prepared on the spillway, May 1972. The lock at Gainesville was resited about 1,850 feet downstream from its original location while the spillway was relocated 400 feet upstream. The FDM changed the spillway from a gated structure with an earth dam river closure to a combination gated and fixed-crest spillway.

The second lowermost structure on the Waterway (Aliceville lock and dam) is located about a mile southwest of Pickensville, Alabama. Like Gainesville, this facility currently consists of the lock, a combination gated and fixed-crest spillway, abutment walls, approach channels, and a system of overflow and nonoverflow

dikes. Modifications to this facility's configuration included a change from a timber pile foundation to a concrete-gravity structure, the addition of a spillway bay, the increased height of spillway tainter gates, lowering the foundation of both lock and spillway, addition of a river diversion channel, and the resiting of the lock. These changes resulted with approval of the Aliceville GDM, November 1973.

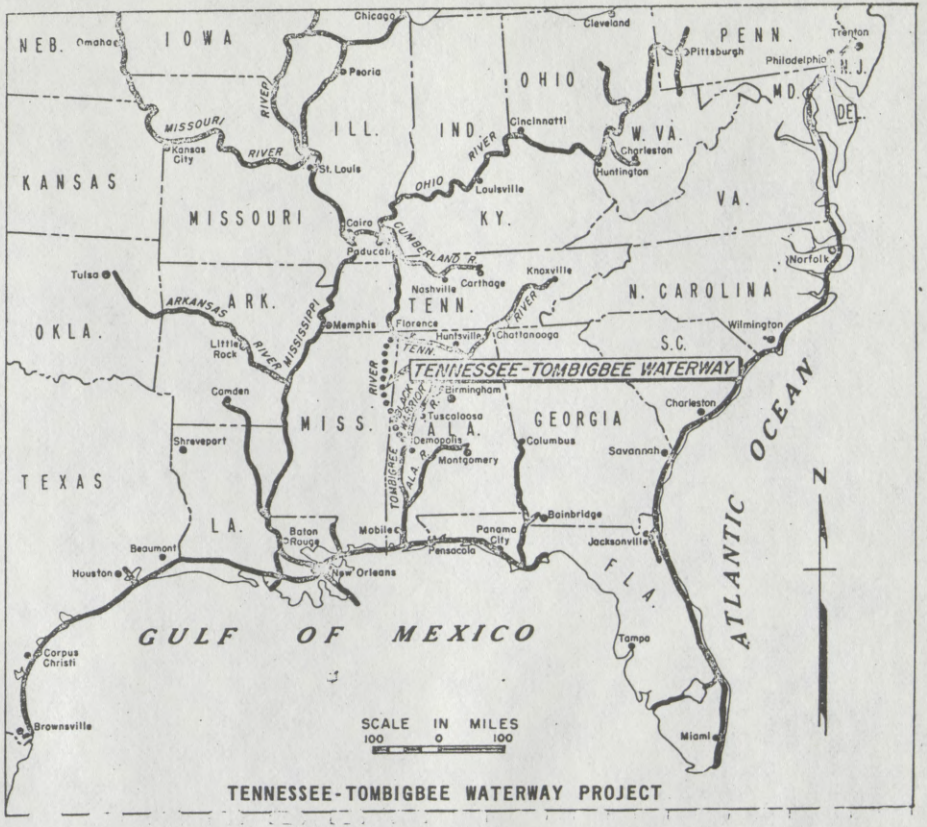
The Columbus lock and dam located about 4 miles northwest of Columbus, Mississippi is the third upstream structure in the River Section. Changes in this facility's configuration, as shown in the Columbus GDM, January 1974, included the relocation of the lock and dam sites, increases in the gate sizes, the addition of a fixed-crest spillway, and a change in the lock from timber pile foundation to a concrete-gravity structure.

The northernmost structure in the River Section, the Aberdeen lock and dam, is located about a mile east of Aberdeen, Mississippi. Plans for this structure currently consist of the lock, located in the channel through a bend in the Tombigbee River, a gated spillway adjacent to the lock, a minimum flow structure, abutment walls, and a system of overflow and nonoverflow dikes. Changes in this structure's configuration also included going from a timber pile foundation to a concrete-gravity foundation and increased dimensions of the spillway. These changes were included in the facility's GDM, August 1974.

Canal Section. The Canal Section extends about 44 miles from the Aberdeen Pool below Amory, Mississippi to the Bay Springs lock and dam at the lower end of the Divide Section. The initial design memorandums (1960 and 1966) depicted the construction of five concrete reinforced locks in this section. Spillways were not included in initial engineering features. Early planning was based on what is known as the "Perched Canal" concept. Under this concept, a channel was formed by levees along both sides of the canal. The current concept, however, involves only one levee extending along the west side of the canal. This levee serves the dual purpose of preventing floods and containing the navigation pool within the canal. The current approach is referred to as the "Chain-of-Lakes" concept. In addition to the concept change from the "Perched Canal" to the "Chain-of-Lakes", other major configuration changes were made. They include the addition of gated spillways at each of the five locks and the resiting of locks A, C, and D.

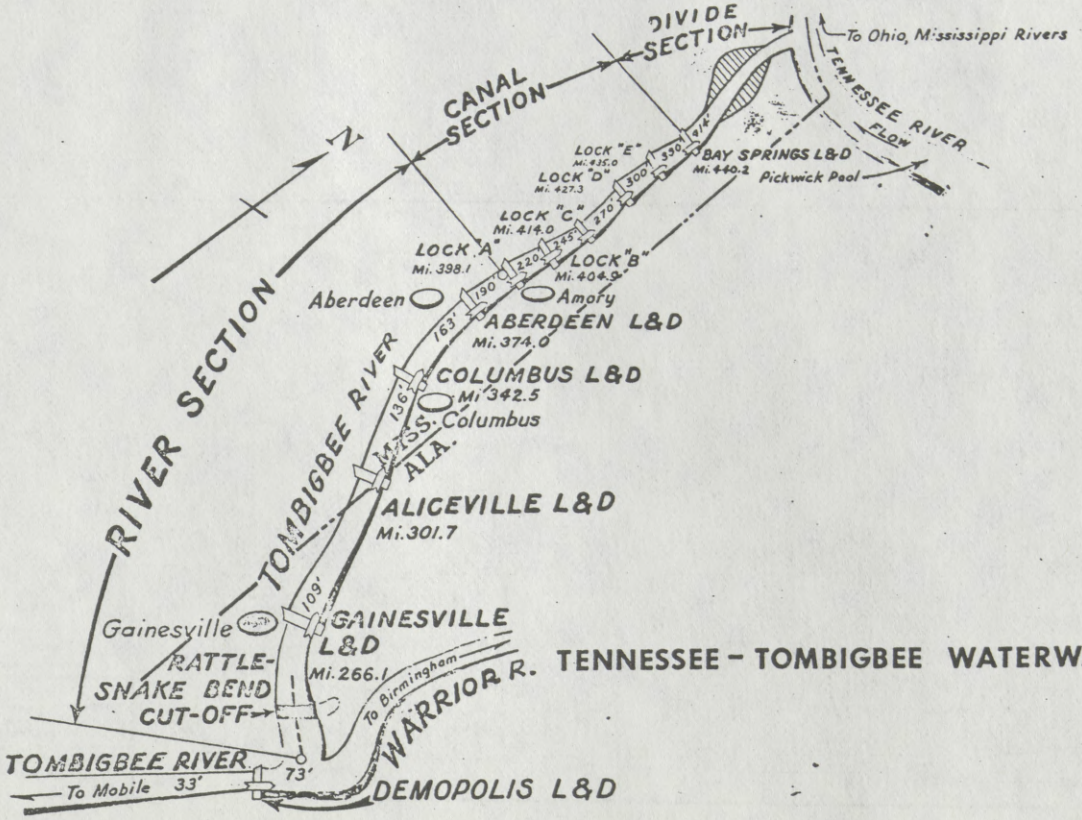
Divide Section. The 40-mile long Divide Section begins at the Bay Springs lock and dam, and will be directly connected to the Tennessee River Pickwick Reservoir via the Divide cut. General designs initially featured a lock at Bay Springs located in Mackeys Creek

consisting of concrete-gravity walls, sills, and guide walls. A spillway was not required. The Bay Springs dam was to be an earthfill structure. Changes in the project configuration since 1966 have primarily been the relocation of the lock to the left bank of Mackeys Creek and a change from an earthfill to a rockfill dam. These changes were set forth in the Bay Springs GDM, October 1974. The Divide cut comprises the major part of the Divide Section and serves as the connecting link between the Tennessee and Tombigbee Rivers. Changes to the Divide cut configuration involved basically the revision of quantitative estimates, changes in the cut's alignment, and changes in the haul distances for spoil materials. These changes resulted from more detailed planning and the establishment of environment controls as shown in the GDM, September 1973, and the FDM, April 1976.



TENNESSEE-TOMBIGBEE WATERWAY PROJECT

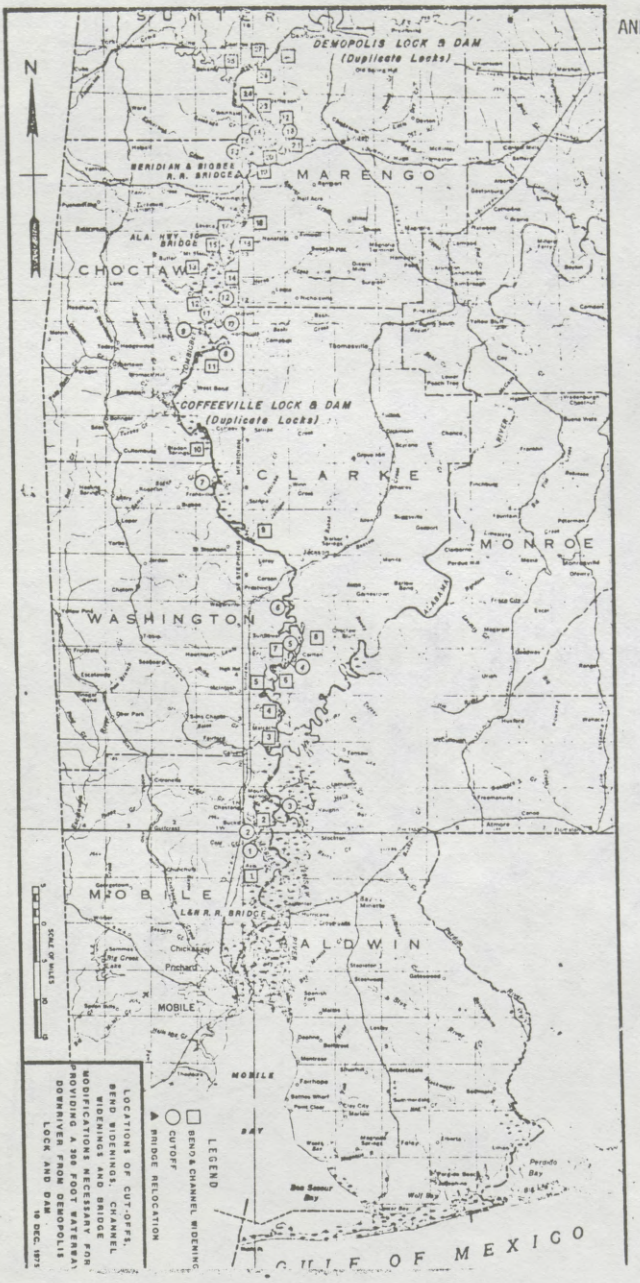
ANNEX A
Sheet 1



TENNESSEE - TOMBIGBEE WATERWAY

ANNEX A
Sheet 2

ANNEX B


SUMTER
DEMOPOLIS LOCK & DAM
(Duplicate Locks)
N
MERIDIAN & BIGBEE
R.R. BRIDGE
MARENGO
ALA.
BRIDGE
CHOCTAW
COFFEEVILLE LOCK & DAM
(Duplicate Locks)
CLARKE
MONROE
WASHINGTON
MOBILE
L&N R.R. BRIDGE
BALDWIN
Chickasaw
Prichard
MOBILE
MOBILE
BAY
Bon Secour
Bay
GULF OF MEXICO
Perdido
Bay
SCALE OF MILES
LEGEND
BEND & CHANNEL WIDENING
CUTOFF
BRIDGE RELOCATION
LOCATIONS OF CUT-OFFS, BEND WIDENINGS, CHANNEL WIDENINGS AND BRIDGE MODIFICATIONS NECESSARY FOR PROVIDING A 300 FOOT WATERWAY DOWNRIVER FROM DEMOPOLIS LOCK AND DAM
18 DEC. 1973

ANNEX C

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
STATUS OF WORK COMPLETED AND IN PROGRESS
AT 31 MARCH 1976

Category of Work	Fiscal Year 1977 Estimated Costs	Amount Expended or Under Contract 2/	Percent Expended or Under Contract 2/
	(Amounts in Thousands)		
Construction Work 1/			
River Section	$ 399,255	$154,476	38.6
Canal Section	310,641	0	0
Divide Section	472,952	14,489	3.0
Subtotal	$1,182,848	$168,965	14.2
Lands and Damages			
River Section	$ 30,945	$ 10,065	32.5
Canal Section	9,625	151	1.5
Divide Section	13,982	5,431	38.8
Subtotal	$ 54,552	$ 15,647	28.6
Supervision and Administration (S & A)			
River Section	$ 16,730	$ 4,128	24.6
Canal Section	14,142	1,178	8.3
Divide Section	22,178	1,357	6.1
Subtotal	$ 53,050	$ 6,663	12.5
Engineering and Design (E & D)			
River Section	$ 21,050	$ 17,268	82.0
Canal Section	19,350	10,963	56.6
Divide Section	29,150	9,691	33.2
Subtotal	$ 69,550	$ 37,922	54.5
Total	$1,360,000	$229,197	16.8

1/ Includes work for relocations (railroads, utilities, cemeteries, etc.), reservoirs, dams, locks, roads, cutoffs, recreation facilities, buildings and grounds, purchase of equipment, and cultural resources.

2/ For construction work the figures represent work completed or in progress by contracts. For lands and damages, S & A and E & D, the figures represent actual costs incurred.

ANNEX D

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
PREPLANNING FUNDS—NOT INCLUDED IN CURRENT PROJECT COST ESTIMATE

(Fiscal Years 1947 through 1966)

Fiscal Year	Amount	
1947	$ 58,000	-Preliminary Survey -Designs and Plans in Progress
1948	600,000	-Preparation of Survey (definite) Project Reports and Plans and Specifications
1949	0	-None
1950	200,000	-Preparation of Detailed Plans and Contract Plans and Specifications
1951	40,000	-Design and Preparation of Detailed Plans and Specifications
1952	(183,500)	-Funds Revoked -Project Placed in "Deferred for Restudy" Status
1953	(800)	-Funds Revoked -Project Placed in "Deferred for Restudy" Status
1954	0	-Project Placed in "Deferred for Restudy" Status
1955	0	-Project Placed in "Deferred for Restudy" Status
1956	0	-Project Placed in "Deferred for Restudy" Status
1957	65,000	-Economic Restudy Prepared from General Investigation Funds
1958	95,000	-Economic Restudy Prepared from General Investigation Funds
1959	10,000	-Economic Restudy Prepared from General Investigation Funds
1960	32,000	-Economic Restudy Prepared from General Investigation Funds
1961	8,000	-Economic Restudy Prepared from General Investigation Funds
1962	0	-None
1963	0	-None
1964	0	-None
1965	125,000	-Reevaluation of Project Economics
1966	80,000	-Reevaluation of Project Economics
Total	$1,128,700	

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
PROJECT COST CHANGES

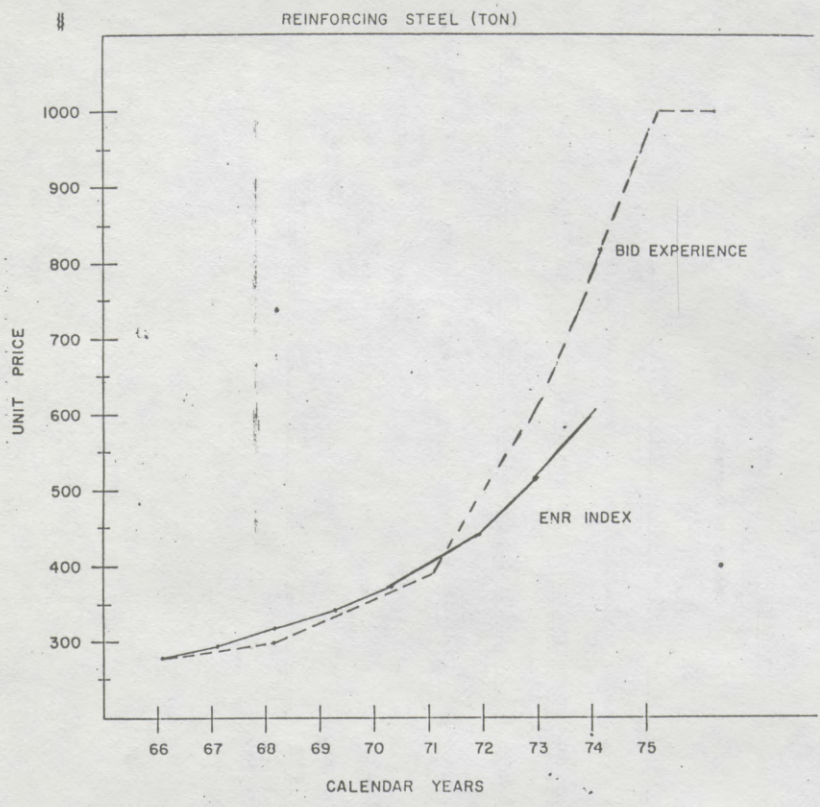
(Amounts in Thousands)

Fiscal Year of Appropriation:	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	
Effective Date of Estimates (PB-3's)	1 Jul 65	1 Jul 66	1 Jul 67	1 Jul 68	1 Jul 69	1 Jul 70	1 Jul 71	1 Jul 72	1 Jul 73	1 Jul 74	1 Oct 75	
Total Cost (Corps of Engineers only)	$263,000	$289,000	$289,000	$291,000	$323,000	$346,000	$386,000	$465,000	$623,000	$815,000	$1,360,000	
Changes to Estimates		$ 26,000	$ 0	$ 2,000	$ 32,000	$ 23,000	$ 40,000	$ 79,000	$158,000	$192,000	$ 545,000	Total Change $1,097,000
Breakdown of Changes:												
Price Level Changes		$ 0	$ 0	$ 2,000	$ 29,700	$ 19,850	$ 38,060	$ 37,489	$ 44,813	$ 49,181	$ 103,721	$ 324,814
Current Unit Prices/Recent Bid Experience		4,747	0	0	0	1,050	0	8,426	25,108	69,311	311,495	420,137
Real Estate		1,653	0	0	400	0	1,120	350	3,463	4,216	(434)	10,76[illegible]
Design Changes		16,500	0	0	1,300	200	170	31,237	84,120	66,629	132,510	332,666
Other/Unclassified		3,100	0	0	600	1,900	650	1,498	496	2,663	(2,292)	8,615

ANNEX F
SHEET 1

TENNESSEE-TOMBIGBEE WATERWAY PROJECT

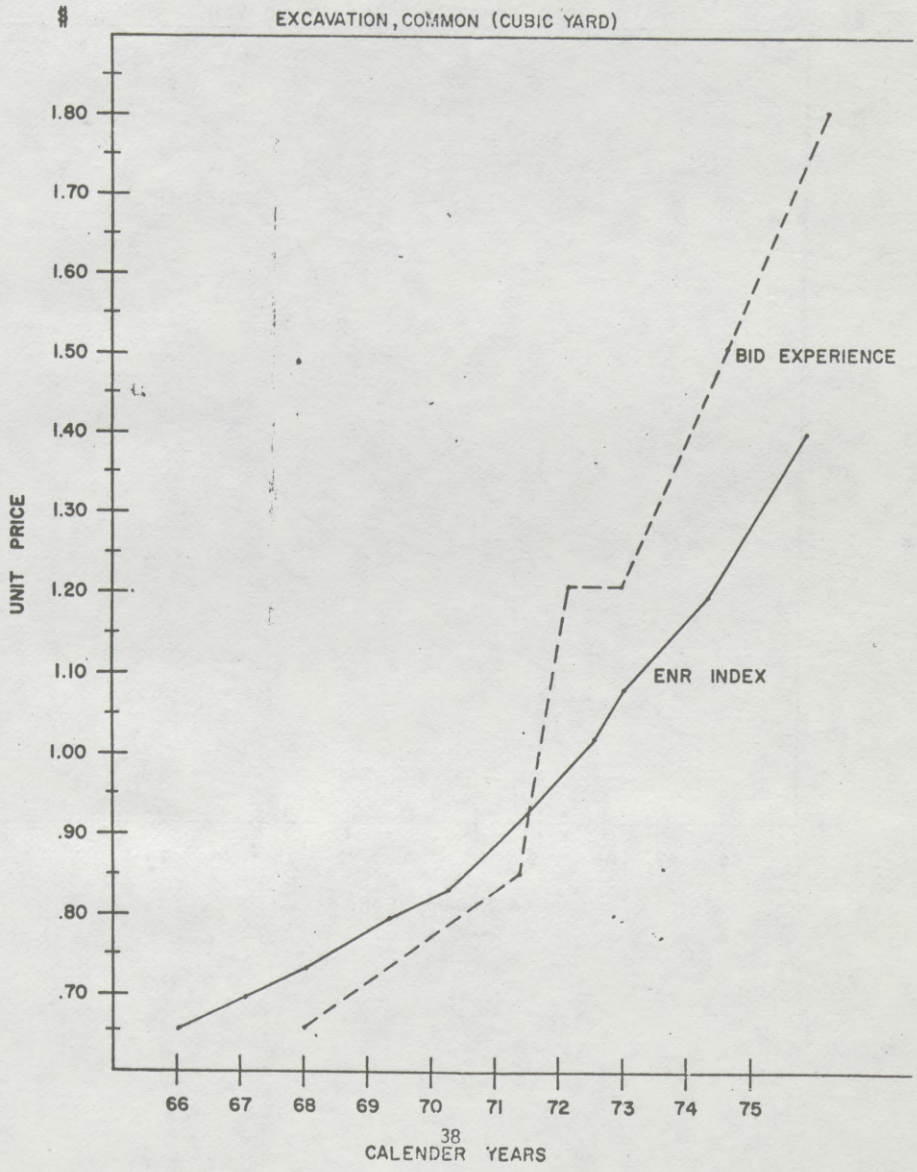
GRAPHIC COMPARISONS OF ACTUAL BID EXPERIENCE WITH ENR INDEX



ANNEX F
SHEET 2

TENNESSEE - TOMBIGBEE WATERWAY PROJECT

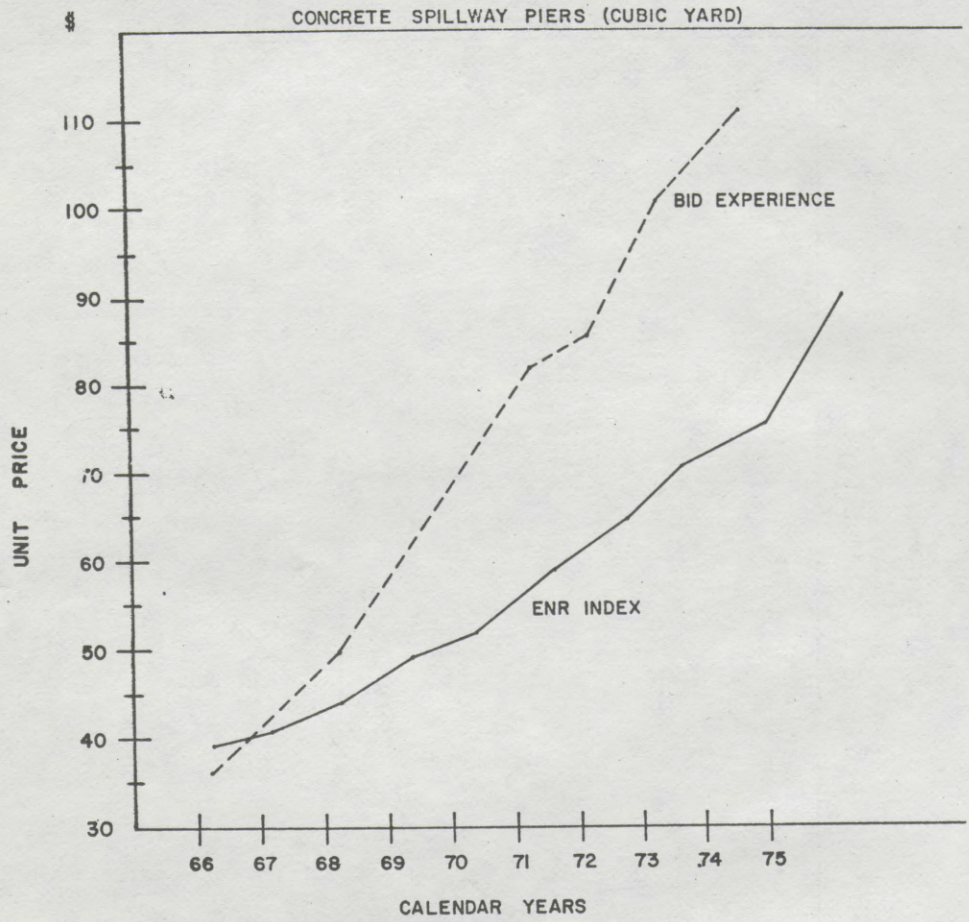
GRAPHIC COMPARISONS OF ACTUAL BID EXPERIENCE WITH ENR INDEX



TENNESSEE-TOMBIGBEE WATERWAY PROJECT

ANNEX F
SHEET 3

GRAPHIC COMPARISONS OF ACTUAL BID EXPERIENCE WITH ENR INDEX



ANNEX G
SHEET 1

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
STATUS OF DESIGN MEMORANDUMS

AT 31 MARCH 1976

Project	Subject of Design Memorandums	Approved	Submitted 1/ but Not Approved	Not Submitted for Approval
RIVER SECTION				
Demopolis Lake	Real Estate	X		
	Relocations-Railroad	X		
	Rattlesnake Bend Cutoff	X		
	Navigational Channel	X		
	Relocations-Pipeline		X	
	Relocations-AT&T			X
Gainesville Lock and Dam	Basic Hydrology	X		
	Land Requirements—Public Use	X		
	Construction Area	X		
	Real Estate—Reservoir Area	X		
	General Design Memo	X		
	Source of Construction Material	X		
	Geology and Soils	X		
	Lock and Channels	X		
	Relocations—Railroad	X		
	Geology and Earthwork—Spillway and Channels	X		
	Spillway	X		
	Instrumentation	X		
	Relocations—Black Warrior Electric	X		
	Relocation—Alabama Power	X		
	Public Use Facilities	X		
	Buildings, Grounds, and Utilities	X		
	Reservoir Clearing	X		
	Navigational Channel	X		
	Sedimentation Program			X
	Relocations—Telephone			X
	Relocations—Gas			X
	Master Plan			X
Aliceville Lock and Dam	Basic Hydrology	X		
	Requirements—Public Use	X		
	Real Estate—Construction Area	X		

ANNEX G
SHEET 2

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
STATUS OF DESIGN MEMORANDUMS

AT 31 MARCH 1976

Project	Subject of Design Memorandums	Approved	Submitted 1/ but Not Approved	Not Submitted for Approval
Aliceville Lock and Dam	Real Estate—Reservoir Area	X		
	General Design Memo	X		
	Construction Procedures and Diversion Plan	X		
	Geology and Earthwork	X		
	Sources of Construction Material	X		
	Lock and Spillway	X		
	Right Bank Access Road	X		
	Relocations—Railroad	X		
	Mississippi Valley Gas Pipeline			X
	Instrumentation	X		
	Relocations—Alabama Power	X		
	Relocations—Telephone, TV			X
	Navigational Channel	X		
	Public Use Facilities			X
	Buildings, Grounds, and Utilities			X
	Reservoir Cleaning	X		
	Sedimentation Program			X
	Master Plan			X
	Relocations—TVA	X		
	Relocations—Southern Gas Pipeline			X
	Relocations—Tennessee Gas Pipeline			X
	Relocations—Old Macon Road			X
Columbus Lock and Dam	Basic Hydrology	X		
	General Design Memo	X		
	Land Requirements-Public Use Facilities	X		
	Geology and Earthwork	X		
	Sources of Construction Material	X		
	Lock and Spillway	X		
	Relocation—TVA	X		
	Real Estate Construction Area	X		

ANNEX G
SHEET 3

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
STATUS OF DESIGN MEMORANDUMS

AT 31 MARCH 1976

Project	Subject of Design Memorandums	Approved	Submitted 1/ but Not Approved	Not Submitted for Approval
Columbus Lock and Dam	Real Estate—Reservoir Area	X		
	Relocations—Telephone and Electric		X	
	Relocations—Railroad			X
	Instrumentation	X		
	Construction Procedures and Diversion Plan	X		
	Right Bank Access Road	X		
	Public Use Facilities			X
	Buildings, Grounds, and Utilities			X
	Navigational Channel	X		
	Reservoir Clearing	X		
	Sedimentation Program			X
	Master Plan			X
	Relocations—Electric	X		
Aberdeen Lock and Dam	Basic Hydrology	X		
	General Design Memo	X		
	Land Requirements Plan	X		
	Geology and Earthwork	X		
	Reservoir Clearing	X		
	Sources of Construction Material	X		
	Lock and Dam	X		
	Real Estate—Construction Area	X		
	Real Estate—Reservoir	X		
	Relocations—TVA			X
	Relocations—Railroad			X
	Relocations—Gas	X		
	Instrumentation	X		
	Navigational Channel	X		
	Public Use Facilities			X
	Buildings, Grounds, and Utilities			X
	Sedimentation Program			X
	Master Plan			X
	Relocations—Roads			X
	Relocations—Water			X
	Relocations—TVA			X

67-591 O—80——22

ANNEX G
SHEET 4

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
STATUS OF DESIGN MEMORANDUMS

AT 31 MARCH 1976

Project	Subject of Design Memorandums	Approved	Submitted 1/ but Not Approved	Not Submitted for Approval
CANAL SECTION:				
	Basic Hydrology	X		
	General Design—Locks A & B	X		
	Lock A—Relocation Railroads			X
	Real Estate—Construction Area Locks A & B		X	
	Real Estate—Construction Area Locks C, D, & E			X
	Real Estate—Reservoir Area			X
	General Design Memo			X
	Relocation—Railroad			X
	Relocation—Pipeline	X		
	Sources of Construction Materials			X
	Lock A—Lock, Spillway, and Earthwork	X		
	Lock A—Relocation TVA			X
	Lock B—Lock and Earthwork	X		
	Relocations—South Central			X
	Instrumentation—Lock A			X
	Lock C—Lock, Spillway, and Earthwork			X
	Instrumentation—Lock B			X
	Lock D—Lock, Spillway, and Earthwork			X
	Lock A—Canal, Levee and Control Structures			X
	Instrumentation—Lock C			X
	Instrumentation—Lock D			X
	Lock B—Canal, Levee and Control Structures			X
	Lock C—Canal, Levee, and Control Structures			X
	Public Use Facilities			X
	Buildings, Grounds, and Utilities			X
	Lock D—Canal, Levee, and Control Structures			X
	Master Plan			X
	Sedimentation Program			X
	Lock E—Canal, Levee, and Control Structures			X

TENNESSEE—TOMBIGBEE WATERWAY PROJECT
STATUS OF DESIGN MEMORANDUMS

ANNEX G
SHEET 5

AT 31 MARCH 1976

Project	Subject of Design Memorandums	Approved	Submitted 1/ but Not Approved	Not Submitted for Approval
CANAL SECTION:				
	Lock E—Lock, Spillway, and Earthwork			X
	Instrumentation—Lock E			X
	Lock A—Relocation Gas Pipeline			X
	Lock B—Relocation Telephone			X
	Lock B—Relocation Power			X
	Lock C—Relocation Telephone			X
	Lock C—Relocation TVA			X
	Lock D—Relocation TVA			X
	Lock A—Relocation EPA			X
	Lock A—Relocation Sewage Facility			X
	Lock A—Relocation Roads			X
	Lock C—Relocation Electrical			X
DIVIDE CUT:				
	General Design Memo	X		
	Feature Design Memo	X		
	Dredging Yellow Creek Embayment	X		
	Drainage Structure	X		
	Instrumentation and Inspection			X
	Real Estate—Divide Cut and Railroad Relocation	X		
	Master Plan			X
	Relocation—Railroad		X	
	Relocation—Railroad	X		
	Relocation—Utilities	X		
	Relocation—Roads		X	
BAY SPRINGS:				
	Materials Design	X		
	General Design Memo	X		
	Lock and Dam			X
	Instrumentation			X
	Real Estate—Construction Area	X		
	Real Estate-Reservoir		X	
	Reservoir Clearing			X

Note 1.

The approving authority for design documents of a general nature is the Office of the Chief of Engineers (OCE) while design documents of a technical nature are approved by South Atlantic Division (SAD).

ANNEX H
Sheet 1

TENNESEE-TOMBIGBEE WATERWAY PROJECT
CHANGES IN QUANTITIES OF MAJOR COST ITEMS BY MAJOR FEATURE

AT 31 MARCH 1976

Item/Feature	1966	1975	Net Change
Reinforcement Steel (Ton):	35,087	13,092	(21,995) a/
Gainesville Lock & Channel	715	1,132	417
Gainesville Spillway	201	243	42
Aliceville Lock & Dam	986	1,350	364
Columbus Lock & Dam	1,015	1,369	354
Aberdeen Lock & Dam	1,024	1,381	357
Lock A & Spillway	6,140	984	(5,156)
Lock B & Spillway	6,015	1,431	(4,584)
Lock C & Spillway	6,015	991	(5,024)
Lock D & Spillway	6,140	1,047	(5,093)
Lock E & Spillway	6,140	1,053	(5,087)
Bay Springs Lock & Dam	696	2,111	1,415
Structural Steel (Ton):	6,910	14,364	7,454 a/
Gainesville Lock & Channel	967	1,240	273
Gainesville Spillway	*	630	630
Aliceville Lock & Dam	917	1,268	351
Columbus Lock & Dam	776	1,284	508
Aberdeen Lock & Dam	976	1,647	671
Lock A & Spillway	228	1,298	1,070
Lock B & Spillway	228	1,378	1,150
Lock C & Spillway	228	990	762
Lock D & Spillway	228	1,003	775
Lock E & Spillway	228	1,114	886
Bay Springs Lock & Dam	2,134	2,512	378
Excavation (C.Y.):	209,679,200	304,252,530	94,573,330 a/
Demopolis Lake	964,000	15,830,000	14,866,000
Gainesville Lock & Channel	3,399,000	3,344,000	(55,000)
Gainesville Spillway	1,086,700	1,170,700	84,000
Gainesville Lake	13,670,000	18,146,100	4,476,100
Aliceville Diversion Channel	971,000	1,074,000	103,000
Aliceville Lock & Dam	1,142,500	3,661,000	2,518,500
Aliceville Lake	8,120,000	16,090,127	7,970,127
Columbus Lock & Dam	758,500	4,142,503	3,384,003
Columbus Lake	24,638,000	26,844,000	2,206,000
Aberdeen Lock & Dam	1,239,000	3,247,500	2,008,500
Aberdeen Lake	1,250,000	6,005,500	4,755,500
Lock A & Spillway	1,425,000	1,835,700	410,700
Lock A & Canal	0	15,601,500	15,601,500
Lock B & Spillway	402,000	1,766,400	1,364,400
Lock B & Canal	0	12,807,500	12,807,500

* Lump sum dollar amount only was shown on contract. Quantities were not shown.

ANNEX H
Sheet 2

TENNESSEE-TOMBIGBEE WATERWAY PROJECT

CHANGES IN QUANTITIES OF MAJOR COST ITEMS BY MAJOR FEATURE

AT 31 MARCH 1976

Item/Feature	1966	1975	Net Change
Lock C & Spillway	751,500	1,088,500	337,000
Lock C & Canal	0	3,556,000	3,556,000
Lock D & Spillway	283,000	1,341,900	1,058,900
Lock D & Canal	0	3,234,000	3,234,000
Lock E & Spillway	243,000	1,053,300	810,300
Lock E & Canal	0	3,645,700	3,645,700
Bay Springs Lock & Dam	1,791,000	2,730,600	939,600
Divide Cut	147,545,000	156,036,000	8,491,000
Concrete (C.Y.)	1,716,230	2,219,234	503,004 a/
Gainesville Lock & Channel	199,800	173,310	(26,490)
Gainesville Spillway	36,200	56,900	20,700
Aliceville Lock & Dam	196,200	229,417	33,217
Columbus Lock & Dam	197,480	202,660	5,180
Aberdeen Lock & Dam	211,500	199,294	(12,206)
Lock A & Spillway	98,250	163,730	65,480
Lock B & Spillway	96,250	137,660	41,410
Lock C & Spillway	96,250	158,360	62,110
Lock D & Spillway	98,250	166,442	68,192
Lock E & Spillway	98,250	180,241	81,991
Bay Springs Lock & Dam	387,800	551,220	163,420
Real Estate (Acres):	80,440	104,584	24,144 b/
Gainesville	16,299	15,352	(947)
Aliceville	13,825	14,282	457
Columbus	6,577	16,915	10,338
Aberdeen	5,695	8,335	2,640
Demopolis	2,240	5,534	3,294
Bay Springs	15,796	13,435	(2,361)
Canal Section	13,308	15,500	2,192
Divide Cut	6,700	15,231	8,531

a/ The quantitative changes for reinforcing and structural steel, excavation, and concrete were primarily a result of the many design changes that have been made. Subsequent to 1967, the project was more specifically defined during the preparation of General and Feature Design Memorandums and plans and specifications. As this additional design and engineering work was done, many feature items were added, deleted, or altered.

b/ The increase in real estate was primarily due to adjustments at the various sites in land requirements for construction areas, reservoirs, public use facilities, wildlife management areas, and spoil areas. An additional 8,450 acres of land may also be required for work south of Demopolis.

ANNEX I

CONSTRUCTION CONTRACTS AWARDED ON THE TENNESSEE-TOMBIGBEE WATERWAY PROJECT

AT 31 MARCH 1976

	Range of Bids		Government	Percent Contract	Number of	States from which
	Low	High	Estimate	Complete	Bidders	Bids Were Received
Gainesville Lock and Approach Channels	$ 18,498,867	$ 27,420,177	$ 20,688,479	96	9	TX, OK, MD, PA, MO, GA, MN, CT, KS
Gainesville Spillway	14,151,922	18,020,890	14,331,339	75	4	NC, OK, GA, MN
Aliceville Diversion Channel	1,536,120	1,643,630	1,351,641	100	4	FL, MS, AL, LA
Dredging Yellow Creek Embayment	7,199,000	12,735,000	8,685,000	88	5	MO, LA, MI, TN
Demopolis Reservoir Dredging Phase I	5,759,579	6,956,458	5,370,609	68	7	IL, LA, FL
Aliceville Lock and Dam	47,274,208	51,692,599	49,272,000	13	6	OK, MD, GA, KS, AL, MN
Columbus Lock and Dam	45,972,307	55,875,474	45,759,714	12	6	OK, MD, GA, KS, AL, MN
Rattlesnake Bend Cut off	2,447,384	3,179,878	1,971,695	88	6	LA, FL
Big Creek Cut off	2,923,435	6,869,990	3,473,250	25	9	FL, PA, TN, MO, AL
Demopolis Reservoir Phase I and II Clearing, Grubbing, and Diking, Phase III Excavation	8,656,906	12,338,741	7,049,516	64	7	LA, FL, PA
Relocation Illinois Central Gulf RR	4,789,428	7,404,545	5,173,000	0	15	TN, FL, AL, AK, MS, KS, KY
Test Dewatering Divide Cut	1,164,134	2,441,443	1,490,000	66	8	OK, NJ, MS, KY, MO IN, TN
Totals	$160,373,290	$206,578,825	$164,616,243			

CoaLiquid, Inc.

737 Executive Park
Louisville, Kentucky 40207
(502) 893-0106

August 1, 1980

Honorable John C. Stennis
Russell Senate Office Building
Room 205
Washington, D. C. 20510

Dear Mr. Chairman:

CoaLiquid, Inc. is a Kentucky Corporation engaged in the manufacture of a mixture of pulverized coal and fuel oil (called COM by many), which it sells to utilities and industrial users of residual fuel oil as an alternative fuel. Coal-oil mixtures have been included as a synthetic fuel in all recent federal legislation, and many see COM as the only viable near term option to convert major oil users at least partially to coal. A company affiliated with us recently received a nearly one million dollar loan under the Alternative Fuels Production Program offered by the United States DoE, to construct a plant in Jacksonville, Florida. As President of CoaLiquid, I have been quite active in assisting the start-up of the operation in Florida.

For major oil users in Florida and the southeast generally to convert to coal or to a coal-oil mixture, there must be an economic incentive. Most industrial prospects must see a fuel savings of sufficient amounts to allow them a 25 to 35% return on investment in the capital cost of converting from oil. This means that as a producer of a coal-oil mixture we must price our product at least 10 to 20% lower than residual oil on a BTU basis. Because the cost of transporting the coal from Eastern Kentucky and Tennessee by rail is in the excess of $18.00 per ton, we are not able to meet that reduced price and still operate our business at a profit. What begins as $30 to $35 per ton coal in Kentucky and Tennessee results in $50 per ton coal in Florida. Over one third the price paid for coal in Florida is for transportation with the result that coal from South Africa and Australia is able to effectively compete with Kentucky coal in the state of Florida. That is unthinkable in a time when national interests are rooted in increasing domestic energy production.

CoaLiquid, Inc.

The transportation option of routing coal by rail to Norfolk or Louisville, then by barge to Florida results in virtually the same transportation cost due principally to the rail cost component. I do not blame the railroads for they are but victims of their need for capital to sustain even current levels of service.

As a solution offered, the Tennessee-Tombigbee Waterway is the only reasonable alternative. When complete, the Tenn-Tom will shorten the route from the Kentucky coal fields to Florida by nearly 800 miles and virtually cut in half the cost of transportation. Current DoE estimates are that coal-oil mixtures will soon replace 600,000 barrels of residual oil requirements per day. This will require 25,000,000 tons of coal per year which must be moved to the southeast and to the northeast from Tennessee, Kentucky and Virginia, even ignoring those utilities and industries that convert to coal.

As recent as December of 1979, the President's Commission on Coal issued its report which noted that the Powerplant and Industrial Fuel Use Act, the Energy Security Act, and the proposed Oil Backout Bill would generate demand for 357.8 million tons of coal by 1995. For this to occur, economical and competitive transportation rates must exist.

The Tenn-Tom will not be a one-way carrier of coal. Northern Florida and Southern Georgia is an area dotted by phosphate mines producing for agriculture and industry, as well as one of the most concentrated areas of paper manufacturing. Barges moving coal into the southeast can return to the midwest carrying such products.

Construction of the Tenn-Tom does not eliminate the need for an improving rail system, but instead provides another element in what will be an economical and efficient intermodal transportation system.

CoaLiquid sincerely adds its support to the dozens of companies who have already endorsed the Tenn-Tom. We could not have foreseen those 30 odd years ago when the Tenn-Tom was first authorized that it would become an energy lifeline, but that it has and will become.

Yours truly,

G. T. Hawkins
President

bak

STATEMENT FOR

THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN

WATER RESOURCES SUBCOMMITTEE OF THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

Mr Chairman, we appreciate the opportunity to give written testimony concerning the Tennessee-Tombigbee Waterway.

The East Mississippi Council, Columbus, Mississippi, is a non-profit development organization dedicated to the growth and development of its 17 counties, 5 of which are directly linked to the Waterway and the balance of which can and will be served by transportation arteries to the Waterway. Our membership is 1,385 and is made up of all types of people within our area of concern, the majority of which are individual dues paying members. Since our inception in 1971, we have been intimately involved in transportation matters of our state, including the Tennessee-Tombigbee Waterway. Our membership has consistently supported the Waterway's development, having testified before Congress, as well as numerous occasions which involved the State of Mississippi matters relative to the Waterway. We have not wavered from our support.

As indicative of our support of the Waterway, let me reiterate several matters which should indicate the public support of the Waterway and which shows the investment which the people of our area have made in the Waterway and which they continue to plan for. Also, we would like for you to be aware of the massive transportation problems which we face in this region of our state.

Public Investment

Perhaps the most important point to consider here is that the State of Mississippi and taxpayers in 12 counties adjacent to the Waterway are doing their part. It is recognized that the Federal investment in the Waterway project is massive, but on the same economic scale, the people of the State of Mississippi are investing a large share too.

As you are aware, we are sure, the project requires that local costs, such as road construction, sewer and water lines, bridges, and recreation cost sharing, be provided. In regard to bridges for example, the State of Mississippi in 1976 and again in 1980 provided $40 million and $35 million bonding authority respectively. This bonding authority pledges the full faith and credit of the State of Mississippi to back the construction of bridges effected by the Waterway project. What is more important, through a formula worked out in the Mississippi legislature, the local counties bordering the Waterway actually provide the revenues for the retirement of these bonds through their local tax base. The local citizens are investing their money in the Waterway even though the times are tough enough that these revenues could be used for just rising expenses of providing needed services to the taxpayers. It is evident that our local people believe in the Waterway, and compared to the project cost borne by all taxpayers, the local folks are bearing a proportionate share of the cost. They are doing their part.

In regard to recreation benefits which are so flippantly handled by opponents of the project, there is real interest and investment going on

now. Local counties and community political subdivisions are purchasing land or investing in other ways to create major recreation investment along the Waterway route. Moreover, private citizens, under free enterprise, are investing their dollars now in areas which are virtually complete or nearing completion. Homes and vacation sites are being built, ramps and access channels are being constructed, development is taking place with private capital.

If we understand the intent of our present water resource policy to be public investment to create private capital investment in utilizing water resource projects, then evidence exists that this is precisely what is happening along the Tennessee-Tombigbee Waterway. Private capital is being invested.

Further evidence exists along these lines. For example, a local cattle and grain company established a grain elevator on the Tennessee-Tombigbee and actually shipped grain last year. Approximately 1.3 million bushels was shipped through this elevator while only being operable for a few months during the last season. This elevator was established by local people with local capital. In addition, a local firm invested in two tow boats which were used for staging and shipping of the barges at the grain facility. The success of this grain operation has spurred further discussion with a second group of local citizens who are in the preparatory stage of developing a similar facility.

It is interesting to note that present construction contractors consider the local tow company operator as an important cog in their

construction plans and have publicly been quoted in local media as planning to use this operator for certain operations during construction. Evidence again of the local impact brought about by timely local investment.

Another local businessman has for the past two years been developing a facility adjacent to the Waterway which will be available for industrial usage. This development is again financed by local dollars. While this has been going on, the local industrial foundation has conducted feasibility studies on port development and has purchased, again with local money, enough acreage for the development of a local port facility. Other communities, including some which are as much as 30 miles away from the Waterway, are developing plans for utilization of this vital transportation artery.

Analyses by a major university in our state as well as by the Fantus Company of New York and Chicago have pointed out the potential agricultural impact which the Tennessee-Tombigbee will have. Serious discussion, not pie-in-the-sky, has developed concerning the link between grain elevators along the Mississippi portion of the Waterway and the Ports of Mobile and New Orleans. Both ports have maintained steady and regular growth in the handling of raw agricultural products for export and the savings projected in the university studies indicate that the water transportation available would make the local elevators competitive and offer a substantial cost reduction to farmers which translates into buying power and profit. . .clearly an advantage in the free enterprise system which needs our attention. The drawback noted by the Fantus Study is that there is a lack of inexpensive

barge transportation which precludes the venture capital from moving into the grain storage and processing business. Again evidence that private capital can and would flow to the Waterway area.

Finally, a discussion of this important transportation link necessitates an overview of the present transportation mess extant in the East Mississippi area. The East Mississippi Council has been deeply involved in the rail problems which are affecting this area of the state. Our surveys have revealed rail car shortages, extremely long turn around times, and breakdowns which have created such problems that the shippers have incurred losses, have had finished products ruined, and have had extra expenses in labor costs and transportation costs.

Moreover, the proposed or already initiated abandonments of rail lines which once served this region are projected to effect as much as 900 miles of track which is located in the Council area and, more importantly, in the area affected by the Tennessee-Tombigbee Waterway. In a state which can boast of completed waterways or serviceable transportation links such as roads or rail lines, this problem would not be great. But in a state which is rural in nature and which compared to the rest of the country, this type of problem is tantamount to disaster.

We question how a Congress can reverse itself and remove its support from such a useful and important link for our area if the policy has been to help depressed areas and to assist in developing the rural areas of our country.

Finally, if it is in the wisdom of this committee to develop new and different policies toward water resources, we question the propriety of developing these policies at the expense of the people who have invested their time and money in a project like the Tennessee-Tombigbee. If there is needed in our country a new and better way of dealing with water resources such as more state participation or to cost share on some other basis, we submit that it is in the interest of our nation to stand by the investments we have already made and to begin anew with an approach involving new projects and ideas. This committee's response in the negative would be as injudicious a decision taken as any the Congress has taken including the stopping or slowing of defense spending, the bail out of the City of New York, or any other scheme one could dream up.

We urge that you not be swayed by arguments of environmentalists or by other forms of transportation. The project has been proved in court. We only have to examine the subsidy of highways, airlines, and pension plans to understand that all have fed from the trough.

Thank you very much.

Respectfully submitted

Rex M. Murff

Rex M. Murff
President

cc: Tennessee-Tombigbee Waterway
Senator John Stennis
Senator Thad Cochran

STATEMENT FOR THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN OF WATER RESOURCES SUBCOMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS:

Mr. Chairman:

My name is Larry Blazynski, Transportation Coordinator of Foote Mineral Company in Exton, Pennsylvania. My company has plants located in several cities along the inland waterway system. We are in the business of processing ores, scrap materials, and coal to produce minerals and chemicals.

We are very supportive of early completion of the Tennessee-Tom Bigbee Waterway and plan to utilize its transportation facilities when the waterway is completed. An inherent advantage of the Tennessee-Tom Bigbee Waterway is shorter transportation routes for barges, the most economically efficient mode. By connecting the inland waterway system with the Eastern Gulf of Mexico, Foote Mineral Company will benefit through reduced transportation costs and shipping time.

Foote Mineral presently moves by barge some 30,000 tons of manganese ore from Burnside, Louisiana to New Johnsonville, Tennessee. We also handle several thousand tons of slag from Burnside to Porterfield.

At the completion of the Tennessee-Tom Bigbee Waterway, discharge of these ores could be made at Mobile, Alabama, rather than Burnside, reducing the distance moved by more than 30 percent, thereby also reducing freight costs and time.

We could also develop barge movement of our finished product to Alabama destinations which are greatly economically inaccessible by water due to circuitous routes (via the intercoastal waterway.)

These are only a few examples of the transportation benefits offered by the Tennessee-Tom Bigbee Waterway. Our business as well as others, is greatly dependent on future economic and market conditions, therefore, it is somewhat difficult to precisely predict the full extent of our use of the Tennessee-Tom Bigbee Waterway some six years before its completion. Nevertheless, we do know that the waterway will be a significant benefit to my company and others for shipping bulk commodities.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tom Bigbee Waterway.

Larry Blazynski
W. L. Blazynski

WLB:smg

GW Natural Resources Group
GULF + WESTERN INDUSTRIES, INC.

New Jersey Zinc Division
Marquette Company
Jersey Miniere Zinc Company
Chemicals Division
Coal Division
Société des Blancs de Zinc
de la Méditerranée (France)

July 21, 1980

STATEMENT FOR THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN OF WATER RESOURCES SUB-COMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS:

Mr. Chairman, I am Vice President of the Natural Resources Group of Gulf + Western Industries, Inc. My company is headquartered in Nashville, Tennessee, and is in the business of producing and shipping cement, zinc, chemicals and coal products throughout the nation and the world.

We are very supportive of the early completion of the Tennessee-Tombigbee Waterway, and plan to utilize its low cost transportation facilities when the waterway is completed.

My company presently receives about 20,000 tons per year of zinc concentrate and upgraded ilmenite ore from Gulf ports to Clarksville, Tennessee and Ashtabula, Ohio. Without the Tenn-Tom, this tonnage will be transported by rail or barge at a higher cost.

These movements were not known in 1975, and therefore, these transportation savings have not been included in the benefits now estimated for the waterway by the Corps of Engineers.

This is only one example of the transportation benefits offered by the Tenn-Tom. Our business, as well as others, is greatly dependent upon future economic and market conditions, therefore, it is somewhat difficult to precisely predict the full extent of our use of the Tenn-Tom, some six years away from its completion. Nevertheless, we do know that the Tenn-Tom will be of significant benefit to my company and others in mid-America for shipping bulk type commodities. It will, undoubtedly, become a vital link in our national transportation system.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway.

Peter E. Rumsey
Vice President-Distribution

PER:cf



MICHIGAN UNITED CONSERVATION CLUBS
Northern Michigan Office • Rt. 1 Box 1509 • Grayling MI 49738 • 348-2316
LANSING HEADQUARTERS
2101 Wood St. • P.O. Box 30235 • Lansing, MI 48909 • 517/371-1041

July 21, 1980

The Honorable Daniel Patrick Moynihan
Chairman
Subcommittee on Water Resources
Committee on Environmental and Public Works
United States Senate
4204 Dirksen Building
Washington, DC 20510

Dear Chairman Moynihan:

RE: July 25, 1980 oversight hearing on national waterway development--
Tennessee-Tombigbee Waterway

On behalf of the Michigan United Conservation Clubs (MUCC), representing 100,000 members and 430 affiliated organizations, I would like to applaud you for scheduling the July 25, 1980 hearing to investigate the Tennessee-Tombigbee Waterway. We will be unable to attend the hearing, but wish these comments entered into the hearing record.

MUCC shares the interest of conservationists across the nation in the outcome of your hearing and the eventual fate of this project in the Congress. I am sure your subcommittee has been provided ample information from the National Wildlife Federation, Environmental Policy Center, and National Taxpayers Union to substantiate the serious questions surrounding this project which must be addressed by the Senate. Our staff was present for the June 25, 1980 vote and debate of the House to cut funding for FY 1981 and complete a General Accounting Office report. Despite the close vote of 196-216, it is clear that fiscal responsibility will have to begin in the Senate on water policy in the United States.

The Tennessee-Tombigbee Waterway has come to symbolize much that is wrong with Congressional spending priorities. It represents what is worst in the pork barrel process of wasting taxpayers money on environmental disasters. It is flagrant evidence that the "good old boy" system of allocating national resources still prevails in the Congress.

PRESIDENT
GLENN CORBETT, 20647 Country Club, Harper Woods, MI 48236
VICE PRESIDENTS
GLENN GEERLINGS, 9531 New Holland, Zeeland, MI 49464
ROBERT SLINGERLEND, 3201 Lake George Rd., Lake Orion, MI 48035
DWIGHT ULMAN, 2745 E. Dexter, Saginaw, MI 48603
EXECUTIVE DIRECTOR
THOMAS L. WASHINGTON, P.O. Box 30235 Lansing, MI 48909
TREASURER
OWEN C. (Chuck) BURNS, 12210, M.A.C. Drive N.E., R.3, Belding, MI 48809
BOARD REP.
GORDON ROY, Rapid River, MI 49878
REGIONAL VICE PRESIDENTS
WENDELL BRIGGS, 3747 Hordyk N.E., Grand Rapids, MI 49505
GERALD GOODMAN, R. 1, Box 32, Iron River, MI 49935
BEATRICE INGLIS, 14415 Inglis Hwy., Millersburg, MI 49759
JOHN WHITMORE, 32024 Hull, Farmington Hills, MI 48018

I am certain that an objective investigation of this project will substantiate its critics' worst fears regarding cost effectiveness, need, and environmental costs. We eagerly await the results of your hearing.

Very truly yours,

Thomas L. Washington

Thomas L. Washington
Executive Director

TLW/tmf

cc: Senator Riegle
Senator Levin

JUL 2 0 1980

STATEMENT FOR
THE HONORABLE DANIEL P. MOYNIHAN, CHAIRMAN
WATER RESOURCES SUBCOMMITTEE OF THE
SENATE COMMITTEE ON ENVIRONMENT & PUBLIC WORKS

Mr. Chairman, I am Dennis E. Peterson, Vice President of Oil-Dri Corporation of America. My company's offices are located at Chicago, Illinois and my company's plant is located at Ripley, Mississippi on the Illinois Central Gulf Railroad and is in the business of manufacturing and shipping ground clay as absorbents (cat box absorbents and industrial absorbents).

We are very supportive of the early completion of the Tennessee-Tombigbee Waterway and plan to utilize its low-cost transportation facilities when the waterway is completed.

The inherent advantages of the Tenn-Tom of providing a shorter transportation route for barges, the most energy efficient mode, guarantee this waterway to be one of the busiest in the nation. By connecting our vast inland waterway system with the eastern Gulf of Mexico, some fourteen states can benefit from this waterway.

My company is presently shipping about 1,000 tons of ground clay absorbents from Ripley, Mississippi to Guayaquil, Ecuador. Without the Tenn-Tom, this tonnage would be transported by rail, via the Illinois Central Gulf which has many abandonments of rail lines in Mississippi and Ripley, Mississippi is one of them. By using the Tenn-Tom, this commodity could be shipped at a savings of about $16.00 per ton. This movement was not known in 1975 and, therefore, these transportation savings have not been included in the benefits now estimated for the waterway by the Corps.

This is only one example of the transportation benefits offered by the Tenn-Tom. Our business as well as others is greatly dependent upon future economic and market conditions. Therefore, it is somewhat difficult to precisely predict the full extent of our use of the Tenn-Tom, some six years away from its completion. Nevertheless, we do know that the Tenn-Tom will be of significant benefit to my company and others inmid-America for shipping bulk-type commodities.

It will undoubtedly become a vital link in our national transportation system.

Thank you for the opportunity of presenting this statement in support of the Tennessee-Tombigbee Waterway.

Yours truly,
OIL-DRI CORPORATION OF AMERICA

Dennis E. Peterson
Vice President
Transportation & Distribution

DEP/dc

Oil-Dri Corporation of America
520 North Michigan Avenue
Chicago, Illinois 60611

OIL-DRI PRODUCTION COMPANY
P.O. Box 476
Ripley, MS 38663

PORT AUTHORITY OF ALLEGHENY COUNTY
Beaver and Island Avenues
Pittsburgh, Pennsylvania 15233
(412) 237-7000

July 22, 1980

Senator Daniel Patrick Moynihan, Chairman
Water Resources Sub-Committee
Senate Committee on Environment and Public Works
4202 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Moynihan:

It is vital to Pittsburgh and the Tri-State region that immediate action be taken to modernize the three worst traffic bottle-necks on the Ohio River System. Namely the locks and dams at Gallipolis, Ohio, on the Upper Ohio River, and at Greensboro and Point Marion on the Monongahela River in Pennsylvania near the West Virginia border.

These Locks and Dams are more than 50 years old, are not designed to handle modern tows, and must be enlarged and rebuilt.

There is no way that the locks can handle additional tonnage of coal--let alone meet federal and state goals of doubling production to develop new replacement fuels to deal with the energy crisis. These outmoded structures are undersized for modern barge traffic, therby causing costly delays.

More that 45 millions tons of coal a year are moved on the rivers through the Port of Pittsburgh, the biggest inland port embracing the Pittsburgh District of the Army Engineers.

This coal is mined and shipped from four states--Pennsylvania, Ohio, West Virginia and Kentucky. It is impossible to move any appreciable increase of coal to market by any other mode of transportation. The great bulk of the rich coal reserves of Pennsylvania, Ohio, West Virginia and Kentucky-coal reserves that are among the richest in the nation-are dependent on water transportation, the most fuel-efficient carrier.

The Port Authority of Allegheny County, other river, business and labor organizations are vitally concerned about the need to modernize these three Locks and Dams. It is imperative for the economic health, jobs and future development of the Port of Pittsburgh region.

Finally, we are greatly disturbed that the preliminary U.S. Census show that Pittsburgh's population dropped 21 percent to a low of 410,000 people over the past decade, and Allegheny County for the first time declined to 1,433,000, a loss of 172,000 since 1970.

If these river structures are not modernized, it will only accelerate an already serious out-immigration of industry and jobs.

We would appreciate your including this statement in the record of the Sub-Committee hearings of July 23-24. Thanks for your consideration.

Sincerely,

Ed Beachler

ED BEACHLER
Director of Waterways

/sbg

Port Authority of Lyon County

Industrial Sites - Public Docking Facilities

EDDYVILLE, KENTUCKY 42038
BOX 621

CHARLES BACCUS
CHAIRMAN
BEN LANDES
VICE CHAIRMAN
R. L. PUTNAM
SECRETARY-TREASURER
C. O. ROBERTSON
JAMES THORPE
HERB SCHREINER

July 25, 1980

To Whom It May Concern:

The Kentucky Port and River Commission authorized the construction of Port of Lyon County in 1976, based primarily on the fact that it is within a 50 mile radius of 75% of Western Kentucky coal, and only one lock must be traversed to reach the Tennessee-Tombigbee Waterway.

The port, with an investment of over two million dollars, is presently shipping nearly 3/4 million tons of coal per year.

Projections show this will increase to 3 million tons per year by 1984.

Much of this tonnage will go to southern utilities and the export market, via the Ohio and Mississippi rivers.

With the opening of the Tennessee-Tombigbee Waterway, our transportation cost will be cut nearly 300 ton-miles for export, and open many other inland southern markets not now being served efficiently.

We sincerely believe the Tennessee-Tombigbee Waterway will provide a vital link in the coal transportation system of our nation and the world.

Charles L. Baccus

Charles L. Baccus
Chairman
Port Authority of Lyon County

The Only Public Port on Lake Barkley

TRANSPORTATION NEEDS OF INCREASED COAL PRODUCTION AND COMPLETION OF THE TENNESSEE-TOMBIGBEE WATERWAY

MONDAY, JULY 28, 1980

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES,
Washington, D.C.

The subcommittee met at 10:03 a.m., in room 4200, Dirksen Senate Office Building, Hon. Daniel Patrick Moynihan (chairman) presiding.

Present: Senators Randolph, Moynihan, Domenici, and Simpson.

Also Present: Senator Stennis.

OPENING STATEMENT OF HON. DANIEL PATRICK MOYNIHAN, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator MOYNIHAN. A very pleasant good morning to our guests and witnesses in this second day of hearings which the Subcommittee on Water Resources is conducting on the general subject of the transportation needs related to increased coal production and use in the United States over the next several decades.

On the general proposition that the United States must produce and consume more coal, there has been no shortage of support lately. The World Coal Study, conducted at the Massachusetts Institute of Technology, projected that U.S. production of coal would increase threefold by the year 2000. The National Academy of Sciences, in their recent study, "Energy in Transition 1985–2010," estimated that at three times today's production rate, coal is likely to supply one-third to one-half of the Nation's energy by the year 2000. At the Venice Summit, the participants called for a doubling of world coal production by 1990.

There is further agreement on another point—a most important constraint to meeting such ambitious goals to increase domestic consumption of coal and increase coal exports is our national transportation system. How are we to handle such enormous quantities of coal?

Over the last decade, waterways have accounted for only 10 to 12 percent of the tonnage of coal shipped from the mine. Most of our existing coal piers are inadequate to handle the projected increase in the export of steam coal. With the expansion of facilities on both the gulf and east coasts and the easing of lock constraints on connecting waterways, the existing bottlenecks could be alleviated.

But such investments must take place in the context of a national plan to coordinate our various modes of transportation. Our

current arrangements on the Federal level do not lend themselves to a well-coordinated plan of action. Jurisdiction is spread among various executive departments—Commerce, Transportation, Energy, and Defense—and a multitude of congressional committees. Regulation of competition and public subsidies fall unevenly on the various modes of transportation.

I call upon Theodore Roosevelt for support on this point. In the 1908 Report of the Inland Waterways Commission, Roosevelt wrote in his letter of transmittal to Congress: "* * * the successful development and use of our interstate waterways will require intelligent regulation of the relations between rail and water traffic. When this is done the railways and waterways will assist instead of injuring each other. Both will benefit, but the chief benefit will accrue to the people in general through quicker and cheaper transportation."

As a new chairman of the Water Resources Subcommittee, it fell to me to initiate an appraisal of our waterways and ports in light of the new set of economic and political circumstances confronting our Nation. It is in this spirit that our subcommittee approaches these hearings.

Today our subcommittee seeks the counsel of two economists with vast experience in the area of national energy transportation policy. We have asked Dr. Michael Bronzini of the University of Tennessee and Dr. John Fuller of the University of Iowa to speak to the problems of coal transport, particularly as it relates to waterways and port facilities. We have also asked General E. R. Heiberg of the Army Corps of Engineers to inform us of the plans of the recently formed interagency task force on coal exports (ICE).

Our macroscopic perspective of today will be followed by more comprehensive hearings on specific proposals for waterways and port development. At that time the subcommittee will seek broad participation by local, State, and private interests.

The first day of our hearing was to concern the general subject and the second particularly the Tennessee-Tombigbee project, which is the largest project underway. We had to reverse our order because of the availability of witnesses. So today we will be on the general subject, but we will begin, even so, with the particular which we were not able to conclude on Friday.

May I first say we are honored once again by the presence here first—on time—from the beginning right to the end, of our beloved senior Senator from Mississippi, the chairman of the Armed Services Committee, Senator Stennis, who has followed this subject not from its outset, inasmuch as the Tennessee-Tombigbee was first proposed in 1817, but almost from its outset.

Senator Domenici was not able to return to our hearing Friday afternoon as he was managing legislation and could not leave. So he will open in a short time. And Senator Simpson has to leave in a short while to negotiate some matters having to do with today's calendar.

So first may I say, Mr. Chairman, would you like to make an opening statement of some kind?

Senator STENNIS. I certainly do, thank you, Mr. Chairman, and I do not want to take a lot of your time.

I want to take a minute to mention General Morris. I know that he is well versed in this matter. He was the chief witness during litigation and he made special preparation on a personal basis. I think a general question that I would want him to be asked, and if you permit me, I can just ask it now. Would the general set forth the main facts about this project as he knows them personally, and professionally. I think it has an important place in your hearings. So if I may just make that request and say that I found General Morris to be a man of great integrity with the highest degree of professionalism that I have found in the Government. If you can hear him, at your convenience, I would greatly appreciate it and thank you in advance.

Senator MOYNIHAN. Well, it is our privilege, and it is a very special one, that we find that General Morris has come here personally. In one moment we will have the privilege of asking him to make a statement.

Senator Simpson, did you want to make a general statement or did you want to have our witnesses before you when you do?

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Mr. Chairman, I compliment you and Senator Domenici for scheduling this hearing on the planning and capital investment that is needed for the transportation, handling, and shipment of coal for export purposes, if recent market projections can be realized. I would also like to reiterate a point I made during our review of the Tennessee-Tombigbee project—although I represent a State that is fifth in net U.S. coal production, I am not here to play off one region against another; we are concerned with American coal—not eastern or western, high sulfur or low sulfur, steam coal or metallurgical coal—American coal that can ease part of our domestic energy situation while adding to our export income by up to an additional $14 billion per year.

The report of the World Coal Study released earlier this summer was an inviting blueprint for the export future of U.S. coal. Although the United States is now the largest world coal exporter at 63 million tons in 1979, projections forecast 350 million tons per year. Capital requirements for this level of export trade was set by the World Coal Study at $4 billion for inland transportation systems and an additional $1 billion for ports.

Public financing of all or part of these facilities will raise serious questions about investment criteria and subsidization. I will continue to urge that commitment of public funds be made only after economic and financial feasibility are clearly shown. A positive benefit/cost ratio should not be the sole criteria. Financial feasibility—the ability of a facility to generate revenue to repay the investment and a return to the Treasury that will not amount to the U.S. taxpayer subsidizing foreign coal users—must be the criteria for pursuing public finance of the facilities, if indeed finance of such facilities is anticipated.

Also, the geographic distribution of steam coal exports will require consideration of locating new coal export facilities on the gulf and west coasts as well as the east coast. Mr. Chairman, I am informed that Hampton Roads in Virginia is now our largest

export facility for coal and members of this subcommittee may wish to visit this facility as part of our deliberations.

Finally, this subcommittee should take care to anticipate the regulatory trap that awaits the unwary. As with other aspects of energy programs, governmental delay may be the hardest hurdle to surmount if this major capital program is to be undertaken by public and private sources. The delay which is now part of our governmental processes must be curtailed or this new opportunity to impart some measure of energy security to our trading partners and improve our balance of payments could be stillborn.

In addition, Mr. Chairman, I just want to state that I greatly admire what you and Senator Domenici are doing in this area. It is a very important arena of transportation, and I hope we don't get into the issue of western coal versus eastern coal, and union coal versus nonunion coal, and high-sulfur versus nonsulfur. I hope that we just deal with the issue of what that Coal Council came out with.

With that, Mr. Chairman, I have to leave. We are meeting right now with the chairman of the committee, Senator Randolph, and Senator Stafford to try to determine the flow chart of nuclear waste today, and that will be an interesting one in itself.

Senator MOYNIHAN. We hope you might be able to return. Many a person has gone off to deal with the subject of nuclear waste and never returned.

Senator DOMENICI. We don't want that.

Senator SIMPSON. It was when I flew over Three Mile Island, that was what happened to my hair.

Senator MOYNIHAN. Let us get on.

Our first witness, only in the general sense of a person coming before the committee to provide us information, is General Heiberg, who was here, of course, on Friday. But we are so pleased that Gen. John Morris, the Chief of Engineers, is with him and has appeared at his own volition entirely and is prepared to join his brother officer at this matter. If General Heiberg and General Morris would come forward, we would be most grateful. Of course, if you wish to bring some of your associates, please do.

STATEMENT OF LT. GEN. JOHN W. MORRIS, CHIEF OF ENGINEERS, U.S. ARMY CORPS OF ENGINEERS, ACCOMPANIED BY MAJ. GEN. E. R. HEIBERG III, DIRECTOR, CIVIL WORKS; JAKE LANKHORST, DEPUTY COUNSEL; ALEX SHWAIKO, CHIEF, PLANNING DIVISION; AND ED COHN, CHIEF, ECONOMICS SECTION, PLANNING DIVISION

Senator DOMENICI. Mr. Chairman, might I have a few moments?

Senator MOYNIHAN. You certainly may. I see we have Mr. Cohn, Mr. Shwaiko and Mr. Lankhorst. We welcome you, General. We are technically still dealing with the question of Tennessee-Tombigbee.

Before Senator Domenici speaks, may I simply say this is probably the last occasion on which General Morris is going to appear before this committee. He will be leaving the service of his country, which he has served with valor, distinction, and with perfect honor for more years than perhaps he ever intended. But they have been years each one of which has been a year in which the debt of the

American people to this distinguished officer has grown. This committee certainly wishes to acknowledge it. This committee certainly wishes to go on record to say we object to the retirement standards of the armed services, but then there is nothing we can do about them. We wish he could stay with us indefinitely. He probably has had just about enough of the Corps of Engineers.

In any event, this is an honor to have General Morris before us. Senator Domenici.

Senator DOMENICI. Mr. Chairman, I share those comments with reference to General Morris. While I am on the subject of people such as General Morris and the capacity of the Corps of Engineers as a great engineering society, I would say to you, Mr. Chairman, I hope that you and I for a few more years can continue to work in this area. I think one of our great challenges—and I say this in all honesty—is to find a way to improve upon the system that the corps is charged with; that is trying to operate as a professional engineering group. I don't think there is any doubt that the corps is probably the best engineering organization in the world, and to the extent that we can find ways to get around the 15-, 20-, 25-year delays and sort out projects quicker and let them get on with doing the job that they do so well, if we could do that in the next 3 or 4 years, Mr. Chairman, I think we will have served not only the corps well, but we would have served this country well. When you find that the average time for corps projects now is 26 years from the time they are originally thought of to the time you turn the first spade of earth, that is an incredible situation for our country to be in, and I suspect that it is an incredible posture for them to be in.

On the broader issue of transportation, Mr. Chairman, much is being said these days about the reindustrialization of the United States. And I don't know whether these hearings on transportation for coal have been couched in that language, but obviously we are going to return, without question, to an era when railroads and water transportation are going to be built up instead of being torn down, and that will be part, there is no doubt in my mind, of building back the vibrancy in the American economic system, whether it is reindustrialization or whatever you want to call it. So I think the hearings have some fantastic import for this Nation even though they are limited to transportation as related to coal, there can be no question.

I want to spend some time today on the issue of Tennessee-Tombigbee. I am part of both bills, the energy bill and the bill on nuclear waste. But as I see it, there are some very important issues, and I would just quickly summarize them.

One, is the real traffic potential there or is it an illusion? Second, if it is there, will shippers use the Tennessee-Tombigbee because of the constraints of the Tombigbee River below Demopolis? And third, a very precise one, did the corps hide the known cost increase from Congress until it could find new benefits to continue the justification of the project?

Now, all three of those could take a great deal of time. I hope we could get to them and finish them today at least to the satisfaction of our record and to those of us that are here. Those are the issues as I see them at this point, and I thank you, Mr. Chairman.

Senator MOYNIHAN. I thank my colleague and friend.

General Morris being present, and his senior officer present, perhaps you would like to lead off.

General MORRIS. Thank you very much. I do not have a prepared statement, but I do have some things I would like to say.

First, I would personally like to thank you for your kind words about me personally and, of course, for the corps. Your words and Senator Domenici's mean a great deal to us.

On the subject of having had enough of the corps, I doubt if that will ever really happen. And if I could add one bit of personal support to Senator Domenici's objective of improving the project time, I echo that completely. Our public works program runs about a third of our annual investment, and we are doing the same things for other nations in a fraction of the time it takes in this country.

Senator MOYNIHAN. Would you say that again. You are doing things for other nations in a fraction of the time it takes in this country?

General MORRIS. Yes, there is no doubt about it. Senator Domenici and I have talked about this before. I have talked with many other people. And even after I leave the service, if I can help in any way on that, if my experience will add to the solution of the problem, I certainly would like to offer it, because there is just no reason why we should not be able to undertake programs and projects in the same era in which they were conceived and understood. By the time you are on the building you have a whole new set of ground rules and have to go back and start again. So it is a worthwhile undertaking, and I applaud Senator Domenici for coming forth with it. I just hope we can find the answer there.

Senator DOMENICI. General, before you leave that subject, and I don't intend to delay, but is the corps involved in in any serious analysis for recommendations with reference to this area of why it takes so long and could there be some alternative methods?

General MORRIS. Yes, I will answer generally. We have done that so many times, and I think we are prepared to talk about it almost any time you want to. We may have to dust off some previous studies and update them. We have some ideas. I have some, and I know our people do.

Senator DOMENICI. Thank you.

General MORRIS. Sir, for the benefit of the record and also for the committee, I have been personally involved with the Tennessee-Tombigbee project since 1972. I either made all of the decisions which are now being discussed or was a principal factor in those decisions. In 1972 I became the director of civil works. It was during the period of that directorship that the fiscal year 1976 budget was put together, and that is the one in which the controversy on withholding information has been associated. I was later the chief of engineers when certain other decisions were made having to do with the waterway from Demopolis to the Gulf of Mexico. I did appear in court as a witness on the same subjects, particularly this one: "Did the corps hide information?" I can tell you categorically we did not.

Senator MOYNIHAN. Would you say that again?

General MORRIS. I said I can state categorically we did not withhold information. I can personally attest to the fact our objective was to give information to the Congress and not to withhold it.

Just to put that point to rest once and for all, the fiscal year 1976 budget was presented to the committees of the Congress by the President in January 1975. That bill included $815 million for Tennessee-Tombigbee. The full Congress did not see the water resources appropriations bill until August of 1975. It was in the committee in the meantime. I, personally, took to the House of Representatives Appropriations Committee and to the Senate Appropriations Committee a figure of $1.4 billion for that project in August of 1975, 2 months before the Senate ever debated the bill. Now, there is no way that information could be withheld under those circumstances.

There are a lot of questions associated with the $815 million figure that was in the budget submitted by the President in January 1975. I am personally willing and able to discuss that figure. I have nothing but the greatest confidence in the way it was derived, and I believe that any questions you wish to ask will stand the test of logic and reason.

In fact, the one figure that was the most current in the entire public works appropriations bill in January 1975 was $815 million for Tennessee-Tombigbee. It was put together under the rules by which budgets were prepared in those days. We told the Congress during the hearings that we were doing another cost estimate. It is in the record. And the illusion that someone was withholding information because we didn't want the cost to go over a billion dollars will not stand the test, because three years earlier the Senate Appropriations Committee knew this project would cost over a billion dollars, and that is also in the record.

So I think just to be crisp and concise about it, I was personally involved in the entire budget process associated with the fiscal year 1976 budget. I was engaged in the decisionmaking for the $815 million. And I say to this committee, and for the record, that I, personally, took a $1.4 billion figure to the Appropriations Committees of this Congress before the full Congress ever saw the appropriations bill and had a chance to debate it.

Senator MOYNIHAN. Now, General, I am going to ask you to stay with that subject just another moment in order to dispose of it. On Friday we heard the word deception used. I can only speak for myself, but—no, I can speak for this whole subcommittee. We reject that term. The idea that the Corps of Engineers, led by an officer of your achievement, distinction and perfect honor, would ever have deceived the U.S. Congress is one which we reject. That is beyond it.

There are these two numbers, and they need to be explained. I take it you are giving us a very simple explanation that, in the January 1975 budget submission, the $815 million estimate was submitted according to the budgeting rules and procedures at the time. Some months later you went around personally to the Appropriations Committees——

General MORRIS. Staff, yes, sir.

Senator MOYNIHAN. And said, "Now, you should know it is not going to be $815 million, we now have the number of $1.4 billion."

General MORRIS. That is correct.

Senator MOYNIHAN. And the price went up.

General MORRIS. Yes, sir. Now, the reason I took the number around was not so much to change the figure in the budget, because it really is intended to justify the appropriations for a single year, not to establish ultimate project costs. We couldn't even put inflation in the budget in those days. My purpose in going around was to explain to them that the amount of money in the budget would not be sufficient to keep the project on schedule because the total cost was going up; therefore, we had to make a decision either to extend the construction time of the job or put more money in.

Sir, I think, without belaboring this point, memories do get dim. But the fall of 1974 and summer of 1974, when this budget was put together, the United States was in some rather unusual circumstances. We just had an oil embargo lifted in January that year. We had a tremendous increase in steel prices, and steel was a hard commodity to acquire. I, personally, went to bat to get more steel for the Smithland project. I had meetings with the largest construction companies in the United States. They would not do any more work for the corps because of the cost escalation.

Now, December 13, 1974, after our fiscal year 1976 budget had been completed in the Office of Management and Budget, we opened bids on one of the projects for Tennessee-Tombigbee. It was the Aliceville project. It was one-third higher than our estimate.

Senator DOMENICI. When was that?

General MORRIS. December 13, 1974. I had gone personally through an analysis of the cost escalation figures of the United States. Our field office sent us three numbers: $759 million, $1.004 billion and $1.159 billion. In my experience, none of those figures were good enough to give to the Congress; none of them, although, the $759 million was the application of escalation for 1 year to the previous year's budget. The $815 million figure took the $759 million which was the application of escalation to the previous year's budget, and, in addition, added in the impact of the Aliceville contract to the fiscal year, and I did that simply because I wanted to be sure the Congress had the very best information we could give them. As it turned out, after 6 months of very hard work, the figure $1.4 billion emerged. That was, as I said, in August of 1975.

In September 1975 we put together the 1977 budget with a cost estimate of $1.36 billion. It was down a little bit.

What I am getting at here, is that our estimate of the situation the previous December was absolutely correct. The Aliceville experience was not typical of the whole United States. The field overreacted to that one experience, and if we had used our numbers, we would not have used good numbers.

We had a 4-percent increase in 1977, which was about half the national inflation, so the construction industry did level off.

Senator MOYNIHAN. General, therein we resolve that matter certainly to this Senator's satisfaction. The field gave you a range of 759, 1.004 and 1.159, and 1.4 turned out to be the more accurate as time went by. I, for myself, put this particular matter behind.

Senator DOMENICI. Mr. Chairman, I have a couple of questions. I don't quite understand. The part that is fuzzy to me is, General, these cost figures that you have just been describing and as they

have been evolving in an ever spiraling manner are important because they could, at a given point, make the BC ratio of the project below that which is acceptable.

General MORRIS. Correct.

Senator DOMENICI. For instance, I have a work paper here that would indicate in June of 1975, that the cost estimate was $1.2 billion, but I have a benefit-cost ratio of below one. I added a 0.93 to this one.

General MORRIS. Sir, I would like to address that. Those numbers that you have are numbers that did exist, but they were not final analyses. Those numbers you have picked out are just preliminary numbers. There were other sets of numbers. Let me go through what happened.

In the course of the Tennessee-Tombigbee decisionmaking, I asked for three investigations to be made of our own activities. In a way, I am kind of sorry I did it because I have been beaten around the head and shoulders ever since. I asked the Secretary of the Army for an Army agency audit. I wanted to find out if we had used sound procedures. I also asked that our General Counsel review in great detail the authority issue. And it was out of that review that we came up with some of the questions about authority. I also asked that there be a complete review made of the benefit-cost situation, and led to a report by General Letellier to the Appropriations Committee in January 1975. And the record will reveal Senator Stennis asked some pretty good questions at the time as to why we were doing this.

The numbers that you just referred to were a set of numbers which came out of the analyses before the review was complete. When it was all said and done and we completed a reevaluation of the costs and benefits, the benefit-cost ratio was greater than one. Then we ran into another problem.

If you recall, in August of 1975, Judge Richey here in Washington decided that the Corps of Engineers, the Chief of Engineers, had exceeded his discretionary authority in the application of the River and Harbor Act of 1909. The River and Harbor Act of 1909 says the Chief of Engineers is authorized to rehabilitate and repair navigation structures to current traffic. "Current" is the operative word. We had interpreted "current" to mean current as of the date and time when the work was undertaken but extending for the life of the project, so that when you build a project, it would be fully useful for 50 years. Judge Richey said you cannot extend; it has to be current as of a fixed date in time. That meant that lock and dam 26, which was the issue, needed additional congressional authority. When that decision was made, we reviewed every waterway project in the United States, including Tennessee-Tombigbee. As a result of that review, I decided that we did not have authority to rehabilitate the waterway from Demopolis to the Gulf of Mexico without additional congressional authority, and we came back to Congress and got authority to make a study. The Public Works Committee gave that to us.

That action affected the economics, because we had included the original cost of the Tennessee-Tombigbee, which was connecting the Tennessee River to Demopolis only, the cost and benefits of improving the waterway from Demopolis to the gulf, because if you

read the authorizing documents by the Congress, it says that there will be a waterway built connecting the Gulf of Mexico with the Tennessee River, and built in such a way you will not have to change the tows. But, in any event, we had to delete from the original project the section from Demopolis to the gulf because we recognized the need for additional authority, and we had to revise the benefit-cost analyses.

Now, that 0.93 figure, which I don't have clear recollection of, is probably one of the numbers that showed up at the time we dropped the benefits and cost associated with that lower part. While that was going on, though, I also issued instructions to our field offices to see if there wasn't some cheaper way to build a waterway, such as having one-way traffic through the divide cut with passing zones. Some of those economies were made. I don't know whether the 0.93 had taken into account those economies or not.

But, in any event, the point I would like to make, sir, is that after those adjustments, and removal of the modifications to the lower section from the economic analysis, we had a project with a benefit-cost ratio of about 1.1. If you were to read the instructions I issued, it was to come back to me whether we should stop the project, finish the project as it was, or whether we should continue it. I was prepared to recommend that project be stopped if the benefit-cost ratio was less than 1.0.

The General Accounting Office investigated this project, which a lot of people seem to forget. They suspended their work on November 30, 1976, when the lawsuit was filed, as is their practice. When they notified us of the suspension they brought an issue to our attention relating to the benefits claimed for the authorized project from the Tennessee River to Demopolis. They believed that traffic created by the Tennessee-Tombigbee would create a negative effect on the Black Warrior-Tombigbee project from Demopolis to Mobile. This is kind of a subtle point, but it is important to understand the detail into which we went. These things just didn't happen off-the-cuff. They involved hard work by some very, very fine people, and I think we have got the right answer. But here is what happened.

When you build the Tennessee-Tombigbee, you increase the transportation on the section from Demopolis to the gulf. Obviously that increase prevents the section from Demopolis to the gulf from developing to the full potential it might have developed had you not increased the traffic buildup because of the waterway above. I don't know if that point is clear or not.

Senator MOYNIHAN. Not to me.

General MORRIS. In the original projects for Black Warrior-Tombigbee, which included a section from Demopolis to the Gulf of Mexico, there were some benefits calculated on the project that would reach its maturity in x years. When you put in the Tennessee-Tombigbee waterway from the Tennessee River to Demopolis, that adds extra traffic out of the Tennessee River that would not have otherwise been there. This causes the original waterway to reach its capacity years sooner than projected, precluding some industrial development that might have occurred. The General Accounting Office believed it appropriate to reduce the benefits of the Tennessee-Tombigbee project because of this limiting effect on

the Black Warrior-Tombigbee project. We went through an analysis to test the GAO position and found we still had a project with a benefit-cost ratio of greater than one. And today it is better than it was in 1976, when we made that calculation.

I think it is a long answer, sir, but I wanted to be sure.

Senator MOYNIHAN. We are not in any hurry, General. You are very courteous to be here and take your time.

Senator DOMENICI. Would you tell us again even though you weren't certain, as I understand it, of which of the figures were going to be your ultimate figures. You had a number of them and costs were spiraling, and you, yourself, had some doubt about whether the normal procedure should apply—that is, add increased costs to the previous year which gave you $815 million—you, yourself, had doubts about that. When and to whom did you divulge the increased cost above $1.1 billion or above?

General MORRIS. Sir, the fact that the project was ultimately going to cost over $1 billion was general knowledge everywhere. It is hard to believe it wouldn't be because it was in the record of the 1973 hearings. But, if you recall, we have to remember that even though the ultimate cost of the project was known to be over $1 billion, we were not allowed to include inflation beyond the budget year. That was just the way the budgets were put together in those days. So, I did not know whether it was going to be $1.1 billion, $1.2 billion, or $1.4 billion, because we were going through this complete reevaluation of cost and benefits. We were going to try to reduce the scope of the project in order to get the costs down. I directed our field office to get to work on it and get back to me in May so I could get the information to the committees before the bill came to the floor of the Congress. They came back to me with a sufficiently satisfactory estimate that I could use of $1.4 billion. That was not a perfect number either, because in the next year's budget it was reduced to $1.36, as I recall. But I gave that information to the committee staff of both the House and to the Senate. The House had already marked up its bill so it could only hear what I had to say. But I talked to Mr. Proctor Jones of the Public Works Appropriations Committee at some length in August. I don't know the precise date, but it was during the month of August. I put that in my deposition, and it is in the court record also.

Senator DOMENICI. Would there be any reason, based upon your procedures, where you would hold off on publicly disclosing a cost increase of a substantial nature until you had reevaluated an economic BC study?

General MORRIS. No, sir. As a matter of fact, the same things could be said about every project in the budget. Every project in Arizona, New Mexico, New York had exactly the same characteristics as the Tennessee-Tombigbee: they all would have ultimate costs greater than the total costs presented in the budget, because we did not include inflation. And as a normal rule, we do not make economic analyses after a project is authorized. We rarely go back and reevaluate the benefits and costs on a project once it is placed under construction. The reason for that is when the Congress authorizes and appropriates funds to build a project, the executive branch of the Government is expected to utilize those funds in the manner for which they were appropriated, and having placed a

project under construction we normally built it in 3 or 4 years. We normally don't conduct another economic analysis. But in the case of Tennessee-Tombigbee, because it was such a big project and so expensive, I wanted to make sure we had the thing right, and so I asked for another cost-benefit analysis. I also asked for a review of the authority, and I also asked the Army Audit Agency to look at it. We were trying darn hard to get this thing right so it would withstand challenges—and we welcome challenges, incidentally. That the record created by those investigations are now the very documents that are being used against it, that is OK, too. But I just want to be sure this committee understands that the bulk of the data that is being used to challenge us is coming out of the very documents that were created, at our request, to make sure we were giving the taxpayers of the country and Congress what they expected.

Senator DOMENICI. I have a memo here from Frank C. Deming, Chief, Engineering Division. Do you know who that is?

General MORRIS. I presume Mr. Deming is in either our Mobile or Atlanta Office.

Senator DOMENICI. It is dated November 12, 1975. It says: "Recommend the matter of rising—spiraling—construction costs be of a secondary consideration and not a major factor in any news releases. This is a very critical matter and we have been told not to discuss it until the OCE completes the presentation to appropriate people." Maybe that is consistent with what you are saying.

General MORRIS. That is basically right, because, again, these reviews were directed by the Office of the Chief of Engineers, not by the field, and I took the responsibility for reviews, for the decisions, and also for the action that came out of it. Now, there are constraints on the executive branch, or at least on elements of the executive branch, for revealing budgetary data prior to its submission. I don't know that date. That date sounds sort of like that.

But the thing that is frustrating to me, sir, is that in this whole process, from the time that we found we were going to do the benefit-cost analysis again, I was driving the people in Atlanta and Mobile as hard as I possibly could to get information back to me so I could reveal it to the public and Congress. We wrote a press release, which was ultimately released, but we had to hold it for some time until we got other coordination. I remember going to the Office of Management and Budget with this project and explaining to them the costs were going to be much higher than we thought, and so forth. So Mr. Deming probably is reflecting instructions that he did send, but they were not written that way to withhold them from the public, but to make sure we got the story out properly.

Senator DOMENICI. But that was, timewise, if that is relevant, that is 5 months after these costs were revealed to Congress, at least to appropriate people in Congress.

General MORRIS. I see. Yes, sir. Now, then, there was a period of time in June of 1975 I was still Director of Civil Works; in July of 1975 I became the Deputy Chief of Engineers, and I went to work for the public works program under General Gribble, who was the Chief of Engineers, until General Graves arrived. General Graves arrived in September or October. As soon as he came on board, I

told General Graves two things: I said, "Get the Tombigbee straight. I want to know if we have got the authority and I want to make sure we have a viable project."

Now, the question of the $1.4 billion cost was not basically the issue at that time. The question was the benefit-cost ratio—did we have a project that was viable? Also, we had this little problem with the Demopolis to the gulf thing we had to unravel that came up during the same period of time. So there were a lot of things in the works that did not relate to the $1.4 billion so much as with the authority issue and the benefit-cost issue. And General Graves, I am certain, told the field until we had this number in and had hard numbers, we shouldn't be talking about them. Just like that 0.93 figure, it raises questions in your mind it probably shouldn't have been there.

Senator DOMENICI. But your divulging to appropriate people here 2 months before that in August was rather informal, as I understand.

General MORRIS. Yes, it was informal, and I think that was a mistake on my part. I thought it was adequate to the requirements, because the budget that was put together, the $815 million, was done completely logically and properly, and it was, as I say, no different than any other project in the budget which we knew was going to have a positive BC ratio, as the estimate showed.

Senator DOMENICI. I think that is where most of the problem comes in. I think the statements our chairman has made with reference to you are borne out in spades in your testimony that you, personally, weren't trying to deceive anyone. But it would appear that outsiders looking at this record would have no knowledge that you had personally come over and talked to Proctor Jones, who is the professional staff member for the Appropriations Committee, and to have talked to him about the fact that neither the $759 million or $815 million are going to be right, that it is more like $1.4 billion. Then there are internal memos saying we shouldn't let anybody know publicly in a release type thing.

General MORRIS. I appreciate that. If this project had not been so controversial, the 1977 budget would have appeared in January of 1976, and it would have included a $1.36 billion estimate, which it did, and that would have been the end. But it is kind of sportive to say the Chief of Engineers has deliberately withheld information.

Senator DOMENICI. One last question, and I apologize for taking so much time.

Senator MOYNIHAN. No problem.

Senator DOMENICI. When you go through the process that you have just described and you talk to appropriate people here—and an appropriations bill got passed, didn't it?

General MORRIS. Yes, sir.

Senator DOMENICI. What did it say?

General MORRIS. The bill doesn't deal with total project costs, it just says how much money you get for the project for that fiscal year. It only listed the project and appropriation.

Sir, as a result of all this, the rules have been changed. We don't do it now the way we did it then. We put the inflation in now. That is why the project costs went up so much this year. We are delighted with this change because now the right price is in there.

Senator DOMENICI. That was not a way of doing things so that you get the project a little further down the line before you have your final benefit-cost ratio, this was a normal procedure.

General MORRIS. Yes, except normally we don't redo the benefit-cost analysis on a project that is authorized. We just leave it alone and go ahead and build it. Again, I want to emphasize, because this project was so controversial and, in the long run, so expensive, I wanted to be sure we had a project that could continue to work.

Senator DOMENICI. By your own involvement in checking the benefit-cost ratio, are you suggesting to us that the procedure in those days literally could have had this project proceeding with the 1976 appropriation only to find thereafter that an independent analysis might reveal a benefit-cost ratio under one?

General MORRIS. Yes, sir, I will have to agree. That is what we did in the Arkansas project, if I am not mistaken. We took 10 years to build it, and I don't think they recomputed the benefit-cost after that project was begun. I don't know of any other project offhand where we have gone back and done the benefit-cost analysis after the project was undertaken. I am going to say once again I didn't want to take chances. I think that my life would have been much simpler if I had not had all these checks.

Senator DOMENICI. If I can, one question, as a matter of fact, the normal procedures operative at this point in time for this kind of project, would have had you going to Appropriations in an informal or formal manner, depending on what they wanted, not necessarily what you wanted, and you would have divulged in a manner consistent with their desires the new cost estimates, but there would not have been a new BC estimate even if the cost had gone up as much as from $759 million to $1.4 billion?

General MORRIS. Sir, that is generally correct. Ordinarily I would not go back to the committee with a change in the budget amount. It so happens we were very sensitive to this project. You are right, the system would have permitted a project to be placed under construction and to be built over a long period of time, with increasing costs, and without redoing the benefit-cost analysis. The reason is there is a fairly general acceptance of the fact that as the costs go up, the benefits go up proportionately; you escalate one against the other. But you are right, that could have happened.

Senator DOMENICI. And you are saying to this committee it didn't happen here. The reason is because you, yourself, insisted that both the estimates become more firm and the BC get reevaluated, plus you had the court ruling, not on this one but on lock and dam 26, that forced you to reevaluate a piece of the project below Demopolis.

General MORRIS. That is correct, sir. You have it correct.

Senator DOMENICI. Thank you, Mr. Chairman.

Senator MOYNIHAN. Thank you, Senator Domenici.

Just a quick point, General, if I might. When you speak of the rules not providing for assumption of inflating costs, those were your rules, I assume?

General MORRIS. I think we all had a hand in those, including OMB and the Congress. It is hard to be sure—maybe Mr. Schwaiko or one of my helpers here can assist—but this business of not including inflation goes back many, many years. For many years

we didn't have the kind of escalation problems we have now. We had them of sorts, but it was current costs; everything was current costs.

Senator MOYNIHAN. And was this mandated by the Congress or was this just a practice?

General MORRIS. It was accepted in our procedure for doing the economics, has been presented to Congress many, many times in various forms, and generally accepted. That doesn't mean they were changed by the executive branch of Government with the Congress knowledge, but I don't think there is any law that says we do them that way, but I think there are regulations.

Senator MOYNIHAN. This is an administrative practice.

May I ask you just one question about the escalation of costs. In what measure has the increased costs of the Tombigbee been associated with price changes and how much have increased costs been associated with design change, or if not design change with something turning out to be more difficult than you knew?

General MORRIS. Sir, I would like to provide those exact numbers for the record, because we do have them.

Senator MOYNIHAN. We do appreciate that. They are probably a mix, but it would be interesting for us to know to what degree this is a price inflation or to what degree it turns out be to design.

General MORRIS. A great majority is price inflation.

General HEIBERG. Well over half of it.

Senator DOMENICI. General Heiberg says 50 percent.

General HEIBERG. Actually two-thirds of the increase from 1971 to 1979 has been inflation increases.

Senator MOYNIHAN. That surprises me. That is smaller than I would have thought. There is turning out to be more rocks in the way.

General MORRIS. We assumed in the divide cut mostly sand and loam. It turns out there is a great amount of rock in there. We will give you the exact numbers.

Senator MOYNIHAN. That is a question, General, it is possible to find out where rock is.

Mr. Chairman, would you like to ask some questions?

Senator STENNIS. Senator, thank you again. I am really impressed and want to thank him for his testimony. At the time you have mentioned, lock and dam 26 was under fire more or less, and this project itself was in court. General Morris, I remember, told me he was giving his personal and professional attention, trying to do the right thing. I am glad to hear more of the details.

Senator MOYNIHAN. He has not only tried, Mr. Chairman, but this is presumptuous in the presence of the chairman of the Armed Services Committee, he not only tried, but he has succeeded. General Morris has been a credit to the corps and this Nation, and we are honored to have him here. Having undertaken a large enterprise, he has had large troubles. If you led a quiet life, what would you have to show for it? We are pleased that you were able to come this morning, sir.

Senator DOMENICI. He is like you, he is prematurely gray.

General MORRIS. It is not often you see a 26-year-old man as gray-haired as I am.

Senator DOMENICI. General, it may be that this is the last time we see you before the committee, but you have suggested you are not leaving this field. We look forward to your counsel over the years. We would like to congratulate you. It is presumptuous perhaps for us to do so for a distinct and honorable career, one of valor and enterprise. We wish you well in your well deserved retirement.

General MORRIS. May I just say there has never been a Chief of Engineers worthy of the corps.

Senator MOYNIHAN. That speaks to both institutions, the Chief and the corps. We thank you.

General MORRIS. Thank you.

Senator DOMENICI. General, you know the chairman talks so much he doesn't leave anything for people like me to say, but I concur.

Senator MOYNIHAN. The hearing will recess for just a moment while we wait for Senator Warner, who would like to make a statement on the second subject, which we now turn to, the general subject of coal transportation. The committee will recess for 2 minutes.

Senator DOMENICI. Mr. Chairman——

Senator MOYNIHAN. The committee will not recess for 2 minutes.

Senator DOMENICI. Mr. Chairman, I had some questions of the corps I didn't get to ask last time and I didn't think General Morris would have to be here, but I would like to have some time for that.

Senator MOYNIHAN. I am sorry, would you proceed.

Senator DOMENICI. Let me ask you, was it your intention now at this point, as you turn to the general subject, to excuse the corps witnesses?

Senator MOYNIHAN. No, sir, they will begin the hearing.

Senator DOMENICI. I wonder then if we might let me reserve the questions and get on with your general hearing. Let me run to the floor and make my particular arrangements on the nuclear waste bill and I will return. In the event I don't get my specifics in, I am going to arrange with the chairman for a time accommodating for both you and myself—it may be 9 o'clock tomorrow morning—but I have 15 or 20 questions and I want to get them out. I don't want to delay. And we might work that out between us.

Senator MOYNIHAN. We will do exactly so. In which event, we will have a 2-minute recess.

Senator MOYNIHAN. The committee will come to order again.

We now begin the second of our hearing subjects, which is the matter of the transportation of coal by water in the context of the extraordinary changes that have taken place in our national planning, and in international agreements for that matter, with respect to the use of coal. We are moving back to an energy source which had seemed to be phasing out. We have clearly determined we have the coal resources. The subject of transporting them has been but little attended to at this early stage. That is what the committee is going to be dealing with this morning.

We are especially pleased and honored to have as an opening witness, which is scarcely the word for such a distinguished colleague, Senator Warner of Virginia. The Senator has a statement he would like to make, and we welcome you, sir, to this committee.

It is a great pleasure to see you. We know of your interest not just as a former Secretary of the Navy, but water transportation is a matter of very large concern to you, to your great ports—Hampton Roads and Norfolk—the coal mining regions of your State, and we would like to hear at any length any matter that involves your interests.

STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE STATE OF VIRGINIA

Senator WARNER. I thank you, Mr. Chairman.

As you know, I have had a great interest in coal for some time. It is integral to my State and, of course, the national needs.

I will be very brief, but I would request to the chair that my statement in its entirety be placed in the record.

Senator MOYNIHAN. Without objection, so ordered.

[The statement referred to follows:]

STATEMENT BY
SENATOR JOHN W. WARNER
WATER RESOURCES SUBCOMMITTEE
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
JULY 28, 1980

WATER PROJECTS AFFECTING COAL TRANSPORTATION

MR. CHAIRMAN, YOU ARE TO BE COMMENDED FOR YOUR LEADERSHIP IN HOLDING THIS TIMELY HEARING ON A SUBJECT WHICH IS VITAL NOT ONLY TO THE UNITED STATES' ECONOMIC AND ENERGY WELL-BEING, BUT ALSO TO THAT OF THE ENERGY-DEFICIENT NATIONS OF THE WORLD.

LAST MONTH, AT THE VENICE ECONOMIC SUMMIT, THE UNITED STATES, ALONG WITH SIX OTHER NATIONS, SIGNED A DECLARATION BOLDLY STATING THAT THEY MUST RELY ON FUELS OTHER THAN OIL TO MEET THE ENERGY NEEDS OF FUTURE ECONOMIC GROWTH. THE SIGNATORIES AGREED THAT ONE WAY TO ACCOMPLISH THIS GOAL WAS TO DOUBLE THEIR COAL PRODUCTION AND USE BY EARLY 1990.

THIS DECLARATION WAS A VISIBLE AFFIRMATION OF RECENT STUDIES WHICH HAVE FOUND THAT WORLDWIDE USAGE OF COAL WILL INCREASE DRAMATICALLY OVER THE NEXT TEN TO TWENTY YEARS.

BECAUSE AMERICA HAS MORE MINEABLE COAL RESERVES THAN ANY OTHER COUNTRY IN THE WORLD, IT IS ONLY LOGICAL THAT THE NATIONS OF THE WORLD WOULD LOOK TO AMERICA TO SUPPLY THE LION'S SHARE OF THEIR INCREASING NEEDS FOR COAL.

FOR MANY MONTHS, HOWEVER, I HAVE BEEN CONCERNED THAT AMERICA'S COAL TRANSPORTATION NETWORK IS ILL-PREPARED TO HANDLE THE MOVEMENT OF THE PROJECTED INCREASED COAL DEMANDS.

TWO MONTHS AGO, THIS LONG-STANDING CONCERN WAS HEIGHTENED WHEN IT WAS BROUGHT TO MY ATTENTION THAT OUR COAL TRANSPORTATION NETWORK WAS APPEARING TO BE BREAKING DOWN IN A MANNER WHICH WAS DRASTICALLY AFFECTING BOTH OUR EXPORT MARKET AND OUR DOMESTIC MARKET.

FEARING THAT A CONTINUATION OF THIS SITUATION WOULD CAUSE THE UNITED STATES TO LOSE BENEFICIAL ECONOMIC OPPORTUNITIES, I WROTE A LETTER ON MAY 27 TO THE SENATE MAJORITY LEADER AND THREE SENATE COMMITTEE CHAIRMEN OUTLINING MY CONCERNS AND REQUESTING THAT A JOINT TASK FORCE BE FORMED TO CLOSELY EXAMINE THIS PROBLEM AND TO SEEK SOLUTIONS.

I WOULD LIKE TO INSERT AT THIS TIME INTO THE RECORD A COPY OF MY MAY 27 LETTER.

MR. CHAIRMAN, AS YOU WELL KNOW, OUR NATION'S COAL TRANSPORTATION NETWORK IS AN INTEGRATED, INTERMODAL NETWORK OF RAILROAD, HIGHWAY, BARGE, PIPELINE AND SHIP TRAFFIC.

THE WORLD COAL MARKET IS HIGHLY COMPETITIVE. IF AMERICA IS TO ENJOY ITS FULL SHARE IN THE MANIFOLD BENEFITS OF INCREASED WORLDWIDE COAL USAGE, OUR TRANSPORTATION NETWORK MUST BE ABLE TO MOVE LARGE AMOUNTS OF COAL AT THE LOWEST PRICE POSSIBLE, IN AN EXPEDIENT AND EFFICIENT MANNER.

LATELY THERE HAVE BEEN SIGNS THAT EACH COG IN OUR COAL TRANSPORTATION NETWORK HAS DEVELOPED PROBLEMS WHICH ARE RAPIDLY FORCING AMERICAN COAL TOWARD A NON-COMPETITIVE PRICE POSITION.

IN THE EXPORT MARKET, OUR NATION'S EXISTING COAL PORTS, INCLUDING MY OWN STATE'S COAL PORT OF HAMPTON ROADS, HAVE BECOME JAMMED TO THE POINT THAT THEY HAVE GREAT DIFFICULTY IN HANDLING EVEN THE PRESENT COAL DEMAND, LET ALONE THE EXPECTED INCREASES. AS A RESULT, THIS COUNTRY IS ALREADY LOSING BADLY-NEEDED COAL REVENUES TO OTHER COUNTRIES.

FURTHERMORE, LACKING ADEQUATE COAL PORTS ON THE WEST COAST, THE UNITED STATES IS LOSING A SIGNIFICANT AMOUNT OF THE JAPANESE COAL EXPORT MARKET TO AUSTRALIA.

IN THE DOMESTIC COAL MARKET, I HAVE LEARNED THAT OUR NATION'S COAL ROADS TOO OFTEN ARE IN DISREPAIR, OUR INLAND WATERWAY TRAFFIC HAS ITS SHARE OF BOTTLENECKS, AND OUR NATION'S COAL RAILROADS ARE NOT ALWAYS ABLE TO RESPOND AS QUICKLY AS OUR COAL OPERATORS WOULD LIKE. AS A RESULT, EVER-INCREASING AMOUNTS OF FOREIGN COAL ARE EVEN NOW BEING BURNED IN GULF COAST UTILITIES.

IN THE PAST, WE HAVE TENDED TO DEAL WITH THIS PROBLEM IN A PIECEMEAL, BAND-AID FASHION. IN MY JUDGMENT, IT IS TIME THAT WE EXAMINE THE TOTAL PROBLEM AND PROPOSE OVERALL SOLUTIONS.

THE WATER RESOURCES SUBCOMMITTEE OF THE ENVIRONMENT AND PUBLIC WORKS COMMITTEE IS CRITICALLY IMPORTANT IN ANY EXAMINATION OF OUR NATION'S COAL TRANSPORTATION NETWORK.

BECAUSE IT HAS JURISDICTION OVER BOTH THE NATION'S INLAND WATERBORNE TRAFFIC AND OUR NATION'S PORT DEVELOPMENT, IT HAS THE ABILITY TO FAVORABLY AFFECT BOTH OUR DOMESTIC AND EXPORT COAL MARKETS.

PRINCIPALLY YOUR SUBCOMMITTEE HELPS TO DEVELOP OUR NATION'S WATER RESOURCES POLICY AND PASSES UPON INDIVIDUAL WATER PROJECTS.

BUT AS YOU KNOW BETTER THAN I, MR. CHAIRMAN, FOR THE PAST COUPLE OF YEARS THE TERM "WATER PROJECTS" HAS COME TO CARRY UNFORTUNATE CONNOTATIONS IN THE PUBLIC MIND.

THE UNFLATTERING AND OFTEN INACCURATE LABEL OF "PORK BARREL POLITICS" HAS BEEN APPLIED ACROSS THE BOARD TO WATER PROJECTS BILLS, WHICH HAVE COME TO BE VIEWED AS LITTLE MORE THAN PET PROJECTS OF INDIVIDUAL CONGRESSMEN AND SENATORS.

BUT LOOK AT THE FACTS, 130 MILLION TONS OF COAL TRAVERSE OUR NATION'S INLAND WATERWAY SYSTEM EVERY YEAR -- SOME 50 MILLION TONS OF COAL ANNUALLY PASS THROUGH OUR NATION'S PORTS DESTINED FOR FOREIGN CONSUMPTION -- AND BOTH FIGURES WILL CONTINUE TO INCREASE.

MR. CHAIRMAN, I SUBMIT THAT A WATER PROJECT WHICH WILL HELP TO MOVE SUCH A VITAL COMMODITY EXPEDITIOUSLY, MAKING IT COST-COMPETITIVE, DOES NOT DESERVE THE DEROGATORY LABEL OF "PORK BARREL POLITICS".

THERE IS NO QUESTION THAT OUR INLAND WATERWAY SYSTEM HAS BOTTLENECKS WHICH MUST BE STRAIGHTENED OUT EITHER BY EXPANDED DREDGING OR NEW FACILITIES.

THE WORLD COAL STUDY POINTED OUT THAT, TO MEET THE INCREASED WORLD DEMAND FOR COAL, OUR COAL PORTS MUST BE DREDGED DEEPER. LARGER BERTHS MUST BE BUILT TO ACCOMMODATE THE LARGER COAL SHIPS. NEW COAL EXPORT FACILITIES ON THE GULF AND WEST COASTS, AS WELL AS NEW AND EXPANDED FACILITIES ON THE EAST COAST, MUST BE BUILT.

PRESIDENT CARTER SEEMED TO RECOGNIZE THIS NEED WHEN HE SIGNED THE DECLARATION OF THE VENICE SUMMIT WHICH CONTAINED THESE WORDS:

> "IT WILL BE NECESSARY TO IMPROVE INFRASTRUCTURES IN BOTH EXPORTING AND IMPORTING COUNTRIES AS FAR AS IS ECONOMICALLY JUSTIFIED TO INSURE THE REQUIRED SUPPLY AND USE OF COAL."

IN REALITY, HOWEVER, WATER PROJECTS DEALING WITH DREDGING, AND EXPANSION OF FACILITIES, HAVE MET WITH UNNECESSARY DELAYS. JUST TWO EXAMPLES, WITH WHICH I AM PARTICULARLY FAMILIAR, ARE THE DEEPENING OF THE PORT OF HAMPTON ROADS TO MAKE IT COMPETITIVE WITH OTHER WORLD COAL PORTS, WHICH HAS BEEN UNDER STUDY FOR SOME 10 YEARS -- AND THE DEEPENING OF THE PORT OF BALTIMORE WHICH HAS BEEN UNDER CONSIDERATION FOR MORE THAN 10 YEARS.

IF AMERICA CONTINUES TO DELAY ITS NEEDED WATER PROJECTS WHICH AFFECT COAL MOVEMENT, IT WILL MOST LIKELY LOSE OUT ON A MULTI-BILLION-DOLLAR OPPORTUNITY. COUNTRIES LIKE FRANCE, JAPAN, AND SPAIN -- TO NAME BUT A FEW -- HAVE PUBLICLY STATED THAT THEY WILL TAKE THEIR COAL BUSINESS ELSEWHERE, PRINCIPALLY TO SOUTH AFRICA AND AUSTRALIA, IF AMERICA CANNOT RESOLVE ITS COAL TRANSPORTATION PROBLEMS.

MR. CHAIRMAN, IT IS TIME THAT THE ADMINISTRATION AND THE CONGRESS RECOGNIZE THE VITAL IMPORTANCE OF OUR NATION'S COAL INDUSTRY, AND UNDERSTAND THE REALITY OF THE MARKET IN WHICH IT MOVES.

IT IS TIME TO RECOGNIZE THAT ANY PROJECT WHICH WILL HELP TO PUT THOUSANDS OF MINERS BACK TO WORK, CREATE THOUSANDS OF SERVICE-RELATED JOBS, SHARPLY IMPROVE OUR BALANCE OF PAYMENTS, HELP TO REDUCE OUR INFLATION RATE, MOVE US TOWARDS ENERGY INDEPENDENCE, STRENGTHEN OUR NATIONAL SECURITY, AND HELP SHORE UP OUR ENERGY-DEFICIENT ALLIES, IS NOT A "PORK-BARREL" PROJECT -- BUT IS A PROJECT WITH AN IMMENSELY FAVORABLE COST/BENEFIT RATIO THAT SHOULD BE ACTED ON WITHOUT DELAY.

IT IS TIME THAT THE ADMINISTRATION AND CONGRESS RECOGNIZE THAT, FOR AMERICA TO REMAIN COMPETITIVE, COAL-RELATED WATER PROJECTS MUST NOT BE ALLOWED TO LANGUISH. THAT IS A LUXURY WE CAN NO LONGER AFFORD.

TO SUCH PROJECTS, TWO TESTS, AND TWO TESTS ONLY, SHOULD APPLY. IS THEIR COST-BENEFIT RATIO ON THE PLUS SIDE -- AND ARE THEY ENVIRONMENTALLY ACCEPTABLE?

IF THE ANSWER TO THOSE QUESTIONS IS YES -- AS I BELIEVE IT WILL BE FOR MANY, IF NOT MOST, COAL-RELATED WATER PROJECTS -- THEN THEY MUST RECEIVE EXPEDITED TREATMENT IN APPROVAL, IN APPROPRIATION, IN CONSTRUCTION, AND IN COMPLETION.

MR. CHAIRMAN, I SALUTE YOU AND THE SUBCOMMITTEE FOR YOUR INITIATIVE IN ADDRESSING THIS URGENT NEED. EACH OF US, IN OUR OWN RESPECTIVE AREAS OF JURISDICTION AND RESPONSIBILITY, HAS AN IMPORTANT PART TO PLAY. WORKING TOGETHER, WE CAN MEET THE NEED.

TO THAT END AND IN THAT SPIRIT, I APPRECIATE THE OPPORTUNITY TO APPEAR TODAY AND I PLEDGE MY CONTINUING EFFORT AND COOPERATION.

JOHN W. WARNER
VIRGINIA

United States Senate

WASHINGTON, D.C. 20510

May 27, 1980

Honorable Robert C. Byrd
Majority Leader
Room S-208, U. S. Capitol

Honorable Howard W. Cannon
Chairman, Commerce, Science and Transportation Committee
Room 5202 Dirksen Senate Office Building

Honorable Henry M. Jackson
Chairman, Energy and Natural Resources Committee
Room 3106 Dirksen Senate Office Building

Honorable Jennings Randolph
Chairman, Environment and Public Works Committee
Room 4202 Dirksen Senate Office Building

Gentlemen:

Within the past two months, five major studies regarding the use of coal have been issued -- all in agreement that worldwide usage of coal will increase dramatically over the next ten to twenty years.

The World Coal Study found that coal production and consumption worldwide will at least double and possibly triple. All five studies noted that this tremendous increase will occur as dwindling supplies of oil at acceptable prices force nations to look for alternative sources of energy.

This bodes well for America's domestic as well as its international economic future. Currently, America is an energy importer. Our economy depends on oil as its primary energy base. We are spending $95 billion annually to purchase needed oil from foreign oil producing nations. Coal, which accounts for 80% of our domestic fossil fuel reserves, now supplies only 18% of our energy needs.

Coal is America's most abundant energy resource. Moreover, America has more mineable coal reserves than any other country in the world, with roughly one-third of the world's reserves lying beneath its soil. If the studies are correct and coal does become the world's growth fuel, the United States, with the largest known reserves, would become the biggest exporter -- the Saudi Arabia of coal.

This occurrence would put thousands of miners back to work, sharply improve our balance of payments, help make us energy independent, and strengthen our national security posture.

But such an increase in coal production cannot occur without encountering some obstacles.

One of the prime obstacles to the enormous increase in the usage of our nation's coal resources, as noted in the various studies, is the ability of our country to move large amounts of coal at the lowest price possible, in an expedient and efficient manner.

The studies point out that the strain of the projected increase in coal tonnage may tax our transportation system to its limit, possibly creating a nationwide breakdown of the system.

While 60% of our nation's coal is transported by our railroads, more and more of the nationwide hauling of coal -- for domestic use as well as export -- is coming to depend on an integrated, intermodal network of railroad, highway, barge, pipeline and ship traffic.

Lately, there have been indications that this network is breaking down. In the export market, for example, it has come to my attention that ships bound for the world's coal importing nations often are required to lie at anchor off our nation's coal-loading ports awaiting the arrival of their coal cargo from our nation's mines.

Such delays dramatically increase the costs to foreign shippers and are forcing them to look to other countries, rather than the United States, for their ever-increasing coal requirements.

If nothing is done about these apparent breakdowns in our coal transportation network, America will not be able to fully develop its coal resources and will have to forfeit a multi-billion dollar business. French officials have already indicated to me that their country will have to take its coal business elsewhere unless America is able to correct its coal transportation problems. Moreover, our domestic market may suffer further foreign inroads unless we can improve our transportation situation.

In the domestic market, U.S. coal operators have informed me that foreign coal is being imported in ever-increasing amounts to be burned in Gulf coast utilities because of high transportation costs and difficulties experienced by domestic coal producers.

In preparation for the coal bonanza that is fast approaching, it is time for the Senate to examine closely the ability of our nation's transportation network to handle the projected increase in coal production.

While several Senate Committees, as well as the Department of Transportation, have looked at various components of the coal transportation network, there has not been a recent Congressional examination of the total network and the demands which vast increases in coal production will place upon it.

Because the coal transportation network crosses several Senate Committee jurisdictions, I believe that any examination of the network, to be complete, must be interdisciplinary in scope.

Thus, I would like to request that your committees, which have jurisdiction over the various components of the coal transportation network, form a joint task force to hold hearings in this very important area.

The task force could draw upon those studies already completed and currently ongoing in this area, including the Department of Transportation's forthcoming National Energy Transportation Study. Moreover, a comprehensive Senate examination would provide all interested parties involved in the coal market, both domestic and international, with the opportunity to be heard in a unique public forum.

It is my hope that an independent examination by your committees, exercising their oversight responsibility in a timely manner on this vital subject, would contribute importantly to public understanding, and provide the nation's coal and transportation industries with constructive suggestions and solutions to the coal transportation problem.

67-591 O—80——25

May 27, 1980
Page four

As the projected crunch is still in the future, there is time for careful and thoughtful examination of the problem. But time is running out and I believe we should begin hearings as soon as possible.

I hope that the Senate will be able to begin its examination of this matter during this Congress.

Respectfully,

John W. Warner

John W. Warner

cc: Senator Howard H. Baker, Jr.
Senator Bob Packwood
Senator Mark O. Hatfield
Senator Robert T. Stafford
Members of Senate Coal Caucus

Senator WARNER. With the Chair recognizing my bias on coal, he will, I hope, if I become enthusiastic, indulge me. I am reminded of the old story of one of Gen. Robert E. Lee's lieutenants who wrote an analysis of the War Between the States and he titled it "History of the Civil War from the Southern Point of View."

I am speaking to you, of course, from Virginia's interest.

Mr. Chairman, it seems to me we have got to ask that these projects receive expedited treatment, providing they meet the cost-benefit ratio on the plus side and the environmental requirements. I would like to just conclude by saying I have had many visits to my State in the company of my Government, with the purchasers of Virginia coal—foreign purchasers—and they look you straight in the eye and say we have perhaps 2 years, at most, within which to improve our offloading facilities in the Hampton Roads area, and if we don't improve them through dredging and otherwise, we will lose our markets to South Africa and Australia, they having already gone forward with the needed dredging requirements and offloading to meet the supertankers which are coming into use now. So unless we receive this expedited treatment within that period of time, Virginia, I can tell you firsthand, will lose its competitive edge, which is now primarily due to geographical location—Virginia to Europe—to these principal coal-exporting countries in South Africa and Australia.

Senator MOYNIHAN. Senator, I would like to say, you say Virginia, but you mean the United States.

Senator WARNER. Of course. Through Virginia comes much of the coal from the East.

Senator MOYNIHAN. Right. Of the whole Appalachian region, the export goes through Hampton Roads. This is the largest coal-exporting facility we have in this country, is it not?

Senator WARNER. That is correct.

Senator MOYNIHAN. Is there now underway a development project for the harbor comparable to that which you say is taking place in Australia and South Africa?

Senator WARNER. We are in active negotiation with the Corps of Engineers to see what we can do to expedite. A program has been under study, Mr. Chairman, for almost a decade.

Senator MOYNIHAN. But the project is not underway.

Senator WARNER. Not yet. But for a decade we have been discussing the deepening of the channel to accommodate the larger type ships.

Senator MOYNIHAN. But it is not underway yet.

Senator WARNER. No, it is not underway yet.

Senator MOYNIHAN. And we are going to triple the amount of steam coal used in the 1980's. The 1980's are underway, but our transportation arrangements are not.

Senator WARNER. That is correct.

Senator MOYNIHAN. One other question, something you said struck me—and I am new to the subject and you, as a former Secretary of the Navy, are much more privy than I—we are now beginning to construct superhold freighters, if you will.

Senator WARNER. Tankers, coal tankers.

Senator MOYNIHAN. Very large bulk transportation has moved its way into solid coal as well as liquid fuel.

Senator WARNER. They are comparable to the ones now being used for oil.

Senator MOYNIHAN. So, in other words, we have in that regard with respect to coal the revolution of the sea transportation capacities which have not yet been matched by the harbor capacities.

Senator WARNER. That is correct.

Senator MOYNIHAN. And that is one of your concerns.

Senator WARNER. These ships will simply go wherever they can find a port in the world to accommodate their particular craft and the need for expedited offloading of coal or onloading.

Senator MOYNIHAN. Thank you so much.

Our distinguished chairman, who never fails to find time for subcommittees on this Committee on Environment and Public Works, has joined us. Senator Warner has just been making some extraordinarily important points about the export facilities of coal through, for example, Hampton Roads.

Senator Randolph, would you like to make a statement at this point?

Senator RANDOLPH. Thank you very much, Mr. Chairman. It is a little difficult to go from nuclear waste to a substance that should never be wasted, and that is West Virginia coal.

Senator WARNER. But it is being wasted now, Mr. Chairman, unless we open up that port and dredge. You and I have discussed this not once, not twice, but a dozen times on the floor of the Senate. I know the chairman's interest in this matter, and I am very hopeful this committee can provide the Nation with a vehicle by which we can have expedited treatment of these projects.

Senator RANDOLPH. Well, I thank both the chairman and the Senator from the Commonwealth of Virginia. There are just a few States that use the word "commonwealth." And I have always

associated it with the wealthier or more affluent States. West Virginia does not carry that wording.

I don't want to step back except to say that 15 or 16 years ago I was able, through this committee, to have a widening and deepening of the channels at Hampton Roads. It brought a deluge of criticism to my efforts from West Virginians who wondered why I would be spending money in old Virginia rather than the newer Virginia. I explained that foreign ships could not come into the harbor—they were too large—and, therefore, were unable to fill their bottoms with northern and western coal moving by rail into that area of Virginia. I am not trying to say it was a project equal to the one you are discussing here today, but there is always a need to move the products of the field and the factory and the mine to the consuming public, wherever that public may be.

Mr. Chairman, this is another in the hearings that you are holding on the inland navigation system. Is that right?

Senator WARNER. That is right. This whole system, to me, is like a chain, and it is no stronger than its weakest link, and right now the weakest link is the offloading and dredging required, particularly in Hampton Roads.

Senator RANDOLPH. Yes. This investment is rather large, approximately $10 billion since the beginning, 1824. So it is an investment, I would want to think, should be maintained. I am gratified you have given me the opportunity to come and participate briefly, Mr. Chairman.

I can continue to tell you how important coal is. You all know how I feel about that. I will say that in 1977, 156.3 million tons of coal moved in our navigable waters. This represents approximately 15 percent of the total domestic waterborne commerce. So it is a very considerable item. Growth projections for this one commodity make our inland waterways even more important in the next century. Twenty-five percent of all waterborne traffic in the year 2000 will be coal. I think that is a correct statement to make. This will be approximately 420 million tons and will represent the commitment of this country, as we have already expressed it in the Congress and in many other places, to coal as an alternative to the importation of foreign oil.

I am familiar with the Ohio River Basin which extends along the western boundary of the State of West Virginia. I do want to have the record reflect in 1978, 218 million tons of cargo moved in the rivers which compose this basin. It is a tremendous amount of tonnage.

The Ohio River navigation system was completed in 1925 and has undergone one major modernization which will be completed with the Gallipolis lock. Gallipolis we think of as just across the river in Ohio. I wanted to go to Gallipolis one time because I wanted to see where O. O. McIntyre was born. No one probably remembers who he was. He was the man who wrote the first column about New York, "New York Day by Day." He sent it to hundreds of newspapers throughout the country. He said he stood in the shadows and watched the people go by. A tremendous writer. I have many of those columns that went on for years and years.

But we do need to modernize the three locks. Also, in the Monongahela River system—I don't know whether you know about it, Senator, that is one of the rivers that runs north; there are not too many of those around—but coal and chemicals are the major commodities in this basin, and we must keep that basin in operation, capable of moving the anticipated traffic which I mentioned.

Of no less importance are the ports—and that is what you are here for—which will move particularly coal in export. Now, with the Energy Security Act of 1980 and passage of the Power Plant Fuel Conversion Act in the Senate, I believe we are coming to a point where at least now, and hopefully in the future, we will not be relying upon imported oil. So the passage of this legislation is important, important as a part of that bigger responsibility. Further progress toward the use of domestic coal will require better coordination of existing government coal-related programs. In addition to our commitment for domestic coal use, the coal industry is now on the verge of establishing a new market for its steam coal—you know about that—in foreign countries. That is something that is happening. In order to take advantage of this situation, our inland transportation facilities, which you advocate improving, as well as our port facilities, which you are here for as a testimony of your interest today, must be able to handle coal quickly and, of course, sufficiently. I know the Interagency Coal Export Task Force, chaired by the Department of Energy, is working to address this immediate problem, and it is a long-term problem.

There are issues, of course, which these increased exports arise. The Corps of Engineers, whom I have had conferences with—I am sure the Senator from Virginia and others have had—are a part of that task force.

So I will conclude by saying that these hearings serve further to draw the attention that is needed to improvements and expansion of the coal handling capabilities not only on the rivers and canals—and the Senator here from Pennsylvania sitting at your side, I know he is interested in some locks and dams and facilities——

Senator WARNER. And the Monongahela, which flows north.

Senator RANDOLPH. That is right.

So we must not forget the port facilities; they are part of the system.

Dr. Carroll Wilson, in the coal study that he did, which I went through very carefully, projected as much as a 700-percent increase in U.S. coal exports over the next 20 years, as the world seeks to decrease its dependence on oil. That is not only here, but in other countries. In 1980—that is here with us—the U.S. coal exports have increased—someone would not realize that this has been happening—have increased 43 percent over the previous year, which was a high.

I and others are working with Secretaries Klutznick and Goldschmidt, with the rail and coal industry, working with other representatives in seeking solutions to the severe congestion problem of our major coal export facilities at Hampton Roads, Va., and at Curtis Bay, Md. Some progress has been made, but it is necessary, I say to the Senator from the Commonwealth of Virginia, to move expeditiously to eliminate obstacles to coal exports, to realize

that we must have a growing part of the world market, and I think the world is ready to buy it if we can move it to those consumers.

So it is helpful, it is very helpful, to have this hearing. It is not just another hearing on Capitol Hill. This is a hearing that has a direct bearing on the security of this country and the men and women and children who live in it, and that is the navigation system being upgraded to take care of the movement both on inland waterways and at the ports of shipping and entry, Hampton Roads being one.

I thank you very much.

Senator MOYNIHAN. We thank you, Mr. Chairman.

We thank you, Senator Warner, very courteous of you to come. I see you have been joined by Senator Heinz, to whom we give an equal welcome, and we look forward to hearing from you. You are just at the outset of the second phase of our hearings on the subject of water transportation of coal.

STATEMENT OF HON. JOHN HEINZ III, U.S. SENATOR FROM THE STATE OF PENNSYLVANIA

Senator HEINZ. Mr. Chairman, thank you very much. I am grateful for this opportunity to appear before the Water Resources Subcommittee to discuss the issue of coal transportation. I know that you are anxious to hear the remaining testimony of your expert witnesses, but I would, representing the Nation's third largest coal-producing State, take just a few minutes to make the following remarks.

Senator MOYNIHAN. We welcome you for your knowledge of this subject matter and your commitment to it.

Senator HEINZ. Mr. Chairman, I thank you.

Let me say that, first, I believe it is essential we remove the current regulatory, transportation, and other barriers to increased coal utilization so that our economy is never again held hostage by foreign oil. Second, to attain the national goal of energy independence, we need an efficient, intermodal—I mean rail, highway and waterborne—transportation system for the movement of coal. Third, because river transportation is one of the most efficient means of transporting coal and other products, improved inland navigation and port facilities, as the Senator from Virginia was mentioning a moment ago, as was the Senator from West Virginia, should be a top national priority.

Let me briefly expand on each of these points.

First, on the need for greater coal utilization rather than exporting our capital base to and importing inflation from the OPEC countries, America can and must become itself the OPEC of coal. My own State of Pennsylvania is a case in point. The third largest coal-producing State, Pennsylvania now produces some 80 million tons of coal per year. Based on proven recoverable reserves, however, Pennsylvania could increase its coal production by 50 percent a year and still maintain this increased production level for at least the next 200 years. Or, put another way, the original block of coal in Pennsylvania was 1 mile high, 1 mile wide and 17 miles long. Today, it would only be slightly different. It is still 1 mile high, 1 mile wide, and after all these years still 13 miles long. We have a long way to go in our block of coal.

How does that translate into reduced dependence on imported oil? Well, as we all know, 1 ton of coal is the rough equivalent of 4.5 barrels of oil. Currently, we import about 3 billion barrels of oil a year. Therefore, the 120 million tons——

Senator DOMENICI. It is more than that, isn't it?

Senator MOYNIHAN. We are up around 6.7 million.

Senator HEINZ. Well, after you get through with some of the Government requirements and inflation—and it depends on what kind of coal you are burning——

Senator DOMENICI. No, imports.

Senator HEINZ. How much do we import? Roughly 8 million barrels a day. I said 3 billion barrels a year.

Senator DOMENICI. I thought you said 3 million barrels a day.

Senator HEINZ. No; I am sorry. If I did, I apologize. I meant to say the United States imports about 3 billion barrels a year, which is roughly the equivalent of 8 million barrels a day.

Therefore, the 120 million tons of coal which the State could produce each year represents the equivalent of about 540 million barrels of oil, or about 18 percent of what we now import. Despite the potential for my State to become the Saudi Arabia of coal—and we will let West Virginia become the Kuwait and Iran of coal, and there are plenty of other fiefdoms available for coal-producing States—that has not happened. What has happened as a result of the oil embargoes and shortages is, rather, the opposite of what you might expect.

Since 1975 Pennsylvania coal production has increased only 1 percent a year. In the midst of our current national energy crisis, Pennsylvania coal mines are currently laying off workers. Which brings me to my second major point.

Pennsylvania and other coal-producing States have not recognized their potential in helping meet the Nation's energy needs in substantial part because the transportation system needed to serve the domestic and expanding foreign market is deficient. In Pennsylvania our system of highways and bridges has fallen into disrepair. Our railroads need upgrading and modernization. Port facilities at Erie, Pittsburgh, and Philadelphia are aging and undersized.

Consider, for example, the Port of Philadelphia, through which one might expect vastly increased quantities of coal to be transported to facilitate the conversion of our oil-powered utilities in the Northeast and New England, and to serve burgeoning export markets in the Far East, Europe, and elsewhere. The Port of Philadelphia now has a 6-week backlog of coal waiting right at the docks to be loaded because its coal-loading facilities are deficient.

At inland ports, such as my home city of Pittsburgh, the existing navigation structures are literally falling apart. The waterways of the Monongahela River system, over which travel coal, steel, and other goods, on which nearly one-half million—420,000—jobs, as we calculate it, in more than 100 communities directly depend, and yet these main arteries are literally bleeding profusely as breakdowns and delays at various lock and dam structures create added costs for all those whose business depends on river transport.

Which brings me to my third and final point, Mr. Chairman, namely, that improvements to our inland navigation system are essential before this Nation can realize its potential as the OPEC of

coal. As an example of relative efficiency of river transport, consider the enormous coke plant at United States Steel's Clairton works which consumes some 30,000 tons of coal per day, virtually all delivered by barge. This plant is the keystone for United States Steel's operation in the "Mon" Valley because it supplies the coke and gas for which most other steel-producing plants in the valley could not operate. It is not just a question of coke, but coke gas, which is the energy source of most of the other operations in the valley. Any operations at the Clairton coke works would affect steel and chemical production schedules and cost, and so affect United States Steel facilities throughout western Pennsylvania.

To put the importance of water transportation in perspective, consider how Clairton's daily needs might be met absent an efficient navigation system. The 30,000 tons of coal consumed per day at Clairton takes roughly 25 barges now to transport. One barge is the equivalent of some 15 railcars. So absent barges, some 375 railcars would be needed daily to furnish coal by rail if there were facilities at the plant to take coal in that fashion.

Alternatively, one barge is the equivalent of some sixty 25-ton trucks. So it would take 1,500 trucks daily to furnish the coal needed at Clairton. This would obviously create even more considerable traffic problems than we now have in the area, to say the least.

This is not to suggest, however, that river transport replaces other modes, Mr. Chairman. In fact, river transportation complements other modes. For example, an analysis of 89 shipments along the "Mon" River in Pennsylvania found that 50 used a combination of rail and barge, rail as much as 106 miles; and 21 used a combination of truck and barge, with the average length of truck shipment measuring 10 miles. In fact, a study of industrial sites on waterways in the Pittsburgh district found for every ton of coal and petrochemicals brought in by barge, 1 ton of finished product moves out of the plants by rail or truck—one for one. Thus, for a relatively minor investment in navigation facilities, enormous economic benefits have been realized.

I mentioned earlier there are 420,000 jobs that depend on the river transportation system in the "Mon" Valley.

Senator MOYNIHAN. You mean Monongahela?

Senator HEINZ. Yes; I shortened it. You will find, Mr. Chairman, as soon as we get you up there, that that is shorter and less error-prone to use "Mon" for Monongahela. And I welcome you in the subcommittee, and Pete Domenici, your ranking member, to come up and visit any time as our personal guest, because I think you would find it absolutely—I know you have spoken in Pittsburgh, Mr. Chairman, but I don't know if you have had the deluxe tour. We will be happy to arrange that.

I mentioned the 420,000 jobs the river transportation improvements have produced. The cost of those river transportation improvements, since 1872—over 100 years ago—has been a total appropriated by the Federal Government to build, purchase, improve, and reconstruct all the locks and dams along the Monongahela River, a total of $134,881,000. That amounts to an investment in steel and coal-related industries alone of roughly $300 per job. Since we are talking about a period stretching over 100 years, you

could say that that is less than $3 per job per year. That, Mr. Chairman, is an enormously efficient investment in permanent job creation.

Senator DOMENICI. You are talking about past investment.

Senator HEINZ. I am talking about all investment to date in the Monongahela system, Mr. Ranking Member.

Now, measured against all the other things we do to stimulate employment—public works jobs, CETA jobs, many other things we do—to say the least, that kind of sum, whether it is the $134 million, or the $300 per job every 100 years, or the $3 per job investment per year, would seem to be a modest sum indeed.

In closing, Mr. Chairman, I hope as a result of these very excellent hearings that the subcommittee is having, that we, as a nation, will realize the vast potential of relatively modest investments in navigation projects to stimulate both our economic growth and promote our energy independence. I hope that I will soon have the opportunity to appear before this subcommittee on another occasion to testify on specific needs in the Monongahela River Valley, specifically our Monongahela Waterways Improvement Act, which would represent a small, but necessary, first step toward attaining these objectives.

Mr. Chairman, Senator Domenici, I thank you very much for this opportunity to appear.

Senator MOYNIHAN. We thank you, sir. This is extraordinarily helpful because it is precise.

May I just ask, you make this point so startlingly in the face of this extraordinary difficulty this country faces with imported oil, we have not yet, in fact, turned to a directly substitutable commodity we have, which is coal. We don't use more of it. We don't export—we export a little bit more, but not much more.

I wanted to ask you on Philadelphia, that is a striking figure, a 6-week backlog. I did ask the same of Senator Warner about Hampton Roads. Is there now in progress a harbor improvement project in Philadelphia for the offloading of coal for export?

Senator HEINZ. There are a number of projects in the formative stages that involve making sure that the anchorages are properly dredged. The anchorages are necessary because you can only bring ships up the river on the high tide in Philadelphia, and you have to have adequate anchorages as holding pins for either the ships coming in or going out.

Second, we have been working with the Coast Guard for the last 2 or 3 years to try and develop better all season, particularly winter, capability.

Third, and this is a major problem, the railroad serving the Port of Philadelphia, which is principally Conrail, is looking at ways to upgrade its pier 124, which is one of several but is probably the most important coal-loading facility. It is limited at the current moment to something like 4 million tons a year—a drop in the bucket of the current 80 million tons we now have and of the 120 million tons we could have. We are working with them to try and get them to find the money—and Conrail is not exactly flush for money. They get huge subsidies from us, it is true, but it is because, unfortunately, they are losing lots of money—to improve the coal-handling capability of pier 124 from 4 to 12 million-or-so tons a

year; that would be a major improvement. Obviously, 8 million tons would be a welcome improvement. Things are not going as fast there as we would like.

Senator MOYNIHAN. And there is not, in fact, a Corps of Engineers project underway at this time?

Senator HEINZ. There is no Corps of Engineers project, to my knowledge, underway at this time.

Senator MOYNIHAN. I would like to ask one other question.

Senator HEINZ. But we would like to reserve the opportunity to come back and discuss that with you.

Senator MOYNIHAN. That is what this hearing is about.

Senator HEINZ. Mr. Chairman, I don't want anyone to misunderstand. The first two projects I mentioned, the dreding of anchorages at Marcus Hook is a corps project. The Coast Guard is responsible for transportation. The corps does operate in the Philadelphia district, and it is important to our ability to navigate.

Senator MOYNIHAN. I just have one other question, which is not less important; perhaps the Senator from Pennsylvania would respond to my question. How do you suppose that the French got to Pittsburgh?

Senator HEINZ. How do I suppose the French got to Pittsburgh?

Senator MOYNIHAN. Yes.

Senator HEINZ. I guess they didn't have all the Government regulations we have, Mr. Chairman.

Senator MOYNIHAN. I will tell you how the French got to Pittsburgh. There is a little port on Lake Erie, which is, interestingly, called Angola, and from Angola is a very gentle 22-mile portage to Lake Chautauqua, to the Ogenagansted Creek to the Allegheny River, which becomes the Ohio, which becomes the Mississippi. It all begins in New York.

Senator HEINZ. Mr. Chairman, we have known for some time that the Sun rises and sets on New York. Now we know that the world has begun there. And the Senator has no terrible complaints about that.

Senator MOYNIHAN. I just wanted the record to be clear.

Senator DOMENICI. Mr. Chairman, I have to leave again, but let me just ask the Senator from Pennsylvania, I am back to my old question again, don't you think even for the Monongahela—I have seen it; I flew over it, visited some of the facilities—don't you think a user-fee system related to that project might be a much more expeditious way than to continue with these constant arguments over benefit/cost arguments, general funding, as a matter of philosophy?

Senator HEINZ. No, and certainly not—Mr. Chairman, I think you have to put that in context. There are a large variety of Federal projects that take place where we don't ask user fees of people. We don't ask user fees when we create a public works job program. We don't ask for a community to put in a special user fee when we build a U.S post office in that community. I don't want to get into the entire philosophy that the Senator has and that I have.

Senator DOMENICI. Let me just ask you this general question. We have heard testimony with reference to Tennessee-Tombigbee and just general transportation on our waterways, and while I am a critic of the way we are handling our water projects in this coun-

try, I certainly would say we ought to start with waterway projects, including ports and locks, in keeping the waterways open, and that ought to be a special kind of program unrelated to our State projects that some of us think are being handled in a far too cumbersome manner. That is a national priority. I want you to know I start with that premise. We are hearing testimony, we are building huge facilities at general taxpayers' expense with the ultimate goal of exporting coal to the world, and I am all for that. The United States, in rough figures, has 600 years of coal if we use nothing else, so the resource is enormous. But it just defies me to believe that we ought to pay for these kinds of facilities for exporting coal in the kind of energy environment we live in and not charge something for the hundreds of millions, if not billions, of dollars that we are going to put into these facilities of tax dollars to ship coal to foreign countries. That might not be the case for the little piece you are talking about.

Senator HEINZ. No, put a severance tax on it.

Senator DOMENICI. Related to in some way deferring part of the taxpayers' cost, you say.

Senator HEINZ. Mr. Chairman, if your concern is the coal we are exporting, then place an appropriate severance tax on that coal.

Senator DOMENICI. My concern is not only coal we are exporting, but my concern is precisely what you said in your second point, that we need an intermodal transportation system in this country that is built around the waterways where they are usable, built around our highways where they will function, and around a revitalized railroad system for the whole country, and we can't ignore as we treat one segment different than the other, we negate the relationship of the three. I just wonder if you don't feel it would be reasonable to defer some of the cost of these waterway improvements at least on exportable coal rather than totally subsidize. Now, the Monongahela, it is a piece. When I asked you about it, wouldn't it be good to have an authority there and handle its own affairs? You generally don't disagree we shouldn't be totally subsidizing the transportation of coal for exports.

Senator HEINZ. Mr. Chairman, I think the first thing we ought to do is take a look at the entire structure of subsidies we give the transportation industry. It is all very well to say don't subsidize the waterway transportation system. But I have seen a lot of study about the extent to which we subsidize trucks by virtue of the way we build our interstate highway system and the way we finance that building. The user fees, the special fees that trucks pay, simply bear no relationship at all to the value of those magnificent rivers of concrete that the Federal Government creates.

Senator DOMENICI. Well, it is nowhere near the waterway subsidy. But let me just tell you why I am concerned. The subsidy is something like 40 percent for barges, 3 percent for rail, and 1 percent for trucks, and that has been established. Even if you want to take the land they gave to the railroads and put that in, we can answer that one for you, too, in terms of 50 percent freight rates for some 35 years, all the way through the war and postwar era, where the Government got 50 percent rail rates versus the rest of the economy for that.

Let me just, in closing, tell you what concerns me. Senator Moynihan and I are truly serious about this transportation study we are undertaking here and about what we ought to be doing as a Nation in terms of transportation for coal. I submit to you that we are going to be hung up in benefit/cost ratio and evaluations and hearings and court battles ad nauseam until we figure out a better way to assure the reasonableness of the projects. And I submit the best way going is the marketplace, and that some reasonable relationship to letting the people that use it pay for it is going to get us unstuck from this quagmire of getting nothing done. I just leave you with that because that is what is happening. The tool you are talking about that you are going to testify on later, at this point we are 3 years away—you will be here asking us to authorize it—we are 3 years away from an appropriate corps study and benefit/cost ratio evaluation, and we have been at it for how long? Many, many years already. This is the kind of thing that disturbs us. I submit one of the reasons is that we continue to fight the battle of doing it for free, and that if we could find another way we will untangle this mess and we won't build everything everyone wants, but we will get some of these projects on board and going, which is a real part of the pay-as-you-use kind of waterway system in this country.

Senator HEINZ. Mr. Chairman, I couldn't disagree with you more on one of the points you made. You are saying that the benefit is that we will get out from all the redtape, that we will get out from all the delays. Now I don't think that will ever be possible no matter who pays for it. Each and every single one of these projects, I might add, is going to be subject to all the regulations that exist. And certainly, unless you want to get the Federal Government not only out of paying one penny—is the Senator's objective to take the Federal Government out of paying one penny?

Senator DOMENICI. No, for paying hundreds of millions.

Senator HEINZ. Then as long as the Federal Government is paying 1 penny, as the Senator knows so well, we are going to be here having those hearings, there are going to be authorizations, there will be corps planning studies, because it doesn't take much Federal involvement at all for the Federal Government to want to get in and run everything.

Senator DOMENICI. Let me just tell you I would submit for you the battle of the Tennessee-Tombigbee project, in this Senator's opinion, if that would have been predicated upon the user making a commitment to pay 50 percent of the capital cost over 50 years, we wouldn't be here, because it would have either proven itself in the marketplace or it would have been dumped. And if it had proved itself in the marketplace, I submit to you everyone would have been for it around this institution. We would have had the envrionmentalists around 5 years ago and it would have been a much different project, or we would be sitting here saying it is an absolutely valid transportation system for this country because it is going to yield $45 million a year in reasonable user fees to defer the expense, the cost over 50 years, and it would be behind us one way or another. I think that is the same on almost everything we look at.

You look up and down the Ohio, where we have to go back and repair them, the second phase of maintenance and locks up from

26 that we are going to have to rebuild. I submit there will be a fight on every one, much like Lock and Dam 26, and it would not occur if there was a broad system saying it has proven out on good economics, and there will be a lock fee of so many dollars, and it will go up so much a year based on inflation; I submit they prove themselves one way or another, and we wouldn't have this kind of issue before us. That is the only point I make on regulations.

Senator HEINZ. Senator Domenici, I appreciate your vision of the future. I must say I think it is at variance with the realities that would occur even were you able to have your way be the case. There are lots of people who don't want any of these things built, and they are not going to roll over and play dead just because 50 percent is picked up by private industry. Let me give you an example.

There is a project up on the border between Erie, Pa.——

Senator MOYNIHAN. Senator Domenici has to go to the floor.

Senator HEINZ. This example is for your benefit, and it will take me about 30 seconds.

United States Steel is not using any Federal money to plan this Greenfields steel mill up there between Ohio and Pennsylvania, and it has taken them 5 years to get to the point where the environmental impact statement might be approved the first time around, maybe. That is my point. There is not a penny in Federal money.

Senator DOMENICI. I don't know if that is a congressional issue that you just referred to.

Senator HEINZ. It shows how complicated these things already are.

Senator MOYNIHAN. The Republicans can't agree on anything. How are they going to run the country.

Senator HEINZ. We will all be looking forward to your convention in your fair city of New York.

Senator MOYNIHAN. We thank you very much for very important testimony. You do know on this other subject we have a legitimate concern in terms of the marginal returns of these investments as between intermodal transportation systems. We better not say that there are subsidies in one place and not another. It is something you, as a businessman, would recognize we are groping. We thank you.

Senator HEINZ. Thank you, Mr. Chairman.

Senator MOYNIHAN. Let me say we are running late, in fact happily because we have had such interesting testimony. I have at this point a commitment to preside at 3 o'clock this afternoon. I am going to try not to have that. We will see, if we don't finish this morning, we will continue in the afternoon. But for the moment we are going to hear two persons of great reputation in this field who are going to testify for us. The first is Dr. Michael Bronzini, professor of civil engineering at the University of Tennessee, who is also associate director of the transportation center at the university.

Professor Bronzini, we welcome you to our committee. I would like to note you have been the lead investigator in the Department of Energy—Department of Transportation National Energy Transportation study; perhaps in your testimony you can tell us a little

bit about that. But we have kept you waiting all morning, and we look forward to hearing your testimony.

STATEMENT OF MICHAEL BRONZINI, ASSOCIATE PROFESSOR OF CIVIL ENGINEERING, UNIVERSITY OF TENNESSEE

Mr. BRONZINI. Thank you very much, Mr. Chairman.

It is indeed a privilege to join the distinguished group of witnesses who have come before the subcommittee today. I do have a prepared statement which I have provided for the record, and I will take the liberty of summarizing some of the key points from that.

Senator MOYNIHAN. Your statement will be included in the record. [See p. 415.]

Mr. BRONZINI. Before I begin, I think I would like to tell you a little bit about my point of view.

I am here, I suppose, because of the work I have done over the years in water transportation and also on freight transportation in general. I have been at this business for about 11 years. I am currently running a university research program in transportation systems and energy. I have had projects sponsored by almost all the interests in this controversial area of water resources and transportation. I have had funding from the Corps of Engineers, the Federal Railroad Administration, the Maritime Administration, the Department of Transportation, and the Department of Energy, as you just mentioned. I guess this might indicate that all the sides here consider me to be somewhat unbiased. I hope so. As a researcher, you don't want to get a reputation for having biases. I don't have any axes to grind, I don't have any pet projects or pet peeves, and I would like to testify from that basic viewpoint.

With that as a preface, I would like to cover three areas: first, what the present and future coal movement patterns are in the country; second, given those patterns, what are the constraints that are likely; and third, I might be so bold as to make some recommendations about some things that the subcommittee might want to watch for in the future and in future deliberations.

Senator MOYNIHAN. I didn't hear the second one.

Mr. BRONZINI. What the potential constraints might be.

Senator MOYNIHAN. That is the word that is a little fuzzy when I hear "constraints." What do you mean?

Mr. BRONZINI. They may become obvious in a moment. Basically constraints are things which might inhibit increased coal usage and production. I don't want to go into a lot of facts and figures about coal production and transportation; you have already heard that at some length. The only point I wish to make is that over 20 percent of the coal that moves in this country at some point moves by water; but a good portion of this, around half or more, is multimodal—it moves both by water and truck or rail; but a fairly large percentage does move by water between the mine and destination.

Traditionally, movements have been heavy along the Monongahela, the Ohio, the Green, and Tennessee Rivers, the Mississippi River and Illinois Waterway, and the Great Lakes—presently through the areas of Toledo and Chicago, where it is transshipped for further movement on the lakes.

Senator MOYNIHAN. There is an increasing movement of western coal out from Duluth, isn't there?

Mr. BRONZINI. Yes, that is also developing. Historically, it has not been as large as the movement through Toledo and Chicago, but it is increasing in importance right now. There are some indications that it will be the dominant movement in the future, pending the issue of eastern versus western coal. But if western coal develops the way it looks like it will, then there will be rather large quantities moving from Duluth east for utilities located on the eastern end of the Great Lakes.

The lower Mississippi is moving a lot of western coal right now, and it looks like that is going to be more important in the future.

Senator MOYNIHAN. Through Mobile?

Mr. BRONZINI. It is transported to St. Louis, where it is transshipped for movement south by barge. There are a large number of transloader operations in St. Louis. St. Louis is a very good location from the point of water resources development because it is below the last lock on the Mississippi River. So increased use of western coal moving south on the Mississippi does not really mean increased facilities; it may mean increased port facilities, but it does not mean a tremendous amount of increased waterway facilities.

A new area which I think is becoming important is coastwise coal movement to serve Florida and New England. Again, this would be primarily western coal, or it would also be Appalachian coal moving through Baltimore and Hampton Roads for movement up by barge to New England. This is becoming more important. Historically, it was important, but it has diminished somewhat, but is now reappearing as a major element of water transportation.

As others have already testified this morning, coal exports are on the rise.

Senator MOYNIHAN. They are a little bit on the rise. We are not back where we were 10 years ago, are we? Sorry if I interrupt, it is just because we value your testimony so much. We exported 72 million tons in 1970, and we are down to 41 million in 1978, and back up to 66 million.

Mr. BRONZINI. Indications are that it will move toward 80 million tons in the future.

Senator MOYNIHAN. You mean this decade?

Mr. BRONZINI. I would say so. That is my own opinion, of course. I think it will, in the eighties, reach 100 million tons, between 80 and 100 million tons for export.

Where in the face of this will there be constraints? Where will the problems develop? The principal one, I think, will be in the area of port and terminal facilities. This has been a much neglected area over the years, and the terminals will have to be expanded. There is some expansion already underway. There are facilities being built in St. Louis, for example. There are plans for more, but we will need these facilities to move the coal. Mostly it will come in by rail and be transshipped to water for further movement. Despite the need for these facilities, cost of development is increasing for all the myriad reasons that have been mentioned—environmental constraints, land availability, financial considerations; these all become factors which make it difficult to develop port facilities quickly.

I think we will see them develop whether the Federal Government is there or not. There is controversy as to whether the Federal Government has a role. Some waterway interests say yes, we think the Federal Government should become involved because of past neglect and because of all the problems which have been created by Government regulations. Other waterway interests say stay out of this, this is a private enterprise area, it has traditionally been a private enterprise or a local problem to develop port facilities, and the Federal Government has a role only insofar as the channels and harbors are concerned. I don't know what the final answer there will be, whether the pro-Government or anti-Government involvement voices will be heard.

Senator MOYNIHAN. I can answer you that. It will be, I believe, they want Government money but no Government regulation.

Mr. BRONZINI. The challenge for the subcommittee is to see that water resource development occurs that is compatible with other water resource development goals.

There is a new issue you may not have heard about before. This is a different kind of constraint. It is not a physical constraint, it is more of an "institutional barrier"—that is a very catchy phrase among researchers lately. But anyway, there is a move or there is a case already in existence where a local government has taken upon itself to place a tax upon commodities moving by water; I believe it is whether or not they even use any local facilities. This is occurring down in Louisiana on the Mississippi River, I believe, and it has not occurred elsewhere in this country, to my knowledge. This could certainly inhibit movement of coal by water if local governments all of a sudden take it upon themselves to start taxing interstate commerce. You may not have heard that argument before. It is not part of your responsibility perhaps, but it is something to be aware of. This issue may come before Congress at some point.

Senator MOYNIHAN. I thought John Marshall had settled that.

Mr. BRONZINI. Maybe he is turning over in his grave. This is a little-known issue; that is why I mentioned it. It has surfaced recently.

Senator MOYNIHAN. Send us a note about that.

Mr. BRONZINI. OK, I will dig it out of the files and send it to you.

Senator MOYNIHAN. We appreciate that. We would like to put it in the record and say we heard about this disaster here first.

Mr. BRONZINI. Next are waterway facilities themselves which may become impediments. I say may, I am not saying these definitely will become constraints. All indications are these will become problems, and this subcommittee will be asked to make a decision whether to support refurbishment of facilities such as those on the Monongahela River, which you have heard about, or Gallipolis lock, which you have also heard about already this morning. There may be some problems on the southern end of the Ohio River at locks 52 and 53. These are relatively small locks which are only utilized a portion of the time during the year, but some decision will have to be made on what to do with those. A lot of coal moves through that point on the Ohio River. There must be a decision to either go with the existing facilities or build the Mound City lock, which is presently on the back burner. The Great Lakes

connecting channels could be a problem if these tremendous coal movements from Duluth/Superior develop, which will have to make use of the Soo lock and connecting channel on the Great Lakes. There is presently a Corps of Engineers study underway which is addressing the issue of the connecting channels on the Great Lakes, so you can expect to see a report coming up from the corps on that within a few years, I suppose. They are not critical now, but the study is taking place in advance of the tremendous possible growth of Duluth/Superior movements. So the timing may be good there.

There are a few other places which may develop constraints. We will reserve that for some other time.

I guess my position on the constraint issue is the future of rail-water intermodal movements of coal looks quite bright. I think that will develop very strongly, and the subcommittee needs to be attentive to the needs of providing for the facilities for both modes.

Some suggestions I might offer as to things which the subcommittee might be interested in—you have heard today that there are many studies underway with respect to energy and coal transportation. Let me mention a few of them. The mid-America ports study was done about 1 year ago. It addressed the issue of need for ports.

Senator MOYNIHAN. Who did that?

Mr. BRONZINI. That was a Maritime Administration effort in conjunction with the States in the mid-America region. That study has been published. It does address the issue of port needs in mid-America.

The national transportation policy study work was just finished around 1 year ago, and Dr. Fuller will be testifying about that so I don't want to say much about that.

You mentioned the national energy transportation study. This is a joint Department of Energy and Department of Transportation study addressing the question of future transportation needs in light of the goal of increased coal utilization. That is very, very near to being released. I had some role in that study, under subcontract, with the Department of Transportation. They informed me that the concurrence copies of that report are presently out for review. After the concurrence copies come back in, the study is due to be submitted to the President and made public and go through the usual review process. I really can't say when that will occur. It should occur this summer some time, hopefully in August or September. You will have to ask the Department of Transportation for a precise schedule.

Senator MOYNIHAN. Dr. Sawhill is responsible for that, isn't he?

Mr. BRONZINI. I have lost track of who is actually in charge since I terminated my effort on it.

There is the national waterways study underway which will be done in roughly a year and a half, which again will be addressing the question of future coal shipments on the waterways.

There is the section 205 study, which I suppose the subcommittee is intimately familiar with given the battles which were waged last year on lock and dam 26, which calls for a comprehensive user charge study. There is the section 101 study in that same legislation which addresses the future of transportation on the Upper Mississippi River system.

These studies all in some way, shape or form deal with the question of what will the future of coal transportation be? It seems that at some point you are going to have to ask someone to pull the germane facts together from these efforts and summarize them in some form because they deal with lots of other issues besides coal transportation. But I think it would be in the interest of this subcommittee to know what the findings are of each of these efforts.

I want to make a point about the section 101 study. I suppose my friends in the waterway industry won't like me for this, but this study is a very complex effort being conducted by the Upper Mississippi River Commission, and it involves all the States in the area, it involves the Corps of Engineers, the Department of Transportation, numerous agencies, and it took about a year for all these groups to finally agree on what a good agenda would be to complete this effort. They decided that it would take more time than was allowed in the original legislation, and that time has not as yet been granted. In fact, the waterway industry has lobbied pretty effectively for that time to not be granted. The reason why they are against this is they believe that they are not being represented effectively. The industry itself does not have an effective voice in the study. They view it as a pro-environmental study. I think they are mistaken. I think the real reason, which is perhaps not stated, is that the waterway interests are of the opinion that allowing extra time for the section 101 study will delay unduly any efforts concerning resolution of the issues about a second lock at lock 26 at Alton. I don't believe that is a valid argument. I think the waterway interests are mistaken. The opening volley has not even been fired on the issue of a second lock at Alton, and the section 101 study, in my opinion, would help to speed the resolution of that issue rather than delay it. Without a good job on the 101 study, I think the issue of a second lock at Alton, which is included as an issue to be studied, will be protracted and it will make the battle over the first lock at Alton look like a small kettle of fish by comparison.

Senator MOYNIHAN. Who is technically the sponsor of the section 101 study?

Mr. BRONZINI. It has been handed to the Upper Mississippi River Basin Commission. They are responsible for the study, and they have recommended an extension, but there has been no legislation yet authorizing any extension of time. I think it would be a mistake to curtail that effort.

Senator MOYNIHAN. You would be in favor of extending the time so it could be done.

Mr. BRONZINI. Yes, I would. I think a poor job there will go against the interests of effective water resource development. This, by the way, was not in my prepared statement, the comments on the section 101 study.

What else might you want to be aware of? I would echo some of the comments Senator Domenici made regarding your efforts to improve the whole water resource evaluation process. I think you should demand consistency in project reports and evaluations. If you have got competing projects, they shouldn't all be claiming to move the same traffic. That is certainly obvious and logical. Like-

wise, if you have projects coming before you which are complementary, they should certainly all be claiming they will move the same traffic. I don't know how the process can be overhauled to insure this. There is really no effective guideline calling for this kind of a system viewpoint. Perhaps some adjustments to the content of the water resources council principles and standards for planning water and related land resources are in order, and I think that document is certainly of interest to this subcommittee. There are things which could be done within the guidelines of the principles and standards to improve the water resource project evaluation process. For example, the present version of that document continues the practice of equating transportation benefits with rate savings. I think that is shortsighted and misses the true economics of the situation. It ignores intermodal aspects, for example. So I think the subcommittee should maybe call on the water resources council to address issues like this in the principles and standards.

I think you need to be demanding consistent Federal transportation policy. For example, if I were to ask you what is the only transportation mode which is presently directed by law to generate benefit-cost ratios, would you answer me correctly that is it the water mode? Water transportation is the only mode of transportation for which it is necessary to show positive benefit-cost ratios. There are States which do not even conduct economic studies of highway investments. To my mind, if criteria are good for evaluating water projects, they are certainly good for evaluating other kinds of governmental investments in transportation.

Senator MOYNIHAN. Let me ask you if I may, Professor Bronzini, we built the interstates this way. It is done. One may have argued that it could have been done better or differently and so forth, but it is, in that sense, behind us. There is a history you know. Certainly the Highway Trust Fund was a great facilitator of that enterprise; a tax was levied, which was paid, and the money was always available. The way the money was spent was not a reflection of the taxes paid. There may have been taxes paid all over Florida to build roads in Arizona. It wasn't any direct connection between cost and benefit in that sense. But I think highway transportation is a subject just about concluded for the next generation, wouldn't you say?

Mr. BRONZINI. I think you are correct. The construction is dwindling down quite a bit.

Senator MOYNIHAN. We have the maintenance, but there is not going to be much more of that.

What troubles water projects is that they have been largely free goods, and it is almost an axiom in the economic profession that free goods are consumed in larger amounts than good for which there is a cost attached.

Mr. BRONZINI. I didn't come here to debate the user charge issue, nor was I prepared to, to be quite frank. But I won't hestitate to go on and give my personal viewpoint. As a personal viewpoint, in principle, I am in favor of some level of user charges.

Senator MOYNIHAN. Which could be no more than just tax of the fuel.

Mr. BRONZINI. The question is, How can you provide that in a way which is conducive to the proper development of the system?

Senator MOYNIHAN. The railroads are going to be private and pay taxes and be somehow required to be profitable, and water transportation is public and has no costs, say, in the actual mechanism to the user; how do you not misallocate resources?

Mr. BRONZINI. As I said, I am in favor of some level of user charges because of that exact reasoning, but I am also in favor of an equitable Federal policy in this area. If we are going to have user charges on one mode, for whatever reason, then it seems to me that some equitable level user charge should be placed on anyone else who is receiving Federal assistance in the transportation area. The same is true with subsidies; the issues kind of go hand-in-hand. I think an exact accounting of the costs which need to be the basis for any user charge system on any mode of transportation is not adequately developed.

Senator MOYNIHAN. The subject appalls me. I think of 80 years of hearings on the Interstate Commerce Commission and those mounds of papers and the gradual decline of the mode of transportation they were designed to regulate. Foreign policy is a more understanding area. You don't have to know much.

Let me ask you, sir, to finish your statement, and then I want to ask you about Tombigbee.

Mr. BRONZINI. I guess the concluding comment I have is I would echo some other comments you have heard today. Despite all the statements which have been made about how much this country is going to rely on coal and how soon it is coming, it simply hasn't manifested itself yet. Over the past year I visited numerous railroads and ports and waterway interests, waterway operators, and they have said, "Where is all the coal at? Everyone says it is coming, but our shipments are down; we are not moving coal the way we thought."

So far it has not been a problem because the coal just has not shown up. They are saying "When is the coal coming?" I think if the Congress, in conjunction with the executive branch, could do something to promulgate an effective national energy policy and compatible national energy transportation policy, we will be closer to having an answer to some of these questions.

Senator MOYNIHAN. We may have done that in the oil back-out legislation—a terrible word—that we passed a while ago which would require a very large number of power generating plants to convert to coal, and coal will have to appear and be transported.

I wonder if I could ask you two questions. This is very helpful. Could you send the committee a little note on this question raised of how navigation benefits are calculated? I think you said that the benefits are judged to be the rate savings; is that right?

Mr. BRONZINI. Yes. In fact, the current issue of the principles and standards for planning water resources, which the Corps of Engineers is obliged to follow, continues the practice and indicates that prices paid for transportation shall be used whenever possible to measure transportation savings for transportation benefits. And as a half economist, which most engineers are—to me this does not get to the heart of the situation. Price is certainly something that should be looked at, but that ignores any other impacts of a facility. It ignores what a new facility does to current users of a system and to users of competing transportation modes.

Senator MOYNIHAN. General Heiberg disclaims any knowledge of economics; he is a simple engineer, just makes things that last. But send us a little more on that. Be a good professor and help your country.

Mr. BRONZINI. OK.

Senator MOYNIHAN. One other question, sir. Have you had an opportunity to look at Tennessee-Tombigbee? You are down there in Tennessee.

Mr. BRONZINI. Strange as it may seem, being in Tennessee, I have not had the opportunity to visit the project, which is now under construction. In fact, I have not even visited Pickwick Lock, which is the lock immediately above the project, above or below, on the Tennessee River. I presume you are asking for some further comments on that project. To be honest, I have not seen the record on the project. I have not had any opportunity to study the project for any reason. I have not looked at corps reports or any of the official record. So most of what I know about the project is what I have seen reported in the technical press and trade press. My thinking about the project is that it will rise or fall on its regional development impacts more than anything else. That is my own personal feeling.

Senator MOYNIHAN. It will rise or fall; you speak of it as if it was a device we had ahead of us.

Mr. BRONZINI. The decision has basically been made on the project. It will likely be built.

Senator MOYNIHAN. You mentioned Mobile as an export place, but the coal is not coming out as they thought it might be, but maybe we have more to learn. The national energy transportation study is going to estimate that coal flow, isn't it?

Mr. BRONZINI. There will be in that study some projections of the movements of coal by water transportation, yes. My comment on Tennessee-Tombigbee was that when a project gets built, what actually moves is not what you thought would move on it. The Arkansas Waterway is a pretty good example of that. I have not seen the forecast of exactly what is supposed to move on that river. Regardless of what the forecast says, I think the waterway will be successful or less than successful depending upon what its regional development impacts are. That is my own personal opinion without having had an opportunity to review the entire record.

Senator MOYNIHAN. How is the Arkansas project going? Would you say that has been a successful one?

Mr. BRONZINI. Well, it is moving tonnage much more quickly than anticipated in the forecast. So if that is a measure of success, then it is a success.

Senator MOYNIHAN. Well, you have to measure something.

Thank you very much, sir. This is more than helpful to us. We are going to stay in touch with you as we grope our way through this subject. It is clear there have not been national decisions in this area. We are back into transportation. We are deciding to choose our fuel consumption pattern and not making any arrangement to make that possible.

Mr. BRONZINI. Thank you very much for inviting me to testify.

Senator MOYNIHAN. It has been a great pleasure to have you here.

[Mr. Bronzini supplied the following information:]

Transportation Center
Research/Service

The University of Tennessee
Knoxville, Tennessee 37916
Phone (615) 974-5255

August 11, 1980

Hon. Daniel Patrick Moynihan
Chairman, Subcommittee on Water Resources
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Senator Moynihan:

At my testimony before the Subcommittee on July 28, 1980, you requested additional information on two topics: (1) local taxation of interstate waterborne commerce; and (2) the use of rate differentials to estimate economic benefits. This information is provided herewith.

Concerning item (1) enclosed is a clipping from The Waterways Journal of June 21, 1980. Apparently, this taxation issue is presently being contested in the courts.

Concerning item (2) enclosed are some pages from the Federal Register of Friday, December 14, 1979, containing the applicable regulations promulgated by the Water Resouces Council. You will note that there are others who contest the position taken by the Council.

Again, I thank you for the opportunity to appear before the Subcommittee. If I may be of further service, please call on me.

Sincerely,

Michael S. Bronzini

Michael S. Bronzini, Ph.D., P.E.
Associate Director

MSB/kmj

Panelist Tells Propeller Club Delegates To Be 'Aggressive'

By JOHN SPENCER

Speaking during the first day of a regional Propeller Club conference in Cincinnati June 9, William E. O'Neil of the New Orleans law firm of Lemle, Kelleher, Kohlmeyer & Matthews, told delegates from the Ohio and Mississippi valleys, "You have to keep a vigilant watch and steer an aggressive course between the perils of the federal government and its regulations and the perils of the state governments and their regulations."

Mr. O'Neil was one of three members of a legal panel. Others involved were Scott Miller of Miller & Miller, Louisville, and Theodore Struk of Dickie, McCamey & Chilcote, Pittsburgh. William Schroeder of Rendigs, Fry, Kiely & Dennis, Cincinnati, was moderator.

Mr. O'Neil pointed out that the federal government is now trying to teach us its new version of the three Es — energy, environment and economics. As history has shown, the government used to authorize projects and appropriate funds as it deemed necessary to relieve the economic strain of the depression. From 1960 on that system for the development of the inland rivers has changed, he explained. The federal government now realizes that it can no longer obtain the financial wherewithal through taxation to obtain the goals of its social programs and now requires private industry to subsidize federal social improvements. "The government has exceeded its grasp but not its reach," Mr. O'Neal said.

The New Orleans attorney cited three examples that point out the federal government's new stand: the inland waterway user's tax, the superfund and the VTS (vessel traffic service system). The Inland Waterway Revenue Act of 1978 imposed a tax on fuel and dedicates the proceeds of that tax to such services as dredging, aids to navigation, lock and dam development and water resource management. "It is clear to me, from the waterway user's tax, that Congress remains dedicated to the proposition which has gained increasing currency since 1960, that private industry should bear the cost of the government's social legislation."

Additional Expense

Another additional expense borne by the transporter, yet developed by Congress, is the superfund for the cleanup of chemical discharges on water and land. H.R. 85 and S. 1480 are the most notable versions, according to Mr. O'Neil. This superfund will sell for an $800 million fund with $700 million financed by industry and $100 million financed by the government. The fund will only be used to recover costs of removing hazardous substances where recovery from the discharger or disposer of the hazardous chemicals is not adequate. Not only must the transporter pay for recovery of the spoil, but under this proposal bill he must also pay toward the establishment of this superfund.

The last example given by Mr. O'Neil of the federal government or a government agency enacting rules and regulations at the expense of industry, is the New Orleans VTS. The VTS is unduly expensive and yet unavoidably ineffective, he said. He said the barge and towing industry got off the mark too late with VTS. The rule had already been promulgated by the Coast Guard before it was opposed. "The barge and towing industry must assert itself actively and aggressively in agency rulemaking proceedings in order to exercise at least some control over the industry's destiny," Mr. O'Neil said.

In order to help control the future of the industry, Mr. O'Neil pointed out several areas in which it should be actively engaged. One legislative area is the allocation of the revenues collected from the waterways user's tax. The proceeds from this tax have not yet been earmarked for any specific project. According to Mr. O'Neil, the way the user's tax legislation reads "there is no link at all between the tax monies in the trust fund and any particular capital improvement project that might be of benefit to the barge industry." Since the barge industry will pay the tax, the barge industry should exert itself to influence the decision as to where the funds will be spent, he said.

Advisory Committee

A second area that should warrant concern from the industry, according to Mr. O'Neil, is H.B. 6242, which proposes to establish the Towing Safety Advisory Committee. It would be composed of industry personnel and agency representatives from the U. S. Engineers, Office of Domestic Shipping and the Maritime Administration. The purpose of the committee is to establish chains of communication between industry and government and establish dialogue to distinguish the industry's economic needs.

Another area is that of procedural reform. Mr. O'Neil said, "Somehow a streamlined procedure for proposed rulemaking and timely comment by the industry is a high priority item." His opinion is that the federal courts will avoid the problem of balancing economics, energy and environment. With the federal government concerned about energy and environmental and industry's concern about economics, the industry's concern could easily be lost in the crunch.

Concerning state governments reaching the point of not being able to pay for their own social programs, Mr. O'Neil discussed the recent court case involving the Plaquemines Port, Harbor and Terminal District. It is imposing a harbor fee on every vessel and tow that enters the Mississippi River or the Gulf Intracoastal Waterway within the confines of the jurisdiction of Plaquemines Parish. This tariff is to be imposed, according to Mr. O'Neil, because the parish has declined to increase taxes on real and personal property. The only service rendered by the parish to either the vessels or their cargo is that their positions will be monitored. The theory behind the tariff is that the parish can charge up to one-half the total cost of government because at any one time these vessels might need the services (police, ambulance and fire) offered by the parish, he explained.

"We not only need to watch federal legislation but we now have to watch state legislation. Now is the time for the barge and towing industry to act and assert itself not only at the national level but also at the local level as well," he concluded.

federal register

Friday
December 14, 1979

Part IX

Water Resources Council

Procedures for Evaluation of National Economic Development (NED) Benefits and Costs in Water Resources Planning (Level C); Final Rule

much coordination with FERC and DOE is required.

Response: The availability and/or quality of power forecasts varies over time and from area to area. To specify a particular forecast under these conditions would be inappropriate.

Comment: Another commenter urged that guidance be given for determining the appropriateness of including minimum facilities that preserve the potential for future power production in dams whose complete initial installation is not currently economically feasible.

Response: The procedure recognizes phased construction of hydropower facilities.

Transportation (Inland Navigation)

(May 24: Section 704.127; Final: Section 713.701–.731)

Comment: A number of commenters stated that the use of prevailing rates to measure benefits is inappropriate and that long-run marginal costs should be estimated.

Response: The relevant section has been reworded for clarity (§ 713.703(e)). It is generally agreed by commenters that the Manual states the correct economic principle, i.e., reduction in long-run marginal transportation costs represents the benefit to navigation. The Manual then addresses the empirical issue of the best available method of estimating long-run marginal costs. The rationale was as follows:

Rates v. *Engineered Costs*

1. Economists generally agree that prices (rates) are normally the most reliable estimate of long-run marginal costs.

2. To the extent that prices (rates) are not based on competitive markets, prices misestimate long-run marginal costs. In the real world, few, if any, markets are perfect; the mere fact of an imperfect market is not sufficient reason to shift to a different measurement technique. The issue is: How accurate is the price measurement compared to other available measurement tools?

3. Rates are easily determined.

4. Costs are not easily determined.

a. The necessary data are not available in the public sector, including the Interstate Commerce Commission (ICC), the Department of Transportation (DOT), or the Federal Railroad Administration (FRA). (WRC requested such data of these agencies; they replied that cost data simply are not readily developable.)

b. The necessary data are commodity-specific costs by rail lines and segment by individual movement.

c. The proper handling of joint costs will always be arbitrary.

d. The input prices of cost items are themselves the products of imperfect markets (project and other labor costs are distorted by the effects of the Davis-Bacon Act (Pub. L. 71–798) and union practices; fuel costs are distorted by regulatory practices and international cartel practices; etc.).

5. Current studies do not provide convincing empirical evidence that use of rates overestimates long-run marginal costs.

a. A recent Association of American Railroads (AAR) staff paper, *Railroad Fixed Costs* (April 18, 1979), places fixed costs at only 11 percent in the "intermediate run" (2 to 3 years); this, plus railroads' low rates of return, indicates that rates are a close approximation of long-run marginal costs.

b. DOT has studied the rate and cost issue and believes that errors made by using competitive rates would be not greater than errors made by using constructed cost data. The preliminary results presented in a 1975 working paper, "Description of an Engineered Economic Cost Methodology for Railroad Freight Operations," indicated that constructed costs exceed rates; however the conclusion is limited by the imprecision of the data.

c. ICC cost scale data are accounting data and do not reflect economic principles. Further, those data are not line-specific but are based on regional averages. The use of such data, as in the Locks and Dam 26 Report *(Locks and Dam No. 26 (Replacement) Formulation Evaluation Report,* June 1975), is not supported by academic, railroad, agency, or environmental representatives.

6. Rates, rather than costs, determine actual movements.

Which Rates?

The determination that rail rates are a better measure of long-run marginal costs than engineered or accounting rail costs does not wholly resolve the issue of which rates are the best estimator of such marginal costs. For existing waterways, prevailing, competitive, and similar rates are the best estimators. The rates must be (1) In use; (2) subject to competition (not necessarily water-compelled); and (3) for similar movements.

The Manual recognizes that, for new waterways, prevailing rates may or may not be the best estimate of NED benefits. Some railroad price cutting has occurred after construction of new waterways; whether this price cutting represents a short-run marketing strategy or a realistic assessment of long-run marginal costs cannot be determined with precision. However, railroads have simply stopped competing for many products on existing waterways, implying that initial price cuts are only a short-term response. In any case, the prevailing rate is determinable, unlike a theoretical rate expected to exist with the project. The benefit measurement for new waterways follows from Section 7a of the DOT Act of 1966.

Comment: The provision regarding "changes in international relations" should be removed from the paragraphs on commodity forecasts.

Response: Admittedly, speculation on future changes is fraught with potential error, but international relations are important determinants of exported goods.

Comment: Several commenters noted the omission of benefits from recreation and from reductions in rates to remaining customers of the alternate mode, due to barge competition.

Response: This portion of the Manual covers only navigation benefits. The NED benefits are those to users and do not include distributional impacts between alternate modes and their remaining shippers.

Comment: Several commenters stated that future user charges should not be speculated on.

Response: Future changes in the level of user charges are sufficiently possible to warrant a sensitivity analysis.

Comment: Several commenters recommended that proposed or possible user fees and taxes should be part of both the without-project and with-project condition.

Response: The Manual has been revised (Section 713.705(a)(2)) to include, for clarity, the directive that possible fees or taxes be considered as part of the nonstructural alternatives in the with-project condition.

Comment: One commenter stated that proposed or possible congestion fees and taxes should not be part of either the with-project or without-project condition because they are not now part of law. Another commenter stated that congestion fees and other taxes and fees should not be part of the with-project condition because they have the effect of raising rates and ultimately costs to consumers.

Response: If new fees are enacted, they are appropriately part of the without-project condition. Possible fees must be considered as alternative solutions and may be recommended by way of a change in the law. To have a basis for recommending such change, the fee must be assumed in the with-

Subpart I—NED Benefit Evaluation Procedures: Transportation (Inland Navigation)

§ 713.701 Introduction.

This chapter presents the procedure to be followed in measuring the beneficial contributions to national economic development (NED) associated with the inland navigation features of water resource projects and plans.

§ 713.703 Conceptual basis.

The basic economic benefit of a navigation porject is the reduction in the value of resources required to transport commodities. Navigation benefits can be categorized as follows:

(a) *Cost reduction benefit (same origin-destination; same mode).* For traffic that uses a waterway both with and without a project, the benefit is the reduction in the economic cost of using the waterway. This reduction represents an economic efficiency or NED gain because resources will be released for productive use elsewhere in the economy; for example:

(1) Reductions in costs incurred from trip delays (e.g., reduced congestion by expanding lock sizes at congested facilities or by imposition of congestion fees).

(2) Reduction in costs because larger or longer tows can use the waterway(e.g., by channel straightening or widening).

(3) Reduction in costs by permitting barges to be more fully loaded (e.g., by channel deepening).

(b) *Shift of mode benefit (same origin-destination; different mode).* For traffic that would use a waterway with the project but uses a different mode, including a different waterway, without the project, the benefit is the difference between the costs of using the alternative mode without the project and the costs of using the waterway with the alternatives under consideration. The economic benefit of the waterway to the national economy is the savings in resources from not having to use a more costly mode.

(c) *Shift of origin-destination benefit.* If a project would result in a shift in the origin of a commodity, the benefit is the difference in total costs of getting the commodity to its place of use with and without the project. If a project would result in a shift in the destination of a commodity, the benefit is the difference in net revenue to the producer with and without the project. The shift of origin-destination benefit cannot exceed the reduction in transportation charges achieved by the project.

(d) *New movement benefit.* This benefit applies if a commodity or additional quantities of a commodity would be transported only because of lowered transportation charge with the project. The quantities are limited to increases in production and consumption resulting from lower transportation costs. An increase in waterway shipments resulting from a shift in origin or destination is not included. The new movement benefit is defined as the increase in producer and consmer surplus; practically, it can be measured as the delivered price of the commodity less all associated economic costs, including all of the costs of barge transportation other than those of the navigation project. This benefit, like the preceding one, cannot exceed the reduction in transportation costs achieved by the project.

(e) *Use of rates for benefit measurement.* It is currently more difficult to accurately compute the long-run marginal costs of particular rail movements on the basis of cost estimation studies than to determine the rates at which railroad traffic actually moves. In competitive markets, rates (prices) correspond to marginal cost, and, given market stability, prices will settle at long-run marginal costs. Moreover, the rates actually charged determine the distribution of traffic among modes. For these reasons, rates will be used to measure shift of mode benefits. Section 7a of the Department of Transportation (DOT) Act of 1966 (Pub. L. 89–670) requires the use of prevailing rates, as described in § 713.717(b). In the case of new waterways, this rate may or may not represent the best estimate of long-run marginal costs. In the case of existing waterways, prevailing competitive similar rates are the best available approximation of long-run marginal costs.

§ 713.705 Planning setting.

(a) *Without-project condition.* The without-project condition is the most likely condition expected to exist in the future in the absence of the navigation project or any change in law or public policy. The without-project condition includes any practice likely to be adopted in the private sector under existing law and policy, as well as actions that are part of a broader private and public planning to alleviate transportation problems. The following specific assumptions shall be built into the projected without-project condition:

(1) All reasonable nonstructural practices within the discretion of the operating agency, including helper boats and lock operating policies, shall be assumed to be implemented at the appropriate time. Substantial analysis is required to determine the best combination of nonstructural measures to ensure the most effective use of an existing waterway system over time. This analysis shall be documented in project reports to assure the reviewer that the best use of existing facilities will be made in the without-project condition and that the benefits of alternative with-project conditions are correctly stated. The criteria for the best utilization of the system are overall public interest concerns, including, but not limited to, safety, environmental impact, economic efficiency, and acceptability.

(2) User charges and/or taxes required by law are part of the without-project condition. Proposed or possible fees, charges, or taxes are not part of the without-project condition but are to be considered as part of the nonstructural alternatives in the with-project condition.

(3) The without-project condition assumes that normal operation and maintenance will be performed on the waterway system over the period of analysis.

(4) In projecting traffic movements on other modes (railroad, highway, pipeline, or other), the without-project condition normally will assume that the alternative modes have sufficient capacity to move traffic at current rates unless there is specific evidence to the contrary.

(5) Alternative modes will be analyzed as a basis for identifying the most likely route by which commodities will be transported in the future in the absence of waterway improvement.

(6) The without-project condition normally will assume that only waterway investments currently in place or under construction are in place over the period of analysis.

(b) *With-project condition.* The with-project condition is the most likely condition expected to exist in the future if a project is undertaken. The same assumptions as for without-project condition underlie the with-project condition. The following discussion relates to the alternatives to be considered under the with-project condition.

(1) Management of demand by the use of congestion or lockage fees is a nonstructural alternative, which alone or in combination with structural devices may produce an economic optimum in a congested waterway. Influencing marginal waterway users through a congestion fee can increase the net benefits of a waterway. Alternatives that influence demand shall be evaluated in light of the full range of the Principles and Standards (P&S) evaluation criteria on

§ 713.715 Evaluation procedure: Step 4—Determine current costs of waterway use.

This determination shall be made for all the tonnage identified in step 3. The waterway transportation cost shall include the full origin-to-destination costs, including handling, transfer, demurrage, and prior and subsequent hauls for the tonnages identified in step 3. The effect of seasonality on costs shall be considered in this step. In calculating the cost of prior and subsequent hauls, care must be taken to avoid inappropriate aggregations and averaging of the costs of movements in situations in which there is a wide geographic dispersion in ultimate origins and/or destinations, as in the case of grain traffic.

(a) *New waterways.* The current cost of the proposed waterway use represents the with-project condition; there are no without-project costs for waterway transportation.

(b) *Existing waterways.* Two arrays, one representing the without-project and one the with-project condition, shall be constructed. The difference between the two arrays shall reflect the reduction in current delays and any gains in efficiencies resulting from the alternative under consideration.

§ 713.717 Evaluation procedure: Step 5—Determine current cost of alternative movement.

This determination shall be made for all the tonnages identified in step 3. The cost shall include the full origin-to-destination costs, including costs of handling, transfer, demurrage, and prior and subsequent hauls. The effect of seasonality on costs shall be considered in this step. In calculating the costs of gathering or distribution prior or subsequent to the primary line haul, care must be taken to avoid inappropriate aggregations and averaging of the costs of movements in situations in which the ultimate origins and/or destinations are widely dispersed, as the case of grain traffic. This procedure requires use of price data when available as a proxy for the long-run costs of movement by other modes. This step, combined with steps 3 and 4, generates a first approximation of a demand schedule for waterway transportation given (1) the costs of transportation by alternative modes; (2) current levels of production; and (3) the distribution of economic activity.

(a) *New waterways.* In the case of rail, the prevailing rate actually charged for moving the traffic to be diverted to waterways shall be used. For traffic induced by the waterway, the rail rate shall be constructed as in step 5b.

(b) *Existing waterways.* Rate and other price data shall be used when available to estimate the cost of movement by alternative modes. In the case of rail movements, if the rate for that move is not now used, prevailing rates that are (1) competitive, and (2) for movements similar to the individual move that would occur without the project shall be used. The use of paper rates, i.e., rates at which no significant amount of traffic is actually moved, shall be avoided. A rate is "competitive" to the extent that it is for traffic for which there is intramodal or intermodal competition within the relevant markets. In identifying a "similar" movement, the factors considered may include geographic location, degree of use, characteristics of terrain, backhaul, contract division, seasonality, ownership of rolling stock, and physical rail connection to the shipper. It is the responsibility of the analyst to select rates that, in his or her view, best represent the long-run marginal costs of the movement. Cost estimates for particular moves may be useful in selecting the rate or rates that best meet the criteria of competitiveness and similarity. If more than one competitive and similar rate is identified, an average may be used. All water-compelled or water-competitive rates shall be assumed to be competitive and similar.

§ 713.719 Evaluation procedure: Step 6—Forecast potential waterway traffic by commodity.

Projections of the potential use of the waterway under study shall be developed for selected years from the time of the study until the end of the project life, over time intervals not to exceed 10 years. Commodity projections shall be set forth and documented for the commodity groups identified in step 3.

(a) The usual procedure for constructing commodity projections is to relate the traffic base to some type of index over time. Indices can be constructed by many different methods, depending on the scope and complexity of the issue under consideration and the availability of data and previous studies.

(b) Generally, OBERS projections are the demographic framework within which commodity projections shall be made. There are many instances, however, in which a direct application of OBERS-derived indices is clearly inappropriate. Frequently, there are circumstances that distort the relationship between waterway flows and the economy described by OBERS. Even when total commodity flows can be adequately described through the use of indices derived from OBERS projections, factors such as increasing environmental concerns, changes in international relations and trade, resource depletion, and other factors, may seriously alter the relationship between waterway commodity flows and the economy described by OBERS.

(c) If problems of the type described in paragraph (b) of this section are identified, the analyst shall undertake independent studies to ascertain the most appropriate method of projecting commodity flows. The assessment of available secondary data shall form the basis of these independent studies. These data will assist in delineating the bounds on the rate of increase for waterway traffic, as well as facilitate a better understanding of the problem. They shall be supplemented with (1) interviews of relevant shippers, carriers, and port officials; (2) opinions of commodity consultants and experts; and (3) historical flow patterns. Commodity projections can then be constructed on the basis of the results of the independent studies.

(d) Generally, specific commodity studies are of limited value for projections beyond approximately 20 years. Given this limitation, it is preferable to extend the traffic projections to the end of project life through the use of general indices on a regional and industry basis. Such indices can be constructed from the OBERS projections or other generally accepted multi-industry and regional models.

§ 713.721 Evaluation procedure: Step 7—Determine future cost of alternative modes.

(a) Future cost per unit of each commodity will normally be the same as current cost. As stated in § 713.705(a)(5), the without-project condition shall normally assume that the alternative modes have sufficient capacity to move traffic at current rates unless there is specific evidence to the contrary. This step combined with step 6 provides a time series of demand schedules specific to a particular commodity origin-destination pattern. The projection of any change in future prices shall be addressed as indicated below.

(b) A future rate shall be a prevailing rate as defined in step 5. It shall reflect exclusively a shift in rates because of projected changes in the volume of shipments on a given mode or a shift from one mode to another (e.g., from rail to pipeline). To support such a shift, the analyst shall show that the increase in volume is likely to lead to a change in rate; he may not assume, for example, that an increase in volume of traffic of a commodity from one area to another will automatically ensure a more favorable high-volume rate.

Senator MOYNIHAN. Now we are going to hear from Prof. John Fuller, who is director of the Institute of Urban and Regional Research and a professor of economics, geography and urban and regional planning at the University of Iowa.

Dr. Fuller has been a distinguished contributor in this area. He was involved with the national transportation policy study.

We welcome you, sir.

STATEMENT OF JOHN FULLER, DIRECTOR, INSTITUTE OF URBAN AND REGIONAL PLANNING, UNIVERSITY OF IOWA

Mr. FULLER. Thank you, Senator.

Although I am now at the University of Iowa, a year ago I was involved in the national transportation policy study as deputy executive director.

Senator MOYNIHAN. There is your work. If you don't think you did a valid piece of work, there it is.

Mr. FULLER. That congressional Commission included Senators Long, Williams, Tower, Gravel, Chafee and Pressler, from this body, and it was changed with the 1976 Federal Aid Highway Act. We were doing a full and complete study of the Nation's transportation needs and policies, recommending new policies to meet the Nation's transportation needs to the year 2000. The Commission was also to investigate energy circumstances in its forecast and its review of policies. Its final report was produced last June, and in your investigation of transport needs, coal and the waterways, I am sure that you would wish input from this $5 million, 2-year investigation.

In line with that Commission's study, I would like to broaden the discussion that you have had today to cover overall transport policy considerations. My written statement, that your staff has, contains more details, but to set the stage for a policy discussion, I would like to highlight the Commission's forecast and findings that the demand for goods transportation is expected to grow from the base year 1975 to the year 2000 at an annual rate of 2.63 percent in terms of ton-miles moved. At the same time, population in this country will rise 1.1 percent, energy consumed by transport 1.28 percent, and the GNP 2.35 percent. A major reason for the goods transport increase reversing the recent trends will be the increased consumption of coal and coal products to the year 2000. The coal will have low end-use efficiency and move long distances from production to consumption points. It will require efficient, heavy-duty transport facilities, particularly rail and waterway infrastructure and equipment. The increase in coal output will be almost four times the base of coal moved beyond the local level of production in 1975 in the year 2000. In other words, around 400 million tons of coal were moved in 1975; the Commission's forecast would be 830 million tons in 1980 to 1.4 billion tons in the year 2000.

Senator MOYNIHAN. Now that is the reason for the tremendous increase.

Mr. FULLER. Yes.

Senator MOYNIHAN. Where would you say we are between the 400 and 830, are we halfway through the period? Where are we in tonnage?

Mr. FULLER. As the other speakers have mentioned, we have not been moving as rapidly in increasing the movements of coal as expected. Nevertheless, the movements are still large and they are coming from different areas of the country. You mentioned earlier the movement of western coal from the plains States. That, of course, involves much more transportation because we are moving coal in nontraditional directions and for much longer distances.

Senator MOYNIHAN. What we would like to get is, if we were moving on a direct straight-line curve, we would be at somewhere line 600 million, wouldn't we?

Well, we will find out.

Mr. FULLER. Very good.

By the year 2000, the greatest flow of coal is expected to be from the Great Plains area to the west, south central region. The impacts of that kind of flow projected will be tremendous. As to the waterways, some impacts will be large, including lock capacity limitation along the Ohio and Illinois river systems, as well as congestion on the Gulf Intercoastal Waterway. The Lower Mississippi from St. Louis on will not be affected by the lock constraints of the Upper Mississippi and will not have the same kind of difficulties that the Nation's rail system will face.

With this tremendous increase in transport demand, the derived demand for transportation investments will likewise be great. The estimates of the Commission were that the derived demand for investment in transportation would equal 4.3 trillions of dollars for the period 1975 to the year 2000, over that 25-year period. These are in 1975 dollars.

Senator MOYNIHAN. That is 2 years' GNP.

Mr. FULLER. That is correct, sir, and I think that is an excellent guideline.

Senator MOYNIHAN. All right, go ahead and help us out here. Where are we going to put the 4.2 trillion?

Mr. FULLER. On these figures, this includes 27.2 billion in ports, harbors and waterway facilities; 24.6 billion in domestic marine equipment; and 230.3 billion in railroads.

Senator MOYNIHAN. I see, railroads.

Mr. FULLER. Much larger than waterways.

Senator MOYNIHAN. The order of magnitude, as you fellows say, over the water transportation system, 27.2 billion as against 230 billion.

Mr. FULLER. However, the majority of this investment is expected to be in the Nation's highway system.

Senator MOYNIHAN. That is what I am asking. We haven't got ourselves to half a trillion yet. And the highway system is going to be what? Maintenance is what you are talking about?

Mr. FULLER. The Interstate Highway System, although it began in 1956, was planned primarily with a 20-year economic life, and given that——

Senator MOYNIHAN. Really 20 years? That was the engineering?

Mr. FULLER. That was an engineering rule of thumb. That system, of course, is in need of a good deal of maintenance, but more so is running into a time when major reconstruction of that system is necessary if levels of service are to be continued. That, sir, is the majority of the dollar figure.

Senator MOYNIHAN. But the Interstate System—I know something about this—it was supposed to cost $42 billion. It has gone much above that. The Interstate Highway Defense Act of 1955 estimated about $42 billion, and I think it has about doubled.

Mr. FULLER. The dollar figure that——

Senator MOYNIHAN. Wait, Mr. Brayman reminds me very accurately it was not $42 billion, it was $26 billion. But it has about tripled in cost. But that is not anywhere near a trillion dollars.

Mr. FULLER. Likewise, the Interstate Highway System is by no means the total highway system in the country, and essentially the Federal interest has been on the Interstate System since 1956 to the exclusion of the Federal aid primary and secondary systems and other multitude of highway systems that we under the State, county, and local ownership and operation.

Senator MOYNIHAN. You have a lot of footnotes in your presentation.

Mr. FULLER. Your staff has them.

Senator MOYNIHAN. OK, we will look up that figure. Obviously that 4.2 trillion is aggregated, and we can break it down and see what we have.

Mr. FULLER. Correct.

Senator MOYNIHAN. If there is something to be learned here, you don't see a big waterway expenditure in this 25-year period, it runs about a billion dollars a year.

Mr. FULLER. You are right. In comparison, that is a minor figure.

Senator MOYNIHAN. And we are spending about that now, aren't we? General Heiberg nods. You don't mind my just groping around. We are spending upwards of a billion dollars in the water system.

General HEIBERG. Right now perhaps about $800 million a year.

Senator MOYNIHAN. So the present pace needs to be increased, but perhaps not very much.

Mr. FULLER. That is right. Although let me point out the figures given you are all in 1975 dollars, and $800 million today, unfortunately, does not buy what it would have in 1975.

Senator MOYNIHAN. All right.

Mr. FULLER. The unprecedented capital needs that are suggested by the forecasts that were made would require Government infusion of the transportation sector, net of user fees and revenues, to increase at a rate of just over 6 percent annually in real terms to the year 2000.

Senator MOYNIHAN. Right, 6 percent annually.

Mr. FULLER. Correct.

Senator MOYNIHAN. OK.

Mr. FULLER. Such subsidy infusion means Government will account for not 5.4 percent of total transportation outlays, as in 1975, but 8.8 percent in 1985 and 10 percent in the year 2000. If U.S. growth slows as compared with the overall rate of postwar posterity, the percentage of Government subsidy in comparison with total outlay in transportation would be 12.2 percent. At the 10 percent rate, constant dollar per capita subsidy in this country will be $273 by the year 2000 versus $81 in the year 1975.

Senator MOYNIHAN. I am going to keep interrupting you because you keep saying important things. This is a new figure, subsidy per member of the labor force.

Mr. FULLER. Yes, sir.

Senator MOYNIHAN. Define that, please.

Mr. FULLER. The amount of Government outlay net of income from user fees divided by the total number of persons in the labor force for a particular year.

Senator MOYNIHAN. For a particular year. And we are now running around $182, I would take it.

Mr. FULLER. Right, in 1975.

Senator MOYNIHAN. And this proposal is tripling that.

Mr. FULLER. The forecast is the figure will be on the order of $572 by the year 2000, and those are in real dollars, 1975 denomination.

Senator MOYNIHAN. A lot of subsidy to transportation.

Mr. FULLER. Tremendous, in my mind.

Senator MOYNIHAN. Are we going to get more transportation than we need that way? You will consume more of what is cheaper than otherwise. When things are artificially cheap, you use more of it.

Mr. FULLER. This comes back to your earlier question about free goods. The forecasts of the National Transportation Policy Council were made under an assumption that current transport policy would continue to the year 2000. Current transportation policies are such to allow a fair number of free goods in transportation. If we continue, those policies would hold; if we reverse our policy, then we have the opportunity of not increasing subsidy to the same extent as suggested in these forecasts.

Senator MOYNIHAN. Is it the true cost? It comes somewhere. Someone pays for it; no free transportation. That is a very interesting number and a very significant trend. It suggests where we are heading. If you decide not to know anything about this subject, you have opted for this policy.

Mr. FULLER. That is correct.

If the United States does not wish subsidy to this extent in transportation, what must be done? Certainly of the various inducements that government can use in directing transportation activity economic deregulation is desirable where transport markets are competitive. But transport policy changes with regard to the investments are at least as important. I have four different points I would make about desired changes in transportation policy. These are not necessarily points of the National Transportation Policy Study Commission, but ones I wish to make myself.

This country needs and does not have long-run planning for all the modes of transportation. I am sorry that Senator Randolph is not with us at this point because I think he would recognize that the pioneering effort of the thirties and forties in doing national resource planning unfortunately stopped at that time and did not continue into the postwar era. We simply do not have at this point explicit planning that includes Government at all levels, industry, the private sector, labor and the affected institutions. This sort of integrated, coordinated planning of services and infrastructure is needed to bring about policy direction to improve efficiency and reduce uncertainty.

Senator MOYNIHAN. Would you mind my just saying you spoke of the planning effort of the thirties and forties done by the NEP.

Mr. FULLER. Yes, the Natural Resources Planning Board.

The second point I would make is it is about time we had in this country one capital account for transportation. This capital account, in my mind, should be applied in accord with long-run planning and specific project investment and analyses for all the modes. It should involve projects financed under this account be required to earn an adequate rate of return on the investment that they have. The investment funds for this capital account can be generated by revenue bonds and user fees and general fund revenues of the Federal Government. Preferably, the capital account, in my mind, would be a joint Federal-State capital account.

The third point I would make is that user prices for all modes of transportation are necessary. Those who use transport facilities should pay the cost. If there are exceptions—and there will be exceptions—they should be openly identified and carefully justified as helping achieve social goals. Pricing of this sort is a way of allocating resources and reducing congestion.

The fourth point I would make is we need in this country specific R. & D. funding. Specific incentives are needed. Basic research is in danger. Such necessary and efficient organizations as the National Resource Transportation Research Board are in financial jeopardy. New technologies have simply not been put in place in the transportation sector of this country.

Senator MOYNIHAN. I have been wondering about that. These locks and dams look awfully much like—they have not changed much.

Mr. FULLER. They look much like the predecessors.

Senator MOYNIHAN. If you go down the old Erie Canal, what is left, you will find that.

Mr. FULLER. I wouldn't go quite that far, sir, but if you look at the type of technological changes in the inland waterways, the major changes are in the equipment. You have heavy barges, larger towboats, et cetera. You find the same sorts of changes, primarily equipment, in the Nation's air transportation, the Nation's highways, et cetera, not so much in the technology of the infrastructure.

Senator MOYNIHAN. What is the danger to the Transportation Research Board? What is happening to them?

Mr. FULLER. It has come to my attention that, as with other organizations which are established to promote transportation research, are in grave danger of not being able to continue their operations. In other words, their funding has simply not kept pace with inflation; there has been no overall national push or pressure or support for good research in transportation. I have personally been acquainted with several different Federal studies that have been going on in a variety of transport fields in the last few years. Those studies are ones where there is simply not the opportunity to do good, solid transportation research; they are studies that simply put together the results of past studies, rather than extending knowledge ahead.

Senator MOYNIHAN. I was also much pleased in the early seventies, if I am not mistaken—and General Heiberg would know—we established the National Academy of Engineering.

Mr. FULLER. That is correct.

Senator MOYNIHAN. Which is long overdue. The National Academy of Sciences is everything we wish it to be, but the engineers are at least as important a profession and have not had the academic prestige. They have not blown up the world; therefore, they can't be very important.

Well, we will look into that.

Mr. FULLER. Those two academies support the National Research Council and that, in turn, supports the Transportation Research Board.

Senator MOYNIHAN. That would be a good one. Those are four good ideas. The idea of producing a national capital account is a very serious one. You are in favor of user fees.

Mr. FULLER. Oh, yes.

Senator MOYNIHAN. No economist can not be, or am I wrong? You have to want to know what the costs are, and you want to recoup them—well, you want to make a decision you want to recoup them later or you do not. That is a choice, but it is a choice that ought to be made consistently and not, well, we have never done this before.

Mr. FULLER. Those who are interested in promotion of the efficiency goals I think have to believe in the operation of a market, and that includes user charges. Now, there are certainly other goals for the country—no question about that—and one can introduce those goals into a structure of a market economy in a variety of different ways.

Senator MOYNIHAN. You just say we will use general revenues to pay for this and distribute the cost more widely. As long as you make that choice, it is a perfectly legitimate one. It is the hidden choices that trouble you in Government, where, in fact, a choice has been made but no one knows about it.

Tombigbee. We don't want to let any of our academic friends leave without giving them the opportunity to make some comments on it. You cannot have failed to notice what the issue has been about. What is your feeling?

Mr. FULLER. I have no specific comments that I can easily make upon a particular project such as Tennessee-Tombigbee. What I would point out is though we operate in an atmosphere where we do not have persuasive knowledge of various transportation projects that might be put into operation with the resources the country has, we simly do not have appropriate price signals to help us choose among projects. We therefore can find it very easy to make mistakes about any particular waterway or other infrastructure project. Until we set in place an overall process of doing investment analysis in the country, I think we will continue to make a variety of those kinds of mistakes.

Senator MOYNIHAN. In the purest way, the private sector will always make those calculations and will do that forward planning, if you will, and the Government hasn't done it very much.

Mr. FULLER. Not sufficiently.

Senator MOYNIHAN. Professor Fuller, this has been very good testimony. Both you and Professor Bronzini are a credit to a profession which is sometimes underlooked—that is, the applied economics of these things. Those are good ideas. I don't know how we get

to some of them from here. The idea of pervasive cost, it ought to be what you are trying to do and you will approximate your goals.

Mr. FULLER. In public policy research, it is hard to believe in the theory of second best. I think that incremental steps toward those four goals are extremely desirable for the country.

Senator MOYNIHAN. The iron law of incrementalism. It is not what we desire, if incrementalism is your destiny.

We thank you very much for your testimony, and we look forward to staying in touch with you.

The committee will now adjourn until the hour of 2:30 p.m., when General Heiberg will testify. I am sorry that we did not get the work done this morning, but that is a measure of the interest that the Senators have shown in this subject.

[Whereupon, at 1:05 p.m., the subcommittee recessed, to reconvene subject to call of the chair.]

[The hearing, scheduled to resume at 2:30, was postponed to 9 a.m. Tuesday, July 29.]

[Statements supplied for the record follow:]

Testimony of

Michael S. Bronzini, Ph.D., P.E.
Associate Director of Transportation Center
and
Associate Professor of Civil Engineering
The University of Tennessee

before The Senate Subcommittee on Water Resources

July 28, 1980

National Waterway and Port Development as Related to
Increased Coal Production

The nation's waterways, including the inland rivers, the Great Lakes and intercoastal shipping routes have long played an important role in the movement of coal. In fact, over 20 percent of the coal shipped in the United States moves by water at some point. The questions before us today are: "What are the prospects for coal transportation by water in the future?" and "Can the waterway system accommodate the expected future traffic?" The answers to these questions depend largely upon how fast the nation moves to increased use of coal in place of imported petroleum and whether this increased coal utilization emphasizes traditional sources of supply or western coal. The prospects for coal exports will also be an important factor.

Traditionally, the waterways have been heavily utilized for moving coal from Appalachia and southern Illinois. The Ohio River is the main artery for this movement. The Monongahela, the Kanawha, the Green and the Tennessee Rivers are important Ohio River tributaries which have large coal movements. There have also been strong coal movements on the Mississippi River and on the Illinois Waterway. The Great Lakes have been Shipping large quantities of coal which is received by rail in the Toledo and Chicago areas and transhipped on the Lakes to power plants.

The Ohio River system will continue to be a major artery for coal transportation for the foreseeable future. Both the utilities and the mines are located along this system so coal will continue to move on the system, although perhaps in somewhat different patterns than historically, whether the utilities burn eastern coal or western coal. If the utilities do start to shift to western coal, there is a strong likelihood that the Apalachian coal will move to feed the synfuels industry.

Coal movements on the Great Lakes are more dependent upon the question of western coal. If western coal develops as projected, then one would expect large transhipments of coal at the western Great Lakes ports to feed power plants located at Detroit and further east. This would displace some of the Apalachian coal which is presently being transhipped at Toledo. It might also affect some of the Chicago transloading although much of this is already western coal. If this western coal to Great Lakes movement fails to develop then the traditional movement patterns can be expected to continue.

The lower Mississippi River is presently developing as a major mover of western coal. There are already high capacity transloaders operating at St. Louis and several additional transloaders are under construction. These facilities will ultimately permit many millions of tons of coal to be shipped down the Mississippi River for use by southern utilities and also by those located along the Gulf Coast. This will also provide a logical avenue for export of western coal should such a market develop. Some movements of western coal will also develop on the upper Mississippi River but these movements will be much smaller since the utilities can be reached directly by unit train.

Coastwise movements of coal will become increasingly more important as utilities located in Florida and New England convert from petroleum to coal.

Many of these utilities already have coal conversion studies underway and are planning to receive coal by water since most of them have plants located along the coast and would require very little in the way of facilities to receive coal by water. Thus significant coal moves through the Gulf and along the Atlantic Coast can be expected. This coal will most likely be transhipped at ports which currently serve the coal export trade.

Coal exports are increasing significantly. The principal export point is the Virginia Tidewater area. Additional ports which are shipping coal include Baltimore, New Orleans and Mobile, and there are plans underway to begin exporting coal once again from San Francisco. This coal export business basically involves a move by rail to the port, although the New Orleans-Baton Rouge area and Mobile offer the possibility of transloading from barge to ship for export.

With these expectations for future coal movement, where will the constraints develop? Clearly, much of the anticipated future coal traffic involves transloading from rail to barge, rail to ship or barge to ship. Thus, increased coal production and movement by water will place considerable strain on port and terminal facilities. Traditionally, these transloading facilities have been built by private operators but this is becoming more difficult. Suitable land is becoming quite scarce and the permit process to develop a coal terminal is rather long and drawn out. Environmental impacts of coal facilities can be particularly troublesome. Older terminals are often subject to complaints of noise pollution. New terminals sometimes cannot be located at desirable sites due to environmental impacts. For example, there was recently a case in my own area where a proposed coal dock to serve a TVA power plant was denied a permit due to environmental impacts. It can take as long as five years to bring

a new high capacity coal terminal on line. The high interest rates and the uncertain financial future also inhibit terminal development. In summary, there will be a continuing and perhaps increasing need for coal terminal facilities and it seems to be increasingly difficult to develop such facilities. The question then is, What's to be done? Some port interests maintain that private enterprise will solve the problem while others look forward to some type of governmental assistance. From the perspective of water resouces, I think we can expect that the terminals will be built. The challenge will be to have this development occur in a manner which is compatible with other water resource interests.

A second type of constraint somewhat related to the transloader question may not be of much concern to this Subcommittee but should be mentioned in passing. This is the question of local taxation of interstate commerce. Some local governments have deemed the movement of coal through facilities located within their jurisdiction, and even movements which do not utilize local facilities, as being subject to local taxation. Special local taxes of this type imposed on waterborne commerce could be a factor inhibiting coal transportation by water in the future.

Third, there are a number of physical facilities on the inland waterways which could constrain future coal moves. The locks on the lower Monongahela River might need the earliest attention. One pair of locks have been in operation for over 73 years and are badly deteriorated. Immediately upstream are two locks which have been in service since 1932. As these and other locks begin to reach the end of their economic lives, the Subcommittee can expect to see replacement studies being sent forward by the Corps of Engineers.

Two locations on the Ohio River deserve mention. Gallipolis Locks which

are just below the Kanawha River serve significant coal traffic and are the last remaining smaller locks on the Ohio River. The Corps of Engineers is presently conducting a study concerning possible replacement of that structure. On the lower Ohio, Locks 52 and 53 have been the subject of study for a number of years. Lock 53 is a smaller lock which sometimes causes considerable delay to coal traffic. Lock 52 has a small chamber and a temporary large chamber. Both of these were to have been replaced by Mound City Lock which is presently being held in abeyance. The Subcommittee might ask for some recommendation from the Corps and other interests concerning these facilities sometime in the near future.

There might be constraints on the Great Lakes system, particularly if the western coal alternative develops. The Great Lakes system is presently under study by the Corps. Additional locations which might develop contraints include the lower Tennessee River, the Illinois Waterway and the Black Warrior River in Alabama, particularly if Mobile develops its potential as an export point.

In summary, it appears that the nation's waterways will continue to be important movers of coal. It is likely that future coal transportation will require all modes, and intermodal rail-water transportation would seem to have a great future. The Senate should be attentive to the need to provide the facilities for both modes of transportation to handle the expected increase in coal traffic.

There are some additonal actions which the Subcommittee itself could take to insure that this will happen. First of all, the basic facts, figures and forecasts concerning coal transportation are public information and, in fact, several studies and reports have been done recently or are in progress. It might be a good idea for the Subcommittee to have someone summarize all

of these studies and lay out their conclusions with respect to the waterway and port development issue. Second, in reviewing various proposals for waterway and port development, the Subcommittee should be sure that the various project studies are consistent. That is, competitive projects should not all be claiming the same traffic and, on the other hand, complementary projects should all be designed for the same traffic level. In other words, a systems viewpoint is really what is needed here. Third, the Subcommittee should insure that the criteria for project evaluations, such as the "Principals and Standards for Planning Water and Related Land Resources," provide adequate and correct guidance. For example, the present version of Principles and Standards continues the practice of equating the benefits of water transportation as the difference between the price paid for rail service versus the price which would be paid by the shipper for service by waterway. This type of analysis ignores the basic economics and tends to preclude effective consideration of multimodal and intermodal impacts. Fourth, even though the Subcommittee is charged directly with responsibility for water resources, you must also be concerned with the criteria which are employed to evaluate other federal transportation actions. That is, it is basically not fair for one set of planning standards and criteria to be placed on federal aid to water transportation while a different set of criteria are applied to federal aid to other modes of transportation.

One final observation may be of interest. Despite the rosy future predicted for coal, port and waterway operators up and down the rivers have noted that coal shipments are down compared to what they have been historically. Railroad representatives have been saying the same thing. In other words, everyone expects that increased coal transportation is coming but they

are beginning to wonder when. Vigorous promulgation of a coherent national energy policy and a complementary national energy transportation policy would go a long way toward answering this question.

* * *

BIOGRAPHY

Dr. Bronzini holds the B.S. degree from Stanford University and the M.S. and Ph.D. degrees from the Pennslyvania State University, all in civil engineering. He has been engaged in transportation research and consulting since 1967. He has held positions with the Pennsylvania State University, Georgia Institute of Technology, CACI, Inc. in Arlington, Virginia and he is presently Associate Director of the Transportation Center and Associate Professor of Civil Engineering at the University of Tennessee. He has conducted several studies in energy transportation and he is generally familiar with both water and rail transportation systems.

Testimony

To The

Water Resources Subcommittee

Of The

Senate Environment and Public Works Committee

On The Subject Of

Waterborne Transportation Of Coal

Presented By

Frank Kudrna, Director

Illinois Department of Transportation

Division of Water Resources

July 28, 1980

The State of Illinois is strongly concerned with the development of an effective national energy policy and is supportive of increased utilization of coal as a primary source of energy. As part of his energy program, President Carter has called for a substantial increase in coal production, to more than 1 billion tons per year by 1985. Whether or not this objective can be achieved will be dependent, in part, on the capability of the coal transport infrastructure to accommodate the movement of the coal from the mine to the place of consumption.

It can be expected, regardless of environmental regulations which are or will be imposed on coal-burning electricity generating power plants and on industrial users of coal, that the demand for Illinois and Midwest coal will continue to increase in order to achieve national goals for energy self-sufficiency. Furthermore, it is anticipated that future cost increases and limits placed on the production of petroleum by the oil exporting countries may cause substantial overseas demands for U. S. produced coal. Although other countries such as West Germany and Great Britain have rich coal reserves, it is becoming apparent that the total cost to mine and ship U. S. coal, even to western Europe, will be cheaper relative to the costs of producing local coal in many parts of the world.

The State of Illinois is a major producer and net exporter of coal to the midwestern and southeastern regions of the country. Out of a total production in 1976 of 58.2 million tons, 25.4 million tons were consumed in the State and 32.8 million tons were shipped outside the State. Bituminous coal reserves of between 30 and 40 billion recoverable tons are reported in Illinois, representing about 25 percent of the national

total. These reserves exist in relatively thick seams at shallow depths. Although the coal has a high Btu content, about 44 percent of the coal has a sulfur content of 3.6% - 4.0%.

Despite its favorable position as a coal supplier, total production in Illinois has declined steadily since 1970; in 1970 it was 64.9 million tons and by 1977 it was only 53.9 million tons. Presently, the industry is still suffering declining production and relatively slack demand. Most Illinois coal is consumed by electric power plants and the single most significant factor in the production declines has been environmental regulations that limit the emission of sulfur dioxide from coal-fired generating facilities.

The importance of the waterborne mode in the transport of coal is demonstrated by the fact that 25 percent of the Illinois coal produced in 1975, 14.7 million tons, moved by barge for some portion of the journey. In terms of coal shipments on the Great Lakes, a total of 4,039,144 tons were shipped from the Port of Chicago to other Great Lakes ports. The movement of Illinois coal by barge required about 9,800 barge loads, assuming each barge was loaded to capacity of about 1,500 tons. Were that entire tonnage to be added to the rail system, it would have required 147,000 loaded rail cars or the equivalent of over 1,300 unit-trains.

The State of Illinois borders on 1,082 miles of navigable inland waterways. The proximity of the major Illinois coal-producing counties to the navigable waterways in Illinois improves the potential for shipment of coal to market by barge and for the effective inter-modal

transport of coal by rail or truck to river and Great Lakes terminals for transshipment.

In order to enable the U. S. to achieve substantial increased utilization of its coal resources, both in this country and overseas, there will be a need for increased research and investment by both the public and private sectors for improvements to the existing rail, water and highway transport systems and to the facilities that provide for the transfer of coal from one mode to another.

The U.S. Department of Transportation report, Transporting the Nation's Coal - A Preliminary Assessment, recommends for the period beyond 1985, that waterborne coal traffic forecasts be continuously updated and refined, especially in view of the long construction period for building needed facilities. The report recommends specific areas for additional research, for all modes, including:

- Availability and adequacy of transportation services at specific new coal-burning facilities.
- Social, environmental and safety impacts of increased coal traffic.
- Consolidation of coal-handling facilities.
- Further identification of points or segments of the transportation system which may constrain traffic flow as coal and other commodity traffic increases.
- Modifications to operations to increase system capacity.
- Collection of necessary data on coal transportation.

These research topics require involvement by appropriate state agencies, and the results of such state studies could furnish necessary input to the U. S. Department of Energy. In the State of Illinois,

the Illinois Department of Transportation, Division of Water Resources, in conjunction with the Illinois Institute of Natural Resources, is funding a study entitled Inventory of Illinois-Related Coal Shipments and Coal Transportation Systems. The purpose of this study is to inventory the current production, use and transportation of coal with respect to the State of Illinois. This will include an analysis of the physical capability of the transport infrastructure (rail, water and highway) to accommodate the movement of coal. The final report will provide a basis for subsequent studies that will involve the development of forecasts of short-range and long-range production and consumption of Illinois coal and the determination of phased improvements to the transport system to accommodate increased demands of coal.

Another ongoing study funded by the Illinois Department of Transportation, Division of Water Resources, entitled Inland Waterway Commodity Flow Study, will identify the inbound and outbound tonnage of coal and other major commodity groups to river segments in Illinois during the years 1969-1979 inclusive. In addition, the study will identify the extent of the hinterland or market area of each river segment and the inland modes used to transport commodities to and from each river segment. This study will furnish the framework for future analyses of the capacity of the water transport system in the State and the types of new port facilities and possible locations on the waterway system to accommodate future demands.

In keeping with the recognized potential of the State of Illinois to provide a substantial portion of the future domestic coal production to

meet the Administration's energy programs, the Illinois Department of Transportation submitted a request to the U. S. Department of Transportation on May 24, 1979 for information on energy research and study programs, funded by the Department of Energy, which might provide funds to the State of Illinois for the continuation and greater in-depth analysis of future coal transportation needs.

On July 18, having received no response from the Department of Energy (DOE), a telegram was sent to DOE requesting a response to the letter of May 24. Over one month later, on August 13, a letter was sent from DOE which expressed regrets that the May 24 letter from the Illinois Department of Transportation could not be found in DOE files, and, if a copy could be furnished, then DOE would attempt to provide the information as requested. A letter dated August 23 transmitted the May 24 letter from IDOT to DOE.

As of January, 1980, DOE had not responded to the request for information that IDOT had made originally on May 24, 1979. On January 17, 1980, another written request was made to DOE to provide information on research and study programs funded by DOE, particularly in the area of coal transportation.

Finally, on February 19, nearly 9 months from the date of the original correspondence, DOE telephoned IDOT with a response. After all those months the answer was simply "No," DOE funded no programs which might provide funds to the State of Illinois for the study of future coal transportation needs.

A continuation of the above described series of events by the Department of Energy, or by other Federal agencies involved in the development and implementation of our Nation's energy policies, can serve only to delay and increase the cost to achieve energy self-sufficiency. Furthermore, if the U. S. is to become a leading exporter of coal to worldwide markets, it is imperative that a close working relationship be established and maintained between the responsible Federal and State agencies.

The Illinois Department of Transportation looks forward to working with the Water Resources Subcommittee in the development of water transport facilities and an overall transportation system to accommodate future coal production for domestic use and foreign exports.

THE AMERICAN ASSOCIATION OF PORT AUTHORITIES

1612 K Street, N.W.
Washington, D.C. 20006

COAL AND PORTS

Testimony Submitted to the U.S. Senate Subcommittee
on Water Resources

August 8, 1980

67-591 O—80——28

The American Association of Port Authorities fully appreciates coal's growing importance in the world energy picture. It is concerned, however, that vital components in the logistical network that moves coal from the mines to the final consumer may be incapable of sustaining the vast tonnages projected to move in world and domestic trade over the next quarter of a century. Much of that trade will be dependent on deep-draft vessels and therefore on the availability of suitable port facilities to effect the critical transfer of coal between the inland and ocean carriers. Without ports, the traffic simply will not move. The facts are that current U.S. port capacity is not sufficient to meet future coal needs. As representative of all this nation's major deep-draft seaports and most of its smaller ones, AAPA believes that this problem must be addressed promptly and decisively if American coal is to retain its primacy on the world market and to satisfy the essential energy needs of the United States and its major allies.

The economic well-being and ultimately the political and social cohesiveness of the United States and its allies depend quite fundamentally on the ready availability of low-cost energy. Since World War II and even more so over the past 20 years, that requirement has been largely satisfied by petroleum. But the sudden emergence of the Organization of Petroleum Exporting Countries (OPEC) as a major world economic power, manifest in spiraling prices and periodic threats to curtail or shut off entirely oil deliveries has placed the Western world in a dangerously precarious position. Continuing inflation and now the serious recession here in the United States can in large part be ascribed to OPEC decisions. Soviet threats to the Persian Gulf

could very well lead to military conflict and even World War. Thus, the energy crisis impinges on the highest economic and security interests of the United States, and must be viewed in that context.

If the West, including the United States, is to free itself forever from its dependence on OPEC, it must find a practical energy alternative to oil -- one that will assure continued economic growth, adequate living standards, and reasonable security. Coal, as the World Coal Study rightly concludes, offers the most plausible near-term solution to the energy problem. Yet to meet projected world demand will require massive production increases and a multiplying of coal moving in international trade five to 12 times its 1979 level by the year 2000. Most important, as WOCOL warns, such growth will be possible only "if the U.S. increases its exports very significantly."

Already a semblance of the future envisioned by WOCOL is beginning to emerge. Conversion of utility and industrial power and heating systems from oil and natural gas to coal has become stated national policy of the U.S. government and a number of other foreign industrial countries. Similarly, new utility power plants are being required to consider the coal alternative. Demand for steam coal is rising sharply. The Japanese are now active in the world coal market and have indicated that their steam coal import requirements could rise from the current level of approximately one million tons annually to 53 million tons by 1990 and 80 million tons by 1995. Others that have entered the market or expressed serious interest are

France, Italy, Great Britain, West Germany, Sweden, Taiwan, South Korea, Denmark, and Brazil. Here in the United States, a similarly strong commitment to coal by the domestic power industry is being retarded only by the failure of the federal government to provide essential financial and regulatory assurances.

The move to coal is further dramatized by the sudden upsurge in steam coal exports through U.S. North Atlantic ports that began in late 1979 and is continuing at an accelerating pace. Whereas in 1978 U.S. steam coal exports to non-Canadian destinations amounted to just 300,000 tons, last year they jumped to 2.5 million tons, and could climb to 10 million tons in 1980, to 25 million tons within two or three years, and, according to the U.S. Department of Energy, to 100 million tons by the end of the decade. All of that would come on top of the continuing heavy movement of metallurgical coals (43.1 million tons in 1979) and an expectedly heavy traffic in coastwide movements to New England and other Northeastern points.

Ports are an essential link in the international coal logistical system. Coal, being a bulky low value commodity for which transportation is a critical cost component, is highly sensitive to transportation rates. Without low cost transportation, it simply cannot be moved economically. Export coal must move by deep-draft ocean carriers, and therefore requires the ready availability of modern, capable port facilities. That means ports equipped with highly efficient ship loaders, adequate storage areas, ready connections with inland carriers, and berths and channels dredged to receive and load to

capacity the largest vessels likely to be employed in the trade on a regular basis. A port must be capable of transferring vast tonnages between inland carriers and waiting ships at the lowest possible cost and without avoidable delay so as to ensure a continuing and steady flow of traffic from the mines to the consumers. Furthermore, if U.S. coal is to be competitive on the world market, U.S. ports must be able to function at least as efficiently as any of their foreign competitors.

For almost thirty years, the United States has been the world's leading coal exporter, but that situation is changing rapidly. Formidable new competitors -- Australia, South Africa, Canada, Poland, the Peoples Republic of China, and the Soviet Union -- are challenging our historic supremacy. Japanese and European investors are pouring vast sums into the development of mines and related infrastructure in Australia and elsewhere. The Japanese have negotiated countertrade agreements with China and the Soviet Union -- offering technology, capital, and technical know-how in exchange for coal. Once committed by investment and long-term contract to other foreign suppliers, they will be less willing to come to the United States for their coal needs.

The United States is in an excellent position to make the most of the lucrative opportunity presented by the rapidly expanding world demand for coal. With the largest and most varied reserves of quality coals available anywhere in the world, over 100 million tons of idle mine capacity, unparalleled technological resources, and a

highly productive and reasonably stable labor force, the United States could, given requisite transport infrastructure, move rapidly to meet world coal needs. Substantially expanded U.S. production would accomplish a number of important national goals.

Increased U.S. coal production would, in the first place, serve U.S. foreign policy goals by helping our allies reduce their dependence on OPEC energy supplies. Secondly, it would mean a substantial easing of the U.S. balance of payments problem, first by cutting the need to import expensive natural gas and petroleum, and secondly by increasing U.S. exports abroad. Third, it would mean added employment opportunities, not only for the coal mining industries but also for ancillary industries as well. DOE, for example, suggests that one effect of its projected increase in coal exports for the year 1990 could be the creation of 38,000 new jobs for coal miners and another 190,000 other jobs in coal mining communities. A study on the impact of Virginia's ports on the economy of that state found that one job is created for every 955 tons of coal that moves through those ports, and that the increase of coal exports in 1980 alone could generate 10,000 new jobs with an additional payroll of $200 million. Finally, it would mean increased national income, and as a consequence, increased tax revenues for the federal, state, and local governments.

But the facts are now that U.S. ports are not capable of handling projected exports. Most of this nation's export capacity is concentrated on the East Coast (Hampton Roads, Baltimore, and

Philadelphia) and to a significantly lesser extent on the Gulf (Mobile and the lower Mississippi River). No terminals solely dedicated to coal are to be found at any port on the U.S. West Coast. The East Coast terminals are, in several instances, served by obsolete coal terminals, some of which are almost a century old, and totally unsuited for modern needs. Draft limitations severely restrict the size of the bulk ships that can be loaded.

Current U.S. port coal loading capacity, according to WOCOL, is 94 million tons, far short of its year 2000 U.S. coal export projections of from 123 to 353 million tons. WOCOL particularly points to Hampton Roads (currently the loader of 75 percent of U.S. overseas coal exports), the lower Mississippi, West Coast, and Alaska as port areas where "potentially the most serious constraints exist." But the crunch could come much sooner than that, and may have already arrived.

The sudden surge of steam coal exports through our North Atlantic ports has created severe vessel congestion problems. As of June 1 for example, a total of 42 vessels were anchored at Hampton Roads waiting to load 1.9 million tons of export coal. The situation has not materially improved since then. Similar conditions prevail at Baltimore and Philadelphia. With demurrage charges ranging upward from $10,000 to $20,000 daily, the cost to a charterer of delaying a vessel for days or even weeks can be enormous or even prohibitive, and severely undercut the competitiveness of U.S. coal in foreign markets.

Draft limitations are also costly to shippers and potentially ruinous to the U.S. coal trade. WOCOL estimates that some 1,000 ships of 100,000 deadweight tons each will be required by the international coal trades over the next two decades. A coal vessel that large draws approximately 50 feet of water. Even larger ships are being contemplated for employment in the coal trades, with correspondingly deeper draft requirements. Present controlling depths of the main channel approaches at mean low water are 40 feet at Philadelphia, 42 feet at Baltimore, and 45 feet at Norfolk. Deeper draft vessels (that is those with greater carrying capacity) must be moved out at high tide or leave port only partially loaded.

Shippers faced with the heavy cost of transporting coal over long distances can be expected to turn to ships that will give the maximum economies of scale. As has been borne out by experience in the crude oil trades, the use of very large ships can mean substantial savings in per-ton transportation costs. A few extra inches in draft can mean the difference of several thousand tons of carrying capacity -- adding a foot or more can make a substantially greater difference. In that case, shippers are bound to employ the largest vessels that can be accommodated in the ports where the coal is to be delivered.

At least 10 ports in Europe and Japan are currently capable of receiving ships with maximum carrying capacity of 145,000 dwt or more, vessels far larger than any that can be fully loaded at any U.S. port at present. At the same time, there are modern loading

ports in Australia (Bowen), Canada (Roberts Bank), and South Africa (Richards Bay), capable of handling vessels in excess of 200,000 dwt and fully equipped with the most modern ship loading equipment. Substantial investment in coal port loading capacity is planned or underway in these three countries and also in the Soviet Union (Vostochny) and China. Such improvements, if allowed to go unchallenged, will give these countries a very substantial competitive edge over the United States.

Foreign buyers have warned that unless substantial improvements are made to U.S. ports, they will go elsewhere for their coal. Some have already done so. The writing is on the wall. If this country does not move quickly, its coal industry will suffer, with attendant consequences to the national economy and its international trading position.

What must be done? First, our aging coal facilities will have to be modernized or replaced entirely. Secondly, new terminals will have to be constructed, on the East and Gulf Coasts, and particularly on the West Coast, where none now exist. Thirdly, terminals devoted exclusively to the coastwise trade must be provided, particularly on the Atlantic side, to prevent conflict between domestic and export shipments. Fourthly, needed channel and berth deepening projects must be authorized and expedited with the least possible delay.

Financing of shore terminals is certain to come from the private sector, providing it has certain assurances from government. Already,

coal companies have announced plans for the development of new coal loading terminals at U.S. ports. Other interests, including several port authorities and state government entities, are seriously interested in encouraging coal terminal development. There is no need for federal financing of coal terminals, except to the extent of providing the wherewithal of paying for environmental safeguards mandated by federal law and agency regulations. What developers need is a clear understanding of what the rules are and assurances that they will not be changed after a project is well underway and substantial financial resources are committed. It is incumbent on both Congress and the Executive Branch to ensure that a national policy of promoting coal exports is clearly ennunciated and thoroughly understood and heeded by all federal agencies.

Dredging is another problem. Simply stated, any investment in the most modern, technologically advanced terminal will be rendered worthless if channels and berths are not dredged to accommodate the vessels the terminal is designed to serve. Historically, this function has been performed by the U.S. Army Corps of Engineers. By law, the Corps is charged with responsibility for regulating improvements or changes that affect the navigational waters of the United States. Historically, it has been the Corps that has undertaken, on behalf of the United States, the federal responsibility for dredging harbors, anchorages, and approach channels, and providing other essential navigation works such as breakwaters and dikes. But to an increasing extent over recent decades, this time-honored process has been subjected to increasingly lengthy and complicated permitting delays,

bureaucratic foot-dragging, and bitter and frequently irrational opposition from environmental interests. Appropriations for federal navigation projects are slow in coming, if in fact they make it at all, with the result that needed improvements essential to the commerce and other maritime interests of the United States are seldom in place until years after they are needed. Not a single new deep-draft authorization has been approved in four years.

The problem is further complicated by current efforts to push off onto state and local government bodies what has traditionally (and legitimately) been a federal responsibility for providing deep-draft navigation projects. Under the so-called "cost sharing" scheme advanced by the Carter administration, states would be obligated to put up five percent of the up-front cost of water projects such as port improvements. Another proposal would provide for the allocation to the states of block grants from the federal government for their use in financing water resource projects, be they flood control dams, irrigation canals, or whatever the state might elect. Such proposals are aimed at ending what some regard as being the waste in federal water project programs and enhancing state responsibility in the financing of federal and federally assisted water projects and programs.

These proposals could perhaps be justified where the benefits of proposed projects redound largely to the benefit of a state or local economic entity. But it is patently illogical to classify deep-draft navigation projects that serve a manifestly national purpose in the

same category as flood control dams, irrigation canals, water conservation, hurricane protection, beach erosion, and hydroelectric power. Benefits from the latter accrue predominately to local interests, but the benefits resulting from port projects are regional and even national in scope and clearly transcend the immediate interests of the city or state in which they happen to be located.

The U.S. seaport industry serves the commercial, fishing, and security interests of the entire nation. Through these ports pass the essential commerce that is the lifeblood of the national economy, including coal. For example, the hinterland serving the port of Charleston covers a 20-state region. Coal exported through Hampton Roads comes from mines scattered across the states of Virginia, Kentucky, and West Virginia. Coal shipped through the port of Baltimore comes from mines in Maryland, Pennsylvania, and West Virginia. Coal loading ports on the Pacific Coast would be outlets for coal originating in Montana, Wyoming, Utah, and Colorado. Subjecting this vast trade to state and local budgetary processes amounts to a subverting of the national interest to mere parochial whim.

Maintaining and constructing deep-draft navigation projects is quite legitimately a federal responsibility. The facts are, in any case, that America's seaports are a source of considerable benefit to the federal government and the nation as a whole. The seaport industry contributes mightily to the U.S. national economy and pours billions of dollars into the federal treasury. In 1978, for example, the nation's port industry supported more than one million jobs,

producing personal income of $10.6 billion and adding $32.1 billion to its Gross National Product. In that same year, expenditures by the Corps of Engineers for the operation, maintenance, and construction of channel and harbor projects came to $410.4 million. Adding Coast Guard expenditures for navigation aids brings the total federal spending for navigation-related purposes to $690 million, meaning that America's ports are a source of considerable profit to the U.S. government. Delays in essential dredging can be costly to all concerned. Examples of dredging delays that directly impact coal shipments are deepening projects pending or under active disucssion for Hampton Roads and Baltimore.

The federal government can help the most by hindering less. Permitting processes for private deep-draft berth dredging should be simplified and the Corps and other involved federal agencies should be directed to expedite them. Secondly, deep-draft federal navigation projects should receive the highest national priority, particularly where energy is concerned. Thirdly, extra costs mandated by federal laws and regulations should be paid, at least partially, by the federal government.

One thing we do not need is more costly and time-consuming federal studies. The problems have been identified many times over in studies and Congressional hearings and in other forums. What is needed is a firm commitment by the federal government to do whatever it legitimately can and must do to promote the expansion of U.S. coal exports. Most importantly, what is needed is the courage to act promptly and decisively, in short, to do what has to be done <u>now</u>.

ASHLAND COAL, INC.
Subsidiary of Ashland Oil, Inc.

P. O. BOX 391 • ASHLAND, KENTUCKY 41101 • (606) 329-3333

RICHARD L. SAUNDERS
Vice President - Supply & Distribution
(606) 329-4785

August 4, 1980

Honorable Daniel P. Moynihan
Chairman
Subcommittee on Water Resources
Senate Committee on Environment
and Public Works
442 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Mr. Chairman:

We appreciate this opportunity to comment on waterways issues, with special emphasis on energy transportation which has become a vital factor in this nation's urgent necessity to conserve its resources and lessen its dependence on imported foreign oil.

It is clearly the intent of the Congress to require the redirection of priorities on the use of petroleum products by encouraging the conversion of oil-burning electric utilities to the use of abundant coal. This mandate has been demonstrated by the Senate's passage of The Powerplant Fuel Conversion Act, the so-called "oil back-out" bill. The intent of the Congress to lessen the dependence on imported foreign oil has also been demonstrated by its encouragement of synfuels legislation (Energy Security Act) and efforts to develop coal-oil mixture utilization for steam generation and specialized oil applications.

Similarly, the Congress would like to encourage the use of coal in new electric utility generation plants, as well as afford the coal industry the opportunity of participating heavily in the tremendous export steam coal market which will be developing during the next several decades.

Given the Congress's intent and hopes for coal, and given the coal industry's resources and ability to adequately supply the needs, the major concern is TRANSPORTATION of this key energy commodity.

One of the most vital transportation segments involves the inland waterways which serve the vast coal fields located in the eastern United States.

Compounding the problems of meeting our energy goals, we are locked into a river system (the Ohio) which has 13 modern locks all fitted with one 1,200-foot lock chamber and a 600-foot auxiliary lock chamber. A fourteenth modern lock structure, Smithland, will be completed this year and will have two 1,200-foot lock chambers. These modern lock structures pass the largest tows plying the Ohio River in about 25 minutes. Situated in the midst of these locks is Gallipolis with its only 600-foot and 360-foot lock chambers, which are deteriorating with age. Large tows have to be broken up to pass Gallipolis, taking well over an hour to pass. When the 600-foot lock is closed for maintenance outages or lock-gate damages, the frequency of which is increasing to an alarming degree, tows are incurring delays up to 12 hours.

Half of the traffic on the Ohio River system is coal, and the present coal tonnage of 75 million tons per year needs to be doubled by 1985. The major obstacle is the limited capacity of the Gallipolis Locks, which is currently locking through about 44 million tons of commodities per year. The Corps of Engineers places the present practical, total freight capacity of the Gallipolis Locks at 33 million tons per year, or 11 million tons less than the current traffic flow.

With the expanded coal production which will be required for future energy needs, including synfuels and coal-oil mixtures, the Ohio River traffic may be brought to a virtual standstill because of this one bottleneck at Gallipolis. The resultant far-reaching impact on the Nation's economy and the tax revenues to the Federal Treasury and metropolitan centers of the Ohio River Basin will be unconscionable and devastating. There is obviously urgent need to proceed with necessary funds for the Gallipolis Lock Replacement Project.

The inland waterways are also serving a vital need at this time by providing a relief valve for the explosive congestion occurring at the East Coast coal exporting piers. Discouraged by vessel delays running up to 30 days at Baltimore and Hampton Roads, foreign buyers are sending ships to Gulf Coast ports to receive coal which has been transported by barge from as far up the inland waterways system as Pittsburgh. Such river delivery of coal will play an important part in enabling the United States to participate heavily in the world coal export trade. We are sure that the Congress will support and encourage the use of the waterways for this purpose.

Projects such as Gallipolis, and support and encouragement for the use of the waterways, are truly in the public interest. The replacement of foreign oil imports by use of our indigenous coal in existing and proposed steam plants and in synfuels manufacture clearly benefit the public interest. The replacement of oil imports in foreign countries by coals imported from the United States clearly benefit not only the foreign countries but also the public interest here at home, because such actions weaken the OPEC cartel's position, creates employment and investment in the U.S. and favorably affects our nation's balance of trade. Such munificent benefits to the public interest would certainly not warrant discriminatory applications of waterways user charges. Such charges would discourage, penalize and intimidate those who are sincerely making the effort to lessen our dependence on foreign imported oil and contribute to a healthy, strong and vibrant economy. This, too, is in the public interest.

Yours very truly,

Richard L. Saunders

Richard L. Saunders

RLS/mw

CAC Technical Memorandum No. 20

ENERGY INTENSITY OF BARGE AND RAIL FREIGHT HAULING

By

Anthony V. Sebald

Center for Advanced Computation
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

May, 1974

67-591 O—80——29

Introduction

In an attempt to quantify more of the total system costs associated with transportation alternatives, studies are continuing in the area of energy cost per ton mile for alternate freight and transportation modes. In light of the present energy difficulties, energy efficiency is beginning to have a significant economic impact on the various modes. Energy cost per ton mile is also an important parameter in determining the total environmental impact of competing transportation modes. This paper presents results of an energy comparison per ton mile of competing rail freight vs. inland barge freight, including the effects of circuity and the use of probable competing rail lines instead of national average rail data.

The Problem

The basic underlying difficulty is that of constructing an equitable frame of reference for comparing the two modes. Railroads haul some freight along the barge routes and some over the continental divide. They haul in unit trains dedicated to a single commodity (e.g., coal) over a fixed long distance trip (e.g., Louisville, Ky. to New Orleans) and they also haul in mixed trains which stop and switch frequently. Finally, the railroads also compete with the trucking industry and haul freight (in truck trailers) on "piggy-back" systems as well as in the more conventional railcars. The water transportation industry appears to be even more heterogeneous than rail. Domestic water transportation includes:

1) Inland waterways (Mississippi river system and tributaries)
2) Gulf and Atlantic intracoastal waterways
3) Lakewise or Great Lakes transportation
4) Coastwise or deep sea transportation (New Orleans to New York,

Puerto Rico to New Orleans, etc.)

Even within the inland and intracoastal waterways system there is a large number (1800 on the Mississippi-Gulf system)[1] of barge firms ranging from family owned tugs to large multi-commodity freight haulers.* Barge freight is moved on large capacity, long distance dedicated tows with the power unit waiting for loading and unloading. It is also moved on multi-commodity tows in which the power unit continually moves while shore based tugs connect and disconnect barges and bring supplies. Thus general, widely applicable questions can be answered less precisely than specific ones.

Previous results in this area (2), (3), (4) have been limited to ratios of total domestic fuel use to total domestic ton miles. The present study gives more precise results in that it takes into account two other important variables. The energy intensity per ton mile calculation takes into account the actual energy efficiencies of the most probable rail line competitor of the barges on each particular haul and also includes the relative circuities of the two modes. Circuity (defined as the modal difference in distance travelled for an equivalent haul) is important since a ton moved from New Orleans to Chicago will not travel the same number of miles in both modes.

Methodology

Due to resource limitations, this study was limited to freight traffic on the Gulf Intracoastal Waterway and the Mississippi River with all its tributaries. Using the 1971 actual barge traffic data (5)(6), a list of 290 approximate origin-destination (OD) pairs was compiled. Data on tonnage

*In 1971, 6.6% of the domestic ton mile traffic was regulated by the ICC (5).

carried for each OD pair in each of five bulk commodities (agricultural output, lumber, petroleum, coal and chemicals) was also compiled. These OD traffic pairs are approximate since the data in reference (5) is only disaggregated to the regional level. Ports within the regional level were chosen based on relative percents of corresponding traffic handled at the major ports listed in reference (6).

Rail and barge routings were then generated for each OD pair. In the barge case, the shortest routing was used. In the rail case, a balance of minimum distance and minimum number of rail carriers was used in each routing. Mileages in each case were obtained from (7) and (8). OD ton miles (Tm) are given by the product of the tonnage and respective routing length for each OD pair. Rail energy for each OD trip was calculated by summing the product of energy intensity[9] (Btu/Tm) and mileage for each railroad's portion of the trip. Barge energy for each trip was assumed constant as explained in the next section.

The computer program evaluated the overall intensities (Btu/Tm) for each mode using the following weighted sums:

$$\text{Rail (Btu/Tm)} = \frac{\sum_i (\text{Tm}_{OD_i})(\frac{\text{Btu}}{\text{Tm}})_{trip_i}}{\sum_i \text{Tm}_{OD_i}}$$

$$\text{Barge (Btu/Tm)} = (\frac{\text{Btu}}{\text{Tm}})_{AVG} * \frac{\sum_i \text{Barge Tm}_{trip_i}}{\sum_i \text{Rail Tm}_{trip_i}}$$

The circuity weighting factor $\frac{\sum_i \text{Barge Tm}_{trip_i}}{\sum_i \text{Rail Tm}_{trip_i}}$ is also important in its own

right since changes in the estimates of energy efficiency per Ton Mile of either the rail or barge mode can be easily included in the results of this study by simply multiplying the barge efficiency by the above defined circuity factor. The circuity factor will remain stable until either major traffic pattern changes or major rail or waterway construction occurs.

Results

There are two principal results of this study. First, the weighted average energy intensity (EI) of that portion of the rail industry which competes with the barge lines (on the Gulf and Mississippi with tributaries) was found to be 639 or 711 Btu/Tm depending upon whether one includes or not the fuel used for yard switching. Both numbers are included in the comparison since the barge switching and tow makeup is sometimes done on contract[10] (e.g., tugs hitch and unhitch barges while the main tow continues moving). It is therefore unclear how much of the switching and tow makeup fuel is included in the barge direct EI figure quoted in Table 1. The rail EI's are weighted by 1971 waterborne* commerce statistics, and include the 1971 actual energy intensities (Btu/Tm) experienced by each pertinent rail line as explained in the previous section. The second basic result is the relative circuity of the rail and barge modes for the 1971 waterway commerce traffic on the Gulf and Mississippi with tributaries. On the average, barge ton miles were 1.38 times as great as the equivalent competing rail ton miles. Accepting for a moment that the comparison of an entire rail line's EI with that of the average barge line is a valid one, the derived rail EI is very accurate due both to the availability of excellent data[9] and the fairly

*The actual 1971 waterborne traffic pattern was the basis for comparison between the modes.

TABLE 1

1971 Rail vs. Barge Energy Comparison Parameters

	RAIL	BARGE
ENERGY INTENSITIES (Btu/ton mi)		
Direct[a]	639-711	785
Total	1330[b]	1633[b]
RELATIVE CIRCUITY[b] $(\frac{\text{ton mi - barge}}{\text{ton mi - rail}})$	1.00	1.38
SAMPLE SIZE		
Origin Dest. Pairs		290
Ton Miles Transported		10^8

Notes: (a) Includes motive fuel only, subject to the following clarifications:

$$\text{Barge direct} = \frac{\text{fuel consumed}}{\text{ton miles}}$$ where the fuel figure is fairly imprecise and includes hauling fuel, some but probably not all switching fuel and no maintenance fuel.

$$\text{Rail direct} = \frac{\text{fuel consumed}}{\text{ton miles}}$$

Neither rail figure given includes maintenance fuel, both include freight line haul fuel. The smaller figure excludes switching fuel while the larger one includes all switching fuel.

(b) These figures are subject to fairly large uncertainties.

large sample used (290 OD pairs and one hundred million barge Tm transported). Although the circuity figure is subject to some uncertainty due to judgmental decisions in the choice of logical rail route, the large sample involved would tend to reduce such uncertainty.

The above two results are combined with current estimates[11] of barge freight EI in Table 1. The stated (in Table 1) barge EI is the product of Hirst's revised direct EI and the 1.38 circuity explained above. Admittedly the Hirst figure is subject to large uncertainties*, but Table 1 can easily be updated as new barge EI ratios become available. The new Table 1 barge EI would simply equal 1.38 times the new estimate of barge EI. More is said about the barge EI estimate in Appendix A.

With a bit more effort, a fairly imprecise estimate of total (direct and indirect) system energy for both rail and barge can be obtained. The indirect energy includes such things as electricity consumed to make locomotives, track and freight cars as well as the paint for the offices of the respective companies. Using a method explained in Appendix B, one obtains the results listed in Table 1. It must be emphasized that these are only estimates of the total energies involved. They are useful, however, in that they indicate the total energy consumed in providing a ton mile of rail or barge transportation as about twice that consumed by the locomotive or tugboat alone.

Finally, it is worthwhile to return momentarily to the subject of the legitimacy of comparing an entire rail line's EI to the average barge EI

*It includes all domestic water transportation (coastwise, lakewise and internal) and is based on the roughest, but best available, fuel consumption estimates. Since barge lines are numerous (1800 on Gulf-Mississippi alone), unregulated for the most part and are exempt from fuel tax, no accurate fuel consumption data exists.

competing with it. Rail sources argue plausibly that, by and large, barge movements are large commodity, long, point to point hauls and therefore should be compared to unit train movement EI, not average rail line EI. The energy intensity of high volume dry bulk cargo is significantly lower than the line average EI, it is argued, since:

a) The gondola cars have one of the highest net to gross weight ratios of all rail freight cars.

b) A homogeneous train of gondola cars has a very low air resistance factor when compared to boxcars and especially to piggy back loaded flatcars.

c) Significantly less switching fuel is needed.

d) Unit trains generally travel at lower speeds than other freight trains.

Although some unit train EI results have been published[12] indicating a range of 226* to 359** Btu/ton mile not including circuity but including the emply return trip, much more data needs to be collected before any real comparisons can be made.

---

*Level track.

**Significant grade.

Conclusions

1) The 1971 average barge circuity (ratio of barge ton miles to equivalent rail ton miles) on the Gulf-Mississippi system was 1.38.

2) 1971 rail EI (energy intensity) in Btu/Tm for lines competing for barge traffic was 639 (excluding switching fuel) and 711 (including all switching fuel). The corresponding national average energy intensity was approximately 700 Btu/Tm.

3) The resultant energy intensity comparison including the two above mentioned factors and the best available barge energy intensity per ton mi indicates that rail is from 10 to 23% less energy intensive than barge, but such a factor is inconclusive in view of the large uncertainty associated with the barge fuel consumption data (see Appendix A).

4) The important overall question of modal energy efficiency can only be accurately answered if a definitive program of collection of barge fuel consumption data is initiated. In this author's opinion, the data must be gathered in such a way as to permit regional or national weighting by actual traffic carried and by the circuity factors involved. This means following all steps of the procedure used in this paper with the exception of the inclusion of the actual EI of the most probable barge line (or average of barge lines) for each portion of each trip. The data should also accurately reflect that portion of the barge industry associated with high volume, bulk, long distance (over 100 miles) hauling.

5) The matter of unit train EI should also be resolved for both dry bulk and liquid bulk traffic. To be meaningful in a national average comparison, these data must also be gathered in such a way that the rail line EI's used in this report's calculations could be replaced by the equivalent unit train EI.

9

REFERENCES

(1) Kearney: Management Consultants, "Domestic Waterborne Shipping Market Analysis, Executive Summary," prepared for the Maritime Administration of the U.S. Department of Commerce, February 1974, p. 10.

(2) Eric Hirst, "Energy Intensiveness of Passenger and Freight Transport Modes 1950-1970," Oak Ridge National Laboratory, Report No. ORNL-NSF-EP-44, April 1973.

(3) Richard A. Rice, "System Energy as a Factor in Considering Future Transportation," presented at the American Society of Mechanical Engineers Annual Meeting, December 1970. By the same author: "System Energy and Future Transportation," MIT Technology Review, January 1972.

(4) William Mooz, "The Effect of Fuel Price Increases on Energy Intensiveness of Freight Transport," Rand Corporation, Report R-804-NSF, December 1971.

(5) U.S. Army Corps of Engineers, "Waterborne Commerce of the United States," part 5, 1971.

(6) U.S. Army Corps of Engineers, "Waterborne Commerce of the United States," part 2, 1971.

(7) Rail mileages and routes were obtained from Handy Railroad Atlas of the United States (New York: Rand McNally & Co., 1971).

(8) Barge mileages and routes were obtained from 1972 Interstate Port Handbook (Chicago: Rockwell F. Clancy Co., 1972).

(9) The energy intensity of each rail line was calculated by dividing the line's total diesel fuel consumption in the freight and yard switching categories (Personal communication with Mr. H. Wolf, U.S. Interstate Commerce Commission, April 1974) by the total revenue ton miles carried by the line (U.S. Interstate Commerce Commission, "Transport Statistics in the United States," part 1, 1971, pp. 142, 168, 194, 220, 246, 272, and 298).

(10) Telephone conversation with Mr. Harry N. Cook, National Waterways Conference, Inc., April 1974.

(11) A list of research results in the area is given in Table A1 of Appendix A. Dr. Hirst's revised results (Ref. (2), Appendix A) were chosen here since:

(a) Dr. Hirst's and Dr. Mooz's research are independent national average estimates of total actual fuel consumption and traffic.

(b) Although both used the same fuel consumption estimates, there appears to be some double counting of barge ton miles in Dr. Mooz's results (see Ref. (2), p. 38).

(c) Of the two, Dr. Hirst's results are the most recent and apply to the year of this study (1971).

(12) Telephone conversation with Mr. George Anderson, Western Railroad Traffic Association, Chicago, Illinois, April 1974.

(13) Letter from Mr. Harry N. Cook, Executive Vice-President, National Waterways Conference, Inc. to Dr. Eric Hirst, FEO, March 7, 1974.

11

APPENDIX A. Barge Freight Energy Intensity

Without any doubt, the most uncertain piece of data in the entire area of Barge vs. Rail energy efficiencies is that of barge fuel consumption. The research results given in Table A1 indicate the uncertainty involved.

The commonly held opinion is that more data must be collected. Although the information in existing data has been fully extracted and been found to be insufficient, gathering new fuel data compatible with a ton mile weighting similar to the approach used in this paper is not a trivial task due to the large number (1800 on the Gulf-Mississippi system) of mostly unregulated barge lines which must be queried.

TABLE A1

RESULTS OF RESEARCH ON WATERWAY ENERGY INTENSITY (Btu/Tm)

Author and Applicable Data Year	Btu/tm	
Hirst[1], 1970	680	
Hirst[2], 1971	570	
Mooz[3], ca. 1968	500	
Mooz[4], 1970	512	
Brinegar[5], 1973	462	
National Petroleum Council[6], 1973	510	
National Waterways Conference, Inc.[7], 1968	415	(Lowest Sample 217 Btu/Tm)

Notes:

(a) These figures do not include circuity and should be compared with the rail result from Table 1 of the main report (after correction) which is 463 to 515 Btu/Tm.

(b) The Western Railroad Traffic Association has published[8] results of 10,000 net ton coal train movements which range from 164 Btu/Tm (level track) to 260 Btu/Tm (significant grade) after correction for barge circuity. These figures are most logically comparable with the National Waterways Conference data given above.

References--Appendix A

(1) Oak Ridge National Laboratory, Report No. ORNL-NSF-EP-44.
Domestic (including coastwide, barge, and lakewise) national average
Fuel source: Ref. (3)
Ton mi source: Transportation Association of America, "Transportation Facts and Trends."

(2) Telephone conversation with Dr. Hirst.
Domestic (including coastwise, lakewise and barge) national average
Fuel source: James J. Mutch, Rand Corporation Document R1391-NSF, December 1973.
Ton mi source: Transportation Association of America, "Transportation Facts and Trends."

(3) "The Effect of Fuel Price Increases upon the Energy Intensiveness of Freight Transport," Rand Corporation Report R-804-NSF.
Domestic (including coastwise, barge and lakewise)
Fuel source: U.S. Bureau of Mines, "Minerals Yearbook" and "Mineral Industry Surveys--Crude Petroleum, Petroleum Products and Natural Gas Liquids."
Ton mi source: Interstate Commerce Commission and American Waterways Operators, Inc.

(4) An update of (3) based on 1970 actuals. Letter to J. Feeney from Dr. Wm. E. Mooz, August 8, 1973.

(5) Statement by Claude S. Brinegar, Secretary of Transportation, Before the House Appropriations Subcommittee on Transportation, March 5, 1974. Includes "Freight Transportation by Water."
Fuel and ton mi source: Department of Interior estimates.

(6) "Interim Report Phase I, Transportation Task Group of the National Petroleum Council's Committee on Energy Conservation.
Tug and barge operators only.
Fuel source: Estimate based on propulsion efficiency, annual HP hours of propulsion and fuel efficiency.
Ton mi source: Not given in the interim report.

(7) "A Waterways Fuel Tax: Measurements of the Menace," Washington, D.C., May 1970. Based on a 32.4 precent sample survey of inland waterway carriers conducted by National Waterways Conference, Inc. in 1969. Includes tug and barge operators only.

(8) Telephone conversation with Mr. George Anderson, Western Railroad Traffic Association, Chicago, Illinois, April 1974.

APPENDIX B. Derivation of Total Energy Efficiencies

A reasonable way of estimating total energy impacts of transportation is by the use of a Leontief Input Output inverse matrix, whose elements $(I - A)^{-1}_{ij}$ by definition are the total (direct and indirect) output ($) of industry i needed per dollar of output of industry j. These matrix elements can easily be converted to energy units.

The basic method* and 1963 results for the rail industry are given in reference (1). The same document also extrapolates 1963 data to 1971 but due to a difference in the groundrules of comparison, the 1971 results in Table 1b of (1) are not applicable here. Only the method (Section IIB) is useful.

1971 total rail freight EI, X, can be estimated via the product:

$$X = A \cdot B \cdot C$$

where

A = locomotive and switching fuel used per ton mi in 1971.

B = ratio of total refined petroleum used per ton mile in 1963 to the locomotive and switching fuel used per ton mi in 1963.

C = ratio of direct energy used per ton mi by the railroads in 1963 to the refined petroleum per ton mi used by the railroads in 1963.

D = ratio of the total (direct and indirect) energy per ton mi used by the railroads in 1963 to the direct energy used by the railroads in 1963.

Backup data for (1) gives the following values:

---

*Including a correction for capital purchases such as rolling stock.

B = 1.084

C = 1.129

Table 1a of (1) gives the value of D:

D = 1.70

Table 1 of the present report gives the value of A:

A = 711 Btu/ton mi

Therefore, 1971 total rail freight EI is given by

639 Btu/ton mi × 1.084 × 1.129 × 1.70 = 1330 Btu/ton mi

If the same values for B, C, D are assumed valid for the barge case, 1971 total barge freight EI is given by

785 Btu/ton mi × 1.084 × 1.129 × 1.70 = 1663 Btu/ton mi

Note that these total energies add nothing to the comparison between rail and barge, they simply estimate how much total energy is spent per ton mi in each case.

References--Appendix B

(1) Anthony Sebald and Robert Herendeen, "The Direct and Indirect Dollar, Energy and Employment Impacts of Air, Rail and Automobile Passenger Transportation," Energy Research Group, Center for Advanced Computation, University of Illinois, Urbana, Illinois, October 1973.

CoaLiquid, Inc.

737 Executive Park
Louisville, Kentucky 40207
(502) 893-0106

August 1, 1980

Honorable John C. Stennis
Russell Senate Office Building
Room 205
Washington, D. C. 20510

Dear Mr. Chairman:

CoaLiquid, Inc. is a Kentucky Corporation engaged in the manufacture of a mixture of pulverized coal and fuel oil (called COM by many), which it sells to utilities and industrial users of residual fuel oil as an alternative fuel. Coal-oil mixtures have been included as a synthetic fuel in all recent federal legislation, and many see COM as the only viable near term option to convert major oil users at least partially to coal. A company affiliated with us recently received a nearly one million dollar loan under the Alternative Fuels Production Program offered by the United States DoE, to construct a plant in Jacksonville, Florida. As President of CoaLiquid, I have been quite active in assisting the start-up of the operation in Florida.

For major oil users in Florida and the southeast generally to convert to coal or to a coal-oil mixture, there must be an economic incentive. Most industrial prospects must see a fuel savings of sufficient amounts to allow them a 25 to 35% return on investment in the capital cost of converting from oil. This means that as a producer of a coal-oil mixture we must price our product at least 10 to 20% lower than residual oil on a BTU basis. Because the cost of transporting the coal from Eastern Kentucky and Tennessee by rail is in the excess of $18.00 per ton, we are not able to meet that reduced price and still operate our business at a profit. What begins as $30 to $35 per ton coal in Kentucky and Tennessee results in $50 per ton coal in Florida. Over one third the price paid for coal in Florida is for transportation with the result that coal from South Africa and Australia is able to effectively compete with Kentucky coal in the state of Florida. That is unthinkable in a time when national interests are rooted in increasing domestic energy production.

CoaLiquid, Inc.

The transportation option of routing coal by rail to Norfolk or Louisville, then by barge to Florida results in virtually the same transportation cost due principally to the rail cost component. I do not blame the railroads for they are but victims of their need for capital to sustain even current levels of service.

As a solution offered, the Tennessee-Tombigbee Waterway is the only reasonable alternative. When complete, the Tenn-Tom will shorten the route from the Kentucky coal fields to Florida by nearly 800 miles and virtually cut in half the cost of transportation. Current DoE estimates are that coal-oil mixtures will soon replace 600,000 barrels of residual oil requirements per day. This will require 25,000,000 tons of coal per year which must be moved to the southeast and to the northeast from Tennessee, Kentucky and Virginia, even ignoring those utilities and industries that convert to coal.

As recent as December of 1979, the President's Commission on Coal issued its report which noted that the Powerplant and Industrial Fuel Use Act, the Energy Security Act, and the proposed Oil Backout Bill would generate demand for 357.8 million tons of coal by 1995. For this to occur, economical and competitive transportation rates must exist.

The Tenn-Tom will not be a one-way carrier of coal. Northern Florida and Southern Georgia is an area dotted by phosphate mines producing for agriculture and industry, as well as one of the most concentrated areas of paper manufacturing. Barges moving coal into the southeast can return to the midwest carrying such products.

Construction of the Tenn-Tom does not eliminate the need for an improving rail system, but instead provides another element in what will be an economical and efficient intermodal transportation system.

CoaLiquid sincerely adds its support to the dozens of companies who have already endorsed the Tenn-Tom. We could not have foreseen those 30 odd years ago when the Tenn-Tom was first authorized that it would become an energy lifeline, but that it has and will become.

Yours truly,

G. T. Hawkins
President

bak

ENVIRONMENTAL POLICY CENTER
317 Pennsylvania Ave., S.E., Washington, D.C. 20003
202/547-6500

AUGUST 12, 1980

WRITTEN TESTIMONY REGARDING
INCREASED COAL PRODUCTION ON THE
TENNESSEE-TOMBIGBEE WATERWAY
BEFORE THE SENATE SUBCOMMITTEE
ON WATER RESOURCES

The potential for America to become the Saudi Arabia of coal production and export is a much discussed topic today. Uncertainties exist over the amount of coal that will be exported, and over the modes of transport between the coalfields and our ports. With respect to the use of our ports and inland waterways for coal export, the Environmental Policy Center believes the following points should be considered in the decision-making process.

67-591 O—80——30

ENERGY: RAIL VS. BARGE

The Corps of Engineers and the barge lobby argue that barges are more energy efficient than railroads. This does not appear to be the case, however, when rail movements which compete with barge traffic are compared. For example, coal moving on the rails moves in unit trains which are considerably more energy efficient than normal mixed trains. Unit trains in fact have a slight energy advantage over barges. The University of Illinois Center for Advanced Computation studied this question and concluded that rail had a slight energy advantage over barges. Attached is a copy of this study. The Congressional Budget Office in its review of the question found that there were numerous studies alleging the advantage of one mode over the other in regard to energy. CBO concluded that it was difficult to make a conclusive statement on the matter.

INCREASED INLAND NAVIGATION CAN POSE SERIOUS THREATS TO RIVERS

Expansion of barge traffic threatens to turn some multi-purpose rivers into superhighways for barges. General Heiburg failed to describe the serious negative impacts of inland navigation projects on fish and wildlife resources when he discussed the interaction of navigation with other uses. Some of the damage caused by navigation projects include disruption of bottom habitat and loss of diversity in aquatic species, elimination of wildlife habitat along the river, loss of wetlands, streambank erosion, deterioration of water quality and damage to the water table.

Projects like the Tennessee-Tombigbee Waterway exhibit the full range of these adverse effects. We are concerned that expanded coal exports could lead to environmentally damaging new canal projects and to such large increases in

traffic on existing waterways that recreational wildlife uses will suffer dramatically.

SUBSIDY FLOWS TO FOREIGN COUNTRIES

The U.S. taxpayer will end up subsidizing European consumers of coal unless user fees to recover full capital and maintenance costs of waterways are instituted. A prime reason for expanding coal exports is to help our balance of payments. But if we do not force coal exports moving on our inland waterway system to pay full costs, then we are providing foreign countries with a subsidy, thus undercutting the objective of improving our balance of payments.

Until the inland waterway system pays its own way, the Environmental Policy Center objects to more capital improvements in waterways.

PROPOSED HARBOR DEEPENINGS POSE SERIOUS THREATS

General Heiburg noted the issue of harbor depths in his testimony. In the pending rivers and harbor bill there are numerous provisions to increase harbor depths. We raise the following concerns and urge the Committee to examine each before proceeding with harbor depth increases:

1) Greater harbor depths go hand-in-hand with bigger cargo vessels which in turn can mean fewer jobs and can make existing fleets obsolete.

2) Serious problems already exist over the availability of sites for dredge spoil disposal. In the Baltimore Harbor a major controversy exists over the availability of disposal sites and the attempt to put dredge spoil into unpolluted areas of the Chesapeake Bay in the Hart-Miller Island area. Greater harbor depths will create even

more massive problems and environmental damage.

The Environmental Policy Center would like to see a halt to the race to its becoming the deepest port in the East. We support the goal of maintaining port jobs and preserving the useful life of existing fleets both of which we feel would be jeopardized by harbor expansion.

INLAND WATERWAYS AND NATIONAL DEFENSE

General Heiburg cited in his testimony the national defense advantages of inland waterways. The Environmental Policy Center believes that his remarks are 180 degrees off the mark.

Far from benefiting our national defense, the creation of shipping dependence on inland waterways subjects vast quantities of cargo to a mode that is the most vulnerable to sabotage and Acts of God and that could be most easily closed down in time of war with little hope of speedy repair. Railroads, on the other hand, have a vast network of track, and damage can be quickly repaired. If subsidies to the barge mode make it so attractive that shippers leave the rails, then will there be sufficient rail cars to handle the traffic should the waterways be closed in a defense or emergency situation.

STATEMENT OF: WM. T. JOHNSTON
PRESIDENT
NATIONAL DUMP TRANSPORT INDUSTRY ASSOCIATION
RANDOLPH, OHIO

DANIEL PATRICK MOYNIHAN, CHAIRMAN OF THE WATER RESOURCES SUBCOMMITTEE OF THE SENATE COMMITTEE ON ENVIRONMENTAL AND PUBLIC WORKS

JULY 21, 1980

ENERGY AND INFLATION "COMBAT" WITH WATER TRANSPORTATION

SERVICED BY THE TRUCKING INDUSTRY

We represent a major industry whose services are related to energy. One of our main commodities hauled in semi dump trailers is coal. Our coal here in Ohio is of a high sulfur content. What we need is to get this coal to market, utilize the "Blending" process, and help with balance of world trade by exporting. In order for this to be feasible, we need water transportation to the Gulf from the Appalachian area.

The Tennessee Tombigbee Waterway is the solution to our problem, with one exception, the time element. We need the completion date to be as soon as possible and priorities put in their proper perspective.

The National Dump Transport Industry Association (DTIA) held a meeting on February 6, 1980, with Ohio Valley Improvement Association, Inc. (OVIA), Midland Enterprises Inc., and Cravat Coal Company. Basically, we discussed this very problem and we all are in agreement, the completion of the "Tennessee Tombigvee Waterway" CAN'T BE SOON ENOUGH.

There are many port developments along the Tennessee Tombigbee Waterway, here I would like to state some facts on one of these ports, the Gateway to the

Waterway, the Port of Lyon County, Eddyville, Kentucky.

We will base this on truck hauls per working day.

Commodities;

Coal - 670 loads, 25 ton per load.

Grain - 20 loads, 15 ton per load.

Stone - 12 loads, 20 ton per load.

Fertilizer - 7 loads, 20 ton per load.

Agricultural Lime - 1000,000 tons per year.

Our industry feels honored to service a feasible means of transportation such as water, but all modes of transportation are needed. We have to learn and want to work together to accomplish the complete network of transportation.

Wm. T. Johnston

WM. T. JOHNSTON
President
National DTIA

Founded 1895

OHIO VALLEY IMPROVEMENT ASSOCIATION, INC.

401 Carew Tower, Cincinnati, Ohio 45202

July 24, 1980

Honorable Daniel P. Moynihan
Chairman
Subcommittee on Water Resources
Senate Committee on Environment and
Public Works
United States Senate
442 Dirksen Senate Office Building
Washington, D.C. 20510

RE: Gallipolis Locks and Dam
Modification, Ohio River
(Ohio and West Virginia)

Dear Mr. Chairman:

We enclose with the request that they be incorporated in the record of the hearings held by your Subcommittee during the weeks of July 21 and July 28, 1980, the following statements:

(1) My statement of July 22, 1980 emphasizing the vital importance of the Gallipolis modification as a key element in the transportation of coal;

(2) A copy of a statement presented on April 2, 1980 by this Association's Economic Consultant, Marvin J. Barloon, Carlton Professor of Economics (Emeritus) Case Western Reserve University, Cleveland, Ohio, to the Energy and Water Development Subcommittee of the House and Senate Appropriations Committees concerning the urgent need for expeditious authorization and funding of the Gallipolis modification, and

(3) A position paper in support of the Gallipolis Modernization Project published by the Propeller Club of the United States.

Statements and communications heretofore submitted to your Subcommittee have strongly supported authorization of construction of the Gallipolis Modification this year in order to permit a saving of fully two years in the time required for completion of this project.

Such action would permit appropriation of advance engineering and design funds for Fiscal 1982 which would presumably be available late in calendar 1981. This process could be carried out concurrently with the remaining work on Phase I studies, with no significant risk of improvident expenditure of public funds in view of the high benefit/cost ratios estimated for this project. Advance engineering and design work is projected to require about two years so that construction could begin in calendar 1983. Thus under this procedure the project could be in service by 1990, assuming a seven year construction period in line with experience on other Ohio River modernization projects.

If, however, authorization of construction is deferred until all Phase I work is completed, the clear outlook is for completion of the project in 1992 or 1993. If water resource legislation is not enacted this year or in 1981 prior to completion of Phase I work on the Gallipolis project, then based upon recent Congressional experience such an authorization bill could hardly be expected until 1983 or 1984 when advance engineering and design could start, subject to appropriation of funds. Construction then could not begin until 1985 or 1986 with completion on a realistic seven year schedule in 1992 or 1993.

By that time, according to independent studies prepared for the Corps of Engineers, one by Consad Research Corporation of Pittsburgh and the other by Batelle Columbus Laboratories, traffic seeking access to the locks would substantially exceed 70 million tons (the volume projected by these studies for 1990). This would mean interminable traffic delays constituting a permanent barrier to further traffic growth and the loss of important present commodity movements. This would be a pervasively depressive influence on the economy of the Ohio River Basin with severe repercussions extending to the Lower Mississippi and the Gulf Coast as well as the Northeast Quadrant of the United States. The Lower Mississippi and Gulf Coast areas are major sources of petrochemical feedstocks and petroleum products for the Upper Ohio River Basin. The great concentration of electric power production in the Upper Ohio Valley, which is an important source of peaking power for the Northeast Quadrant, is largely dependent upon Gallipolis for access to coal.

As your Subcommittee is doubtless aware, the Huntington District Engineer has tentatively proposed that the project modification as described in the House-passed Water Resource Development Act of 1980 (H.R. 4788), be amended to incorporate a 600 foot lock in conjunction with the 1200 foot lock in the navigable by-pass.

Letter to the Honorable Daniel P. Moynihan
July 24, 1980

Page Three

Whether this will be the final recommendation of the Secretary of the Army is, of course, uncertain. In any event the time factors are such that authorization of any formulation differing substantially from the House-passed version could not be effected prior to adjournment scheduled for October 3, 1980.

Accordingly, we strongly recommend that the Senate concur in the House-passed version except (if the Senate deems it advisable), as to the reporting requirement which we proposed with our statement submitted to the Subcommittee in June 1979, which we believe Conferees on the House would readily agree to. A copy of an amendment setting forth our conception of such a requirement is attached for convenient reference. This we believe would provide for retention of legislation control necessary to assure conformity of the project with Congressional intent and at the same time eliminate the two-phase procedure which in this case would result in enormous economic waste.

The question of modification of the project as it is described in the House bill can be left for future Congressional determination.

The national importance of this project in relation to attainment of energy security demands expeditious progress. It is to coal what Locks and Dam 26 on the Mississippi is to grain and soybeans.

It is noteworthy in this connection that the Ohio River Basin commission, having previously assigned a No. 1 priority to this project, has in its 1979 Annual Report renewed its support as follows:

> "The most critical development project recommended was the replacement of obsolete locks at Gallipolis on the Ohio River, since this is now the major bottleneck on the otherwise modernized Ohio River navigation system" (p.15).

We respectfully submit that the highest considerations of public interest require modernization of this project at the earliest possible date consistent with orderly and economical progress.

Cordially,

William J. Hull

William J. Hull, Chairman
OVIA Legislative Committee

WJH:pc
Enclosure

STATEMENT OF MARVIN J. BARLOON

CONSULTING ECONOMIST TO THE OHIO VALLEY IMPROVEMENT ASSOCIATION, INC.

BEFORE THE PUBLIC WORKS SUBCOMMITTEES

OF THE HOUSE AND SENATE APPROPRIATIONS COMMITTEES

THE GALLIPOLIS, OHIO, LOCKS-AND-DAM MODIFICATION PROJECT, OHIO RIVER

April 2, 1980

Mr. Chairman and Members of the Subcommittee:

My name is Marvin J. Barloon. I am Carlton Professor of Economics, Emeritus, at Case Western Reserve University in Cleveland, Ohio, where for many years I have been in charge of research and instruction in the economics of transportation, with special attention to transportation by water. I have served as consulting economist to The Ohio Valley Improvement Association since 1954.

The officers of the Association have asked me to report to you today on two matters in support of their recommendation that funds be provided in fiscal 1981 for advanced engineering and design work (AE&D) at the locks-and-dam modification project at Gallipolis, Ohio, on the Ohio River, Ohio and West Virginia. The first is the massive cost which would impact upon the economy at the end of the 1980's in consequence of any deferral of funding at the present time. The second is the circumstance that the funding of construction at Gallipolis, beginning in fiscal 1983, will be harmonious with the stringent budgetary imperatives which may confront the Congress during the 1980's.

By way of perspective, the Gallipolis project is conceived to provide critically needed capacity of modern design for water transportation serving the highly industrialized tri-state area of the upper Ohio Basin,

encompassing all of western Pennsylvania, including the Pittsburgh metropolitan area, most of West Virginia, and eastern Ohio. The principal affected industries are coal mining, electric energy, petroleum refining, iron and steel and chemicals. Because of the long hauls involved, a widely-dispersed impact also extends throughout the Ohio and Mississippi Valleys and the Gulf Coast.

I. ECONOMIC IMPACT OF DEFERRAL OF RECOMMENDED FISCAL 1981 FUNDING

Because of the long lead time for planning and construction, any decision made today with respect to the Gallipolis project will impact with full force probably between 1989 and 1991 when completion may be expected. Initial planning is now under way and is scheduled for submission towards the end of 1980. Advanced engineering and design work will require an additional two years, so that the earliest time when construction can begin will be 1983. Thereafter, at the full capability of the Army Corps of Engineers and under ideal conditions, construction work will require at least five years. This would suggest a theoretical completion date of about January, 1988.

However, this theoretical date will almost certainly not be met because the ideal conditions it assumes are most unlikely to be realized. Unforeseeable impediments during construction include labor difficulties, shortages of essential materials and components, exceptionally bad weather, shortfalls in contractor performance, and unexpected hydrological and geological problems. Over the past 25 years, few, if any, of the new navigation works on the Ohio River have been completed within the time originally scheduled. Delays during construction have typically fallen in the range of three to seven years. As a practical matter, therefore, and on reasonably optimistic assumptions, our concern is with earliest completion

of the Gallipolis project, not in January, 1988, but more probably along about 1990. For purposes of discussion, therefore, I shall assume a 10-year lead time looking towards completion at the earliest at the beginning of 1990. Please note that this assumes expeditious progress at the full capability of the Corps of Engineers and no shortfalls in funding.

Inevitability of Costly Congestion Prior to 1990

Between now and 1990 little can be done to relieve the existing traffic congestion at Gallipolis. Special traffic expediting procedures, such as carrier self-help measures and synchronized scheduling of transits, alleviate the problem, but only moderately and temporarily. The limitations of such measures have been demonstrated at Locks No. 26 on the Mississippi River where, with their full application, traffic delays at the main lock in 1977 averaged 10.2 hours per tow transit. With a rapid and continuing increase in traffic demand, such delay times will become progressively longer until the projected works are completed.

Therefore, your decision at this time on the funding of AE&D for fiscal 1981 is not one to be directed at the relief of present congestion at Gallipolis or of that between now and completion of the project. Instead, assuming authorization this year, your 1981 funding decision is whether the project is to be completed as soon as possible, under orderly and expeditious procedures, or one year later than possible. Therefore, I shall address myself to the costs of congestion at Gallipolis during that one year of possible initial service of the projected new lock, using the year 1990 as a benchmark.

Estimated Cost of Congestion at Gallipolis in 1990

During the year 1990, the non-availability of the projected new lock

would be immensely costly to the shipping and receiving industries. Of course, no precise forecast of this cost can be made. However, I hope it will be useful to your Committee to have a picture of its general magnitude. I estimate the cost to the economy of congestion at the present Gallipolis locks during the single year 1990 to fall in the broad range of $238 million to $315 million. The difference between these figures represents alternative assumptions as to the rate of inflation.

Assumptions as to Inflation. The smaller figure ($238 million) assumes an inflation rate during the 1980's of only 6 percent per year; the larger ($315 million) a rate of 9 percent per year. Both estimates are derived from my calculation of the cost of congestion at Gallipolis in 1990, when stated in dollars of 1979 purchasing power, of $133 million.

At the beginning of the 1980's, inflation is running at an annual rate of 18 percent. No one can now foresee how successful national policy may be in bringing this down. For the lower of my two estimates, I have assumed a reduction by 2/3 to 6 percent annually; for the higher a reduction of only 1/2 to 9 percent. It is clear, then, that a deferral of only one year in the Gallipolis AE&D work contemplated for fiscal 1981 would cost the American economy in 1990 probably in the range of $238 to $315 million, stated in 1990 dollars.

The CONSAD and Battelle Projections of 1990 Traffic Demand. This estimate has been derived from studies of traffic trends and severity of congestion prepared under the auspices of the Huntington, West Virginia, District of the Army Corps of Engineers. Traffic has been expanding at Gallipolis for many years. In 1955, the Gallipolis locks transited 14.6 million tons of freight; in 1965, 23.1 million; and in 1977, 37.2 million. This long-term growth is now accelerating. In January, 1979, the CONSAD Research Corporation of Pittsburgh, under contract with the Department of

the Army, submitted a report to the Huntington District projecting the 1990 traffic demand at 70.9 million tons.

The CONSAD projection has been confirmed very convincingly. In September, 1979, the Battelle Columbus Laboratories, likewise under contract with the Department of the Army, submitted a report projecting a 1990 traffic demand at Gallipolis of 70.2 million tons, virtually the same as the CONSAD projection. These were both very thorough, in-depth studies. Each projection was developed independently of the other and from an entirely different analytical data base. Their close correspondence, therefore, communicates a high degree of reliability.

Prospective Average Delay of 30.4 Hours per Tow. Under the pressures of a 1990 traffic demand at Gallipolis of 70.9 million tons seeking transit, it may be estimated that the average delay per tow of barges will approximate 30.4 hours. This estimate is derived from experience at Locks No. 26 on the Mississippi River. Both Locks No. 26 and the Gallipolis locks are dual locks, and lock dimensions are the same as between the two sites. In 1977, the tonnage transited at Locks No. 26 was 58.4 million, approximating that projected for Gallipolis in 1985 (56.3 million). Average delay time at the main lock No. 26 in 1977 was 10.2 hours. Therefore, I assumed the same average delay time at Gallipolis in 1985 when the projected tonnage will approximate that at Locks No. 26 in 1977.

This is a very conservative assumption. In spite of the approximate equivalence in tonnage, congestion at Gallipolis in 1985 will probably be substantially worse than that at Locks No. 26 in 1977. Much of the traffic at Gallipolis is one-way movement, requiring the lockage of large numbers of empty barges returning to shipping origins. In 1977, 76.9 percent

of all the tonnage which transited the Gallipolis locks was upbound. The upbound and downbound loaded transits at Locks No. 26 are much more evenly balanced. Furthermore, the hazardous approach conditions at Gallipolis block access to either of the locks while vessels are entering or leaving the other, retarding movement and adding to delays.

Records maintained by the Army Corps of Engineers at congested locks have established the relationship between the rising tonnage of traffic demand and the increase in delay times. From 1985 to 1990, traffic demand at Gallipolis is projected to rise from 56.3 million to 70.9 million tons. In this interval of traffic expansion, delays increase about 7.65 percent for each one percent increase in tonnage. On the basis of this observed ratio, it is estimated that the average delay for access to the present Gallipolis locks in 1990 would amount to 30.4 hours per tow transit.

Costs per Hour of Tow Delay. The costs of lockage congestion fall into two categories: (1) the higher cost of waterway carriage and (2) the cost impact on in-plant operations of shipping and receiving industries. As for the first of these, the costs of carriage are raised by immobilization of tows of barges delayed for hours awaiting lock access. While so immobilized, these vessels incur the costs of fuel, labor, crew subsistence, and overhead--costs which are totally unproductive during the waiting period. In-plant costs to shippers and receivers are those consequent on interrupted operations, overtime and other emergency provision for disturbed production schedules, lost sales, and substantially higher inventory costs.

Apart from highly localized or specialized operations, costs of operating a tow of barges on the Ohio River are reported in the general range of $150 to $275 per hour, with $225 per hour as a general average. Costs of delays to shippers and receivers vary widely as between industries and

as to duration and frequency of delays. One large industry, however, reports a cost, including both the barging operation and in-plant costs, of $350 per hour of tow delay.

While estimates of aggregate cost of congestion at Gallipolis derived from these figures are necessarily approximations, they communicate very forcibly the large magnitude of these costs to the American economy. At $350 per hour (in 1979 dollars), the 1990 delay of 30.4 hours would represent an economic waste of $10,640 for each transit. With 12,507 transits projected for 1990, the total cost would thus amount to $133 million, still in 1979 dollars, and to which I have applied the inflation expectations.

The Potential of Traffic Demand in Excess of Physical Capacity

My estimates of a 1990 congestion cost at Gallipolis in the range of $238 to $315 million, in 1990 dollars, may well understate the urgency of prompt action towards completion of the projected modification. There is a reasonable probability that traffic demand in 1990 will exceed the absolute physical capacity of the present locks. A two-week record kept by the Huntington District of the Corps in 1967 found that the average lockage time at the Gallipolis main lock was 74.6 minutes, a mix of shorter-time single lockages and longer-time doubles. With the increase in the size of tows the percentage of double to single lockages may be expected to rise by 1990. The 74.6 minutes is therefore conservative.

If, in 1990, the distribution of lockages as between the main lock and the auxiliary lock were to be the same as at the time of the Corps' study, and at an equivalent tonnage per tow, 9,943 tows of barges would have to be locked through the main lock. At 74.6 minutes per transit, this would require a total of 12,362 hours during the year. Inasmuch

as there are only 8,760 actual clock hours within a 365-day year, this is an obvious impossibility. The traffic demand would exceed the physical capacity of the main lock by 41 percent.

The auxiliary lock could provide some relief. Its dimensions, however, are so limited that, for many tows, each tow would have to be broken into four or five lockage units, with the time for each transit of a complete tow extending up to some four hours or more. Any spare capacity in the auxiliary would thus be quickly exhausted. Much depends on the ratio of loaded to empty barges and on the number of double lockages in 1990. It will be a close call, at best, and not improbably a crisis.

Impact of Traffic Demand in Excess of Physical Capacity. When the traffic demand exceeds the absolute physical capacity of a lock, the period of waiting for lock access lengthens very rapidly so as to constitute in a short time a total barrier to incremental traffic. Experience in 1978 at Lock No. 50 on the Ohio River demonstrates this consequence. This lock, of the same dimensions as the main Gallipolis lock, is now on the threshold of replacement by a completed project. Dam No. 50 is a wicket dam and so is operational only at low-water stages. When low water required the raising of the dam on September 5, 1978, a queue of barge tows began to form immediately. After four days, the average waiting time per tow had grown to 10 hours. After ten days, it had grown to 40 hours. Only the return of high water ended the ever-lengthening queue.

The Gallipolis dam, however, is a fixed dam so that, should a corresponding situation develop in 1990, no such relief would be available. In effect, the critical element of low-cost water transportation would be removed from the economy of the upper Ohio River Basin. For most of the

67-591 O—80——31

traffic no feasible alternative routings are available. Considering that most of the region's industry, notably iron and steel, chemicals, oil refining, coal mining, and electric energy, rests on a logistical base of water transportation, the adverse impact on production and employment would be of major magnitude.

Unemployment, Inflation, and Impaired Energy Supply

My estimates of 1990 congestion costs at Gallipolis in the range of $238 to $315 million and the associated potential for exhaustion of the capacity of the present locks may be converted into the impact on human values and national policy objectives. The dollar sums represent unemployment, inflation, and serious impairment of energy supply.

Unemployment. Reduced production in the upper Ohio Basin would add to job losses, such as those already afflicting the Youngstown district and other industrial centers in the region. This is notably true of the basin steel industry. In 1977, over 1.4 million tons of steel transited the Gallipolis locks, much of it consigned to western and southern markets in competition with steel imports. This steel, including high-valued pipe and tubing, had a mill value of about $476 million and represented the production of many thousands of workers in steel and steel-related industries. These jobs are also dependent on millions of tons of metallurgical coal transited annually at Gallipolis. Employment in chemicals, coal mining, and other industries would be similarly involved.

Inflation. Higher costs and charges would be widely diffused throughout the Northeastern Quadrant of the United States. Electricity generated from Gallipolis coal transits is distributed by high-voltage transmission lines throughout much of the region. Something approaching one-half of all the gasoline consumed in the State of West Virginia and a large portion

of that received in eastern Ohio and western Pennsylvania arrives in the area via the Gallipolis locks. Prices of fuel oil and other petroleum products would be similarly affected.

The products of the Kanawha and upper Ohio Valley chemicals industry are widely distributed to innumerable industries and consumer markets throughout the adjoining states. These products include medicinal ingredients, plastics, food wrappings and other containers, synthetic fibers, and numerous other products. They are produced from crude chemicals and feed stocks, a large portion of which transit the Gallipolis locks from southern and western origins.

Energy. Probably the most critical concern is the availability of domestic bituminous coal as a secure energy supply. The CONSAD Research Corporation reports 53.4 percent of the projected all-commodity tonnage increase via Gallipolis from 1976 to 1990 as consisting of bituminous coal. CONSAD projects 1990 transits of coal at 37,664,000 tons.

As a measure of the importance of the Gallipolis coal movement, it may be noted that the President has stated as a national goal the maximum importation of crude oil at the 1977 level which amounted to 8.7 million barrels a day. The 37,664,000 tons of coal projected to transit Gallipolis in 1990 will contain the energy equivalent of 170 million barrels of crude oil, equal to about three weeks of imports for the nation as a whole, a substantial contribution to be at stake in a single lockage structure.

In addition, the outlook for coal liquefaction foreshadows a very substantial potential volume of waterborne coal movements from the mining areas of the central and upper Ohio Basin to liquefaction plants and of the waterborne distribution of liquid products, a large portion of which would require transit via the Gallipolis locks.

Hazardous Siting of the Present Locks

In addition to the costs of congestion, relief is badly needed at Gallipolis for the hazardous conditions of approach to the present locks. At medium-high and high water stages, when the current is swift, the risk of serious accident is unacceptably high, and rising traffic demand associated with congestion will substantially raise the exposure to this risk. The design of the additional lock installation now projected corrects these hazardous circumstances.

In addition to the removal of this risk to human life and to property, the hazard of a long-term closure of both of the present locks will be averted. When one of the two locks at Gallipolis is closed for maintenance, there is danger that an accident may put the other out of service for the duration of repairs and restoration. Repairs would often require closure for a period of several weeks, or even of months, during which time all water transportation serving the upper Ohio Basin would be suspended. For most of the essential fuels and materials transited at Gallipolis, no economic alternative sources of supply or transportation routings are available.

Impact of Inflation on the Cost of Construction

An additional reason for avoidance of delay is the continuing rise in construction costs. At 1973 cost levels, the Army Corps of Engineers reported a prospective construction cost for the Gallipolis bypass canal with two 1,200-foot locks. An analysis of the detail of this estimate reveals that, with only the one 1,200-foot lock now incorporated in the design, this 1973 cost estimate amounted to about $90.0 million. At 1978 cost

levels, the estimate for essentially the same design had risen to $190 million, an increase at the rate of $20 million per year. With a virtual certainty of continued inflation, this is a reasonable indicator of the predictable yearly cost increment to the Federal outlay which would be consequent on avoidable delay.

Summary as to Costs of Delay

Assuming authorization in 1980 of AE&D and construction at Gallipolis, a year's deferral in funding at this time would mean the loss of one year in the otherwise possible completion of the project at the end of the decade. The public benefits thereby lost would amount in value to something in the range of $238 to $315 million, with a seriously adverse impact on employment and inflation, in addition to a substantial setback in the national program of energy sufficiency and security. Inflation in the costs of construction would constitute an additional penalty for this delay.

II. REDUCTION OF FEDERAL OUTLAYS

In the context of the current program of counter-inflationary budgetary retrenchment, the recommended appropriations for the Gallipolis project fall into two time frames, one immediate and the other deferred. Between now and the end of fiscal 1982, progress at Gallipolis will have only an imperceptible effect on the over-all Federal budget. The recommended appropriation for AE&D for fiscal 1981 is only $500,000. For fiscal 1982, the appropriation for continued AE&D will likewise be only a marginal element in the total Federal budget. It is earnestly to be hoped, of course, that the present inflation will be well under control by the end of 1982.

The significant relevance of the Gallipolis project to budgetary retrenchment, therefore, will begin with the projected initiation of construction in the year 1983. Its role in the total Federal budget, however, will continue to be at a much lower level than the Ohio River program of previous years. As shown in Chart I, herewith, yearly Federal outlays for new construction on the Ohio River between 1965 and 1972 fell in the range of $44 million to $60 million. During the succeeding five years, from 1972 through 1976, they approximated $80 million. Since 1976, these expenditures have steadily declined to about $16 million in 1980. By the end of 1982, the Federal Government will be spending little or nothing on new construction on the Ohio River.

Impact After 1982

The deferred budgetary impact will occur with the construction start in 1983. The currently estimated cost of construction at Gallipolis is $190 million. Over a period of seven years, this will average about $27 million per year. This is only 43 percent of the average annual outlay on new work on the Ohio River during the 12 years, 1965 through 1976. A reduction of this magnitude represents, in itself, a very substantial budgetary retrenchment.

It should be noted further that the Federal outlays prior to 1976 were in dollars of much higher purchasing power. The estimated yearly outlay of $27 million at Gallipolis is in the inflated dollars of 1978. Were we to introduce an adjustment for inflation, the prospective reduction in Federal expenditures on the Ohio would be much greater.

Apart from the Gallipolis project, between 1983 and 1990, no additional new construction is programmed on the Ohio River. The rehabilitation of

Locks and Dam No. 3 on the Monongahela is scheduled for completion in 1981. Thereafter, additional work is programmed on other reaches of the Monongahela, in addition to one project on the Kanawha. On the main stream of the Ohio, the only new construction now foreseen is that of the three upstream navigation structures in the State of Pennsylvania and a permanent structure near the confluence with the Mississippi. These are now contemplated for completion by the year 2000, which means that most, and probably all, of the construction work will be under way during the 1990's, after the work at Gallipolis will have been completed. The $27 million per year, therefore, will be the totality of new work outlays on the main stream of the Ohio until the end of the 1980's.

Counter-Inflationary Role of Ohio River Navigation Works

The present Federal program of budgetary retrenchment is directed at the control of inflation. It should be emphasized that the construction of new navigation works on the Ohio River has proven a major counter-inflationary force, and the Gallipolis project is a keystone in this program. Since the 1950's, the Federal Government has completed 13 new navigation structures on the Ohio, and the 14th is now on the threshold of completion. By 1983, the entire system from the Pennsylvania border downstream to Gallipolis and from Gallipolis to the confluence with the Mississippi will have been modernized.

Since 1960, the volume of freight carried on the Ohio has more than doubled and new, high standards of carrier productivity have been achieved. This immense progress would have been totally impossible without the new navigation works. The industries basic to the economy of the Ohio Valley rest directly on a foundation of efficient water transportation. These

include substantial portions of the national establishment in iron and steel, chemicals, electric power, coal mining, aluminum reduction, and petroleum refining. In the year 1980, the contribution to the efficiency of these and related industries of the modernized navigation system of the Ohio is a significant counter-inflationary force. With the completion of the Smithland project near the mouth of the Ohio in 1981, the present Gallipolis works will remain the only bottleneck in the system between the Pennsylvania border and the Mississippi River. The completion of the Gallipolis modification will thus release the full potentials of the existing works downstream from Pennsylvania as a factor in national industrial productivity and inflation restraint. Construction work on the three present installations upstream from the Pennsylvania border during the 1990's will complete the entire system by the end of the century.

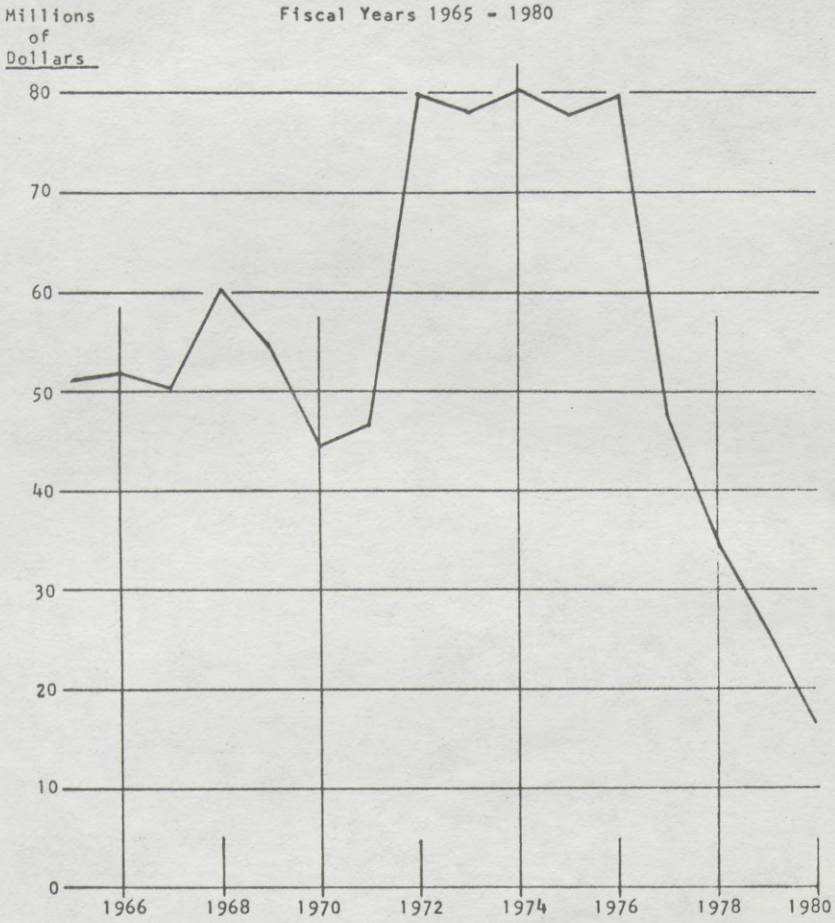
In sum, the post-1982 expenditures on construction at Gallipolis will represent a major reduction in the long-term Federal expenditures on navigation works on the Ohio River, and the project will prove a capstone to a system essential to the heightened and counter-inflationary efficiency of a substantial sector of the nation's industry.

CHART I.

FEDERAL EXPENDITURES ON NEW WORK

ON NAVIGATION PROJECTS ON THE MAIN STREAM OF THE OHIO RIVER

Fiscal Years 1965 - 1980



SOURCE: U. S. Dept. of the Army, Corps of Engineers.

TRANSPORTATION NEEDS OF INCREASED COAL PRODUCTION AND COMPLETION OF THE TENNESSEE-TOMBIGBEE WATERWAY

TUESDAY, JULY 29, 1980

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES
Washington, D.C.

The subcommittee met at 9:10 a.m., in room 4200, Dirksen Senate Office Building, Hon. Pete Domenici presiding.

Present: Senator Domenici.

Senator DOMENICI. General, I hope we can get some answers to things that are disturbing to me. I do want to tell you I appreciate your patience in waiting around. So, can we talk for the first few minutes about the potential traffic justifying this construction project?

STATEMENT OF GEN. E. R. HEIBERG III, DIRECTOR OF CIVIL WORKS, ACCOMPANIED BY ALEX SHWAIKO, CHIEF OF PLANNING, EDWARD COHN, ECONOMIST; AND RON ALLEN, COUNSEL

Senator DOMENICI. It appears to me that the Tennessee-Tombigbee project is marginally economic unless it produces somewhere around $100 million in navigation benefits very soon if not in the first year of operation which could be 1986. If I start with that assumption, am I pretty close to right?

General HEIBERG. Yes.

Senator DOMENICI. Could you tell me, with some specificity, how these $100 million in annual savings are going to be generated?

General HEIBERG. I might need a little help, sir.

Senator DOMENICI. Fine. I want to know things like what companies, what movements, what commodities, what costs to other shippers and other modes of transportation. This will take you all a while. Let's just get it on the record.

General HEIBERG. OK, sir. Let me first say that I had with me at the opening session of the Tennessee-Tombigbee panel Friday both Mr. Alex Shwaiko, my chief planner, and economist Ed Cohn. I also brought along this morning Mr. Ron Allen. As I mentioned to the chairman on Friday, there is a certain amount of caution we want to use with these hearings because we are still in litigation on many of these points. That is why we have the Chief of Engineer's counsel. Ron Allen is representing the chief counsel.

Senator DOMENICI. All right.

General HEIBERG. I would like to have my economist take a first crack at that, sir. Perhaps I can add to his comments.

Mr. COHN. What we do is conduct a traffic survey. What that amounts to is interviewing a number of potential shippers in order to see, first, what they are shipping today and, second, whether or not there is any potential that they might ship it by the waterway were it in existence at the time of the survey. In the case of the Tennessee-Tombigbee, potential shippers were surveyed to establish potential 1975 traffic and to help establish base year of 1986 traffic.

Once we have established that, in other words, what potential traffic movement there is based on interviews, we then conduct a rate study based on pervailing rates by different modes as well as by alternate water routes and by intermodal combinations to establish what the likely alternative cost is today and what the cost would be were the new waterway constructed.

And on the basis of that, we established a rate savings, a savings in shipment costs, in effect. That number, multiplied by the relevant tonnage, becomes the benefit in the existing year and in the base year. That is then projected into the future based upon standard projection techniques which involve using a larger area of projection, sone indicator of general economic activity, projections of, say, GNP into the future and assuming the traffic will flow at the same rate as that indicator.

For example, most of the indications used on the Tennessee-Tombigbee and in most of our studies are so-called OBERS indicators. They are published through the auspices of the Water Resources Council and are produced by the Office of Business Economics, now the Bureau of Economic Affairs, which is part of the Department of Commence, as well as the Economic Research Service, which is part of the Department of Agriculture, and these are standard projections for use in water resources published by the Water Resources Council pursuant to their statutory authority to do so.

They were dominantly the ones that were used on the Tennessee-Tombigbee and indeed most of our studies.

Senator DOMENICI. Let me just interrupt you for a minute.

Mr. COHN. Yes, sir.

Senator DOMENICI. As most of you know, certainly the General knows, I have been in and out of these hearings due to activities on the floor. Is it not the evidence that this project is going to handle only eight barge tows at most?

Mr. COHN. Yes, sir.

Senator DOMENICI. And that there is a series of 10 locks and that the river below Demopolis can handle only six barge tows?

Mr. COHN. Yes, sir.

Senator DOMENICI. And that it is only authorized for 9-foot depth?

Mr. COHN. That is right.

Senator DONENICI. And that at most it is 300 feet wide, at least in most places?

Mr. COHN. Yes, more or less.

Senator DOMENICI. And I would ask this question: What about the river below Demopolis to Mobile in your survey potential, was

it assumed to be what we know it to be now or was it assumed it was going to be improved upon? I mean, was it the jagged course?

Mr. COHN. Yes.

Senator DOMENICI. Now, all of these facts then, Mr. Cohn, I assume were presented to the potential shippers either specifically or in your accumulation of facts because that would be very important to their decision on whether they are going to use this or not, wouldn't it?

Mr. COHN. It would ultimately be important to them; yes. The answer to your question is that we are not relying solely on what the shipper tells us. That is important. If we did that, we would have benefits on every project that would be very large. We have to exercise a considerable amount of discretion. What we are after in the survey is whether or not, if there is a waterway put in, the type of tonnage that is being shipped today is potential traffic for that new waterway. We then come back, in the case of the Tennessee-Tombigbee, the consultant comes back and computes the rate savings. In other words, there was no project in existence, there was no divide cut. We had to, in effect, construct the rate, what the movement would cost, with a profit, to move from the origin to the destination. In order to do that, we had to route the traffic and, yes, we did route it around those bends and in six barge tows from the Demopolis pool down.

General HEIBERG. Let me just add to that, too, sir. I did go through a description with the chairman, at a point when you were absent, of the fact that all over the waterways system we have what appear to be, anomolies looking at the system from 1980. We have certain size locks that do not match other locks, certain size channels that do not match other channels. We do look at the fact that the Tennessee-Tombigbee, as it is intended to be built, will not match what is below. I will say it is a 1980 design, it has matched our best effort to figure up what is needed for that waterway in terms of today.

It does, for instance, match perfectly the Tennessee and Ohio basins above it. It matches as perfectly as we can within the economics of it. In other words, the locks are 600 feet by 110 feet, and the waterway can take the larger kinds of tows coming down to it. The problem is it is not a perfect match down below. That is a fact. That is not peculiar to the Tombigbee Black Warrior and the Tennessee-Tombigbee. We have all kinds of those mismatches. As we go to the future over the decades ahead and try to do the things that ought to be done to remove constraints, if that is the decision made, then we will continue to try to upgrade to make our waterway according to the standards of the time. We are building the Tennessee-Tombigbee to the 1980 standards for the waterways industry, whereas the Tombigbee Black Warrior was built to earlier standards.

The next question comes up, What happens next with the Black Warrior section down below Demopolis? As Mr. Cohn just said, we did not count the benefits of upgrading it to 1980 standards. Those benefits were not included when we were computing the benefits from the Tennessee-Tombigbee Waterway. We were assuming six barge tows.

Senator DONEMICI. So you really don't ask the shippers, because Mr. Cohn indicates, and I take this to be true, that you may get the wrong answers in terms of precisely saying you ship on this, and therefore you use some other modeling technique for accumulating the information based upon comparative evidence and the like.

Mr. COHN. Yes, sir. You are talking about an economic decision that is really not available to the users at that point in time.

Senator DOMENICI. Correct. It assumes that if these are the marketplace indicators, if there is a savings it will be used and then you look for potential commodities, is that about right?

Mr. COHN. That is right. For example, suppose it were an entirely new waterway, forget about the Tenn-Tom for a second. If we were thinking of building a waterway from someplace to someplace——

Senator DOMENICI. Yes.

Mr. COHN. We wouldn't know what we were going to build, what the size would be, what the design would be, whatever. We would have to start with the shipper survey. We wouldn't be going out and giving that shipper all of the details of exactly what the waterway would look like. What we would be doing would be to establish the potential based on his statement of what he is shipping today, where he is shipping it from and to, in what volumes and what he sees for the future, what his handling charges are, what his transfer charges are, what his long-term contracts are and so forth.

That is what you are looking for in the interview.

General HEIBERG. Our review was done in 1975 when we asked the Kearney firm to come in and help us with our reevaluation. So all the looks that they were taking at the thousand or so forth potential movers and 121 movements that they projected were done. (A) 5 years ago, and (B) with the knowledge that there were going to be a lot of changes between 1975 and 1980–85. Those changes will continue. Some have put their finger on the fact that certain of those movers say, well, we are not going to do that. Those things happen in 5 years, of course. Some companies will go out of business. Some others have come in. But our survey was taken at a point 5 years ago now, 1975, and that was the point we fixed for that survey. It would be inordinately expensive and difficult to try to update the survey every year.

Senator DOMENICI. On the other hand, I don't know that it is realistic, but the hearings to this point have proposed to the committee that there is an option of not completing this. That is an option that was part of this hearing.

It would seem to me one very important fact, in determining whether that is an appropriate course would be to redo the shipper survey and the potential user model to today.

I am not suggesting you should have done that. But looking at it from my standpoint, I have been presented a scenario which have benefits and negatives of continuing and benefits and negatives of stopping right now. You are saying that as of 1975, you computed these shipper benefits and potential users, but am I understanding incorrectly that maybe there are some changes that might alter that?

General HEIBERG. No, sir. My point is a bit different from that. My point is that as Mr. Cohn suggested, that you take a point in time and you try to figure out what the movements are going to be from that point in time. It doesn't make sense to go back and take the individual pieces of those 121 movements and expect those to hold steady. In the first place, those were the judgments of the economists who took a look at those movements to begin with. The shipper may never have agreed. He may say in 1985 my corporate intentions are to be out of the coal-moving business, for example. It was a judgment made in 1975.

In fact, I will show you tomorrow, when we continue the panel on the navigation system, I am going to show you the figures on nine of the waterways we have looked at which will, I think, pretty dramatically show you that actual traffic movements from these nine fairly recent waterways have been much greater than we projected. The point is the corps has a record of being very conservative, if you want to say poor from the standpoint of understatement in estimating benefits from movements. I don't only feel this is probably the case for the Tennessee-Tombigbee. I feel more strongly about it. As we also noted here earlier, the potential of the coal movements is almost sure to grow with the extremely extensive demand increase both in the United States and for export steam coal over the years ahead.

Now remember, our survey was back in 1975. I think if we did do the survey today, my own personal opinion would be we would be coming out with nuch greater benefits.

First, we always tend to be conservative. That is our track record and I will show it to you. And, second, we see the steam coal thing as an added impetus particularly from the standpoint of our Western Europe and Japanese trading partners demanding more and more of the steam coal. The promise they made in Venice for our European trading partners to double their use of coal over the next decade is bound to have a tremendous influence on the export of coal.

That was not reflected in 1975. If we were to do it today, I think the demand would probably come out to be even higher and if we do it by the methods that Mr. Cohn——

Senator DOMENICI. But doesn't most of the steam coal come from the Ohio Valley?

General HEIBERG. The potential is Eastern, Middle Western and Western, all of them, sir; the potential is there.

Senator DOMENICI. But as it might move down the Tennessee-Tombigbee.

General HEIBERG. Ohio Valley, yes, sir, to include Illinois and Indiana, does it not?

Senator DOMENICI. That is the part that bothers me. I don't know why they will use Tennessee-Tombigbee. It is cheaper to move Ohio River coal to New Orleans than it is to Mobile or to Norfolk, isn't it?

Mr. COHN. The studies that were conducted show there is a good bit of coal indeed that would be cheaper to move to New Orleans because obviously the lower Mississippi River can accommodate larger tow sizes than the Tennessee-Tombigbee. Kearney still finds a significant amount because of the tremendous distance savings

involved in the movements that he claimed for the Tennessee-Tombigbee. For come movements, the distance savings offset the larger size barges that could be used on the Mississippi and made it economical for the shipment of coal down the Tennessee-Tombigbee to numerous places. Half were exports and half were gulf sites.

So the answer to your question is, sure, there is a lot of coal that will move on the lower Miss, but there is a lot of coal that is going to move on the Tennessee-Tombigbee as well, depending upon the economic factors with the trade off being between the size of the tows on the one hand, and the shorter distance on the other.

For example, to go from the Pickwick pool to Mobile via the Mississippi route, which is rather circuitous, that would take over 10 days, 10.7, I believe.

General HEIBERG. 10.7.

Mr. COHN. Then down from Pickwick to Mobile would be about 4.1 days. That is rather exaggerated. You are talking about getting to Mobile from the top of the Tennessee-Tombigbee. On the other hand, getting from Pickwick to New Orleans versus getting from Pickwick to Mobile is almost a savings of 5 days, 4.1, versus 8.8, something like that, if my memory serves me correctly. That is in days. In terms of distance, it is even more. It is distance that makes the rate.

Senator DOMENICI. Well, this type of savings that you are talking about, I don't understand that because, yes, it is 300 miles shorter via Tennessee-Tombigbee, but the speeds are slower, there are some 14 locks. Doesn't that make it less economic?

Mr. COHN. There are factors that have to be taken into account. Each lock takes a certain amount of time, roughly 40-odd minutes depending on the lift and characteristics. I am talking about the authorized project now, the project under construction. Each one of those takes about 40 minutes, plus or minus. There are 10 of then, obviously that is something less than 8 or 10 hours.

Senator DOMENICI. That is assuming no delays.

Mr. COHN. That is the actual lockage time, right. Now, it seems to me that is out of 4.1 days that you are talking about. So it is not a major part of the move. Nevertheless, all of that is accounted for in the move, the slowing down to go around the bends, the lockage time through Demopolis and Coffeeville, the lockage time through the 10 locks in the project under construction. In other words, the whole routing is taken into account. It is not an abstract argument. It is a detailed number-crunching argument that Kearney went through.

Senator DOMENICI. Let me ask this: What does, from the standpoint of usage, the ratcheting down from eight barges to six as you leave Demopolis, do to this? How do people handle that? You are going down with eight, you get to Demopolis and then you have got a part below it where you can only go six. Tell me, how does that get handled?

Mr. COHN. You simply refleet. That occurs all the time. In other words, as you move along the river, you are always letting off barges or taking on barges. You leave a couple barges at one port and pick up a couple barges.

General HEIBERG. This gets back to my point that we have old and new mismatching of segments of the waterway all over. As Mr.

Cohn said, they refleet. It is just like a railroad will drop off boxcars and pick them up. That goes on all the time. The refleeting goes on all the time. It is not difficult, it is a way of life of the barge folks. Going up and down the Ohio River, even though most of those locks match, there is refleeting that goes on at each pool.

Senator DOMENICI. What percentage of the use is contemplated to be coal?

General HEIBERG. The vast majority, isn't it?

Mr. COHN. In the Kearney report, 65 percent of the tonnage. Coal moves at a lesser rate savings than the other tonnage, so it is about 55 percent of the benefits, as I recall.

General HEIBERG. There is one other note——

Senator DOMENICI. To the extent it is coal, there wouldn't be any significant reshuffling because it would all be going on from Demopolis, there wouldn't be much coal left that would stay there.

Mr. COHN. Some of it could go back up the Black Warrior.

General HEIBERG. Sone would go back up the Black Warrior, some up the Alabama. Most would, frankly, go down, turn left at Mobile to go over to the southern Alabama and the Florida Panhandle area.

Let me add one point. If you do take that tow we are talking about, and let's say it is coming off the Ohio, there are some constraints if you go the other way, the currently available way. We do have some locks at the end of the Ohio which would slow it down if it didn't turn left at Paducah and come down the Tennessee-Tombigbee, it would still have to go through locks 52 and 53.

Now, they are not closed all the time. It depends on the state of the river, but when they are closed there often are delays there. That is No. 1.

When it comes down to New Orleans, most of the demand—I will ask Mr. Cohn to correct me—most of the demand the Kearney study was looking at was demand of the eastern gulf coast.

Mr. COHN. About half was metallurgical coal export; half was domestic demand to the east of Mobile.

General HEIBERG. Demand to the east requires the traffic to turn east at the New Orleans and go into a traffic-congested lock. What I am saying is, the Mississippi for this eastern coal is not an unconstrained route. It is longer and there are a couple, three constraints along the way. I am sure the survey took this into account when they were doing this numbers crunching game as Mr. Cohn described.

Senator DOMENICI. Can you tell me what percentage of the Ohio Valley coal will go down Tennessee-Tombigbee versus the Mississippi? Do we know?

Mr. COHN. No, I don't. I would have to provide that for the record.

Senator DOMENICI. Does someone know? Wouldn't an estimate have been either actually accomplished or inherent in the study?

Mr. COHN. Perhaps one could imply—the answer is "No, because what you would do would be you would interview the various shippers you think are in the zone of potential users." In other words, you don't interview every possible shipper in the entire country for the Tennessee-Tombigbee. It becomes obvious some shippers are not even worth interviewing; it is not worth talking to

them. There are a number on the Ohio River that are probably in that category for one reason or another.

They have no way of determining what the total Ohio River Basin usage was other than simply looking at what is moving on the waterway. It could be determined by looking at our own performance-monitoring data, which is all that I would do now, would be to go back and look at that to see what percentage we are talking about coming out of the Ohio.

Senator DOMENICI. Can you do that and just supply it for the record?

Mr. COHN. Yes, sir.

[The information follows:]

In 1975, total coal production in the Ohio Valley was 475 million tons. Kearney did not project total Ohio River Basin coal production. Various projections place the 1985–1990 figure at 490 to 736 million tons. The Kearney projection of 18.4 million tons for domestic and export use by 1986 thus varies from 2.5 to 3.8 percent of Ohio Basin production depending on the projection used. Kearney also did not project total Ohio Basin-Mississippi River coal traffic. Current projections are imprecise and vary widely depending upon the total export level considered for U.S. coal. WOCOL projects 23 to 126 million tons in exports alone, for the Lower Mississippi, much of it from the Midwest and Appalachian regions, by year 2000. Appalachian production ranges from 730 to 1075 million tons, according to WOCOL, for year 2000. Hence, Lower Mississippi coal for export ranges from about 3 to 12 percent of Ohio Basin production.

Senator DOMENICI. Basically, you would have to know for your own projections of traffic on Tennessee-Tombigbee, wouldn't you?

Mr. COHN. Sure.

Senator DOMENICI. So you can deduce it from the study some way?

Mr. COHN. Again, not from the Kearney study you can't deduce the whole thing, but you can find out how much Kearney thought was going to move out of the Ohio River Basin and then find out how much moved by water out of the Ohio River Basin. I am not sure we can get too quick a grasp on other modes running out of the Ohio River Basin. Obviously, if you start counting the moves to the east on rail from the West Virginia area, the number becomes very large.

Let us look at that and get some numbers back to you. By the way, I might add, Mobile did another study, the 3R study, to generally determine whether or not there was sufficient resource available and whether the demand where Kearney said it would be used existed. And that study did confirm those two aspects of the Kearney study.

General HEIBERG. 3R's is a consultant firm from Denver, Colo.

Senator DOMENICI. Is it true that the market for metallurgical coal appears to have dwindled, almost collapsed, and that the steam coal market at this point is Europe?

Mr. COHN. That is not quite correct. It is true the metallurgical coal market did collapse. As I believe one of the opponents stated——

General HEIBERG. The second panel, one of the panelists said, if I can recall his words, sir, he said something to the effect that, the metallurgical coal (coking coal) market has collapsed and will probably take 5 years to recover. That is what I recall him saying. I have no reason to argue with that.

Mr. COHN. Of course, the projections which were made and published in 1980 by a group headed by Professor Wilson at MIT, do have metallurgical coal increasing by the year 2000, as well as by 1990.

General HEIBERG. The amounts are dwarfed by the steam coal.

Mr. COHN. It wouldn't be fair to say based on that study the bottom dropped out of metallurgical coal. I would say metallurgical coal would continue to increase according to that study.

Senator DOMENICI. Let me just ask you, isn't Mobile about 1,000 miles further from Europe than east coast ports?

Mr. COHN. I am not sure of the mileage.

Senator DOMENICI. That is about right. Why wouldn't most of the coal from the Ohio Valley go to the east coast ports for shipment to Europe?

General HEIBERG. I believe it will, sir, and is now. Most of the coal of the United States is leaving from Hampton Roads, about two-thirds of the coal today, which I will show in my presentation tomorrow. It gets to the Norfolk/Hampton Roads area by rail.

Mr. COHN. About 4 percent of the coal, I would say, last year, probably around 4 percent of the coal that was exported was exported from Mobile. Obviously it is cheaper through Hampton Roads in general. But incremental amounts still move through Mobile.

General HEIBERG. Most of the coal increase is internal. It is not export. The reason I brought up export is I am just suggesting that Professor Wilson's study does project an event that seems to be occurring. You have the interagency coal expert (ICE) task force the President got us working on, and our own national waterway study will be taking a look at that phenomenon, that was not clearly seen in 1975. The 1975 Kearney study, and it still is a fact as far as we are concerned today, shows an increase in the use of coal in the United States. That is, a major part of the demand of the coal is within the United States. Export is something that is an increment above that.

Senator DOMENICI. Let me ask you about the width. Let's assume that the critics are correct and that the operators find Tennessee-Tombigbee to be too constrained for movements and continue to use the Mississippi. I would think the next logical thing would be then, somebody would want you to look at widening Tennessee-Tombigbee to 400 feet or 500.

General HEIBERG. Sir, I don't foresee that. The 300-foot width does permit traffic. What is limiting on the Tennessee-Tombigbee and will be limited when the Tennessee-Tombigbee is finished is not width. The limitations are the sizing of the locks and the depth. The width is not limiting.

Senator DOMENICI. The depth is a limiting aspect?

General HEIBERG. The 9-foot depth, yes, sir. But the 9-foot depth is also a standard depth around almost the entire section of the inland waterways. If the country—I don't mean we have any plans to change that, let's not get that started.

Senator DOMENICI. I understand, but Mississippi——

General HEIBERG. The Mississippi is a problem, sir. I mentioned constraints on the Mississippi. During certain parts of the year we have to go out and do a fair amount of dredging to get the 9-foot

depth at the crossings. In low water years, like we are probably having now, there is a fairly extensive amount of dredging even on the mighty Mississippi in order to get those huge tows past those shallower channel points.

But 9 foot is the nationwide standard for depths.

As far as I know, there is no big move to change that. Almost all the equipment today is aimed at 9-foot depths and 110-foot locks, which, I might add, is also standard. I see no indication that there is going to be a push to change those standands. That is the Tennessee-Tombigbee standard. The width is not limiting.

Senator DOMENICI. Can we talk about some cost estimates on tonnage movements? What is the estimated cost for moving 1 ton of coal by water from the upper Tennessee River via Tennessee-Tombigbee to Mobile for export, compare that with the cost per ton if the ton were shipped via the Ohio and Mississippi River to New Orleans.

General HEIBERG. I suspect we will have to supply that for the record.

Mr. COHN. See, the report lists movement after movement which tells you the answer to that question very specifically as it was computed by Kearney. By the way, I believe I mentioned we had a 40-minute lockage time. That is correct. I also stated that total time was 4.1 days. That is also correct but we also included a delay time, above the lockage time. So there was a total of——

Senator DOMENICI. How much?

Mr. COHN. Two hours total.

Senator DOMENICI. For all the locks?

Mr. COHN. Per lock.

Senator DOMENICI. And that is still in the 4-days plus?

Mr. COHN. Yes, sir, 4.1.

Senator DOMENICI. Is that possible?

Mr. COHN. Yes, sir.

General HEIBERG. That is a total of 20 hours delay at locks. It is a total of 2 hours times 10 locks. It is about 1 day.

Senator DOMENICI. Just the distance and the speed plus that doesn't add up to that small number.

General HEIBERG. It is still a fairly small number, sir. That is a little over 1 day, if I am computing it right.

Mr. COHN. They figured about 2 hours per lockage. What they did was say, OK, 24 hours are going to be spent in lockages, roughly. Essentially what that comes down to is 10 locks under construction plus the 2 existing locks below the city of Demopolis. That is what they cranked in. That is 24 hours.

Senator DOMENICI. When you give me those cost estimates, would you also for the record give us the estimated cost for moving 1 ton of Kentucky coal via the Ohio River to New Orleans compared with Mobile and compared with shipments to Norfolk or other east coast ports? Can you put those in the record for us, Mr. Cohn?

Mr. COHN. Yes, sir.

Senator DOMENICI. This is a written question so if you don't get it out of there we will give you the question if the transcript takes too long.

Mr. COHN. Sir, you want this for movements that actually are in the Kearney report?

Senator DOMENICI. I think we better so we will have it consistent.

[The information follows:]

There were no Kearney coal export moves from Kentucky. The attached tables show a coal export move from Chattanooga, Tennessee to Mobile via the Tenn-Tom and to New Orleans via the Mississippi River. The rate is $3.71 per ton via the Tenn-Tom to Mobile versus $4.49 per ton via the Mississippi River to New Orleans. These data on the tables are based on 1975 rates from the Kearney report.

In 1975 there were no rail rates for exports of coal from Chattanooga to Hampton Roads. There was a small movement, single car, rate for 1980; it was reduced to a 1975 estimated rate by deflating by the U.S. Department of Labor (BLS) rail freight index for coal. The resultant rate is $10.75 per ton for coal by rail from Chattanooga to Hampton Roads.

COAL
Chattanooga - Mobile
via Tennesee Tombigbee

	Mobile $
Chattanooga - Pickwick 249 miles @ 4.3 mph = 2.4 days	
Towboat: 3,200 hp @ ($4,040 - $404)/day x 2.4 days ÷ 13.5 barge/tow	646
Loading: ($96 - $10)/day x 3 days	258
Barge: ($96 - $10)/day x 2.4 days	206
Interchange: ($96 - $10)/day x 1 day	86
Pickwick - Mobile 428 miles @ 4.3 mph = 4.1 days	
Towboat: 1,800 hp @ ($2,560 - $256)/day x 4.1 days ÷ 8 barge/tow	1,181
Barge: ($96 - $10)/day x 4.1 days	353
Additional charge for fleeting at Demopolis and 6 barge tow on BWT	476
Unloading: ($96 - $10)/day x 3 days	258
Empty returns: .7 (646 + 206 + 86 + 1,181 + 353)	1,730
Total	$5,194
Estimate rate ($/T) for 1400 T/barge	$3.71

COAL
Chattanooga - New Orleans
via Mississippi River

	New Orleans $
Chattanooga - Cairo	
Chattanooga - Paducah 464 miles @ 4.3 mph = 4.5 days	
Paducah - Cairo 47 miles @ 4.5 mph = 0.4 days	
Towboat: 3,200 hp @ ($4,040 - $404)/day x 4.9	
÷ 13.5 barges/tow	1,320
Loading: ($96 - $10)/day x 3 days	258
Barge: ($96 - $10)/day x 4.9 days	421
Interchange: ($96 - $10)/day x 0.6 days	52
Cairo - New Orleans 861 miles @ 6 mph = 6 days	
Towboat: 6,400 hp @ ($7,430 - $743)/day x 6 days	
÷ 25 barges/tow	1,605
Barge: ($96 - $10)/day x 6 days	516
Unloading: ($96 - $10)/day x 3 days	258
Empty returns: .5 (1,605 + 516 + 108 + 34 + 53) + .7	
(1212 + 387)	2,276
Total	$6,706
Estimate rate ($/T) for 1400 T/barge	$4.79

Senator DOMENICI. As I understand it, the corps——

Mr. COHN. Sir, we may have some trouble getting costs for alternate modes for this comparison, particularly the east coast ports.

Senator DOMENICI. Why?

Mr. COHN. Well, because the shipment was initially one that was going to Mobile. We presume that that movement was appropriate; that is, the shipper knew what he was doing. Let's say he was moving by train to Mobile from someplace. We assume if we can do it cheaper by the Tennessee-Tombigbee, that he would move to the Tennessee-Tombigbee. We didn't question why he was going to Mobile in the first place. We assume he was going to Mobile because he had a reason to go to Mobile and he figured out that it was better than going to Hampton Roads because they were all existing options that were open to him.

Senator DOMENICI. Well, do the best you can on those comparisons.

Mr. COHN. We don't really have the alternate modes——

Senator DOMENICI. But you have got to assume, Mr. Cohn, in this whole scenario some diversions, don't you?

Mr. COHN. Sure. The shipper knows all of his options. The only thing he doesn't know is what is going to happen on the Tennessee-Tombigbee. If he is moving to Mobile, he must want to go to Mobile for a reason.

Senator DOMENICI. Let me ask you this: It is my understanding that after you do what is called a thorough and extensive survey of shipper savings, there is an arbitrary, at least on Tennessee-Tombigbee, an arbitrary 10 percent is added to the navigation benefits. Is it true that General Morris has barred that kind of procedure in connection with some other projects, such as the Cross-Florida Barge Canal?

Mr. COHN. My understanding is, that is an allegation of the plaintiffs in the lawsuit. It is true that General Morris did say that he did not want to use that normal 10 percent adjustment in the Cross-Florida, but that was because that was extremely detailed step-by-step, interview everybody type of survey, and, in his opinion, there wasn't any reason to, in effect, put in something for those shipments which are likely to have been missed.

Senator DOMENICI. Wasn't Kearney a similar study?

Mr. COHN. It was not as extensive. In other words, not as extensive in geography or in scope or in detail.

Senator DOMENICI. Why is one in more detail than the other?

Mr. COHN. It is my opinion that when you go to something like we did on the Cross-Florida Barge, probably even the Kearney study on the Tennessee-Tombigbee you are wasting a lot of money. That is too much money to spend. We should be doing more of a sampling technique. We are trying to get close to 100 percent—of course, this is a personal opinion—I think we are trying to go to 100 percent coverage on the surveys and I don't think we ought to be doing that because the purpose of the survey is simply to establish the likely tonnage which might move. It is not to establish what each shipper is really going to do as of this moment in time.

So it is just a cross section at that point in time and that can be obtained by survey and it is very expensive to go out and do these surveys, expensive not only in terms of the money being expended,

but in terms of the time and expertise that you have to put on line in order to conduct these surveys.

I think sample surveys would be much more effective.

Senator DOMENICI. The General has indicated that historically the movements are conservative going in and that history will reveal that. Does that justify, perhaps, the 10-percent add-on, General?

General HEIBERG. I think that fits, yes, sir.

Mr. COHN. However, the rationale is we feel we haven't covered everybody.

General HEIBERG. And I believe it is true to say, and Mr. Cohn can correct me, my understanding of that 10 percent is that is an acceptable economic adjustment that economists who understand this business better than engineers accept. It was just that an engineer, my boss, General Morris, made a judgment in Cross-Florida.

Senator DOMENICI. I understand.

Mr. COHN. I might add, sir, we do limit the amount of movement that we will accept to 6,000 tons annually or more. In other words, anything less than that we don't include and we do have some upstart price. In other words, there has to be about a 50-cent-per-ton savings in order for it to be a movement that will move by the waterway, by the Tennessee-Tombigbee in this case, rather than rail. Or if the comparison is water, then it has to be at least 15 cents a ton. So there are certain built-in conservative notions in terms of upset prices or upset volume that the 10 percent also, to some degree, is an attempt to cover.

However, I think it is mainly to cover the fact you haven't done a complete survey.

Senator DOMENICI. Let me back up about 15 minutes and you were telling me about the movements and 65 percent of the traffic was going to be coal. Coal is 50 percent in terms of savings.

Mr. COHN. Fifty-five, I hope I said.

Senator DOMENICI. What are the other commodities, just quickly, that are going to use this and percentages; can you give them to me?

Mr. COHN. I believe there is some steel, grains of various kinds, and some chemicals. They would be the other major commodities, but the percentages are all small.

Senator DOMENICI. Let me say to Senator Danforth, we will be ready in just a couple minutes. Is that all right with you? I am almost finished.

Let's assure that Tennessee-Tombigbee is completed, General, and that the tonnage projections were too high. I know you don't historically like to do that. Let's just assume that. What would the economic result be among various transportation modes?

Mr. COHN. The projections are too high?

Senator DOMENICI. Let's assume that it is completed and the tonnage projections are too high.

Mr. COHN. On the Tennessee-Tombigbee?

Senator DOMENICI. Right. What would the economic result be among various transportation modes?

Mr. COHN. I guess there are two ways to answer that. One, the demand didn't develop. For example, the bottom fell out of all the

coal movements and we went to nuclear, let's say. I guess all modes would be in a bad way. There are an awful lot of items being constructed right now that are predicated on the assumption that coal will move throughout the country. All of those will be wasted. There would be quite a tremendous impact. If, on the other hand, you are saying all the coal is going to move, but we are wrong, it won't move on the Tennessee-Tombigbee, it will move elsewhere, then the economic effect is, of course, to the extent we have put that investment in and it is not, and other commodities don't come along to pick up the slack then to that extent, we have made a bad investment in the Tennessee-Tombigbee.

I might add, however, that very often the commodities that we project will move are not necessarily the ones that move. Our experience on the Arkansas, for example, is what we projected to move didn't. Things that we didn't think would move did. So, as we say in the benefit-cost business, there is only one sure thing about a projection: It is going to be wrong.

General HEIBERG. That is right and I completely agree with that and our history is replete with wrong projections but I go back to what I said earlier, our wrong projections almost in every case on the major waterways have been short in the tonnage they have been projecting and I will show you this tomorrow.

Senator DOMENICI. This is a very major one from the standpoint of cost. It is kind of by itself; it doesn't feed into anything else. If we are wrong on it, we have a real lemon. It doesn't help anything else, does it? It kind of helps itself. It sort of sits out there all on its own.

General HEIBERG. It is very well connected both to the north and to the south, sir. It is a shorter route to the gulf. That is what it is all about. It is suggested it is a clone of the Mississippi by a colleague of yours. To a certain extent, that is right. It is a shorter route to the sea and to the markets of the gulf coast for much of what we project to move down there.

Senator DOMENICI. I mean the Arkansas feeds right into the Mississippi and you have an existing already totally integrated—everything is already there, that is what I mean.

General HEIBERG. Again, sir, most of the projection is for U.S. use of the products. The exports are a portion, but not the major portion. The major demand is for internal use of the products that move on the Tennessee-Tombigbee. As I recall it fits into a portion of our system. It fits into the gulf intercoastal waterways. My intuition tells me our estimates are conservative. I believe coal export projections will be exceeded, but in addition much of the coal movement will be used in the gulf and Tombigbee areas domestically.

Again, going back to the 1975 Kearney survey, it looked at the demand of coal in the served region mostly internal to the U.S. demand and found the demand was there. That is what our projection showed. I certainly agree with Mr. Cohn's comment that projections are wrong; it is an art and it is not something we do well, but I think fortunately if you want to weigh it, it is fortunate that we tend to project conservatively.

Mr. COHN. Sir, I might add, you asked before what would happen if none of the tonnage developed. Maybe I should elaborate on my

response. If the coal didn't develop then the other commodities would continue to grow beyond the amounts that we let them grow to. We reach a limit of 29 million tons coming out of the Tennessee-Tombigbee, which is its share of the Demopolis Lock, by the early 1990's. If coal did not fully develop, what would happen is that other commodities, with higher rate savings, would grow in the future and eventually, not by 1991 as we have it now, but by 2000 or 2010, whatever, would grow to fill up the vacuum left by coal. These other commodities would have a higher rate savings and the overall benefit, in the end, would be higher but it wouldn't accrue as quickly. In that sense the economic justification for Tennessee-Tombigbee is not primarily coal dependent.

General HEIBERG. Sir, I would like to refer back to Mr. Briggs' earlier conment. He was on the second panel on Friday. As I pointed out to Senator Moynihan earlier, obviously the railroads think the demand was going to be there. He was talking about his concern on the part of the railroads that the 50 or 100 million tons, as I recall—50 million tons total diversion was going to occur.

Mr. COHN. That does come out of the plantiffs' brief in the lawsuit. I might add most of that tonnage they are talking about is not tonnage we have claimed. They are talking about tonnage that is moving in the opposite direction, upstream. They would be new movements. We have not included those as benefits. I don't know if they are real or not. I am just saying that is kind of an example of an after-the-survey claim. Normally, by the way, those kinds of claims are the positive kind. Someone runs into a public meeting. For instance, in 1977, when we had the President's review of water resources projects. There was a public meeting held on the Tennessee-Tombigbee and about 9,000 people showed up. Many of those were shippers who said they were going to move on the waterway who are not in our survey.

The same thing is involved with the L. & N. Railway saying there are all these new movements going to occur. We tend to reject those because we don't want to redo the survey all the time and sway in the breeze, be subject to everybody saying I am going to ship; no, I am not going to ship; yes, I am going to ship; well, so-and-so told us this.

Senator DOMENICI. I have one last question. I am assuming the Tennessee-Tombigbee will be added to the list of waterways to which the graduated 10-cent fuel tax will be added. I am assuming that in this question. That seems to be a consensus it wasn't included because it wasn't ready when we passed the user fee.

General HEIBERG. Yes, sir.

Senator DOMENICI. Let's assume that is in. Could you calculate for us what we would have to add as a user-type fee if we were going to defer 50 percent of the cost of constructing this with interest over 40 years and do that as a separate calculation for us, if you will, and reduce it to an annual basis so we will have something to look at? Then plug in your estimated maintenance cost to the Federal Government, again on an annual basis, and do two calculations; assume 100 percent reimbursement and then assume 50 percent and give us what we would have to add as some kind of a user fee. And if you could do those for us by August 14, that would be very helpful.

Then since much of the economic data is predicated upon users who would find it economic, see what you can tell us about whether the addition of that kind of a charge would continue to make it a viable project from the standpoint of users. You can run that back through with somebody, your experts on economics.

General HEIBERG. We will try, sir. We will do our best.

[The information requested follows:]

USER CHARGE

The amount of an annual user charge necessary to collect 50 percent of total Federal first cost of the authorized project as reported for FY 81 through the budgetary process, is $96,658,000, at a 7 3/8 percent interest rate and a 40-year recovery period. On the same basis, 50 percent of the remaining first cost is $41,556,000. The average annual maintainence charges, based on a 5% rate of inflation, at 7 3/8 percent and a 40-year recovery period, is $18,139,000; half of that is $9,069,000.

The average annual amount of tonnage expected to move on the Tenn-Tom is 33,882,980. Dividing the annual charges to be recovered by annual tonnage yields the charge per ton. The results range from $1.23 to $3.39 if only the Tenn-Tom traffic bears the charge, and from $.06 to $.18 if all current waterway traffic shares the charge.

The average annual amount of tonnage expected to move on the Tenn-Tom varies from 21.5 million to 33.8 million if Tenn-Tom traffic bears the charge. If the charge is spread to all current waterway traffic, only negligible traffic losses occur. Traffic losses were determined by comparing the rate savings to the relevant user charge. The rate savings were taken from the Kearney report, increased at an inflation rate of 5 percent per year.

Two important caveats are necessary. First, due to time constraints, no consideration was given to the effect of requiring 50 or 100 percent recovery of all waterway maintence charges. This has the effect of overstating the impact of the traffic losses for those commodities whose alternate routing is totally or partially by water. Second, to the extent that the user charge causes diversions of traffic, the intended amount of recovery will not occur; attempts to increase the per ton amount will drive the Tenn-Tom traffic to zero. This "racheting" effect illustrates the need to chose tax collection systems which permit efficient utilization of the waterway; stated another way, the impact of a user charge on tonnage is dominantly a matter of how it is collected and therefore is not a test of economic efficiency.

Table 1
Annual User Charge
Total and Per Ton 1/
and Remaining Tonnage 2/

	Total	Per ton		Remaining Tonnage	
		Tenn-Tom	System		
	(1)	(2)	(3)	(4)	(5)
50% of total Federal first cost	96,658,000	$2.85	$ .15	26.9	33.9
50% of total Federal first cost plus 100% of Maintenance	114,797,000	3.39	.18	21.5	33.9
50% of total Federal first cost plus 50% of Maintenance	105,727,000	3.12	.16	23.2	33.9
50% of remaining Federal first cost	41,556,000	1.23	.06	33.8	33.9
50% of remaining Federal first cost plus 100% of Maintenance	59,695,000	1.77	.09	31.7	33.9
50% of remaining Federal first cost plus 50% of Maintenance	50,625,000	1.50	.08	32.4	33.9

1/ 40 year recovery period; 7 3/8%; 5% annual inflation rate; excludes specific recreation costs.

2/ Average annual tonnage is 33,883,000 from the Kearney report. Annual system tonnage is 616,000,000 a 1977 figure from the Waterborne Commerce Statistics, Corps of Engineers. This number was not projected, yielding an overestimate in the per ton charge, column 3.

Senator DOMENICI. I understand the chairman contemplates that you will appear tomorrow, General, on your general statement on waterways as it affects coal. I assume the chairman wants to continue on that schedule. I have no word to the contrary. If he can't make it, I will try to be here. Let's stay on that schedule if that is all right with you.

General HEIBERG. Yes, sir, 10 a.m..

Senator DOMENICI. Thank you very much.

[Whereupon, at 10:10 a.m., the subcommittee was recessed, to reconvene at 10 a.m., Wednesday, July 30, 1980.]

[General Heiberg's prepared statement and attachments follow:]

STATEMENT FOR THE RECORD

BY

MAJOR GENERAL E. R. HEIBERG III

DIRECTOR OF CIVIL WORKS

OFFICE, CHIEF OF ENGINEERS

DEPARTMENT OF THE ARMY

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES
OF THE COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

SECOND SESSION, 96TH CONGRESS

28 JULY 1980

NAVIGATION

Overview

Navigation System Description

Currently, nearly 26,000 miles of commercial navigable waterways are in use, in addition to the shipping lanes of the Great Lakes and the coastal trade routes. Ninety-five percent of the United States population lives in states served by this system. These waterways are served by more than 155 commercial harbors and ports operated by private industry or by local or state govenments. Navigation improvements along the waterways include locks at 201 sites, channel alignments, bank stabilization, cut-offs, dredging, and clearing and snagging operations. The Corps of Engineers operates most of the locks, maintains most of the improved waterways and is also responsible for a portion of the dredge fleet capacity required for maintaining the channels and ports. Channels are maintained to the depth which has been found to be most efficient at the port, based on size of ships calling at the port and cost of maintenance.

The depths range as follows:

East Coast	32' - 45'
West Coast	30' - 55'
Gulf Coast	35' - 45'
Great Lakes	28' - 32'

Since 1824, the Federal government has invested about $10 billion in the development and maintenance of the inland and intracoastal waterways and in the Great Lakes and coastal harbors. Present annual maintenance costs for these facilities range from $350 to $400 million.

Commodity Movements

Approximately 1.9 billion tons of freight move along the waterways and through the ports each year. The foreign trade component is nearly equal to the

domestic flow and is growing at an accelerating rate. The waterway system provides effective transportation for movement of crude and refined petroleum, coal, grains, and fertilizers, industrial chemicals, iron ore, iron and steel products as well as other bulk commodities. Energy commodities, petroleum and its products, and coal, dominate foreign and domestic waterborne trade and accounted for 61 percent of all waterborne commerce in 1977. The next largest commodity group moving by water--grains--is predominately for export.

In the three decades, 1947 to 1977, the volume of waterborne commerce increased from 700 million tons to 1.9 billion tons. Domestic commerce has shown consistent growth, beginning with the movement of 579 million tons in 1947 and leveling off within a range of 970 to 990 million tons between 1973 and 1977. Foreign trade represented about 25 percent of total waterborne commerce in 1947, but it currently accounts for about 50 percent of the total. Petroleum is the leading commodity moving on the waterways and comprises approximately 40% of the tonnage. Barge shipments of corn, wheat and soybeans doubled between 1969 and 1977 because of increased exports.

Water Competition

The inland waterway is compatible with other modes, finding its essential niche in the long distance, low cost transport of bulk commodities. While there is some overlap of functions and while this overlap creates some highly vocal and useful debate, the essential need for a functioning and integrated waterway system is not seriously questioned. Trucks serve the local markets and as feeders for both rail and barge movement of grains; railroads historically have provided the major competition to waterborne grain commerce and continue to do so. However, some notable breakthroughs are now occurring in rail-barge cooperation aimed at achieving maximum efficiency: for example, the intermodal activities of the KATY and Milwaukee Road Railroads.

67-591 O—80——33

Coal traffic, like grain, has been increasing in recent years; indeed, it has been the number one growth commodity and currently constitutes about 16 percent of total waterway commerce.

While competition from the railroads will continue to play a significant role, some increase in intermodal cooperation is anticipated. A number of rail-to-water transfer facilities are already under construction or in operation in such places as St. Louis, Duluth, Minnesota, and Cora, Illinois, among other locations.

Waterway Efficiencies

The efficiencies of the waterways are apparent in just a couple of statistics. In 1976, water transportation accounted for 16.9% of the U.S. ton-miles but only 2.37% of the transportation bill. There have been a number of studies concerning fuel efficiency. Various methodologies have been used but the answer has generally indicated that waterway transportation is very fuel efficient. Most studies show that waterways are a close second to pipelines in BTU's per ton mile.

Defense and Emergency Aspects

Analysis of the defense and emergency role of the waterways shows it to be basically supportive of other critical emergency activities. A major objective is to keep crucial ports open and operating for commercial and military traffic. The waterways would also take pressure off other modes of transportation, thus freeing rail cars and trucks for uses directly related to the defense or emergency effort. The role of waterborne commerce could increase with respect to moving petroleum along the Gulf and Atlantic Coasts, supporting industry and energy production during the crisis.

During routine anticipated emergencies, the waterways have a defined role and budget. Floods and hurricanes are not that infrequent and years of experience have led to a determination of how the waterway system can best be utilized in recovery efforts. The abnormal unanticipated emergency, on the other hand, tests Corps and waterway responsiveness in a situation in which contingency plans are nonexistent. Mount St. Helens is a dramatic example of such an unanticipated emergency. Runoff of mud and debris from the eruption of this volcano caused tremendous shoaling on the Lower Columbia River, reducing the 40-foot channel depths to as little as 14 feet in some spots. Pacific Northwest Corps dredges were summoned immediately for emergency duty and efforts were initiated to secure additional private industry dredges in order to reopen the clogged river to deep water navigation. Within two weeks an emergency temporary channel was open, permitting limited shipping to resume. Full depth was scheduled to be restored by 28 July 1980; the full 600' X 40' channel is expected to be restored by November 1980. While the Mount St. Helens eruption is an unpredictable and unique emergency situation not likely to be repeated except possibly in the same area, it does serve to illustrate that crises involving the waterways can arise suddenly and dramatically.

Planning Process

Our waterway planning takes place in the framework of two critical areas: water policy and transportation policy. President Carter clearly specified the policy framework for future water resources development in his June 1978 Water Policy message. We are emphasizing a non-structural, conservation approach making the most of our existing physical plant. For example, several years ago we began the Performance Monitoring System at the locks. This better enables use to evaluate system operations and what improvements are

necessary. A major non-structural measure which is being implemented in a number of locations, e.g., L&D 26, Industrial Lock, and Gallipolis is the requirement for use of helpers boats when locking large tows. While we are making maximum use of non-structural measures, it must be realized that the Corps currently operates 255 locks; more than half of which are over 30 years old. As is evident, many of these projects are aging. Most of the older facilities consist of a single lock which can result in the closure of an entire segment of the river when major repairs are undertaken. Also the increased use of the waterway and modern equipment design have resulted in some inefficiencies in accommodating modern tows. The newer structures are generally of larger size, more compatible with modern equipment, and may include an auxiliary lock in a consistent system design.

New additions will be only those clearly needed, will be environmentally sound, and will be compatible with other needs being served by our increasingly scarce water resource. Current transportation policy is generally compatible with water policy.

As with all aspects of water resources planning, the process is open to encourage maximum public involvement in a meaningful way. This involvement does lengthen the study time and we must, therefore, balance the need for public involvement, agency coordination, review and deliberation, with the need for expeditious planning completion. I also note at this point that funds have not been appropriated to date for the independent review of water resources projects by the Water Resources Council as requested by the Administration. Adequate funding for the review process could help expedite economically and environmentally sound projects which might otherwise be subject to challenge.

On the average, the Corps of Engineers planning process from the study authorization to completion of construction currently takes more than 20 years. Construction time can take up to 10 years. A survey report is required

early on in the planning process thus requiring a fair degree of long range forecasting of needs. These demands on the system have often been underestimated. One of the problems associated with this long lead time is that it necessitates Congressional authorization fairly early in the process and well before the forecasted needs have actually materialized. The recent past has shown that normal navigation improvements are highly controversial even when lockage delays are extremely high. If this trend continues, efforts to improve the inland system in a timely manner will be severely constrained, leading to even higher delays and reduced reliability in the system, particularly when "bottlenecks" develop on the existing system due to a specific facility incompatibility with up and downstream facilities.

Evaluation Criteria

Section 7(a) of the Department of Transportation Act of 1966 provides the basic benefit measure as follows:

" *** the primary direct navigation benefits of a water resource project are defined as the product of the savings to shippers using the waterway and the estimated traffic that would use the waterway; where the savings to shippers shall be contrued to mean the difference between (a) the freight rate or charges prevailing at the time of the study for the movement by the alternative means and (b) those which would be charged on the proposed waterway; and where the estimate of traffic that would use the waterway will be based on such freight rates, taking into account projections of the economic growth of the area."

In other words, it is the shipper savings via the waterway. In addition to Section 7(a), the Executive Branch has recently issued procedures regarding the computation of NED benefits for Water Resources Planning.

Part of that manual relates to inland navigation evaluation procedures and represents a concerted effort on the part of the Corps and DOT to develop sound project evaluation procedures. Project by project study has the disadvantage of missing the forest for the trees. We have to try to see the system whole - both present and future - to see the overall value of the system to form the context for analysis and decision making for the future. The planning/evaluation studies presently underway are very sensitive to these system concerns.

A significant problem is defining the relevant system for analysis. Our present process is to limit the system to waterways since we recognize, as does the WRC manual of procedures, that it is impractical to reevaluate all transportation modes in each study. The specific procedure is to evaluate the potential waterway plans aganist the most likely transportation routing in the absence of the waterway or waterway improvement.

National Waterways Study

We expect that the NWS will assist us in solving some of these planning problems. We are looking for the output to help us prioritize needed system improvement (structural as well as non-structural). With this prioritization, we should have a better perspective on commercial navigation and other waterway uses.

NATIONAL WATERWAYS STUDY

Introduction and Overview

Congress authorized the National Waterways Study in Section 158 of the Water Resources Development Act of 1976 (Public Law 94-587).

The Institute for Water Resources, now part of the Corps Water Resources Support Center at Fort Belvoir, Virginia, was tasked with implementing the

Congressional directive, leading to the creation of the National Waterways Study (NWS). Funding was initiated in FY 1978. The total amount allocated for the study is $6.25 million. The overall NWS objective is to "identify and analyze alternative strategies for providing a navigation system to serve the nation's current and projected transportation needs." To meet this objective the study will:

* Project the nation's potential requirement for water transportation.

* Assess the capability of the existing waterways system to meet both current and projected national needs.

* Examine the relationship between the use of waterways for transportation and for other purposes.

* Develop and evaluate alternative strategies to meet the projected national transportation needs.

Most of the technical studies are being conducted by contract. Corps division and district offices throughout the United States are also active contributors to the effort by providing data and information necessary to characterize the existing navigable waterway system and by assisting the IWR-NWS staff in the review of draft contractor products. Other study participants, represented through the NWS Steering Committee, include the Department of Transportation, the Maritime Administration of the Department of Commerce and the National Transportation Policy Study Commission. Public participation is actively encouraged through a number of public meetings at important milestones in the study schedule, through the publication of information bulletins marking the progress of the study, and through briefings and presentations for selectd organizations and associations, such as representatives of waterway shippers and carriers, railroads, and environmental interests.

Study Scope

The scope and boundary of the study is nationwide, examining all the nation's commercially navigable inland waterways as well as ports on the Atlantic, Gulf and Pacific Coasts (including Alaska and Hawaii) and the Great Lakes. Ports are not being considered individually, but as part of a broader grouping. The entire nation is divided into 61 subdivisions--segments of the inland waterways and coasts--for which needs are being analyzed and alternative future strategies to cope with shortfalls in capability are being established. Conflicting and complementary water uses are examined where they relate significantly to navigation, as are the competitive and complementary characteristics and projections with respect to other modes--rail, pipeline and highway.

Study Phases

The first phase of the National Waterways study involved developing a plan of study, refining the study emphasis, and producing a workplan. Concurrent with this effort was the task of creating an inventory of the existing system and the commodities which move on the waterways, and preparing a description of that system. Corps division and district input was crucial to this phase. These data were fed through the computer center at the Corps North Central Division and then made available for the contractors' technical research, which constitutes the next study phase.

The technical research for the study is now being concluded as the next phase, evaluation of the existing system and alternative strategy development, gets underway. Following this will be the conclusion of the contractors' effort. Then the Corps' will prepare the conclusions and Final Report which will be sent to the Secretary of the Army, for transmission to Congress.

Study Products to Date

The analysis of the existing system and the technical research conducted to date have generated considerable amounts of information for incorporation into the strategy evaluation phase and the Final Report. A discussion of some of these waterway characteristics follow:

Commodity Movements

Forecasts of commodity movements have been completed and generally indicate significant growth.

The forecasts of grain movements by water will double by the year 2003, the end of the forecast period. Export demand for grain is expected to grow from 100 million to over 250 million tons, with waterways being the main arteries for grain movement to export centers. Noticeable in this growth will be increased traffic through ports on the Great Lakes and West Coasts. NWS forecasts indicate that coal will grow from 16 to 26 percent of total waterborne commerce by 2003, an increase of over 260 million tons. This does not include the very recent prospects for dramatic growth in the exports of steam coal, which could well add an additional 100 million tons to NWS projections.

The greatest coal demand will continue to be for support of coal fired utilities, while five to ten percent of the coal produced may be going toward the production of synthetic fuel by 2003. A growing synthetic fuels industry could have important implications for coal barge traffic on the Lower Mississippi and Gulf Coasts. Overall, U.S. domestic demand for coal is forecasted to grow from 156.3 million tons to 418.9 million by 2003. A significant portion of this increased demand will originate in New England, where a ten fold increase in the use of coal is projected.

Coal sourcing and forecasts of demand for coal are influenced by many factors, including environmental acceptability of coal and nuclear power as energy sources, our national export policies, and U.S. competitiveness in the export of coal. Since January of this year, overseas expression of interest in importing American steam coal has mushroomed. The National Waterways Study has responded by incorporating a high export scenario into the evaluation/alternative strategies element which will anticipate the impacts of greatly multiplied exports. Traffic in chemicals, which constitute the third largest growing commodity on the inland waterways after grain and coal, is forecasted to double from 50 million to over 100 million tons by the year 2003. The largest chemical traffic growth area is expected to be the Gulf of Mexico.

Interaction With Other Water Uses

The technical research on navigation interaction with other water uses indicates this interaction is more limited than the number of multipurpose uses would imply. Studies detailing the complements and conflicts of other water uses and water availability to navigation found limited problem areas. Three basins with water availability demand conflicts include the Alabama, the Apalachicola-Chattahoochee-Flint (ACF), and the Missouri Rivers. The potential for low flow problems or water shortages exists for the Alabama, ACF, Red, Ouachita and Arkansas Rivers. Hydroelectric power release timing conflicts were shown to occur on the Alabama and Cumberland Rivers. Several benefits and complementary water uses were determined in the course of the technical research. The most pervasive use interacting with commercial navigation was found to be recreation. This was common to virtually all waterway segments. There are many instances in which navigation projects also

provide attractive recreation sites, such as on the Arkansas and Mississippi. Oxbow cutoffs on these same rivers are noted for being good fish and wildlife habitats. Another benefit in some instances is the use of dredged material to create good island habitats, as on the Upper Mississippi, or for beach nourishment.

Principal conflicts between commercial navigation and recreation uses include: congestion at locks, such as on the Mississippi and Ohio; conflicts in crowded harbors, like San Francisco and Chesapeake Bays; commercial tow wake in narrow channels notable on the Monongahela, Ohio, Upper Mississippi and Illinois Rivers; and fleeting area conflicts, also on the Ohio and Mississippi.

Navigation System Capability

Research on the capability of the navigation system discerned a number of contraint points or areas which now or soon might have an impact on waterway traffic. Constraining locks appear on 14 of the waterway segments. Most of the affected rivers have coal as a primary commodity, but rivers utilized for grain transportation are also impacted. The inclosed map shows the location of representative constraints.

The system is also constrained by certain ports lacking adequate facilities or the economic capability to acquire needed facilities. Depth can be an additional port constraint, particularly in view of the recent interest in a huge expansion of steam coal exports.

Navigation conditions can also present a constraint to current or increased waterway traffic in certain locations. Such hindering conditions include inadequate channel and bridge clearances, sharp bends, one-way traffic and

inadequate navigation aids. Among the waterways experiencing such constraints are the Illinois, Missouri, Upper Mississippi, Green, Upper Allegheny, and Alabama River.

Strategy Development

These, then, constitute some of the key preliminary findings of the technical research for the National Waterways Study which are being incorporated into the evaluation of the existing system.

With the completion of the Final Report in September 1981, the NWS anticipates submitting a document which clearly achieves the stated objective to "Identify and Analyze Alternative Strategies for Providing a Navigation System to serve the Nation's Current and Projected Transportation Needs."

DREDGING

One of the most significant waterway issues is that of dredging and dredged material disposal. This is the most important of the environmental concerns associated with the impacts of navigation. Currently, about 300 million cubic yards of dredged material must be disposed of each year. Among the potentially adverse environmental impacts are altered marine habitats, increased turbidity, resuspension of bottom organisms, and aesthetic disruption.

The present dredge fleet in the U.S. is generally adequate to meet our needs, but it is becoming aged, averaging 30 to 50 years old. Encouragement of increased private industry dredging capability will likely result in a reduced Federal dredge fleet. Increasingly higher dredging costs will also modify dredging activities in order to stay within tighter budget limits.

In gaining a perspective on dredging effects, it is important to note that the areas impacted are often small and recovery is rapid. The amount of sediment

moved and turbidity produced by floods, storms, and volcanoes generally dwarfs that produced by dredging.

At least in part because of concerns regarding environmental effect from the placement of dredged material, the maintenance costs for the waterways have increased significantly over the past few years. The impact of this is to place in jeopardy our ability to maintain a reliable and efficient system. Reduced dredging could result in the use of smaller tows and loss of some of the efficiencies inherent in a modern reliable system. It could also impact on needed improvements. For example, deepening of Baltimore harbors was authorized in 1970 but has not been undertaken because of lack of agreement regarding dredged material disposal.

The dredged material research program was undertaken to provide definitive information on the environmental impacts of dredging and dredged material disposal operations, and to develop technically satisfactory, environmentally compatible, and economically feasible dredging and disposal alternatives, including consideration of dredged material as a manageable resource. The environmental effects have been defined and existing practices and concepts have been modified.

On the Great Lakes, for example, dredged material was generally disposed of in open water sites. The Corps now operates contained disposal facilities for polluted materials, and local interests must furnish all lands, easements and rights-of-way, contribute 25% of the costs, and operate and maintain the facility after completion of disposition.

The effects of selective disposal of polluted dredged material in confined disposal facilities have been dramatic. Costs of dredging and disposal of

polluted material varies from a minimum of $4.38/cubic yard for the Saginaw River, MI project to a maximum of $24.40/cubic yard for Sebewaing River, MI project. This compares to a national average unit cost for maintenance dredging of $1.33. In short, the environmentally induced effects have increased the maintenance dredging costs from 3.3 to 17.6 times over the national average. At the same time one way haul distances to confined disposal facilities vary from a minimum of 1/2 mile in Duluth, MN to 22 miles for the Rouge River, which constitutes a major increase in non-productive time. The effects of environmental constraints on dredge operations have been dramatic, in the overall, particularly in the Great Lakes. The four Corps of Engineers hopper dredges operating on the Great Lakes had a combined annual production of 11.3 million cubic yards in FY 1968. In FY 1978 these same four dredges dredged only 3.7 million cubic yards. This dramatic decrease in production is due to environmental factors.

INTERAGENCY COORDINATION

Department of Transportation

We have substantially increased our coordination efforts with the DOT over the past few years and feel that a fuller understanding has developed. One of the most recent cooperative research efforts in which we are involved is a feasibility study of the Regional Cargo Transportation Facilitation Center concept. The idea is to end the era of freight terminals as loss centers due to inefficiencies in mode transfers and replace them with highly productive unified freight terminals. These would better utilize line haul equipment and increase fuel efficiency through common handling and delivery equipment rather than underutilize individual facilities.

Interagency Coal Exports Task Force

In addition to the importance of the waterways for handling of domestically used energy products, we are presently studying the possibility and impacts of significantly increasing our coal exports as part of an interagency task force. The potential exports to Europe and Japan will affect the Corps program from both the inland and ports sides.

Some of the major issues identified by the potential coal buyers include:

- o Shallow draft available in U.S. ports which precludes the use of large ships.
- o Existing congestion resulting in demurrage charges for ships in queue.
- o Availability of ground storage for coal at existing ports.
- o Lack of modern loading equipment at the ports.

o Long time required to provide port and channel dredging due to permitting and licensing process.

o Uncertainty regarding future rail costs.

o Capacity of the inland transportation system.

Our major coal shipping ports have been Hampton Roads, Baltimore, Mobile Harbor, New Orleans and Philadelphia. While the present facilities appear to have adequate capacity for the present demand, they are not without problems as you have noted from the newspaper coverage of the ships in queue at Hampton Roads. The Corps responsibility in the ports is for channel depth and maintenance. Presently, the available depths on the East and Gulf coasts are limited to 40-45 feet which restricts the ship size and increases the costs to the consumer.

Hampton Roads is the main coal export point for the U.S.. The coal arrives at Hampton Roads by rail and accounts for about two-thirds of U.S. coal exports. A major problem is the present channel depth of 45 feet. The major physical constraint from the Corps viewpoint is the Chesapeake Tunnel which would need to be relocated if the channel were to be deepened beyond 55 feet. Baltimore is our second ranking coal export port and is in a good position to compete for additional export because of its close proximity to the Appalachain fields by rail. Existing channel depth is 42 feet. Deepening to 50 feet, which was authorized in 1970, has not been constructed because of problems with dredged material disposal sites.

Mobile is the leading Gulf Coast coal shipping port with most of the coal arriving by barge from the coal fields in northern Alabama. Construction is underway to provide ground storage for 1.1 million tons and a loop track to

handle 100 car unit trains. Presently, draft restrictions are 39 feet. New Orleans also receives most coal by barge; but ship draft in the Mississippi River is limited to 40 feet. With the exception of Philadelphia we are presently studying feasibility of deepening each of these major coal ports. It is important to realize that besides sulphur difference, coal also has large variations in BTU's. The present coal exports are almost entirely of coking coal with high heating values, mined primarily from the Appalachian fields. However, the coal that is now expected to be exported is steam coal with many more potential sources including much of the midwest and west. While the increase in steam coal exports has a national security goal and an economic goal for reducing our dependence on foreign oil and improving our balance of payments, accomplishing these objectives must be weighed against the environmental concerns which for port deepening center around the disposal of dredged material. The effects of increasing coal exports on the inland waterway is dependent on the origin points and export ports for the coal. Minimally, we know that the Ohio River basin will be impacted with presently indentifiable constraint points probably consisting of Lock 52 and Gallipolis on the Ohio, and Winfield Lock on the Kanawha River.

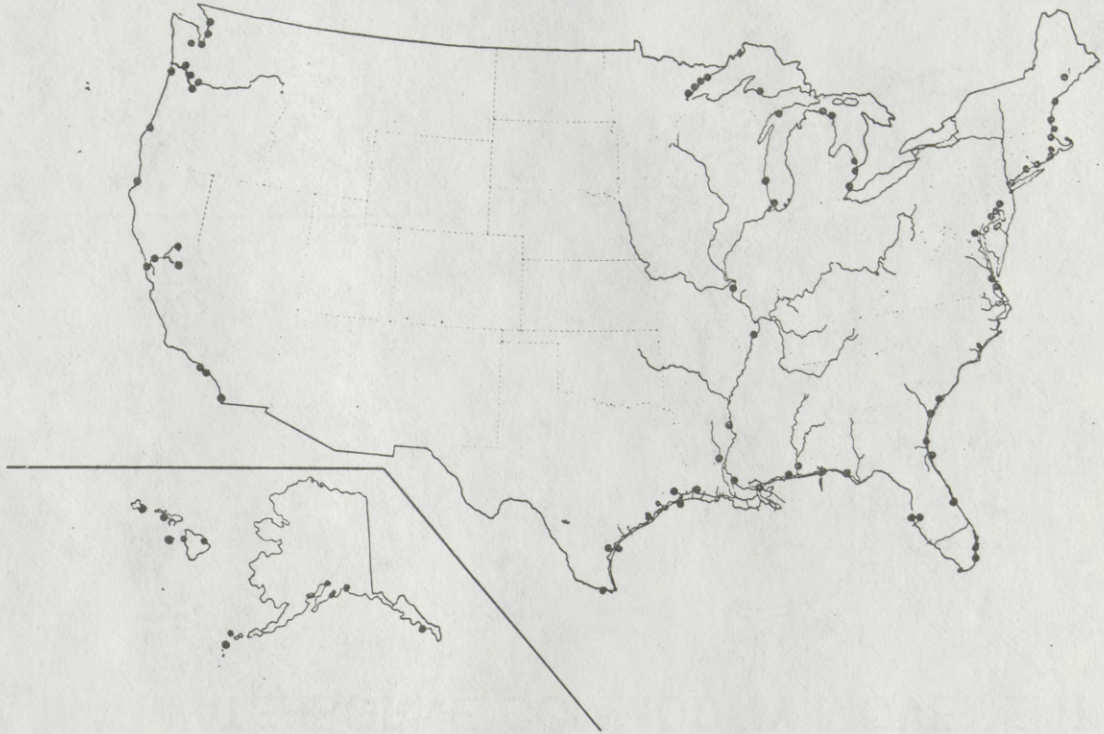
While I have talked about the east coast, the potential for coal exports also exists for the west coast ports such as Long Beach which presently has sufficient depth to handle 100,000 DWT vessels. Exports from Portland with inland shipments via the Columbia River are also possible.

This completes my presentation. I would be pleased to respond to any questions you may have.

U.S. NAVIGATION SYSTEM

- Nearly 26,000 Miles of Commercial Navigable Waterways in Use
- More Than 155 Commercial Harbors and Ports
- Locks at 201 Sites
- About $10 Billion Federal Investment Since 1824
- Approximately 1.9 Billion Tons of Freight Each Year

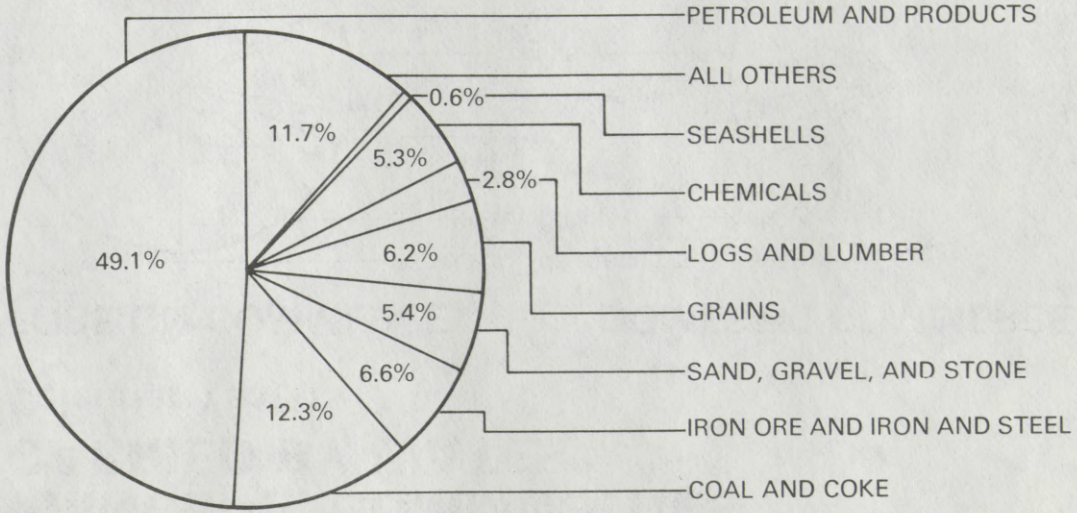
MAJOR WATERWAYS AND PORTS



WATERBORNE COMMODITY MOVEMENT

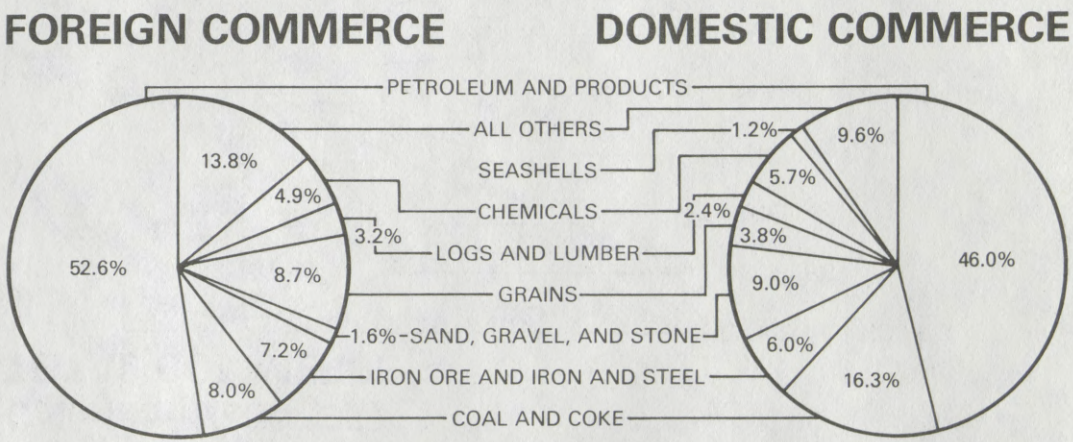
PRINCIPAL COMMODITIES CARRIED BY WATER

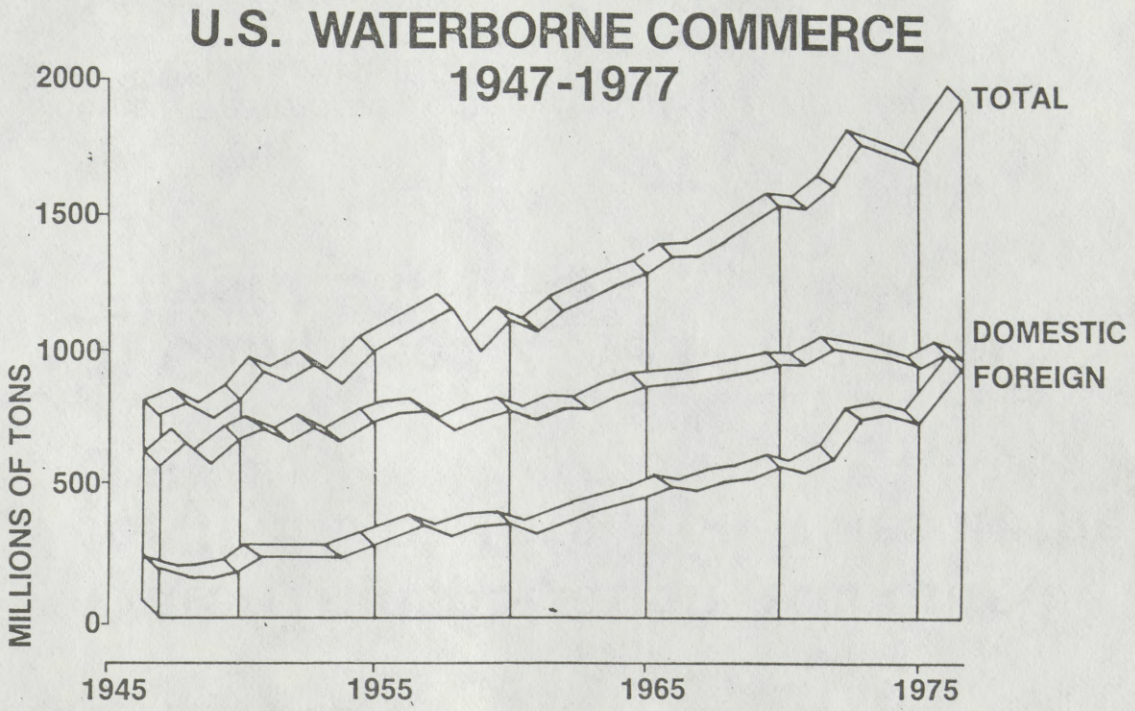
Calendar Year 1977
TOTAL COMMERCE



PRINCIPAL COMMODITIES CARRIED BY WATER

Calendar Year 1977




U.S. WATERBORNE COMMERCE
1947-1977
2000
1500
1000
500
0
MILLIONS OF TONS
1945
1955
1965
1975
TOTAL
DOMESTIC
FOREIGN

IN 1976 . . .

- **Water Transportation Accounted for 16.9% of Total Ton-Miles in the U.S.**
- **It Comprised 2.3% of the Total Freight Bill**

Source: *Waterborne Commerce Statistics, Transport Economics, ICC*

WORK PERFORMED COMPARED TO FUEL CONSUMED—1972

	Ton Miles (Billion)	Fuel Consumed (Trillion BTU)	BTU Per Ton Mile	Miles One Ton Moved Per Gallon
Rail	784	538	686	202
Highway	470	1,101	2,343	59.2
Waterway*	178	48	270	514
Pipeline	476	134	282	492

*Excludes Great Lakes and domestic deep draft shipping.

Source: Table constructed from U.S. Department of Transportation, *Freight Transportation Energy Use, Volume I—Summary And Baseline Results*. Report No. DOT-TSC-OST-79-1, I, Research And Special Program Administration, July 1979. Observed values from tables 4-1, 4-2, and 4-3, pages 31, 33 and 34.

River Transportation Division
Iowa Department of Transportation
5268 N.W. 2nd Avenue
Des Moines, Iowa 50313
515/281-4292

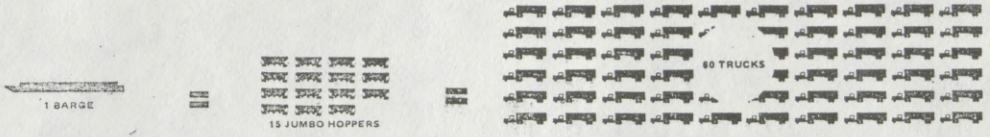
COMPARE

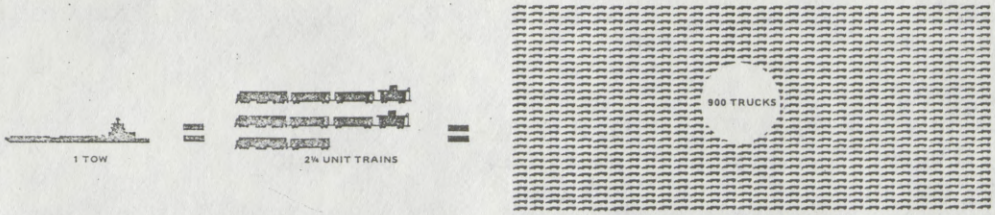
CARGO CAPACITY



BARGE	15 BARGE TOW	JUMBO HOPPER CAR	100 CAR UNIT TRAIN (GRAIN)	LARGE SEMI
1500 TON	22,500 TON	100 TON	10,000 TON	25 TON
52,500 BUSHELS	787,500 BUSHELS	3,500 BUSHELS	350,000 BUSHELS	875 BUSHELS
453,600 GALLONS	6,804,000 GALLONS	30,240 GALLONS	3,024,000 GALLONS	7,560 GALLONS

EQUIVALENT UNITS





EQUIVALENT LENGTHS



¼ MILE	2¼ MILES	36 MILES
15 BARGE TOW	2½ UNIT TRAINS	ASSUMING 150 FT. BETWEEN TRUCKS

Prepared by:
Planning and Research Division
Iowa Department of Transportation

COMPARISON OF ANTICIPATED TRAFFIC AT TIME OF PROJECT AUTHORIZATION WITH 1978 TONNAGE FOR SELECTED WATERWAYS

Project	Project Completion or Opening Date	Anticipated Tonnage* (Thousands)	1978 Tonnage (Thousands)
Alabama-Coosa	1972	1,906	1,967
Arkansas	1970	9,015	9,852
Black Warrior-Tombigbee	1954	1,304	14,601
Ohio Basin (Combined)	1925	59,389	217,715
Gulf Intracoastal WW	1944	9,668	84,364

*Annual expected tonnage as estimated at time of project authorization.

COMPARISON OF ANTICIPATED TRAFFIC AT TIME OF PROJECT AUTHORIZATION WITH 1978 TONNAGE FOR SELECTED WATERWAYS (Continued)

Project	Project Completion or Opening Date	Anticipated Tonnage* (Thousands)	1978 Tonnage (Thousands)
Illinois	1939	7,500	37,251
Tennessee	1948	15,300	31,634
Middle Miss. (Mo. R. to Ohio R.)	1953	10,000	79,328
Upper Miss. (Minn. to Mo. R.)	1940	9,000	68,976

*Annual expected tonnage as estimated at time of project authorization.

67-591 O—80—35

CONGRESS HAS PROVIDED THE STANDARD FOR COMPUTING THE BENEFICIAL EFFECTS OF NAVIGATION IN SECTION 7(a) OF THE DEPARTMENT OF TRANSPORTATION ACT OF 1966, AS FOLLOWS:

The Primary Direct Navigation Benefits of a Water Resource Project Are Defined as the Product of the Savings to Shippers Using the Waterway and the Estimated Traffic That Would Use the Waterway; Where the Savings to Shippers Shall Be Construed To Mean the Difference Between (a) the Freight Rate or Charges Prevailing at the Time of the Study for the Movement by the Alternative Means and (b) Those Which Would be Charged on the Proposed Waterway; and Where the Estimate of Traffic That Would Use the Waterway Will Be Based on Such Freight Rates, Taking Into Account Projections of the Economic Growth of the Area.

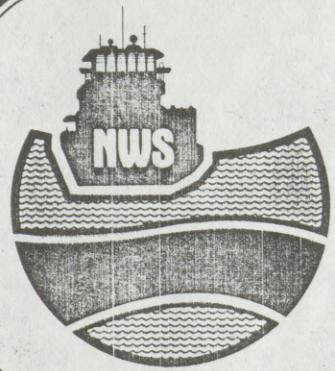
Friday
December 14, 1979

federal register

Part IX

Water Resources Council

Procedures for Evaluation of National Economic Development (NED) Benefits and Costs in Water Resources Planning (Level C); Final Rule



National Waterways Study

RESPONSIBILITY
Department of the Army
Corps of Engineers
Institute for Water Resources

AUTHORITY
Water Resources
Development Act
of 1976

OBJECTIVE

"Identify and analyze
alternative strategies
for providing a navigation system
to serve the nation's current
and projected transportation needs."

PROJECTED GROWTH IN DOMESTIC WATERBORNE COAL MOVEMENT

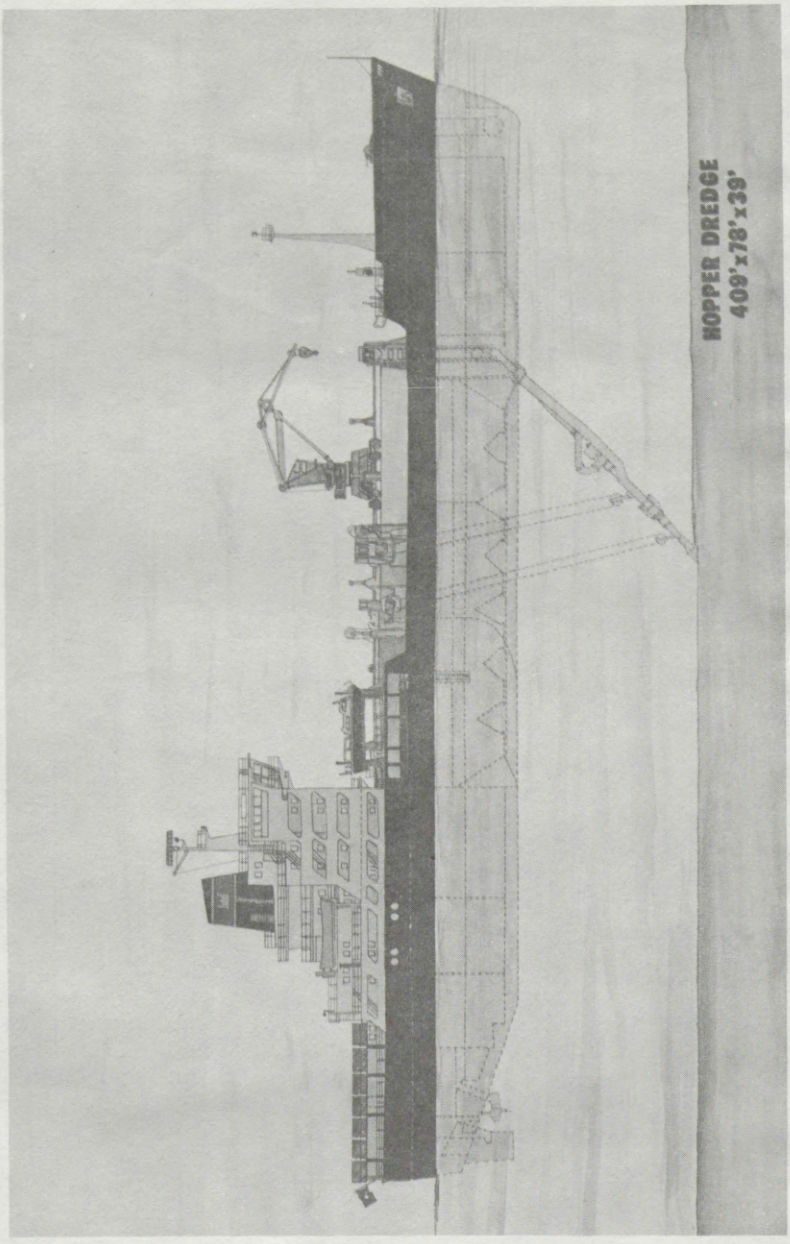
	1977	2003
Millions Tons	156.3	418.9
Coal as a % of Total Domestic Waterborne Commerce	16%	26%

Source: NWS

WATERWAY SYSTEM CONTRAINTS

- Constraining Locks on 14 Waterway Segments
- Ports That Lack Adequate Facilities
- Insufficient Depth
- Navigation Conditions

Source: NWS

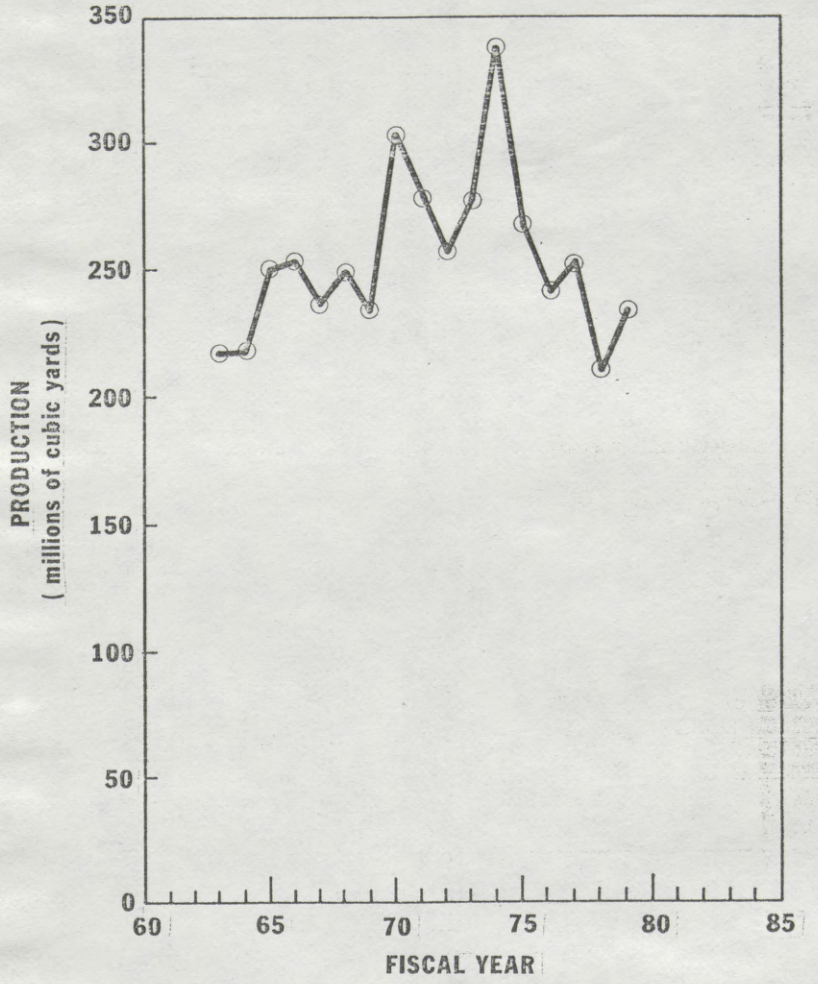

HOPPER DREDGE
409'x78'x39'

DREDGING PROGRAM

MAINTENANCE YARDAGE

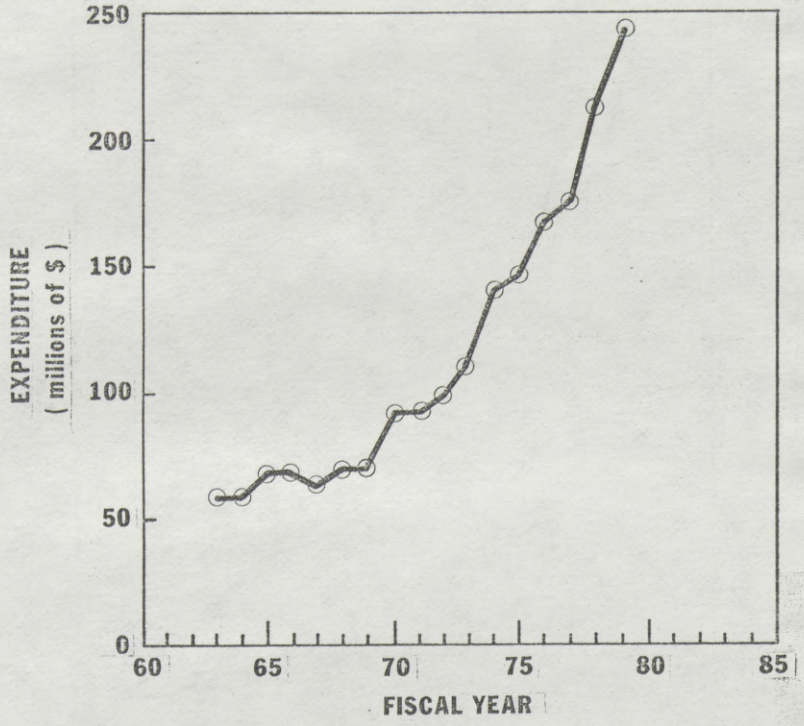
CORPS & INDUSTRY

1963-1979



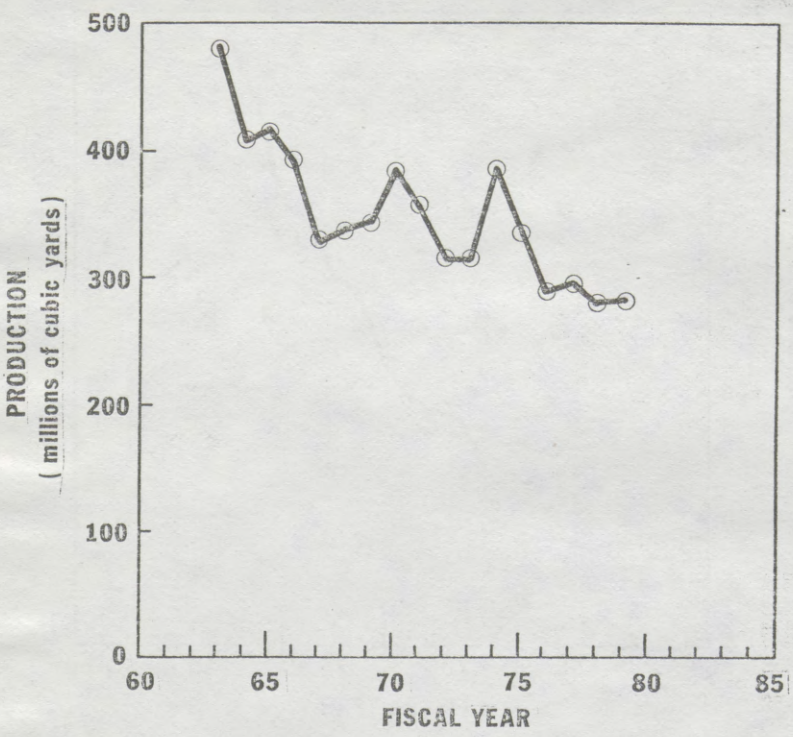
APPENDIX 6

DREDGING PROGRAM
MAINTENANCE EXPENDITURES
CORPS & INDUSTRY
1963-1979



APPENDIX 7

DREDGING PROGRAM
TOTAL YARDAGE
CORPS & INDUSTRY
1963-1979/



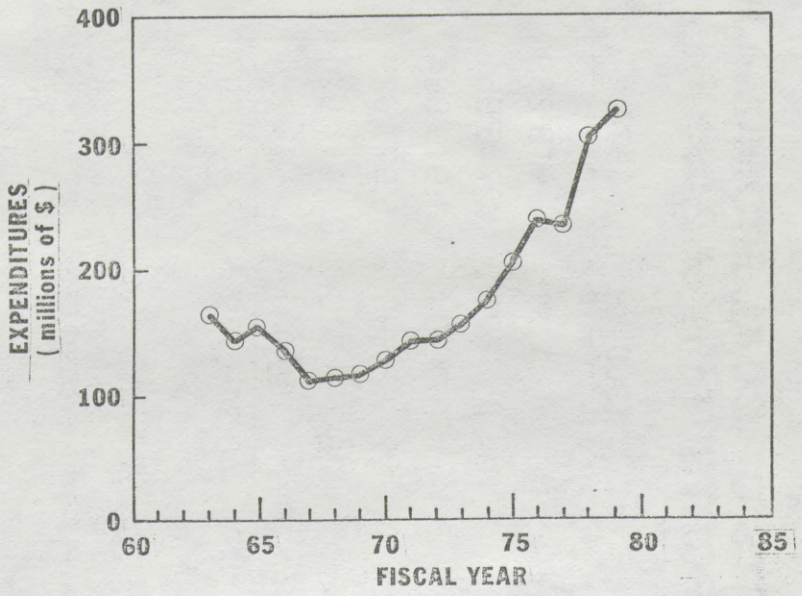
APPENDIX 8

DREDGING PROGRAM

TOTAL EXPENDITURES

CORPS & INDUSTRY

1963-1979



APPENDIX 9

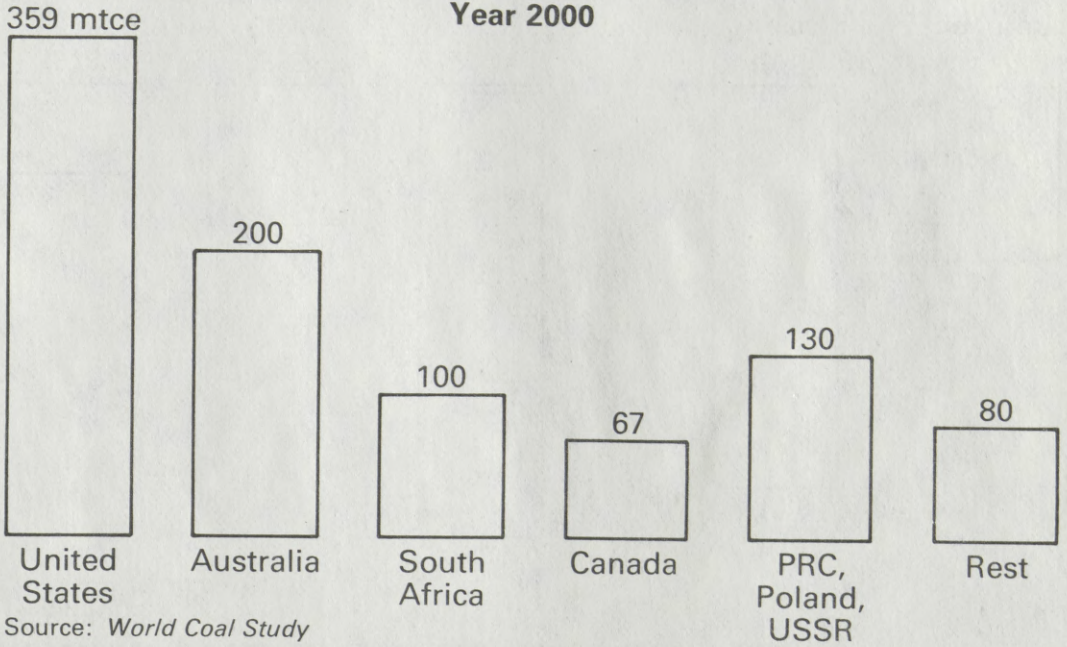
U.S. EXPORTS OF COAL FROM MAJOR COASTAL PORTS (Tons of 2,000 lbs.)

	1969	1974	1979*
New Orleans	0	913,269	1,409,447
Mobile	601	1,746,861	2,969,814
Philadelphia	377,704	1,915,864	1,135,000
Baltimore	2,658,390	5,977,029	9,158,429
Hampton Roads	36,848,513	37,541,920	32,102,904
Other	429,961	533,754	45,100
Total	40,315,169	48,628,697	46,820,694

*Preliminary
Source: *Waterborne Commerce of the U.S.*

COAL EXPORTER POTENTIALS

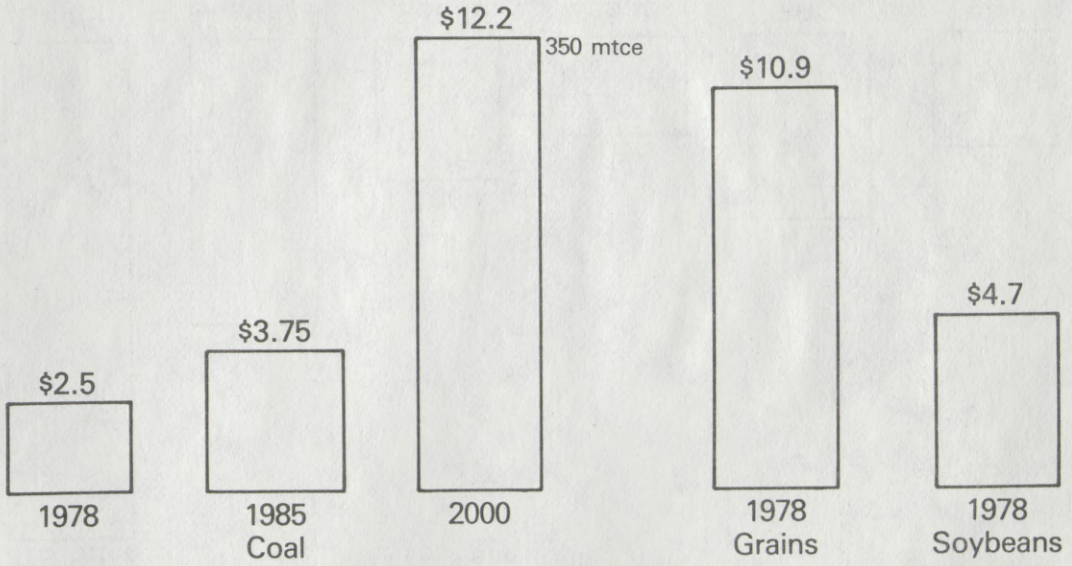
Year 2000



Source: *World Coal Study*

U.S. COAL EXPORT REVENUES

($ Billions)



Source: *World Coal Study*