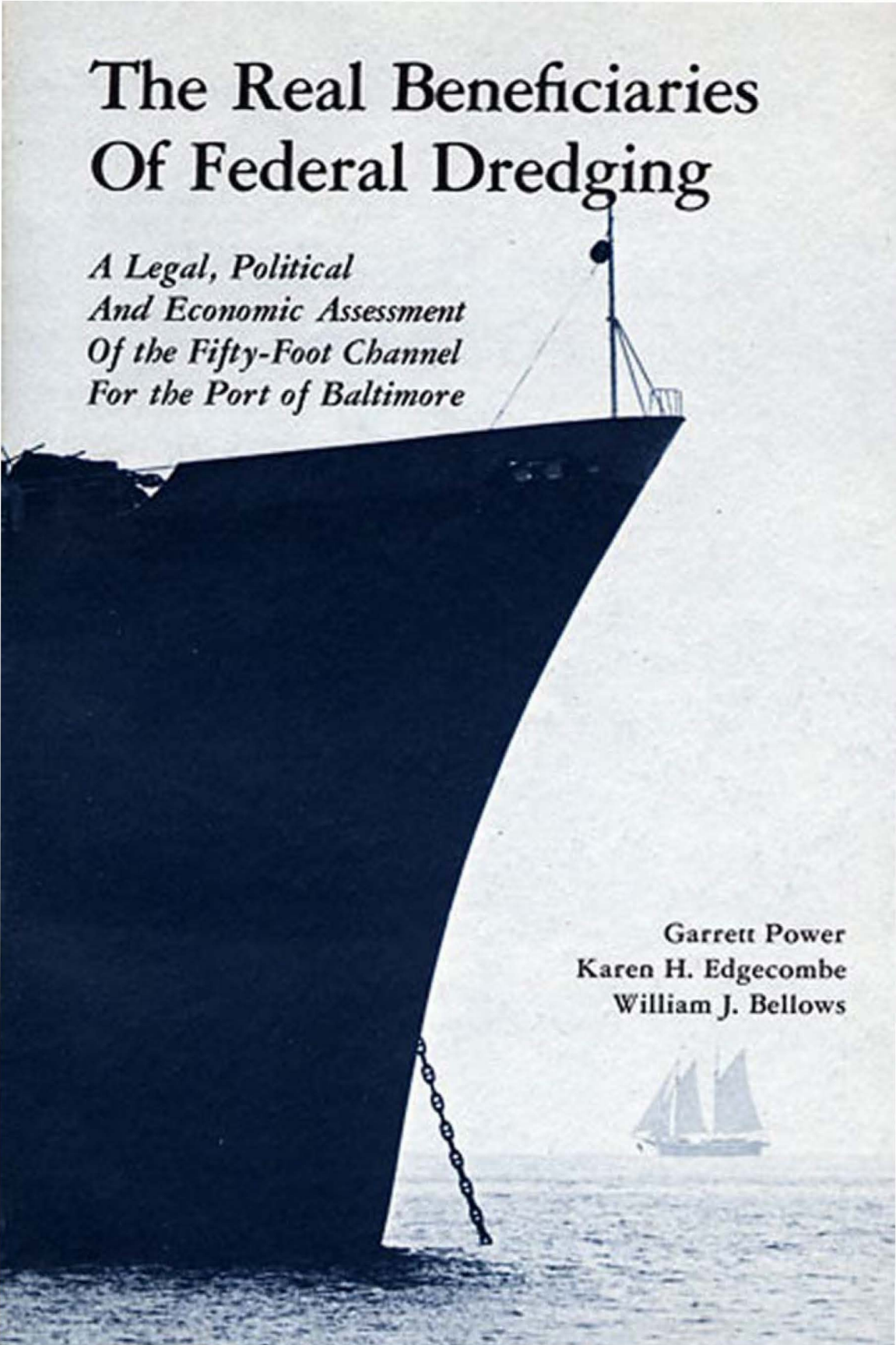
The Real Beneficiaries Of Federal Dredging

A Legal, Political And Economic Assessment Of the Fifty-Foot Channel For the Port of Baltimore



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Editor's Preface

On an average day, more than twenty vessels are leaving or entering Baltimore Harbor. It has been estimated that one out of every ten jobs in Maryland may depend upon the port, for a total statewide impact of $4.3 billion. While Baltimore has been an important domestic and international port since colonial times--today it ranks among the largest in the nation--its success has not been the result of a natural deep water harbor. Quite the contrary. During the last two hundred years, the harbor and portions of the shipping channels have required widening and deepening to accommodate the increasing numbers of deep draft freighters and tankers.

During the late 18th century, dredging was supervised by Baltimore's Port Wardens. To pay the dredging costs, the wardens assessed a user fee, called a tonnage tax. In 1824, however, Congress gave the U.S. Army Corps of Engineers authority over the nation's navigable waterways. And ever since, the Corps has been responsible for managing federal water projects. Between 1826 and 1958, the Corps deepened Baltimore Harbor and channels from 17 feet to 22 to 35 to 42 feet--its current depth. In recent years, with changes in environmental regulatory responsibilities, the Corps has retained authority to issue permits for discharging dredged or fill material and to regulate transportation of dredged material for purposes of dumping.

Beneficiaries of Federal Dredging

In addition to regulating its projects, the Corps also performs benefit-cost analyses. These are economic studies that add up all the costs a given project will entail and contrasts those costs with the savings that will result from the project.

In 1958, the Corps was authorized by the House Public Works Committee to look into further improvement of Baltimore Harbor. The trend was continuing towards construction of bulk carriers that would require deeper channels than the 42-foot shipping lanes. For example, vessels on the order of 100,000 DWT (dead weight tons, a measure of cargo carrying capacity) could not enter the harbor fully loaded. The Corps proposed deepening channels to 50 feet. While the project received a good deal of support from commercial, private, city and state interests, the State of Maryland plan to deposit the resulting dredged spoil in a diked area at Hart and Miller Islands met with strong opposition, primarily from residents living near the islands but from environmental groups as well.

Although Congress appropriated preconstruction planning funds for fiscal years 1977 and 1978, the court suits brought against the Hart and Miller Islands project effectively delayed dredging operations. By the time the state was given authority to begin construction of the dike, Congress, in September 1981, refused to appropriate $7.5 million in start-up funds, because of the Reagan Administration's attempts to reduce federal spending and congressional debate over reform of federal water financing.

While this study by Garrett Power provides a historical overview and analysis of the Baltimore Harbor and Channels Project and the Hart and Miller Islands Project, it is primarily a critical examination of the role of the U.S. Army Corps of Engineers in federal waterway projects. Power focuses on the Corps as regulator of projects it manages and on the limitations of benefit-cost analysis.

He argues that the Corps, as regulator of the very projects it promotes and manages, is caught in a conflict of interest. In addition, he finds that the benefit-cost analysis is both unrealistic and misleading as a basis for congress to make national funding decisions. This is because benefits are calculated as dollar savings in transportation expenses to a few heavy indus-

tries that are the primary beneficiaries of deep draft channels; costs, on the other hand, are calculated as dollars paid out of state and federal treasuries. If Congress is to use such an analysis as a basis for making national funding decisions, then there are other benefits and costs that must be considered as well. For example, while there is added wealth that accrues to the port and to the state as a result of greater usage of the port there are losses, or costs to competitor ports, which may lose business as a result of the added attraction of Baltimore. Given that federal dollars are used for the dredging, says Power, benefit-cost analysis must take such factors in account.

Ironically, Power points out, there is no real certainty that dredging is the most cost-effective option for those industries which take advantage of deeper draft channels. Historically, of course, digging deeper has been the natural response to the larger carriers; but there has been little incentive for industry to explore alternative plans because the federal treasury has paid the bills. Wouldn't industry, he asks, undertake more rigorous balancing of benefits and costs if they--not government--were paying the bills?

A reevaluation is currently going on in the Administration and in Congress over national port policy and alternative means for financing improvement operations. *The Real Beneficiaries of Dredging* should be a valuable contribution to this reevaluation.

Merrill Leffler

Introduction

Two related navigation projects have long been in planning for Baltimore Harbor. The first would deepen the existing main and approach shipping channels to a depth of 50 feet, from the mouth of Chesapeake Bay to Baltimore. The second, already underway, would contain material dredged from the Harbor in a diked disposal area adjacent to Hart and Miller Islands.

Baltimore Harbor is located on the Patapsco River, ten miles from the river's mouth on Chesapeake Bay. A 42-foot deep channel running from the mouth of Chesapeake Bay to Baltimore now affords deep-water access. The channel extends from the Atlantic Ocean, through three shoals in Virginia, to the Patapsco River. Branch channels exist in Curtis Bay and the Middle and Northwest Branches of the Patapsco River. The Baltimore Harbor and Channels Project will modify 53 miles of these channels by widening them and deepening them to 50 feet. The dredging will be conducted by the Baltimore District Office of the U.S. Army Corps of Engineers and cost the federal government $242.6 million.

The diked disposal area is being constructed by the State of Maryland at the Hart and Miller Islands 13 miles east of Baltimore City near the mouth of Back River; the dike will form a 1,100-acre enclosure with capacity for 52 million cubic yards

of sediment. If all the dredged material from the Baltimore Harbor and channels were disposed there, the enclosure would be filled within nine to ten years. The State of Maryland will pay the $108 million cost of constructing the dike, rehandling the dredge material and maintaining the disposal area over the life of the project.

Since first proposed in 1966, the Baltimore Harbor and Channels Project has received widespread and consistent public and private support. In 1974, Governor Marvin Mandel of Maryland said: "In planning the future of the Port of Baltimore until the year 2000, we regard the 50-foot Channel Project as vital for the economic transportation of such bulk cargoes as ore, coal, and possibly oil."[1] In 1976, the Chesapeake Bay Foundation concluded: "Maryland's economic health is dependent on the Baltimore Harbor. Dredging and the Harbor Channel are necessary if Baltimore is to compete successfully with neighboring ports."[2] And in 1980, the Greater Baltimore Committee reiterated the "dire need for dredging the port to the level of 50 feet."[3]

Although most elected officials, conservation agencies and local residents accepted the need for a 50-foot channel, the Hart and Miller Islands project proved more controversial. Opponents challenged the Corps' authority to even grant the state a permit for the disposal site plan; moreover, the Corps' environmental impact analysis was charged with being insufficient in identifying potential structural problems and the consequent effects of polluted spoil possibly leeching into the Bay. In 1976, a lawsuit was brought to prevent construction of the disposal area. Through a series of court actions and appeals, work on the project was delayed for more than five years.

This inquiry is, in part, a history of the Baltimore Harbor and Channels Project and the Hart and Miller Islands Project; as such, it serves also as a basis for a critical assessment of the role of the Corps of Engineers in managing the nation's waterways. Chapter 1 is a historical review of the role of the U.S. Army Corps of Engineers in the development of navigable waterways, in general, and the Port of Baltimore, in particular. Chapters 2 and 3 give a history of the Port of Baltimore and a detailed study of current plans to deepen the channels and dispose of the dredged spoil at Hart and Miller Islands. Chapter 4

considers the politics of the funding process, Chapter 5 the effects of environmental regulations and Chapter 6 the economic basis for justifying waterway projects. Chapter 7 concludes with a summary and evaluation of the Corps' role as regulator of the projects it manages.

1

The Army Corps of Engineers and the Nation's Ports

The Corps' Role in Port Development

The United States Army Corps of Engineers is an American tradition. "Of all our institutions," one author has written, "none has had a more profound effect on the face of America than the Corps of Engineers."[1] The Corps was created by Congress in 1802; while its original duty was defense,[2] it has since expanded into a variety of peacetime activities which have made it the world's largest civil engineering enterprise. Beginning in 1824 with congressional authorization to maintain and improve the nation's rivers, harbors and other navigable waterways,[3] the Corps' civil works programs have grown to include flood control, hydroelectric power production, irrigation and improvement of water supplies and water quality. Since the 1890's, the Corps has had a regulatory function to complement its engineering activities. Its permission is a legal prerequisite for construction, dredging and filling, as well as for discharging refuse in navigable waterways.[4]

In short, the Corps has responsibility for almost all construction in waterways of the United States. As a result, it has played a significant role in the development of the nation's ports; as one harbor expert has noted: "Historically, a major development of the U.S. port industry has been the dredging operations of the Army Corps of Engineers. The navigation

budget of the Corps has provided the great majority of federal funds and technical assistance related to port planning and development. Moreover, the dredging of channels and harbors by the Corps has traditionally been performed without costs to the ports."[5]

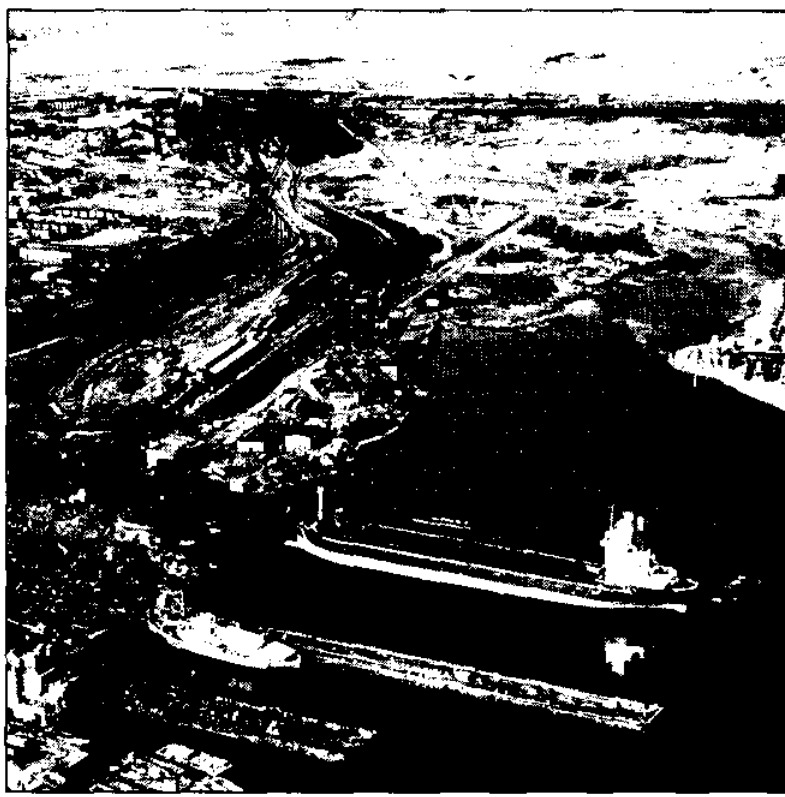
To maintain existing ship channels alone, the Corps annually dredges 300 million cubic yards of material; it dredges an additional 80 million cubic yards each year in new projects.[6]

The trend in the shipping industry towards the use of deeper draft vessels has increased even more the demand for dredging ports throughout the United States. Simultaneously, recent federal legislation has established administrative procedures to evaluate the environmental impacts of dredging. While these procedures have sometimes caused delays in waterway projects, they have also required the Corps to make changes in its dredging operations. Perhaps the most significant change involves disposal of dredged spoil.[7] Methods other than open dumping are now evaluated so that adverse effects of dredging operations on marine ecology are minimized. Still, a great deal remains to be learned about the effects of dredging on the marine habitat, for example, about the mechanisms of pollutant release, the chemical forms that are taken up by organisms and long-term environmental implications.

The increased demands for dredging in ports throughout the United States, coupled with increasing costs, reinforce the need for a comprehensive study of future U.S. port requirements. At best, federal port policy is fragmented;[8] at worst, it consists of haphazard approval of public works projects that often have strong local support because of the prospects for increased economic benefits. Nevertheless, completed projects have sometimes led to overcapacity in some port areas and intense competition among others.

One author has labelled the Corps' water projects the fruit of "pork barrel politics"[9] because of the long-standing control Congress has over federal dollars for development of the nation's water resources. Until recently, ready approval of Corps projects has often gone unchallenged, despite the fact that such projects often amount to federal subsidies of special private interests who stand to gain the most from dredging proj-

ects and political plums for sponsoring congressmen and senators.



The Corps' Civil Works Program

The Army Corps of Engineers' Civil Works Program is the responsibility of the Director of Civil Works of the Office of the Chief of Engineers. There are 11 regional divisions and 36 local districts.[10] Actual planning and construction are done by district field offices. In addition, an independent Board of Engineers for Rivers and Harbors reviews Corps plans for improvement.

The Corps' long-range planning is conducted in two steps. First, the Chief of Engineers sets objectives for the entire civil

works program, and each division then submits estimates of its region's needs for the next five years.[11] Once the Corps has set these priorities, it submits a budget proposal to the Office of Managment and Budget. If OMB orders a cut in that budget, as it frequently does, the Corps eliminates projects based on its own priority system.

Each year Congress passes a Public Works Appropriations Bill which contains the annual appropriations for the Army Corps of Engineers' civil construction program. For a project to be included in any appropriations bill, a lengthy process of proposal, study and authorization must take place.[12]

Interest in a project may be initiated in several ways. State and local governments, civil organizations or industry may ask Congress to authorize the Corps to study a proposed project that will improve the navigable waterways in their regions. Federal agencies may also request congressional authorization for civil works projects. Alternatively, the Corps itself, while working on an existing project, may see the need for future modifications or improvements and seek continued congressional authorizations.

The request for study of a proposed project is formally put before congressional Public Works committees for inclusion in the next Rivers and Harbors Bill, and, if the committees feel that the proposal merits further investigation, a feasibility study is authorized. It is a common practice never to refuse a request for a preliminary study. The feeling is that "every community should be given an equal opportunity to have its proposals for improvements examined on their merits."[13] Funds are then allocated through the Office of the Chief of Engineers to the Office of the District Engineer where the proposed project will be located. The District Engineer prepares a preliminary report for the Chief of Engineers that includes the engineering survey, a consideration of alternatives and a benefit-cost analysis. After holding public hearings, the Chief of Engineers then determines the economic justification of the project and submits his decision to Congress, which may either abandon the project or request further review.

If further review is requested, the District Office carries it out. Another series of hearings is held, and, if the District

Office recommends construction, it is reviewed by the Office of the Division Engineer, the Chief of Engineers and the Board of Engineers for Rivers and Harbors. Relevant federal agencies, including the Office of Management and Budget and state governments, are notified of the Corps' recommendation. The views of these groups are then submitted to Congress, along with the Corps' plan of improvement.

Hearings are then held by the House and Senate Public Works committees in which the Corps defends its plan; other concerned agencies--including federal, state and local--as well as industrial and civic organizations present their own views on the proposed project. Following these hearings, Congress decides the fate of the project. This decision is based, in large measure, on the Corps' recommendation, on its economic justification as derived from the benefit-cost analysis and on congressional politics.

If a project is authorized, it then awaits action by the appropriations committees of the House and Senate. Ferejohn has noted that almost any project with a favorable benefit-cost ratio will be authorized.[14] The appropriations decisions, however, are rigorous. Separate appropriations are made for preconstruction planning and for actual construction. Theoretically, a ten-year project could be cut in any given year, since the Corps presents an annual budget to the appropriations committees which then allocate funds for each proposed or ongoing project. In reality, a project is rarely cut once construction begins. But the failure to appropriate funds for the initial planning can kill a project or delay it for years.

Such was the case in the proposal to deepen the channels of Baltimore Harbor. The project was authorized in 1970. But the funds for preconstruction planning were not appropriated until 1976, for Fiscal Year 1977. A bottleneck like this can be caused by several factors, including scarcity of funds and local opposition to the project. In the case of the Baltimore Harbor Project, inadequate funding, not public opposition, was largely responsible for the six-year delay.

Congress also controls the procedures by which the Corps evaluates projects. Since 1936, Congress has mandated the use of benefit-cost analysis. The benefit values used in this analy-

sis have been criticized because they are said to result in grossly overstated benefit-cost ratios.[15] Moreover, the uncertain valuation of environmental costs makes accurate forecasting difficult; and the use of a low discount rate--the rate is mandated by Congress—can make unwarranted projects appear economically attractive.

The Corps' Permit Program

For many years, the Corps' only concern in its waterway develoment program was facilitating maritime commerce. Traditionally, there was little regard for water quality or for fish and wildlife damaged during dredging operations. This attitude is evidenced by practices between 1890 and 1968, when the Corps was the primary federal agency with authority to regulate discharges of industrial refuse into the nation's rivers and harbors.[16]

Section 6 of the Rivers and Harbors Act of 1890 (later Section 13 of the 1899 Act) prohibited the deposit of any refuse into navigable waters without the consent of the Corps. The Corps narrowly construed this authority and used it "only occasionally to impose civil or criminal responsiblity on those who discharged waste matter that impeded navigation."[17] Not until 1970 was a permit program instituted by the Corps to control the discharge of polluted materials into the nation's waterways.[18]

In 1899 the Corps was given two regulatory functions. Section 9 of the 1899 Rivers and Harbors Act prohibits the construction of any "bridge, dam, dike, or causeway" in any navigable waterway without the consent of Congress and the approval of the Chief of Engineers and the Secretary of War (now Secretary of the Army).[19] The Corps has narrowly interpreted this section to require congressional consent only for such construction as would disrupt the usual shipping lanes and then only if the navigable waterway is interstate.[20] In all other cases of construction or work, Section 10 is applied: Section 10 requires a permit from the Chief of Engineers for the construction of any "wharf, pier dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures" and for excavation of "fill."[21] Section 10 does not require congressional approval. As we will see in Chapter 3, this distinction proved

important in the Baltimore Harbor and channels dredging proposals: Federal courts debated for several years whether the Hart and Miller Islands Project was governed by Section 9 or Section 10.

The Corps first began to consider environmental matters in 1968 when, under Sections 9 and 10 of the 1899 Rivers and Harbors Act, it initiated a "public interest review" of permit applications. Corps regulations defined this review as a general balancing of all relevant factors, including conservation, aesthetics, effects on fish and wildlife, water quality, recreation and navigation to determine the "probable impact of the proposed structure or work and its intended use on the public interest."[22]

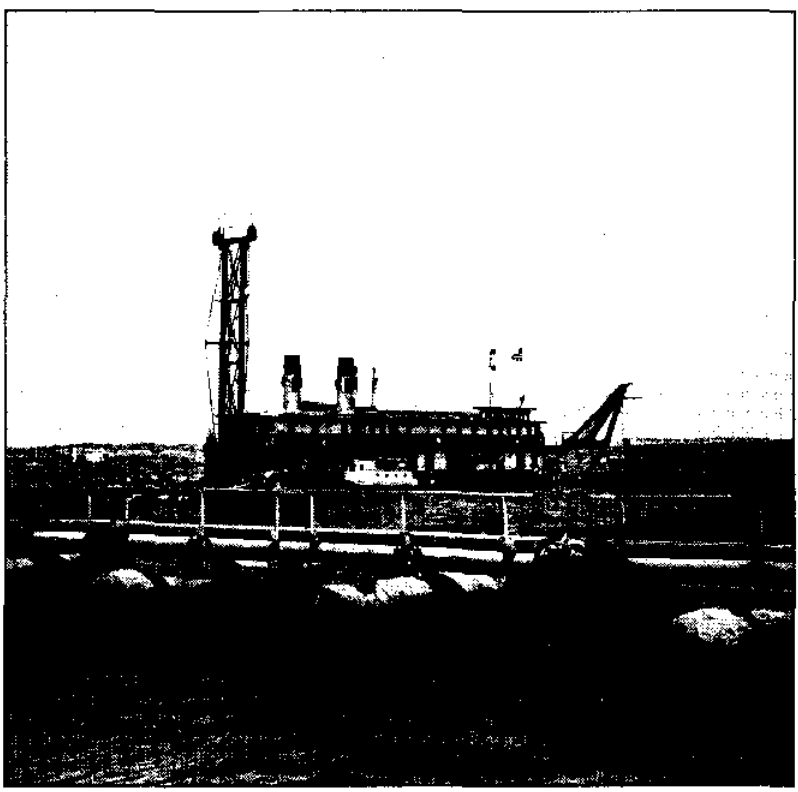
The following year the National Environmental Policy Act (NEPA) was enacted, making the consideration of environmental effects mandatory. NEPA has required the Corps to make an environmental assessment of each permit application. If the assessment concludes that the proposed activity could significantly alter the quality, productivity or potential of the environment, an Environmental Impact Statement (EIS) must be prepared by the District Office where the permit application is being reviewed.

The Corps' pollution control authority (such as it was), under Section 13 of the 1899 Act (regulating the discharge of industrial waste into the waterways), was transferred to the Environmental Protection Agency (EPA) by the Federal Water Pollution Control Act (FWPCA) of 1972.[23] However, there are two exceptions: Section 404 of the FWPCA states that the Secretary of the Army (the Corps) retains authority to issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites."[24] Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 gives the Corps the authority to regulate the transportation of dredged material for the purpose of dumping into ocean waters.[25] The Corps' permit program for work or construction in navigable waters under Sections 9 and 10 of the 1899 Rivers and Harbors Act remains unaltered.

In certain situations, the Corps' newly created pollution-control authority is relevant to its own dredging operations.

Beneficiaries of Federal Dredging

Many of the permits it issues authorize the disposal of the very materials its civil works program generates. For example, the Corps may perform some new or maintenance dredging on a river or harbor. From the early 1900's, until 1972, Congress required state and local communities to provide for disposition of the dredged materials; the common practice had been to carry the dredged material to deeper waters and dump it overboard. Since 1972, however, states have had to obtain permits from the Corp: a Section 103 permit for dumping in the ocean, a Section 13 permit for discharge in navigable waterways, a Section 10 permit for construction of a structure to hold polluted materials or a Section 404 permit for discharge of spoil.



Environmental guidelines exist for both Section 103 and Section 404 permits.[26] In addition, NEPA requires the Corps

to prepare, at the least, an environmental assessment and to solicit the comments of other concerned federal agencies. When a project does not comply with environmental guidelines, the District Engineer may still consider other overriding or relevant factors, such as the potentially unfavorable economic impact on navigation if the proposed activity is not authorized.[27] The Corps' regulations state that "District Engineers have . . . been given the authority to issue most permits found to be in the public interest over unresolved objections of another federal agency if that agency indicates that it does not desire to refer the application to a higher level of authority for review."[28] In the event that another agency such as EPA or the Department of Interior's Fish and Wildlife Service objects strenuously, their comments may be referred to higher authorities. But such interagency conflicts are usually resolved by another requirement that the Corps make permit approval conditional, to reflect the concerns of these agencies. Section 404 also gives EPA veto power to prohibit or restrict the use of any area when adverse effects on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas will result, or when a conflict with the Corps cannot be resolved.[29]

On occasion, the Corps' dual functions may put it in conflict with itself. For example, in order to issue a permit to the state to dispose of dredged materials, the Corps must assess the impacts of disposal. For the Corps to receive its annual appropriations from Congress for its dredging operations, it must demonstrate that adequate assurances from the state have been received. Whether district engineers, who sponsor harbor improvement plans and who also issue the necessary dredge and fill permits, can adequately separate these two functions is a question which deserves consideration.

The succeeding chapters focus in detail on connections between the the Corps' civil works program and the Baltimore Harbor and Channels Project, a project that is a fairly representative of the process by which Corps projects are initiated.


M MORAN

2

History of the Port of Baltimore[1]

The port of Baltimore was established in 1706,[2] almost a quarter of a century before the founding of the city.[2] A flourishing business in the export of grain to the West Indies and Europe made the port a cargo center even before the Revolutionary War.[3]

In the nineteenth century, the port's location as the westernmost of all the Atlantic ports became significant. With the advent of the railroads in the early 1800's, the port of Baltimore, 150 miles inland, became the transfer point in a transportation network that linked maritime commerce to the American midwest. Railroad companies made substantial private investments in the port's cargo facilities,[4] and, largely through their influence, Baltimore became a leader in the export of grain and the import of iron ore.

Trade through the port continued to increase into the twentieth century and throughout both world wars. Shortly after the Second World War, however, the trucking industry came to the fore and Baltimore's port facilities, designed for rail carriers, became substantially outmoded.[5] Completion of the St. Lawrence Seaway further contributed to the port's decline. In 1956 the Maryland Port Authority was established in an effort to revitalize the port through the use of public funds.[6]

Beneficiaries of Federal Dredging

Notwithstanding a tradition of private ownership of port facilities, public works projects to improve Baltimore Harbor date back to the time of the American Revolution. In 1783, the city established a Board of Port Wardens to direct improvements of the harbor and channel. The first survey conducted by the board revealed a water depth of 9 feet at mean tide at the head of the harbor and 18 feet at Fells Point. In order to provide cargo-carrying ships greater access to the port, the Board built some primitive dredging equipment, and, beginning in 1798, city funds paid for dredging the inner harbor.[7] To pay dredging costs, users were charged a tonnage tax--a penny a ton for incoming and departing vessels. The tax was later doubled.

In the early 1800's, responsibility for improvement of navigation in the outer harbor was assumed by the national government. A survey conducted by the Secretary of the Navy in 1826 at the request of Congress showed the main channel 17 feet deep at mean low tide.[8] Increases in traffic and ship size created a demand for a deeper channel. The first federal response to this need came in 1836 when Congress authorized $20,000 to deepen the harbor's entrance channels to an unspecified depth.[9] The money was given to the Board of Port Wardens and the city's dredging apparatus made the improvements.

In 1852, Congress authorized dredging the outer harbor channels to a depth of 22 feet and a width of 150 feet.[10] The Baltimore District of the United States Army Corps of Engineers, under the direction of Captain Henry Brewerton, undertook this project in cooperation with the city. The dredging began the following year and employed both Army and city-owned dredges. An area extending approximately 15 miles, from the city limits near Fort McHenry to deep water past the mouth of the Patapsco River, was included. The Civil War interrupted operations before the lower end of what became known as the Brewerton Channel could be completed.[11]

After the war, work was resumed under the supervision of a new Baltimore District Engineer, Major William P Craighill, a man who played a vital role in the development of the port.[12] Craighill's first task was to survey the existing channel and determine its navigable condition. Finding that the lower portion of Brewerton Channel (which extended directly into the

Chesapeake Bay) had shoaled considerably due to the Susquehanna River current, Craighill proposed that a new cut be made following a more southerly route in order to more closely correspond to the confluent currents of the Pataspsco and the Susquehanna.[13] Craighill's plan was approved, and government dredges commenced work on the channel with a goal of a 22-foot depth and a 200-foot width.[14]

By 1870 Baltimore's port equaled any on the Atlantic Coast; the number of ships using the port steadily increased and the city prospered. The desire for a continuation of this growth led to the establishment of a Board of Improvement in 1872, initially funded with $200,000 from the city and a $100,000 appropriation from Congress.[15] The Baltimore District of the Army Corps of Engineers continued to supervise joint federal and local improvements. Superior dredging equipment was employed which excavated three times faster than the older models.[16] The deepening and widening of the harbor proceeded on an even more massive scale.

Throughout Craighill's tenure as Baltimore District Engineer, he worked closely with city officials and local business leaders to convince Congress that further appropriations should be made. The success of his persuasion could be seen in the dimension of the channel at the time of his departure in 1895: 27 feet deep and 600 feet wide.[17] Through 1886, the federal government had spent roughly $2 million on the harbor, the city and the state $584,000 more. The tonnage of cargo moved through the port was second only to New York Harbor.[18]

Dredging of the channels, however, was not without its critics. Writing to the Chief of Engineers in 1872, Craighill notes that a few people (presumably oyster fishermen, although he did not specify) disapproved of the dredging because it endangered their livelihoods.[19] Nevertheless, the business community as a whole supported the channel improvements for their tremendous benefit to the city's economy.

Craighill was also a strong advocate of the upgrading of the ship canal that connected the Chesapeake and Delaware bays, thus providing a shorter access route to the Atlantic Ocean.[20] (Proposed routes for such an improved canal were considered during Craighill's service as District Engineer, but

construction did not actually take place until after World War I.[21]) A major project of the 1890's was the dredging of Curtis Bay, a tributary of the Patapsco River. As historian Harold K. Kanarek has described the project, it "seemed necessary because of the erection of a large sugar refinery in Curtis Bay. Of course the government, not the company paid for the improvement. Government promotion of business in the form of subsidies or technical assistance was not unusual. The Corps of Engineers had helped to build the nation's transportation network from the early days of the Republic."[22]

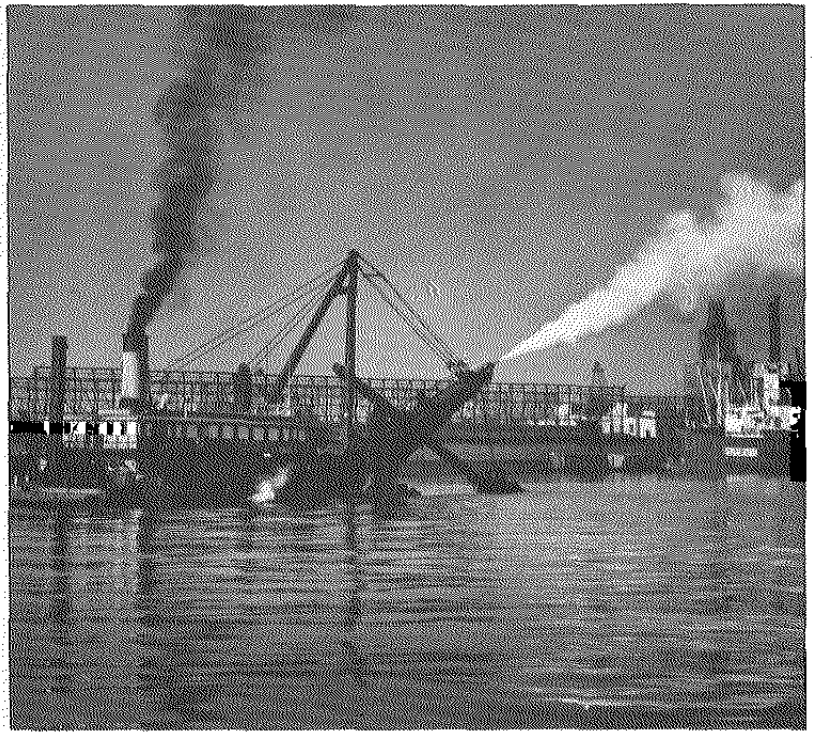
After Craighill left Baltimore in 1895, the Corps continued to maintain and enlarge the approach channels. Both the city and the federal government spent millions of dollars on new work and maintenance dredging. A 30-foot channel was completed soon after the turn of the century, and a 35-foot channel was completed in 1915.[23] By 1945, the federal government had expended nearly $17 million on Baltimore Harbor.[24]

Since the turn of the century, deep-water dumping of dredged material has resulted in controversy and is said to have damaged the Bay's oyster industry.[25] In 1902, the District Engineer for Baltimore warned of the need to develop disposal techniques other than deep-water dumping. He proposed constructing an artificial island in the channel from the dredged spoil.[26] The proposal was not acted upon.

Congress expressed concern about open dumping in its Rivers and Harbors Act of 1917. The act provided that the Chief of Engineers could approve new work in Baltimore Harbor if the city provided bulkheads behind which dredged material could be deposited.[27] The 1930 Act contained a similar requirement.[28] In 1945, Congress voted that local interests could not hold the federal government responsible for damages resulting from local dredge spoil disposal.[29] Since 1958, Congress has required all lands, easements and spoil disposal areas to be furnished at local expense.[30]

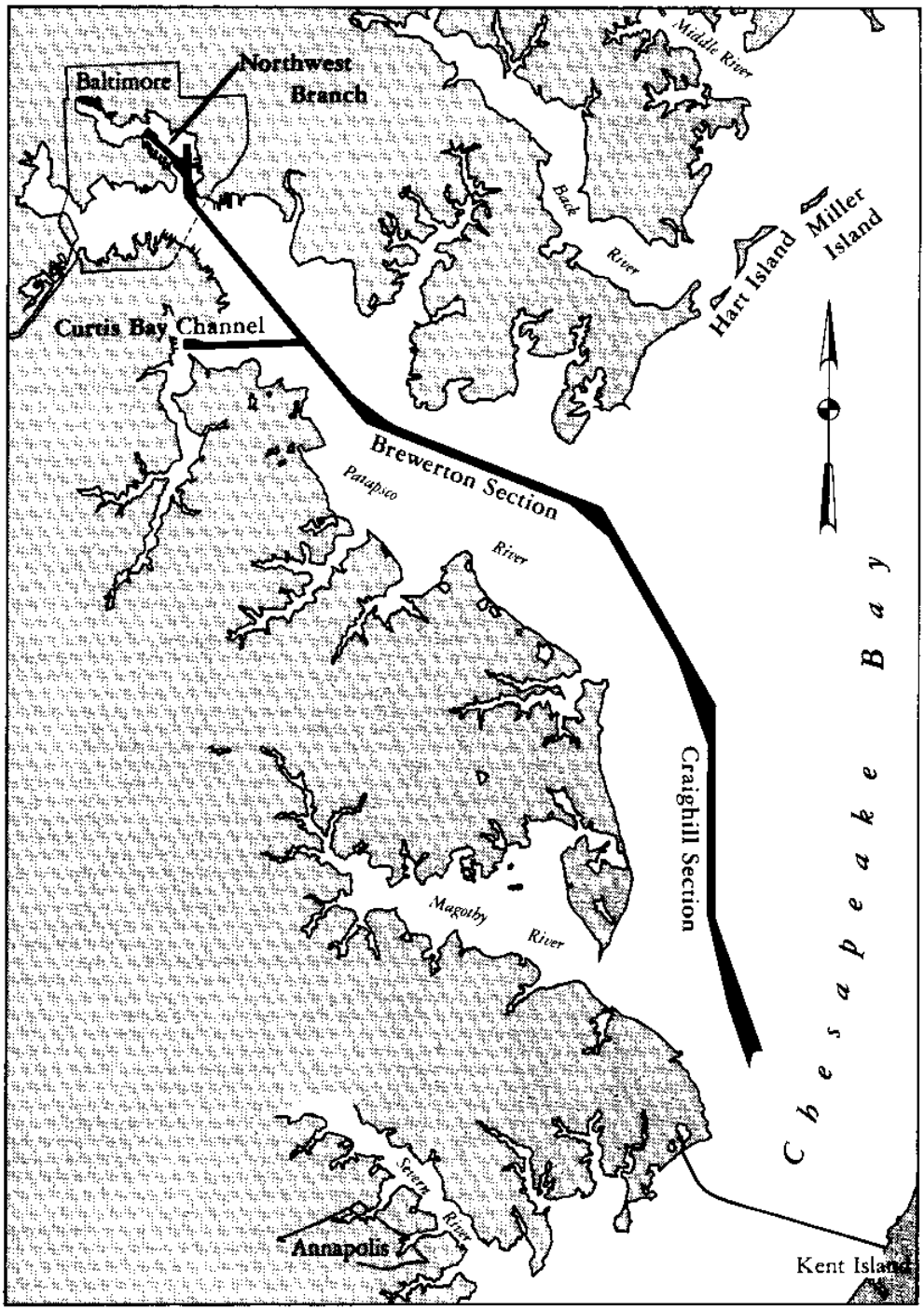
Harbor improvement has continued throughout this century. Since the 1917 Rivers and Harbors Act, the various federally maintained channels have been treated as a single project for budget authorization purposes.[31] The scope of the project was expanded in the late 1930's. The Chesapeake and

Delaware Canal, expanded after World War I, was converted from a barge to a ship canal with a depth of 27 feet, and a connecting channel was constructed to link it to the Brewerton Channel.[32] After World War II, Congress revised the Baltimore Harbor Project to provide for a depth of 39 feet in all the channels, which was achieved in 1954 at a cost of about $15 million.[33] Even before completion of this dredging, the Corps



was already recommending further expansion of the harbor to a depth of 42 feet and a width of 800 feet. Congress adopted the Corps' proposal in 1956, but budget considerations prompted presidential vetoes in 1956 and 1957. The project was authorized in the Rivers and Harbors Act of 1958[34] and by 1960, the dredges were busily widening and deepening the harbor and its channels. By 1965 the controlling depth of the main channel was 42 feet.

Maryland Channels to Be Dredged



3

Navigation Projects Proposed for the Port of Baltimore

Proposal to Deepen Baltimore Channel

In 1958, when Congress authorized the deepening of Baltimore channel to 42 feet, the House Public Works Committee passed a resolution authorizing the Corps to consider the advisability of further navigational improvements. In response, the Baltimore District Engineer prepared a Review Report, issued in June, 1969,[1] which recommended a plan to expand the existing 36.6 miles of 42-foot channels to 53.5 miles at 50 feet.

Public hearings had been held in 1966, and attendance, according to the Review Report, included "representatives of federal and state governments, shipping interests, commercial and civic organizations, and representatives of port-linked industries."[2] All of the governmental, industrial and commercial interests recommended deepening the channels to accommodate the growing numbers of deep-draft vessels carrying bulk cargo such as coal and iron ore. Fifty feet was the maximum depth requested by any of those local interests at the 1966 hearings.[3] Projected cost to the federal government was estimated at approximately $99.3 million. The benefit-cost ratio was estimated at 2 to 1.[4] (Previous federal expenditures for new and maintenance dredging in Baltimore Harbor included roughly $9 million prior to 1917[5] and another $40 million between 1917 and 1968.[6])

Beneficiaries of Federal Dredging

The Baltimore District Engineer's report was circulated according to standard Corps procedure: first to the North Atlantic Division, then to the Board of Engineers for Rivers and Harbors, then to the Office of the Chief of Engineers and finally to the Secretary of the Army. With a few modifications, the Review Report was submitted by the Chief of Engineers to Congress in 1970, and the Secretary of the Army submitted a copy to the Office of Management and Budget (OMB) for its comments. Congressional approval of the 50-foot channel for Baltimore was included in Section 101 of the Rivers and Harbors Act of 1970,[7] with commencement of construction subject to approval by the Secretary of the Army and the President.

OMB asked the Corps to consider several cost-saving adjustments to the scope of the project.[8] It asked about the possibility of a narrower channel than the one planned, an update of all costs, the possibility of separating "the small, economically superior 'inner harbor' segment from the large deepwater portion that would result in only very few modest net benefits" and the possibility of cost-sharing with "the very few, easily identifiable immediate beneficiaries of the deepwater portion of the port."[9]

The Corps responded to each of OMB's requests for additional information but concluded that the project should proceed without change.[10] In considering the possibility of a narrow channel, the Corps replied that there was certainly a need for studying what constituted an adequate channel width but noted that no such study had ever been conducted.[11] They concluded that the existing width was adequate because none of the various port interests had complained.[12] This response, of course, leaves unexamined the question whether a lesser width would be sufficient. While concluding that the full width should be recommended, the Corps did discuss several alternatives. Port interests had indicated that improved radio communications might make it possible to use a single lane inbound channel for both inbound and outbound ships, thereby lessening the required width. Without further elucidation, however, the Corps decided that such a system "could prove more expensive than providing the full channel widths."[13]

In the discussion of alternatives, the Corps next considered the feasibility of deepening only the inbound side of the chan-

nel to 50 feet; this was based on the fact *then* that since the majority of vessels requiring the 50-foot channel would be carrying imports, once emptied at port they would ride higher on their outbound passage and not require a 50-foot channel to leave the harbor. The only outgoing ships that might require such a clearance would be coal ships,[14] which, in 1974, were trickling out of the harbor at the rate of only one per week.

The Corps' response to the alternative of deepening only the inbound channel can be best described as ambivalent. Answering OMB, they recommended beginning construction of a single inbound channel while conducting "post authorization studies . . . of the project to determine the advisability of widening the channels to full project width";[15] yet on the very next page, the Corps recommends that no changes should be made in the original project.[16] The appealing aspect of only deepening the inbound channel was, of course, the savings in cost. The 1974 cost of a single inbound lane at a depth of 50 feet was estimated at $73.9 million ($52.4 million federal and $21.5 million non-federal expenditures). In sharp contrast, the cost of the full channel widths had jumped from $99 million in 1969 to $116.6 million in 1974 ($83.8 million federal and $32.8 million non-federal).[17] A total federal savings of over $30 million dollars was disregarded with the statement that further studies should be conducted.

OMB's suggestion that the Corps consider the feasibility of cost sharing with the "very few, easily identifiable, immediate beneficiaries" of the project was rejected. Though the Corps report states that such an idea was without precedent, the OMB suggestion was not entirely novel. Since 1920, the Corps has been required by statute to evaluate the general and local or special benefits conferred by a given project and to recommend the appropriate "local cooperation" to be required.[18] In implementing this requirement, however, the Corps has mandated cost sharing only in instances where there was but *one* prospective beneficiary. The Corps concluded that since the Baltimore Harbor Project had "multiple users," cost sharing was not required.[19]

The multiple beneficiaries cited by the Corps include Bethlehem Steel Corporation, EXXON Corporation and some inland steel companies which purchase imported iron and chrome ore.

Beneficiaries of Federal Dredging

Secondary beneficiaries include the railroads, specifically the Baltimore and Ohio Railroad Company and the Canton Railroad Company, which move commodities to the interior and bring coal down from Appalachia. When the Corps held a meeting with representatives of these industries in the late 1960's, cost sharing met with unanimous opposition. The companies argued that "cost sharing" would be a change in "existing Federal laws, regulations and precedents" that have evolved from the 1920 Rivers and Harbors Act.[20] They claimed that it would be unfair to change long-standing federal policies without extensive national hearings. With regard to cost sharing by state and local governments, the Corps reasoned that increased costs of dredge disposal made it inadvisable to expect further local government contribution.[21]

The Corps' supplemental report was submitted to OMB for further study in 1974.[22] OMB approval, required by the Rivers and Harbors Act of 1970, finally came in 1976. A first appropriation of $280,000 was approved for inclusion in the federal budget for Fiscal Year 1977[23] and $440,000 was appropriated for 1978.[24] These funds were used for preconstruction planning.

The next step was a Final Plan of Study issued by the Baltimore District in May, 1977, outlining the expected course of their studies and mentioning some of the unresolved issues still to be investigated.[25] This study reported that by May, 1977, total federal costs, originally projected to be $99 million, had risen to $127 million and nonfederal costs had gone from $3.5 million to $46 million.[26] Significant issues which still remained open included the adequacy of dredge disposal areas and the continued economic justification for the project.[27] By May, 1981, the final two documents required in the preconstruction planning were released. The Corps combined in one publication drafts of the General Design Memorandum and the Environmental Impact Statement.[28] The General Design Memorandum presents a review of the economic, engineering and environmental feasibility of the project. It includes an updated benefit-cost analysis. Inflation had almost tripled costs--the federal first cost investment estimated at $85 million in 1973 had risen to $243 million in 1981.[29] Nevertheless, the estimate of benefits had also soared. Since the 1974 benefit-cost analysis, there has been a phenomenal growth in the export coal market,

from 4.7 million tons in 1970 to 9.1 million tons in 1978 to estimates between 36 million and 81 million tons by 1985.[30] The net result is that the benefit-cost ratio set at 1.9 in 1974 had increased to 4.7 by 1981.[31]

The Proposal to Dispose of Dredged Spoil at the Hart and Miller Islands Site

Congressional authorization for the Baltimore Harbor Project in 1970 included the stipulation that local interests must agree to cooperate.[32] The state had to give three assurances: that it could provide a suitable site for disposing of dredged material taken from Maryland waters; that it would construct a retaining dike; and that it would pay the costs of transporting the spoil to the disposal area.

In 1968, in anticipation of congressional authorization for the overall project, the state began planning its activities. Acknowledging the "gross contamination of bottom sediments," an advisory commission urged that the state appropriate funds for a "spoil containment area in the vicinity of Baltimore Harbor."[33] To this end, the General Assembly appropriated $13 million in 1969 for the selection and construction of such a site.[34]

The state commissioned an engineering firm to study feasible sites for spoil disposal. Seventy locations were considered by the firm, which made its assessments in terms of perceived economic and environmental impacts of building such a facility. Its report, issued in 1970, recommended Hart and Miller Islands, situated at the mouth of the Back River, just north of the mouth of the Patapsco River.[35] They were considered most desirable for several reasons: One side of the diked area would be formed by the two islands, thereby cutting construction costs; materials for the dike walls were present in the area; construction would have little effect on valuable marine life; and existing oyster beds and significant fish spawning grounds would not be destroyed.[36]

The report suggested three possible configurations, each of which would accommodate 100 million cubic yards of spoil, the amount estimated to be dredged from the harbor and nearby channels in a twenty year period.[37] But the state eventually

selected a smaller, 1,100-acre configuration which could hold 52 million cubic yards, the approximate amount to be generated in the initial deepening of the harbor channels to 50 feet. This site would have a nine to ten year life, corresponding to the amount of time which will be required by the Corps to dredge the channels. This means, of course, that another site of equal size will be required in ten years. Given the long lead-time, the state is already considering several locations.

Before the state could proceed with the Hart and Miller Islands project, it had to obtain a permit to dredge and fill from the Corps of Engineers, as called for by both the Rivers and Harbors Act of 1899 and the Federal Water Pollution Control Act of 1972. Application for the permit was made in February, 1972. Four public hearings were held, two by the state and two by the Corps.[38] Comments were received from elected officials, citizen groups and state and federal government agencies, both at the initial hearings and in response to the draft EIS subsequently prepared by the Corps.

The Department of Interior expressed numerous reservations and requested more information about the chemical nature of the fill material and the construction specifications of the dike. It also expressed concern for decreased recreational opportunities and the loss of most of the wetlands, with its consequent ramifications for water fowl.[39] In summary, the Department of Interior said: "In general, we find the draft statement to be heavily oriented toward project justification, and inadequate in presenting a complete evaluation of environmental values and alternatives. . . ."[40]

EPA commented that a long-term program should be developed to address all navigation-related activities for the Port of Baltimore[41] and that an overview impact statement would be desirable.[42] EPA also warned that the possible future expansion of the Hart and Miller Islands facility should be included in the EIS for the dredge and fill permit.[43] EPA placed the project in an "environmental reservations" category.[44]

A "final" EIS was published by the Corps in 1974. But continued objections prompted the State of Maryland to hire an outside consultant whose report, issued in 1975, indicated that certain design changes would be necessary to make the dike

acceptable. The Corps' own engineers expressed some concerns about the design of the dike, but meetings late in 1975 with the design engineers and state officials brought assurances that modifications would be made. The Corps then dropped its engineering objections.[45]

In February 1976, the Corps published a revised EIS, and the permit to construct the diked disposal area was issued by the Baltimore District Engineer in November, subject to the condition that the state comply with the objectives of EPA guidelines issued under FWPCA Section 404.[46]

The permit approval caused considerable public outcry. Local residents, environmental groups and elected officials joined in a lawsuit, challenging the Corps' action as "arbitrary, capricious and an abuse of discretion."[47] Their complaint focused on two major issues:

> The Corps' traditional interpretation of Sections 9 and 10 of the Rivers and Harbors Act of 1899: Although Section 9 is specifically applicable to dikes, the Corps maintained that Section 10 was the appropriate section. It said that the proposal was not for a dike, but a diked disposal area, which would not inhibit navigation; therefore, it said, Section 9 did not apply.[48] The resolution of this issue was crucial because Section 9 requires congressional consent; Section 10 does not.
>
> The structural integrity of the dike: The plaintiffs contended that the EIS failed to address the possibility of construction failures that might cause a breach in the dike walls or seepage of the contained spoil.[49]

In 1977, this suit was heard by the United States District Court for the District of Maryland. The court granted summary judgment on the first count for the plaintiffs on the grounds that the project was indeed governed by Section 9 of the Rivers and Harbors Act and, therefore, required the consent of Congress.[50]

THE BALTIMORE HARBOR AND SHIP CHANNELS PROJECT: A CHRONOLOGY

1958: House Public Works Committee authorizes Corps of Engineers to consider improvements to Baltimore Harbor.

1966: Baltimore District Corps proposes the deepening of Baltimore Harbor and Channels to 50 feet; holds public hearing.

1968: Corps begins "public interest review," a general balancing of all relevant facts, including conservation, aesthetics, effects on fish and wildlife, water quality, recreation and navigation to determine the probable impact of the proposed structure of work and its intended use on the public interest.

1969: Baltimore District Corps issues *Review Report, Baltimore Harbor and Channels* (June 1969), which recommends dredging of a 50-foot channel to Baltimore Harbor to Congress and the President's Office of Management and Budget.

1970: Congress enacts National Environmental Policy Act.

Baltimore District Corps issues environmental impact statement, *Environmental Statement, Baltimore Harbor and Channels, Maryland and Virginia* (25 September 1970).

"Trident-Green" Study commissioned by State of Maryland considers 70 possible disposal sites and recommends Hart and Miller Islands.

Congress in Rivers and Harbors Act of 1970 authorizes deepening of channels to 50 feet.

Maryland General Assembly appropriates $13 million for selection and construction of spoil disposal site.

1972: Maryland Department of General Services applies to the Baltimore District Corps for a permit to construct a diked disposal area at Hart and Miller Islands.

Maryland Department of Natural Resources issues a Water Quality Certificate approving Hart and Miller Islands diked disposal area.

Baltimore District Corps publishes draft Hart and Miller Islands environmental impact statement and requests comments.

1973: Office of Management and Budget replies to Corps of Engineers 1969 *Review Report* and requests more information concerning the possibility of a channel of lesser width and cost-sharing with beneficiaries.

1974: Baltimore District Corps publishes a final environmental impact statement concerning operation and maintenance of Baltimore Harbor and associated channels, which would maintain existing channels of 42 feet and disposal of spoil by open water dumping.

Baltimore District Corps replies to Office of Management and Budget's request with *Supplemental Information Baltimore Harbor & Channels*, recommending no changes in the 50-foot channel project.

1975: Office of Management and Budget approves 50-foot Channel Project.

1976 Baltimore District Corps issues final environmental impact statement on Hart and Miller Islands diked disposal area.

Congress appropriates funds for preconstruction planning of 50-foot channel: $280,000 for fiscal year 1977; $440,000 for fiscal year 1978.

Baltimore District Corps issues permit for construction of Hart and Miller Islands diked disposal area.

1977: Citizens group files suit in Maryland Federal District Court challenging Corps of Engineers decision to issue permit for construction of Hart and Miller Islands diked disposal area.

Baltimore District Corps Issues *Final Plan of Study, Advanced Engineering & Design for Baltimore Harbor and Channels* affirming the need for the project, calling for development of General Design Memorandum and environmental impact statement as final step in approval of 50-foot channel.

1978: Maryland Federal District Court rules that Corps of Engineers erroneously processed Hart and Miller Islands permit application, holding that Congressional approval is required. State of Maryland appeals.

1980: *May:* United States Court of Appeals for the Fourth Circuit reverses ruling of District holding that Congressional approval not required and remands case to District Court for consideration of other objections to Corps approval of permit.

November: U.S. Supreme Court denies a petition for Writ of Certiorari, thereby allowing decision of Court of Appeals to stand.

December: Maryland Federal District Court holds that the plaintiffs have failed to advance substantial and dependable evidence challenging the permit for Hart and Miller Islands disposal area, thereby allowing the project to go forward.

1981: *January:* Maryland Governor Hughes includes $23.7 million in capital budget to be added to $12 million remaining from previous authorization for construction of Hart and Miller Islands spoil disposal area.

March: Reagan Administration introduces S.809 into Congress; it requires private beneficiaries to pay the costs of Corps construction of deep draft channels.

May: Baltimore District Corps issues *Main Report and Environmental Statement, Baltimore Harbor and Channels, Maryland and Virginia,* the last step necessary for Corps of Engineers approval of 50-foot channel project.

June: State of Maryland awards contract for construction of a dike at Hart and Miller Islands site in the amount of $32.9 million.

September: Start-up funds stalled by Reagan Administration.

The defendants appealed to the United States Court of Appeals for the Fourth Circuit. In May 1980, the ruling of the District Court was reversed. The appeals court reasoned that the term "dike" in Section 9 was ambiguous; the court focused instead upon the legislative history of the statute and the established administrative practices. It found that the Corps had been proper in asserting its authority to license the diked disposal area under Section 10 of the Rivers and Harbors Act.[51] A Petition for a Writ of Certiorari was denied by the United States Supreme Court in November 1980.[52]

But this reaffirmation of the Corps' jurisdiction to issue a permit left unanswered the plaintiffs' second complaint that the Corps had abused its discretion in issuing the permit. While the Corps maintained that dike failure was extremely remote, the plaintiffs pointed to several known dike failures, some within Chesapeake Bay. In answer to interrogatories, the Corps revealed that nine spoil facilities in the Philadelphia-Baltimore-Norfolk area had experienced structural failures.[53]

The plaintiffs argued that the environmental damage from such a dike failure would be disastrous. They protested the Corps' failure to even consider such a possiblity in the EIS and in the ensuing permit approval. They also said that the EIS failed to consider the future need for additional diked disposal areas or the cumulative effect of these facilities on the ecology of the Bay.

In December 1980, the Maryland Federal District Court rendered its decsion on the second count. It found it had neither the power nor the responsibility to review the merits of the Corps' conclusions. Its role was limited to determining whether or not the procedures required by the National Environmental Policy were followed. The court concluded, with seeming reluctance, that the plaintiffs had failed to advance substantial evidence that the EIS was fatally flawed.[54]

With the legal questions finally resolved, the Maryland Port Authority prepared to advertise for construction bids. Maryland Governor Harry Hughes included $23.7 million in his capital budget for Fiscal Year 1981-82 to be added to the $12 million for the project which remained from a previous bond authorization. Estimated costs of this diked disposal area have

been subject to rampant inflation. The original cost estimate in 1969 was $3.5 million. By 1974 the figure reached $32.8 million[55] and by 1977, $46 million.[56] By early 1981, the project was estimated to cost $70 million;[57] $35 or $36 million will be required to build the dikes during the 1981 fiscal year.[58]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4

The Politics of Approval and Funding

The funding of public works projects is an excercise in politics and involves the Corps of Engineers, the U.S. Congress, industrial, local and other beneficiaries as well as opponents, which may range from local and neighborhood coalitions to the executive branch of the federal government. This chapter examines the role of each of these groups.

The Corps of Engineers

The Corps is first and foremost a group of engineers whose historically well-defined role has been to improve navigation on the nation's waterways. It seems only natural that it promote waterway improvement projects through the cultivation of strong relationships with local shipping, business and government interests and with Congress. The district offices try to build a coalition broad enough to see a given project through to completion. To gain congressional support, the Corps must demonstrate local backing and a favorable benefit-cost ratio. Local opposition or controversy invites congressional reluctance to support the project in committee and on the floor. To gain broad local support, Corps projects must offer something to everyone. As we will see, various special interests stand to gain from the Baltimore Harbor project.

Beneficiaries of Federal Dredging

The district offices of the Corps of Engineers are the prime movers behind waterway improvement projects. Situated in regions that request improvements and being responsive to local preference, these offices are promoters of water projects. No better illustration exists than the history of Baltimore Harbor during the post-Civil War tenure of District Engineer, William Craighill. [2]

On May 25, 1966, the Baltimore District office held a series of public hearings to determine the extent of local interest in the Corps' proposal to deepen the channels. All comment was favorable and supported a new depth of at least 45 feet. Several industry representatives, including the Baltimore and Ohio Railroad Company, the Canton Company, Marcona, Inc. (a supplier of iron ore), the Bethlehem Steel Corporation and the American Merchant Marine Association expressed strong interest in a 50-foot channel. [3]

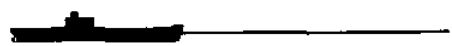
The types of industries likely to benefit from a deeper channel were three: those associated with coal exports (the railroads), iron ore imports (the steel companies) and petroleum imports. These are the bulk commodities handled through the port of Baltimore that are more economically transported in deep-draft vessels. The indirect beneficiaries of the projected increase in trade were, of course, shippers, represented by the steamship trade associations, the City of Baltimore and the State of Maryland, represented by the Maryland Port Authority.

To demonstrate the need for a deeper port, proponents of the project pointed out that the mean average depth required for dry bulk carriers had been steadily increasing--from 33 feet in 1946 to 35 feet in 1956 to 39 feet in 1966; the mean average draft required for tankers in 1966 was 45 feet. [4] This trend was expected to continue with the construction then underway of vessels with dead weight tonnages (DWT) of 50,000 to 100,000 that would draw as much as 50 feet of water. [5] To operate most economically, these carriers must be fully loaded. The American Merchant Marine Association estimated in 1969 that over the proposed 50-year life of the Baltimore Harbor project, a savings of $115 million in the costs of transporting iron ore and $24 million for petroleum products could be expected through the use of these larger, more economical vessels. [6]

Vessel Sizes—Past and Present

BALTIMORE CLIPPER *ANN MCKIM*
Length 143′ Draft 14′

LIBERTY CLASS
Length 441′-6″ Draft 27′-8″ DWT* 10,800

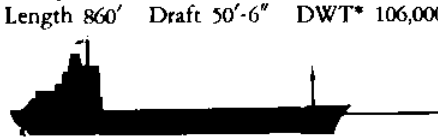


VENORE CLASS
Length 582′-11″ Draft 34′-4″ DWT* 24,000

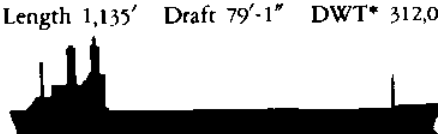
DRY BULK CARRIER
Length 775′ Draft 41′-5″ DWT* 60,000

JACQUES CARTIER
Length 800′ Draft 45′ DWT* 89,000

SAN JUAN EXPORTER (World's Biggest Ore Carrier)
Length 860′ Draft 50′-6″ DWT* 106,000



UNIVERSE IRELAND (World's Largest Ship)
Length 1,135′ Draft 79′-1″ DWT* 312,000



**DWT = Dead Weight Tonnage*

Beneficiaries of Federal Dredging

Once the District Office satisfied itself that there was solid public and industry support for the proposal, it set about the task of preparing a report for Congress. This report recommended deepening the main channels to 50 feet and the east and west channels of the northwest branch to 49 and 40 feet, respectively. In 1969, the Corps estimated that this plan of improvement would have a benefit-cost ratio of 2 to 1.[7]

The Congress

As keeper of the national purse, Congress determines the fate of Corps projects. Once the Corps and other proponents of a waterway improvement project have convinced local senators and congressmen that the proposed project will benefit their constituents, these legislators begin to use their influence in Congress, especially if they happen to sit on one of the public works or appropriations committees.

While the public works budget is not the only distributive expenditure available to members of Congress, it is one way in which they can maximize the flow of federal dollars into their districts and states. Public works projects are considered by congressmen and constituents alike a major avenue for returning federal tax dollars to their districts.[8]

Ferejohn's 1974 study of the political process by which Congress authorizes and funds Corps civil works projects focused on the memberships of the House and Senate Public Works and appropriations subcommittees. Positions on these powerful funding bodies are highly prized because members can influence the location of federal projects, especially waterway improvement projects. The study showed the strong historical correlation between the composition of the committees and the location of Corps projects. For politicians who know the value of announcing new federal projects and jobs in their districts, the practical advantages of committee membership are clear.

The full Congress seldom opposes the projects approved in committee. Within the committees, members will usually be receptive to the proposals of their peers in order to cultivate reciprocal good will when their own proposals come up in the future. Thus, on non-controversial bills, the support of even

one member of these committees can result in the success of a project.[9]

Hence, the projects which gain approval may not necessarily promote the well-being of a broad constituency, but rather the special interests of a select minority. As Ferejohn has noted, "political considerations and the public good are not always in conflict; but the extent to which they are is of some interest in itself. When decisions are made that openly violate economic principles, we find an opportunity to measure political influence."[10]

The Baltimore Harbor and Channels project provides interesting support for Ferejohn's thesis. Originally authorized by Congress in 1970, the project was well designed to give the Port of Baltimore an advantage over competitor ports in the Northeast: In 1970 George H. Fallon, a Maryland Congressman, was chairman of the House Public Works Committee which recommended that authorization.

Although authorized in 1970, the first funds for preconstruction planning were not appropriated until 1976 (for fiscal Year 1977). Various factors contributed to this delay. It took the Office of Management and Budget 2 1/2 years to respond to the Corps' request for comments; when OMB did respond, it requested "supplemental information" which took the Baltimore District 1 1/2 years to compile.[11] Still, there was another reason for delay--the project was proving to be controversial.

Maryland's proposal to construct a diked area at Hart and Miller Islands for dredge disposal was vehemently opposed by residents living near the site. They enlisted the support of their Congressman, Clarence Long, who rapidly became an outspoken critic of the disposal plan while expressing some doubts about the efficacy of the 50-foot channel itself.[12] As a member of the House Appropriations Committee, Congressman Long may have attempted to hold the 50-foot channel proposal hostage until the state developed an alternative dredged spoil disposal site.

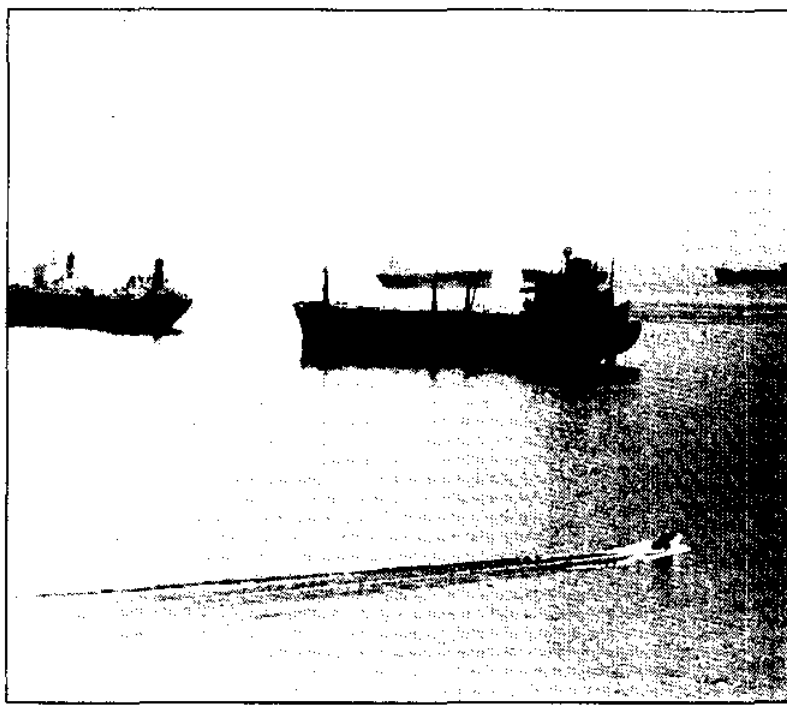
As significant as the relationship between committee membership and the distribution of new public works is the

control Congress exercises over Corps procedures in evaluating projects. In 1936, Congress mandated the use of benefit-cost analysis, requiring that the benefits of a proposed project must exceed its costs. This was an attempt to apply rational decision-making criteria to expenditures of federal dollars;[13] it is similar to the rate-of-return analysis used in evaluating investment in the private sector. Benefit-cost analysis is intended to ensure that projects will only be authorized when projected benefits outweight estimated costs. Nevertheless, the Corps' measures of benefits result in overstated benefit-cost values. Moreover, critics have contended that the use of a low discount rate, also mandated by Congress, is decidedly biased in favor of project approval. This criticism is examined in detail in Chapter 6.

The Beneficiaries

Direct project benefits are based on shipping more cargo tonnage per vessel trip. Hence, the immediate beneficiaries of deep channels are companies receiving commodities shipped at lower transportation charges. The 1981 benefit-cost analysis prepared by the Corps provides an index of the transportation savings associated with the 50-foot channel.[14] Of the importers, the primary beneficiaries are Bethlehem Steel Corporation, Exxon Company and the American Sugar Refining Company. The average annual transportation savings in iron ore imports from Canada, Liberia, Venezuela and other foreign carriers is expected to be $10.5 million, most of which may be attributed to Bethlehem Steel; the average annual savings in petroleum imports is estimated at $4 million, most of which may be attributed to Exxon (the Baltimore Gas and Electric Company is the other beneficiary); and the average annual savings in sugar imports is estimated at $6 million, all of which can be attributed to American Sugar Refining Co.[15]

Rising oil prices have produced a phenomenal growth in the demand for coal exports from the Port of Baltimore, with current forecasts projecting between 36 and 81 million tons by 1985 (up from approximately 14 million tons in 1980).[16] Secondary beneficiaries of the 50-foot channel project are industries whose ships or railroads transport coal; among these industries are the CSX Corporation, formerly the Chessie System, which operates both railroad and coal loading facilities



and the Occidental Petroleum Company, Soros Associates and Consolidated Coal Company, all of which are constructing coal shortage and load facilities.[17] While it is difficult to measure the amount of subsidy that such firms will receive, the Corps has estimated the 50-foot channel will result in a $125.8 million annual saving to be shared amongst them.[18]

For grain exporters, the Corps estimates that the 50-foot channel will save $10 million in annual transportation costs. These savings likewise will be shared by transporters and shippers.[19]

The City of Baltimore and the State of Maryland will, of course, be incidental beneficiaries of the 50-foot channel. A 1975 University of Maryland study estimates that each ton of bulk cargo moved through the Port of Baltimore creates an economic benefit to the region of $11.29 (1973 dollars) or approximately $21.00 in 1980.[20] The report explains the theory of the multiplier, as applied to port services and activities:

Beneficiaries of Federal Dredging

> A dollar spent for port services is not destroyed. Rather, whoever provides those services and receives the dollar responds it in some form or other. He may use it to pay his employees, pay taxes, purchase materials and supplies, distribute it as profits, etc. All of these payments give rise to secondary demands. If the dollar is used to pay employees, for example, the employees do not destroy their pay but respend it for food, for taxes, for goods and services; or they put it in the bank . . . These expenditures, in turn, are respent by the recipients, and so the cycle continues. Because all these secondary, tertiary, and higher order expenditures come directly as a result of the primary demand--in this example for port services--the total impact attributable to the port services is the sum of them all.[21]

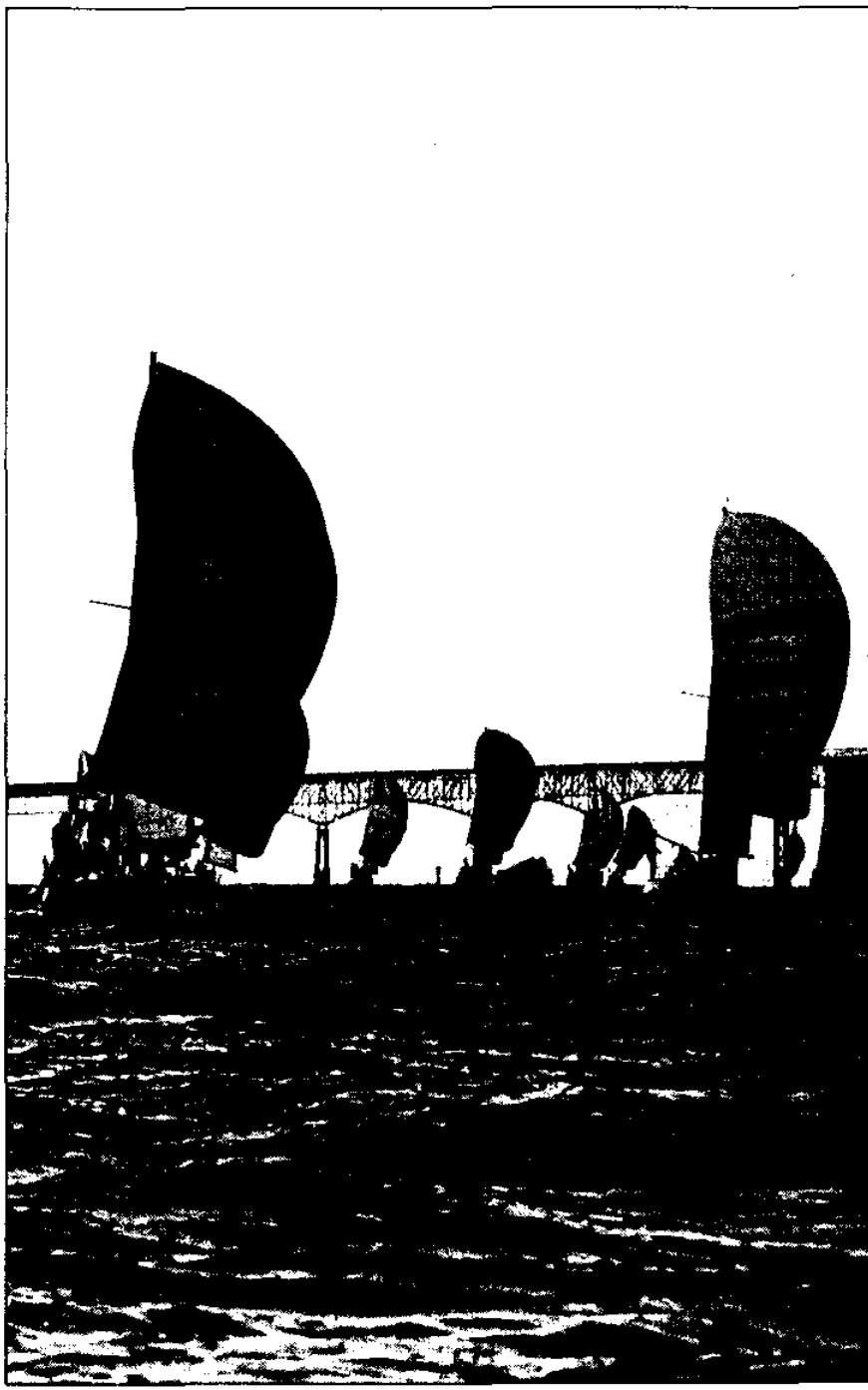
Hence, to the extent that the 50-foot channel gives the Port of Baltimore a competitive advantage and attracts additional bulk cargo, there is a multiplier effect which increases the wealth of the region.

The Opponents

The powerful support for Corps projects by private and public interests has often faced opposition, ranging from individuals to coalitions of neighborhood and environmental groups to the White House and its staff. The Baltimore Harbor and Channels Project has not been without its opponents.

OMB reviews all annual budget requests filled by agencies of the executive branch. Unlike Congress, OMB does not rely entirely on the information supplied by the Corps and by constituents, but applies its own criteria to determine whether the budget submitted (and the projects therein) are justifiable and in line with national policies.

OMB reviews the budget submitted by the Corps each year and usually reduces the total by slimming down ongoing work and cutting some of the proposed new starts. The President and his staff review OMB's recommended changes, and the Corps' budget is then included in the President's budget and



submitted to Congress. When OMB looks for a place to cut the budget, appropriations for new starts are often the first to go. Once cut, it is difficult, but not impossible, for Congress to restore them to a viable status. Should Congress restore too many projects, there is a risk that the President might choose to veto the appropriations bill; but the importance of the public works bill to Congress usually leads to a compromise prior to passage.

Even if OMB does not cut a given project, it may extend its review process over a period of years. For example, when the Baltimore Harbor project was authorized by Congress in 1970, OMB was given a copy of the Corps' 1969 Review Report. As we've seen, no official response came from OMB until 1973 when it requested more information. The Corps responded in 1974 and the first appropriation did not occur until 1976. Although no significant changes resulted from its recommendations concerning design changes and cost sharing, OMB did manage to slow down the approval process.

Formidable forces have attempted to reform federal water resource policies since the 1960's, though not with great success. Congress created the Water Resources Council in 1965[22] and charged it with improving the procedures for evaluation of water resource projects. In the late sixties, the Stratton Commission[23] recommended sweeping changes in federal port policy.[24] The Carter Administration proposed comprehensive reforms in 1977[25] and most recently, Congress has been considering bills that would affect port development.

The proposed reforms consist primarily of changes in benefit-cost analysis and funding procedures. The most frequently proposed reforms in benefit-cost analyses are better procedures for factoring in environmental costs and the use of a higher discount rate. (These issues are discussed in Chapters 5 and 6.) One of the proposed reforms in funding is cost sharing. In times of deficit spending, the idea of 100 percent federal funding of waterway projects has become increasingly unpopular. Commercial users are, in essence, receiving a federal subsidy at taxpayers' expense. Proponents of cost sharing argue that "user charges will provide a real-world market test of a proposed project," because users will only be willing to pay if the benefits of the project are sufficient to make it "economically viable."[26]

President Reagan recently introduced a bill to Congress which would mandate full reimbursement to the federal government for expenditures on dredging deep draft channels.[27] While it is not likely that this bill will be passed as written, numerous other bills currently in Congress are aimed at reform in port development, including the reduction of federal dollars in waterway projects. The reduction of federal funding in waterway projects has already had an effect on the Baltimore Harbor and Channels Project: the $7.5 million in start-up funds for Fiscal Year 1982 have been stalled in Congress.

Projects which improve navigable waterways are less subject to neighborhood criticism than dams and other inland water projects simply because there are less likely to be nearby neighbors who are affected. For the Baltimore project, however, dredging of the 50-foot channel is functionally connected with the Hart and Miller Islands diked disposal area which has encountered vehement neighborhood disapproval. While maintenance dredging for the current 42-foot depth will, in any case, produce spoil, channel deepening creates most of the demand for Hart and Miller Islands. As discussed in Chapter 3, the suit brought in opposition to the Hart and Miller Islands Project ultimately failed. During its pendency the plaintiffs made a tactical decision not to directly question the need for a 50-foot channel, both because resources limited their capacity to make an effective challenge and because the lobby in favor of the project was strong.[28] Now that the suit is lost, however, some of the opponents are redirecting their opposition towards the 50-foot channel. This opposition was voiced by Joseph Bormel, a spokesman for the opponents, at a public meeting conducted by the Corps on June 24, 1981.[29]

Most local and national environmental groups have been acquiescent towards the project. The Chesapeake Bay Foundation[30] has supported it and environmental litigation groups, while challenging innumerable inland water projects, have addressed little attention to navigation improvements, projects.

5

Environmental Concerns

Federal Environmental Law

In recent years awareness of the widespread effects of pollution has led to laws that require federal agencies to consider fully the environmental implications of proposed public works projects. Chief among these laws is the National Environmental Policy Act of 1969 (NEPA). Also relevant to Corps of Engineers projects is the Federal Water Pollution Control Act of 1972 (FWPCA) and the regulations promulgated under the Rivers and Harbors Act of 1899. The Baltimore Harbor Project brings all these laws and regulations into play.

The purpose of the National Environmental Policy Act is "to declare a national policy which will encourage productive and enjoyable harmony between man and his environment."[1] All federal agencies are thus required to: use a systematic, interdisciplinary approach" in planning and decision making; develop procedures for considering the effects of "presently unquantified environmental amenities"; and prepare a detailed statement for "major Federal actions significantly affecting the quality of the human environment."[2]

Section 102(a)(A) requires agencies to use an interdisciplinary approach to planning,

> bringing together the skills of the biologist, the geologist, the ecologist, the engineer, and landscape architect, the economist, the sociologist, and the other disciplines relevant to the project. The mandated approach makes planning no longer the sole concern of the engineer and the cost analyst, and assures consideration of the relationships between man and his surroundings.[3]

Although this particular requirement has not been the subject of extensive litigation, it once presaged sweeping changes NEPA intended to bring to federal agency decision making.

While section 102(a)(B) does not require quantification of environmental values, it does attempt to "bring environmental factors to peer status with dollars and technology" in decision making.[4]

By far the act's most important "action-forcing" procedure is the requirement of Section 102(2)(C) for a detailed statement of the environmental impacts of a proposed action. Congress specifically listed the elements which must be part of the Environmental Impact Statement (EIS):

> The environmental impacts of the proposed actions, both positive and negative, primary and secondary.
>
> The adverse impacts that cannot be avoided.
>
> All reasonable alternatives to the proposed actions, including the alternative of no action, with an environmental analysis of those alternatives.
>
> Consideration of the relationship between local, short-term use of man's environment versus the maintenance and enhancement of its long term productivity.
>
> Consideration of any irreversible or irretrievable commitments of resources required in the proposed action.

Other than listing these required elements, the statute gives little guidance to the agencies in the preparation of the EIS's.

The law does require the preparing agency to consult with any other federal bureau which has special expertise before it prepares the final EIS. The comments provided by these bureaus are to be considered by the preparing agency in the final EIS. Copies of all such comments must accompany the EIS throughout its entire review process.

In addition to the declaration of national policy and the action-forcing procedures outlined above, the new environmental act also established the Council on Environmental Quality (CEQ), which serves as advisor to the President on environmental matters and prepares an annual report on the environment.[5] CEQ receives a copy of each EIS, but plays no role in assessing its adequacy. In fact, there is no general administrative review for adequacy for any EIS. OMB does review all water resource projects, although one commentator has suggested that OMB is often more concerned with fighting the "traditional battle for control of the water resource 'pork barrel'" than with protecting the quality of the environment.[6]

The character of the EIS's prepared during NEPA's first decade passed through three stages of development. In the first stage, they were cursory, straightforward expositions of perceived environmental problems. But as a consequence of federal courts finding these EIS's legally deficient,[7] CEQ guidelines were given greater detail.[8] The result was that the second stage of EIS's grew to encyclopedic proportion; these statements were in turn critized for obscuring important issues with their overabundant length and detail. The most recent CEQ regulations require that the statements be *analytic*.[9]

The Baltimore Harbor and Channels Project spans the same decade as NEPA and, interestingly, the Corps prepared EIS's during each stage. What follows is a chronological review of those statements.

Beneficiaries of Federal Dredging

Environmental Impact Statements for Baltimore Harbor and Channels Project

The first EIS was prepared in 1970, shortly after NEPA was enacted;[10] it was also one of the first to be prepared by the Corps. Eight pages long, it noted that more detailed environmental studies would be undertaken during the advanced engineering and design and construction stages of the project.[11]

This EIS predicted several changes that could result from the dredging: (1) short term changes in benthic (bottom-dwelling) organisms; (2) possible disruption of the salt-water intrusion along the bottom of the Bay, causing chemical, biological and physical changes in the channel itself; (3) minimal perturbation of existing plants and animals. Addressing the question of unavoidable adverse impacts, the Corps reported that suspended sediments which result from dredging were known to have the following effects:

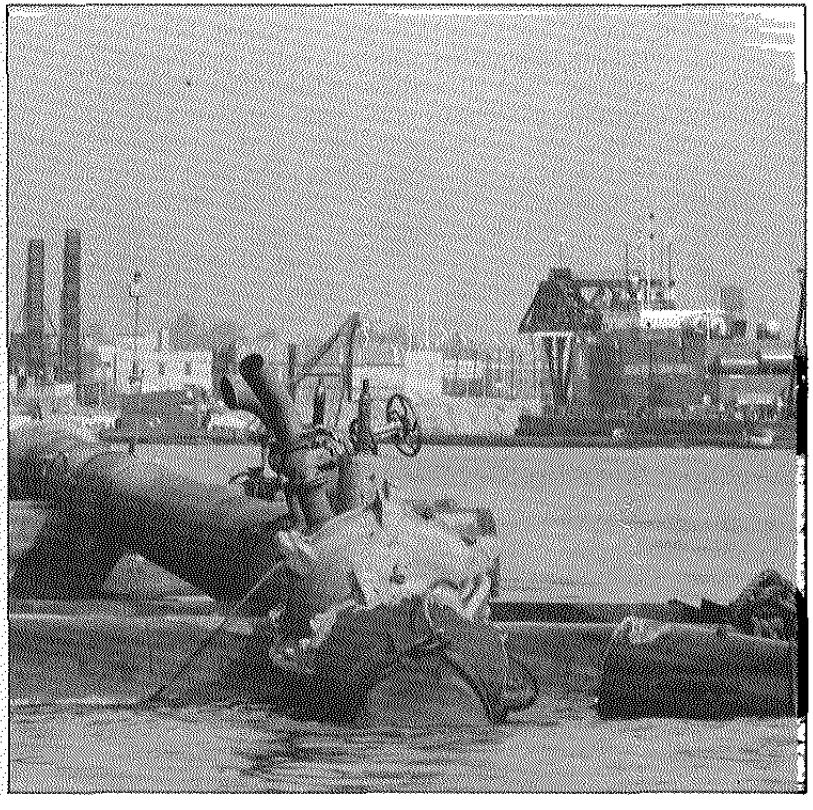
> Gill filaments and tissues of many kinds of animals are frequency damaged, photosynthetic activity and production is reduced, and the buoyancy of eggs of marine animals is often decreased as a result of abnormally high concentrations of suspended sediments. Also, as these sediments settle, they can create a coating which interferes with the "setting" or attachment of larval oysters and may also form soft sediments of "floc" which is uninhabitable for many benthic species.[12]

The EIS claims that "newly exposed bottom will likely become productive within one or two years"[13]

Although reporting that the Bureau of Sport Fisheries and Wildlife (now the Fish and Wildlife Service) responded favorably to the project, the Corps quotes from recommendations which seem to indicate that this is not entirely accurate. As early as 1970, the Bureau had recommended that contaminated spoil containing oils, greases and traces of heavy metals should be put into a diked disposal area *within the harbor* whereas the Corps' plan called for all spoil from the harbor to be deposited "near Baltimroe Harbor."[14] The Hart and Miller Islands site

has been continuously criticized because it is not within the harbor, but is located in the Bay proper.

While the Corps EIS, completed only nine months after NEPA's appearance, is brief and unsubstantiated, it expressed what was known at the time about the environmental effects of dredging.



In 1976, a second, and what was thought to be final, EIS was published by the Corps dealing with the State of Maryland's request for permission to construct a diked disposal area at Hart and Miller Islands.[15] The 300-page report[16] is a disjointed compilation of text, figures and correspondence. It includes a physical description of the natural environment, engineering information concerning the project, estimates of per-

turbations which the project may cause, a list of "alternatives" to the proposed project and comments both in support and opposition to the project.

The Hart and Miller Islands EIS concludes that the project would have the following adverse environmental effects:

> Temporary adverse effects from turbidity are expected during construction and dredging activities. Project operations will be muddy and possibly unsightly, and obnoxious odors may result from dumping anaerobic and contaminated sediments. Because the disposal site will be elevated to 18 feet mlw, ecological succession will proceed from aquatic to marsh to dry land vegetation, with a corresponding succession of biota which may differ from that existing on adjacent Hart and Miller Islands. The disposal area will be partly screened by forested Hart Island, but will nevertheless be visible from the mainland about one mile away. Hart Island is presently used as a picnic site by mariners, although the island is privately owned and posted against trespassing. Recreational use will be restricted during construction, but will increase upon completion of the project. The project will destroy 10.9 acres and 18.4 acres of wetlands on Hart and Miller Islands, respectively. In addition, more than 1,100 acres of Bay bottom will be covered with fill material, transforming the area from an aquatic to a terrestrial ecosystem.[17]

The EIS considered and rejected a less advantageous than diked disposal at Hart and Miller Islands the following alternatives:

> Open water disposal within Chesapeake Bay
>
> Open water disposal in the Atlantic Ocean
>
> On-land disposal in the Baltimore region

Utilization of dredged material to reclaim strip mines

Use of dredged material for manufacture of bricks

Use for fill to replace eroded highway sideslopes lost to erosion

Diked disposal areas at various other locations in Chesapeake Bay

Discontinue dredging in upper Chesapeake Bay[18]

Various questions were raised about the adequacy of the EIS. Among the expressed concerns were: (1) the choice of a location outside of the harbor to dispose of heavily polluted harbor sediments; (2) the value of the resources being destroyed; (3) the need for a comprehensive study of the long-term dredging and disposal needs of the Port of Baltimore; (4) failure to examine seriously alternative sites and alternative disposal techniques; and (5) failure to consider cumulative effects.

The Fish and Wildlife Service (FWS) of the Department of Interior pointed to the high commercial and recreational value of the area's fish and wildlife resources. It noted that Baltimore Harbor was a stressed environment and predicted that the use of Hart and Miller Islands as a disposal site would extend the environmental problems experienced in the harbor to the upper Bay.[19] Although the FWS recommended that the permit be denied, the Undersecretary of Interior approved it on several conditions: The Corps had to agree to designate productive marshes within the disposal site; inner harbor disposal sites would be used for current maintenance dredging (under study by the state at that time). Finally, after some resistance, the Corps agreed to undertake a comprehensive, long-term, Bay-wide disposal plan.

The National Marine Fisheries Service of the Department of Commerce commented that the paucity of data on water quality, sediment chemistry and living marine resources of Hart and Miller Islands and of alternative sites made it diffi-

cult to conduct any meaningful comparisons. It recommended modifications that would minimize adverse environmental impacts, including: (1) the creation of natural wild areas that could support limited recreational use; (2) the use of an irregular and convoluted shape for the area; (3) placing topsoil over the spoil; and (4) an interagency panel of experts to approve further designs and plans.[20]

The concerns expressed by these agencies indicate that there were reservations on the part of environnmental experts. The Corps' obligation to heed these comments and recommendations is unclear. What is clear, however, is that the Corps has little control over the use of the inner harbor sites to dis-

pose of polluted spoil. Its decision was limited to the question of whether to grant the state a permit to construct the diked disposal area at Hart and Miller Islands, and there it did have the authority to impose certain conditions upon the manner in which the dike was constructed. With respect to the remaining considerations, the Corps has discretion to include the other agencies' recommendations as conditions to the permit.

The permit issued by the Corps in 1976 for the construction of the Hart and Miller Islands diked disposal area included a number of the conditions mentioned by the agencies.[21] The State of Maryland was required to acquire title to the islands, which has since been accomplished through condemnation proceedings. In addition, the state was to consult with local and federal agencies to develop a plan of use for the area, to include creation of recreational areas, low use areas and on productive marshes.

According to CEQ guidelines, consideration of alternatives to a proposed action is a central purpose of the EIS[22]. And, according to one agency, a failure to seriously entertain alternatives was the most serious shortcoming of the Hart and Miller Islands EIS.[23] As already detailed, the EIS does explicitly address alternative techniques for spoil disposal, alternative sites for diked disposal areas and the discontinuation of dredging in upper Chesapeake Bay.[24] Nevertheless, while the EIS appears to be thorough, the quality of the analysis is lacking in rigor.

The EIS dismisses open water disposal in Chesapeake Bay as "undesirable to the State of Maryland" but then goes on to observe that "recent research . . . suggests that the impact of open water disposal is not as severe as it was once believed to be"; it summarily dismisses ocean dumping and land disposal as both environmentally objectionable and prohibitively expensive; it favorably reviews the possibility of using dredge spoil to reclaim strip mines; and it calls for further study of the use of dredged material for manufacture of bricks.[25] Consideration of alternative sites was undertaken and incorporated by reference to a study previously commissioned by the State of Maryland.[26] The EIS appears to engage in little, if any, independent analysis of the study's conclusion that Hart and Miller Islands are the preferred site.[27] The EIS concludes that dis-

continuation of dredging is unacceptable since it would ring a "death knell" for the Port of Baltimore.[28]

Collectively, the cursory review and dismissal of alternatives creates an impression that the Corps is bent upon approving a choice already made by the State of Maryland, rather than engaging in a rigorous analysis of alternative disposal sites. Upon judicial challenge, however, the federal district court in 1980 found that the alternatives to Hart and Miller Islands were given reasonable consideration by the Corps.[29]

Another major concern with the Hart and Miller Islands EIS is whether it adequately considers the possibility of cumulative environmental effects. Hart and Miller Islands are but one of a series of ongoing interrelated waterway improvement projects. Dredging the channels to 50 feet will produce most of the spoil to be disposed of at the Hart and Miller Islands site; there will be a continuing need for maintenance dredging, regardless of the channels' depth, which will create a demand for other methods of disposal and new disposal sites.

The Hart and Miller Islands EIS gives only scant attention to the 50-foot channels and the prospect of maintenance dredging. While these matters had been considered in other EIS's,[30] the use of separate EIS's makes it possible to lose sight of cumulative environmental impacts, to use the same economic necessity arguments to support each proposal while dividing up the incremental environmental effects of the several proposed actions, and to ignore the effects of other likely future actions.

Early CEQ guidelines for EIS preparation effectively allowed project proposers to decide themselves on the scope of their project's impact. For example, in Texas in the early 1970's, an EIS was prepared for a proposed dam and facilities to be built at Wallisville, at the mouth of the Trinity River. The Sierra Club sued, arguing that the dam was only part of a much larger Trinity River Project, for which no EIS had been prepared. In the *Sierra Club v. Froehlke*,[31] the court found a nexus between the two projects and ordered the preparation of a programmatic EIS, the document which considers the relationship of projects that are closely related and whose environmental impacts cannot be separated from one another.

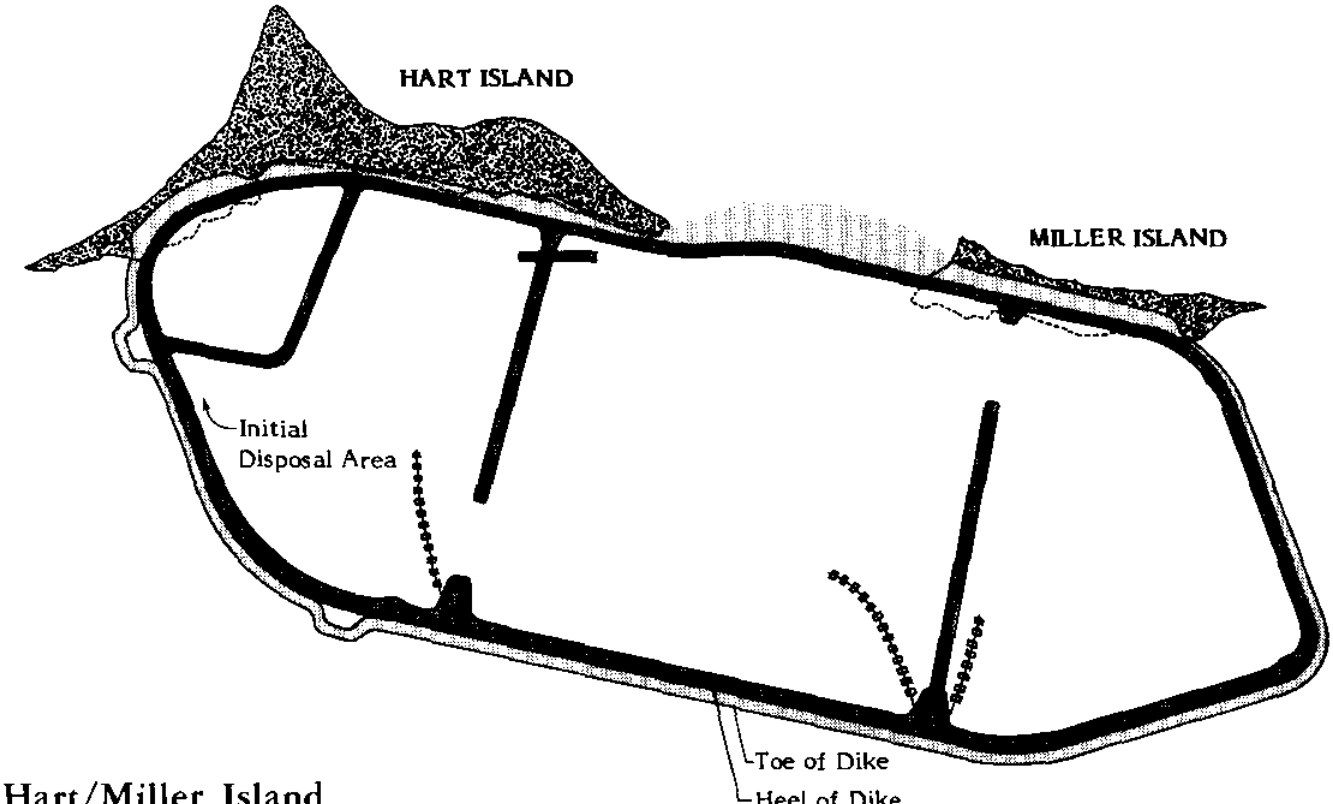
In 1978, CEQ released more explicit guidelines which saw that there may be "proposals or parts of proposals which are related to each other closely enough to be a single course of action." The regulations mandate that these proposals "shall be evaluated in a single impact statment."[32] Further, the 1978 CEQ guidelines introduced the concept of "scoping," "an early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a proposed action."[33]

Clearly, a similar nexus exists among the projects proposed for the Baltimore ship channel and harbor area. The 50-foot channel project could not proceed until the state secured the proper disposal permit. It has been thought that once work began on the disposal facility, tremendous pressue would be created to complete the channel projects. But the link between these projects was not clear in the EIS's, and the Department of Interior noted this in its remarks:

> The environmental statement attempts to separate many independent activities associated with Baltimore Harbor and associated channels--Hart and Miller Island diked disposal area, construction of the 50-foot project channel; maintenance of the existing 42-foot channel; maintenance and deepening of private channels dependent upon the Federal channel . . . .[34]

For example, the Hart and Miller EIS makes little reference to the 50-foot channel project,[35] despite their obvious interrelationship; the state's dike construction permit is a precondition for dredging the channel.

Similarly, future expansion of the disposal site is only alluded to in the Hart-Miller EIS; cumulative environmental effects are therefore hardly touched on.[36] According to the scope of the current project, the Hart and Miller Islands site will receive spoil for up to 20 years, even though the entire channel dredging project is based on a 50-year plan. Planning continues for future dikes that will be needed to contain the spoil dredged 20 or more years in the future, but the environmental effects of these proposals are not contained in the EIS.



Hart/Miller Island
Proposed Containment Area

This analysis notwithstanding, the Maryland Federal District Court has upheld the validity of the Hart and Miller Islands EIS;[37] since there are no plans for an appeal, a programmatic EIS will not be legally required.

The final environmental question which generated controversy concerned the structural integrity of the dike itself. The potential for dike failure was raised in a Peer Review Evaluation by Roy Mann Associates, prepared on July 28, 1975. The Corp's Engineering Division investigated the problem and disagreed:

> This Division does not agree with the Roy Mann Associates' conclusion that an 18-foot high dike at Hart-Miller Islands will be overtopped at 15-year intervals. In summary, the Engineering Division does not believe that an 18-foot high dike will ever be overtopped . . . .[38]

Here again, the Maryland Federal District court found that the Corps had fulfilled its legal mandate; when faced with disagreement among experts, the Corps evaluated the conflicting positions and made a decision. NEPA requires no more.[39]

The Corps filed a third EIS concerning Baltimore Harbor dredging in May, 1981; it is in the General Design Memorandum for the 50-foot project.[40] This statement covers the same ground as the first EIS filed a decade earlier but in the format mandated by new CEQ regulations which took effect June 30, 1979.[41]

President Carter's 1977 Environmental Message to Congress directed the CEQ to make environmental impact statements more useful to decision-makers and the public by requiring them to be "concise, readable, and based upon competent professional analysis."[42] CEQ's subsequently revised regulations are designed "not to generate paperwork--even excellent paperwork--but to foster excellent action."[43] More particularly, the new regulations specify that a project EIS be prepared in the following manner:

> Statements shall be analytic rather than encyclopedic.

> Impacts shall be considered in proportion to their significance.
>
> Statements shall be concise, ordinarily under 150 pages.
>
> A realistic array of alternatives shall be considered and the environmentally preferred alternative specified.
>
> Statements shall serve to assess likely environmental impacts rather than justifying decisions already made.[44]

The environmental statement (1981) for the Baltimore Harbor and Channels Project follows the specified format.[45] A taut 43 pages long, it analyzes and rejects for stated environmental and economic reasons alternatives to the authorized plan of improvement; furthermore, it examines in some detail the hydrologic effects (i.e., changes in salinity) and water quality effects (including those related to spoil disposal) associated with the project.

Still the environmental statement does not measure up to NEPA's broader goals--it is designed to justify a decision already made rather than to openly evaluate the environmental *pros* and *cons*. The statement indicates that no other plans have been seriously considered since this study "is an affirmation of the authorized plan of improvement."[46] Most of the text is a commonplace description of the "environmental resources" of Chesapeake Bay. The statement is general and lacks the chaotic--though sometimes revealing--detail of the Hart and Miller Islands EIS.[47] The statement alludes to the fact that a diked area at Hart and Miller Islands will be used for disposal of the spoil from Maryland waters but ignores the environmental issues raised by the decade-long political controversy concerning this disposal method. The estimate of environmental effects has changed but little in the decade since the previous EIS was prepared.[48] And while the statement concludes that "There are no major unresolved issues concerning the Baltimore Harbor and Channels Project at this time,"[49] the Baltimore District of the Corps has in hand a scientific study which suggests that a 50-foot channel may produce a significant change in the salinity distribution of the upper Bay.[50]

All of this leads to several conclusions. The environmental statement does not give evidence of analytic thoroughness nor does it discuss the difference of opinion which scientists and others have concerning the project. The environmental statement is a *post hoc* rationalization for a decision made a decade ago.

6

Benefit-Cost Analysis: A Critical Review

Introduction

Congress requires a benefit-cost analysis for each federal water project;[1] since the Baltimore Harbor and Channels Project was first proposed, the Corps has prepared four separate analyses. (The State of Maryland does not have an analogous requirement and, consequently, has not prepared any such analysis for the Hart and Miller Islands Project).

Benefit-cost analysis can serve several functions. First, it may be used as a first-order criteria for accepting or rejecting a project. The U.S. Army Corps of Engineers employs benefit-cost analysis in this manner: If analysis indicates that a project's costs will exceed its benefits, the proposal is eliminated from those sent to Congress for possible authorization and appropriations; on the other hand, if a project's benefits exceed costs, the project will likely be recommended by the Corps, and the Corps' report, including the benefit-cost analysis, will be sent to Congress. Second, benefit-cost analysis may be used for choosing among competing projects: By selecting those projects with the highest benefit-to-cost ratios, the Corps or the Congress can presumably promote the efficient use of federal monies. Third, benefit-cost analysis may be used to improve the design of a given project. When designing a navigation channel, for example, questions arise as to the optimum

depth, width and location--benefit-cost analysis may suggest answers to those questions. The benefit-cost analyses for the Baltimore Harbor and Channels Project have served all three of these functions.

Benefit-Cost Analysis of Baltimore Harbor and Channels Project

The first benefit-cost analysis for deepening Baltimore Harbor and channels was prepared in 1969.[2] It was subsequently updated in 1974 and 1977, and totally reworked in 1981.[3] During this period the estimate of total costs inflated from $103.2 million to $361 million;[4] the estimate of annual benefits increased from $12.4 million to $156.5 million.[5] With a congressionally mandated rise in the discount rate, from 4-5/8 percent to 7-3/8 percent, and the unexpected rise in coal exports, the benefit-cost ratio increased from 2 to 1 to 4.7 to 1.[6]

Costs were measured by spreading the estimated construction and maintenance costs over the estimated life of the project. Benefits were measured in terms of the estimated annual transportations savings that a 50-foot channel would create in the importing of iron ore, petroleum and sugar, and the exporting of coal and grain. The economic justification is determined by comparing average annual changes (i.e., interest, amortization of construction costs, operation and maintenance costs) with average annual benefits, assuming a 50-year economic life of the project. Cost and benefits are converted to an equivalent time basis using an agreed-upon interest rate. Tables which summarize this procedure as it was most recently conducted using 1981 prices and a 7-3/8 percent interest are given below. Table 1 gives the expected federal and non-federal costs. Table 2 the estimates of annual savings in transportation costs. Table 3 summarizes the total costs, including interest and maintenance dredging. Dividing the total investment cost by the expected annual savings yields a benefit-cost ratio of 4.7 to 1.

Table 1[7]
Summary of Estimated First Costs
for the Authorization Plan
(February 1981 Price Level)

ITEM	FEDERAL COSTS	NON-FEDERAL COSTS
Dredging		
Virginia Channels	$81,400,000	
Maryland Channels	157,500,000	
Private Channels		$10,480,000
Diked Disposal Area		33,800,000
Relocations		2,000,000
Additional Aids to Navigation	150,000	
Monitoring Program	3,500,000	
Equipment Operations and Maintenance for Diked Disposal Area		72,200,000
SUB-TOTALS	$242,550,000	$118,480,000
TOTAL	$361,030,000	

Table 2[8]
Summary of Annual Transportation
Savings Benefits
for the Authorized Plan
(February 1981 Price Level)

ITEM	AVERAGE ANNUAL BENEFITS
Imports	
Iron Ore	$10,558,000
Petroleum	4,036,000
Sugar	6,024,000
Exports	
Coal	125,795,000
Grain	10,043,000
TOTAL	$156,456,000

Table 3[9]
Economic Summary of
the Authorized Plan
(February 1981 Price Level)

ITEM	AVERAGE ANNUAL BENEFITS
Investment Costs	
Project Costs	$361,030,000
Interest During Construction	66,304,000
Total Investment Costs	$427,334,000
Annual Costs	
Interest and Amortization	$32,434,000
Additional Maintenance Dredging	839,000
Additional Aids to Navigation	14,000
Total Annual Costs	$33,287,000
Total Annual Benefits	$156,456,000
Net Annual Benefits	$123,169,000
Benefit-Cost Ratio	4.7 to 1

Thus, the analysis suggests that the project is a sound one: it appears to constitute a cost-effective expenditure of public monies with $4.70 of return benefit for each $1.00 of expenditure.

Nevertheless, major questions remain concerning the design of the project, the choice of this project over alternatives and the question of whether the project is a worthwhile expenditure of federal and state funds. The discussion which follows examines these issues.

Project Design

Much of the analysis in the original 1969 Review was given to determining optimum channel depth. This was done by calculating benefit-cost-ratios for deepening to various depths; the results of this analysis are given in Table 4. Using the principles of net benefit maximization, the Corps concluded from this analysis that redredging of the Main Channel, Northwest Branch-West Channel and Northwest Branch-East Channel were all justified; that the Main Channel should be deepened to 50 feet, the Northwest Branch-West Channel to 40 feet and the Northwest Branch-East Channel to 49 feet.[11]

Table 4[10]
Baltimore Harbor and Channels
Summary of Economic Justification

		Depth	Annual Benefits ($1000)	Annual Costs ($1000)	Benefit-Cost Ratio	Net Benefits ($1000)
1.	Main Channel from Cape Henry to Fort McHenry and Branch Channels in Curtis Bay and Northwest Branch	43'	1,521	1,648	0.93	-
		44'	2,855	2,166	1.32	685
		45'	3,854	2,847	1.35	1,007
		46'	4,652	3,423	1.36	1,229
		47'	5,398	4,092	1.32	1,306
		48'	6,193	4,694	1.32	1,499
		50'	7,469	5,949	1.26	1,520
2.	Northwest Branch-West Channel	29'	550	23	23.9	527
		30'	853	26	32.8	827
		31'	1,149	30	38.3	1,119
		32'	1,436	33	43.5	1,403
		33'	1,708	37	46.2	1,671
		34'	1,971	43	45.8	1,928
		35'	2,197	50	43.9	2,147
		36'	2,411	59	40.9	2,352
		37'	2,545	69	36.9	2,476
		38'	2,677	80	33.5	2,597
		39'	2,761	92	30.0	2,669
		40'	2,794	104	26.9	2,690
3.	Northwest Branch-East Channel	36'	414	16	25.9	398
		37'	814	21	38.7	793
		38'	1,178	29	40.6	1,149
		39'	1,528	39	39.2	1,489
		40'	1,752	53	33.1	1,699
		41'	1,963	65	30.2	1,898
		42'	2,158	79	27.3	2,079

Beneficiaries of Federal Dredging

Subsequent benefit-cost analysis updated the estimates of costs and benefits but otherwise accepted these conclusions as to locations and depths.[12]

The original 1969 benefit-cost analysis was criticized by the Office of Management and Budget for accepting a proposed channel width of 1000 feet without considering alternative widths.[13] More particularly, it was suggested that benefits from the deep draft channel related to reports that a narrow channel (either one-way or two-way with passing zones) might prove more cost effective. The Corps responded with a benefit-cost analysis in 1974. It fixed the benefit-cost ratio of the 1000-foot wide, two-way channel at 1.94 to 1; the 500-foot wide one-way channel at 2.62 to 1; and the 500-foot wide two-way channel at 3.12 to 1.[14] Notwithstanding the economic superiority of the narrower channels, the Corps recommended the 1000 foot wide channel for safety reasons.[15]

Hence, benefit-cost analysis played a useful, although not controlling, role in determining the location, depth and width of the Baltimore Harbor and Channels Project.

Choosing Among Alternatives

Otto Eckstein, author of *Water-Resource Development*, explains the application of benefit-cost analysis.

> It is not unreasonable to assume that the rationing of federal money will remain equally tight over time. Benefit-cost ratios are based on this assumption; if, in each year, those projects are started which have the highest benefit-cost ratios, and if the marginal increment of each project has a benefit-cost ratio equal to the cut-off ratio of the program in the period, then the total return on federal expenditure will be maximized. Federal expenditure is considered the rationed commodity, and given this condition the present value of the future income stream that can be created to maximized.[16]

In reality, of course, the Chief of Engineers screens proposals and chooses among those with a benefit-cost ratio greater than one. Rather than choosing only the projects with the highest ratios, the Corps and Congress often make a political decision bearing little relationship to the benefit-cost analysis.

Critics have contended for some time that the benefit-cost analyses conducted by the Corps are decidedly biased in favor of development. From time to time Congress has exibited a similar bias: it has modified procedures, thereby making benefit-cost ratios more positive. For example, in the 1966 act creating the Department of Transportation, Congress included an explanation of how benefits were to be computed for navigation projects.[17] And according to one commentator, the prescribed method seriously overestimates future waterway traffic and measures benefits in terms of savings to shippers rather than the more appropriate and smaller savings in natural resources used in transportating goods.[18]

In 1965, Congress created the Water Resources Council (WRC) and assigned to it responsibility for establishing "principles, standards, and procedures" for the evaluation of water resource projects.[19] However, Congress proved more interested in reform in principle than in practice. In 1973, the WRC adopted guidelines which, among other suggestions, advocated a higher discount rate to more accurately reflect the present worth of future benefits.[20] A project's benefits and costs may occur at different times over the life of the project; for a meaningful comparison, benefits and costs must be reduced to their present value. This is accomplished by means of a discount rate: since most waterway improvement projects have high initial costs, with benefits spread over several decades, the discount rate employed in benefit-cost analysis is a significant factor for determining a project's economic worth. A low discount rate produces a more favorable benefit-cost ratio than a high discount rate.

The rate proposed by WRC was 6-7/8 percent, well above the then prevailing rate of 5-1/2 percent. In 1974, however, Congress passed the Water Resource Development Act, which set the rate at 5-5/8 percent.[21] A potential confrontation was averted when the WRC acquiesced and subscribed to the congressional rate. The rate has been raised more recently to 7-3/8 percent.[22]

Beneficiaries of Federal Dredging

Another reform which has been suggested is lump-sum funding. Unlike most other federal spending, funds for Corps projects are appropriated on a year-by-year basis, even though the work may take several years to complete. This makes it easier to disguise a project's total costs behind a yearly fractional appropriation.[23] An annual budget does not reflect the extended commitment of funds which will be needed in future years to complete each new construction start. Advocates of lump sum funding would require that funding be allocated in a single sum.

This controversy about benefit-cost analysis procedures makes questionable its contribution towards assuring efficient expenditure of federal money. The Reagan Administration has introduced Senate Bill 809 which would require that the Corps be reimbursed for all construction and maintenance cost of navigation improvement projects by the non-federal beneficiaries.[24] In defense of this requirement, David Stockman, Director of the Office of Management and Budget, has said: "I think the willingness of industry, local governments and private investors to bear the cost is the best test of the probable worth of such development."[25]

Project Justification

If the benefit-cost analysis fails to assure the best expenditure of federal money, its value in effectively determining the justifiability of a project is at question. In 1936, Congress mandated that benefits of a proposed project must exceed costs.[26] This was an attempt to impose rational decision-making criteria on expenditures of federal dollars and is similar to the rate of return used to evaluate investments in the private sector. Although the most recent benefit-cost analysis provides justification for the 50-foot channels project, the $4.70 of benefit for each $1.00 of costs, is misleading. More particularly, estimates of benefits and costs are both incomplete and inaccurate; federal costs are compared with private benefits; and national waterway policy questions are left unaddressed.

Estimates of Benefits and Costs. In the analysis itself, relevant benefits and costs were simply excluded from consideration. Benefits were limited to transportation savings which would be realized by users of the project. There are other ben-

eficiaries: to the extent that the 50-foot channels give the Port of Baltimore a competitive advantage over other ports, thereby attracting additional bulk cargo, there is a multiplier effect which increases the wealth of the region.

In the benefit-cost analysis, project costs were limited to construction and maintenance expenses. But there are other costs. For example, if the Port of Baltimore attracts more bulk cargo it will be, in part, at the expense of its competitors. Moreover, dredging and spoil disposal will *almost certainly* impose environmental costs affecting Chesapeake Bay and public health.

Such environmental impacts are less readily quantifiable than dredging costs or transportation savings; many even argue that they should not be quantified at all. Nevertheless, there is no longer any doubt that national policy requires serious consideration of the environmental impacts of such a large project. And to be valuable, this consideration should be given significant consideration, together with economic and technological studies of the proposal. An EIS was appended to the 1981 benefit-cost analysis of the Baltimore Harbor Project but, as discussed in Chapter 5, it seemed designed more to minimize than to expose the environmental costs of the project.

The risk of collisions or other accidents is also omitted from the analysis. Increased channel depths will inevitably increase the percentage of large vessels travelling to and from the harbor, raising the possibility of collision among large oil tankers. Given that the Bay is used for recreation and is a commercial resource of crabs, oysters, clams and a variety of finfish, the environmental and economic impacts of increased shipping could be great. With the possibility of shipping accidents, it would seem requisite for the Corps to carefully consider the probabililty of an accident and the consequent damage.

As for benefits of costs which the Corps did consider, there are inaccuracies and incompleteness. Cost estimates for the 50-foot channel project are based on engineering estimates of the amount of sediment to be removed, the disposal method, the estimated working time per month, overhead, allowable profits, design, engineering and administrative costs. In short,

the costs represent out-of-pocket costs of the dredging operation. Despite the seemingly straightforward nature of this calculation, the Corps' 1969 benefit-cost analysis had a major miscalculation, overestimating the amount of spoil to be disposed of by 30 percent. The 1969 quantity estimates had been based on an assumed uniform channel depth of 42 feet. Surveys performed later revealed that actual depths were greater.[27] An error factor of 30 percent in one of the more readily quantifiable aspects of the benefit-cost analysis testifies to the fallibility of the procedure.

Benefits are measured in terms of transportation savings realized by shipping more cargo tonnage per vessel trip either by loading the vessel more fully or by using bigger vessels. Fully loaded vessels distribute the fixed voyage costs over more units of cargo, thereby reducing the transportation cost per ton; larger vessels have a higher overall voyage cost, but have economies of scale. It is only in the bulk trades that vessels require water depth greater than those currently existing in Baltimore Harbor--benefits would result from the imports of iron ore, sugar, petroleum, and from the exports of coal and grain.[28]

To quantify these benefits, the Corps engages in an analytically rigorous procedure whereby estimates of the average savings per ton, per commodity, per source or destination, are multiplied by estimated commerce over the 50-year project life and discounted at 7-3/8 percent to determine average annual savings. Table 5 summarizes this process.[29]

Notwithstanding the carefulness that has gone into the benefit-cost analysis, there may be major inaccuracies in the results: since benefits are based on predictions of future trade patterns, the possibility of miscalculation is large. The Corps' original 1969 benefit-cost analysis, for example, was based on the assumption that approximately 4.45 million tons of coal would be exported annually from Baltimore.[30] Coal, then, would have accounted for almost 16 percent of the project's estimated annual savings;[31] since these projections were made, however, there has been a phenomenal growth in the demand for steam coal. It is now estimated that by 1985 Baltimore coal exports will range between 36 and 81 million tons annually,[32] thus accounting for almost 85 percent[33] of the project's annual savings.

Table 5
Average Annual Savings
(by commodity)

	Unit Savings $/ton	Undiscounted Savings ($1,000) 1986	2000	2036	Average Annual Savings ($1,000)
IMPORTS					
Iron Ore					
Canada	$ 0.91	$ 4,027	$ 4,027	$ 4,027	$ 4,027
Brazil	3.36	2,379	2,379	2,379	2,379
Liberia	1.38	4,152	4,152	4,152	4,152
Total		$ 10,558	$ 10,558	$ 10,558	$ 10,558
Petroleum	$ 2.22	$ 4,063	$ 4,551	$ 1,887	$ 4,036
Sugar					
Americas	$ 5.14	$ 2,128	$ 2,308	$ 2,570	$ 2,276
Other World	$ 16.93	3,505	3,809	4,249	3,748
Total		$ 5,633	$ 6,117	$ 6,819	$ 6,024
TOTAL IMPORTS		$ 20,254	$ 21,226	$ 19,264	$ 20,618
EXPORTS					
Coal					
Japan	$ 5.14	$ 15,420	$ 12,850	$ 12,850	$ 14,375
Europe	$ 2.66	91,504	136,990	136,990	111,420
Total		$ 106,924	$ 149,840	$ 149,840	$ 125,795
Grain					
W. Europe	$ 4.72	$ 3,965	$ 4,640	$ 6,849	$ 4,611
E. Europe	5.74	1,733	2,038	2,996	2,015
Mid-East	5.20	1,056	1,399	2,834	1,405
Asia	11.70	2,012	2,012	2,012	2,012
Total		$ 8,766	$ 10,089	$ 14,691	$ 10,043
TOTAL EXPORTS		$ 115,690	$ 159,929	$ 164,531	$ 135,838
TOTAL COMMERCE		$ 135,944	$ 181,155	$ 183,795	$ 156,456

Beneficiaries of Federal Dredging

Although the 1981 benefit-cost analysis has adjusted to the growth in coal traffic, the prediction which it makes about the future may prove in some other way misleading. Economies of scale create an unrelenting pressure for larger and larger ships of up to 150,000 or 200,000 dead weight tons.[34] Such super-colliers would not be able to load fully in the Port of Baltimore even if channels were dredged to 50 feet. Alternative systems are being considered to accomodate such vessels; among the proposals have been midstream transfer, extra-wide beam ships and barge-carrying ships.[35] All of these proposal present alternatives to deepening shipping channels and could make many of the benefits claimed for a 50-foot channel in the Port of Baltimore illusory.

Public Cost and Private Benefits. The 1981 benefit-cost ratio of 4.7 to 1 would seem to imply that the $242.6 million federal outlay is money well invested.[36] But that implication may, in fact, be misleading.

The project directly or indirectly benefits several of the largest corporations in the United States. Bethlehem Steel Corporation's Sparrows Point plant will receive approximately $5.8 million in annual benefits; Exxon will benefit approximately $4 million each year; Domino Sugar will receive a $6 million subsidy.[37] Various other industries involved in producing and transporting coal and grain for export, including the Baltimore and Ohio Railroad, Occidental Petroleum Corporation, Conoco and Soros Associates, likewise will receive subsidies worth millions of dollars annually.[38]

In this context, it becomes problematic as to whether the federal government should spend $242.6 million that would be of primary benefit to these firms.

Policy Issues. Conducted on a project-by project basis, benefit-cost analysis is inadequate for making broad national policy decisions. Federal actions in dredging ports involve issues both foreign and domestic and present choices both economic and political. Federal dredging can have a substantial impact on U.S. price competitiveness in foreign trade. Increased foreign trade will help meliorate the balance of trade deficit, and increased export of coal will help Western European countries be less dependent on OPEC oil.[39]

Domestically, a federal subsidy for dredging yields obvious benefits to industry, jobs and the economy, but the primary beneficiaries of dredging projects are specific private or geographical entities rather than the nation as a whole. Moreover, while all transportation sectors can claim similar benefits, they are not currently receiving similar subsidies.[40] In addition, funding of a particular port such as the Baltimore Harbor gives it a competitive advantage over other ports in the northeast. These and other "policy" questions are not, nor is it suggested that they should be, addressed by the Corps of Engineers. Nevertheless, it must be recognized that benefit-cost analysis has limited use in decision-making process for national policy issues. It serves a purpose in estimating some of a project's benefits and some of its costs and, within a range of error, can discriminate between economically viable and unjustified projects. But benefit-cost analysis by itself is not particularly helpful for selecting among the best uses of federal money.

7

Summary

In analyzing the role of the Corps of Engineers in federal waterway projects and, in particular, the Baltimore dredging and spoil disposal projects, we have argued that the Corps, as regulator of the projects it manages, is involved in conflicts of interest. Moreover, the benefit-cost analysis that the Corps performs for evaluating the economic viability of such projects is of limited value for developing national port policy.

For the Baltimore projects, the question remains whether it is in the public interest for the federal government to pay for the dredging of the harbor and channels and for the state government to pay for the construction of the diked disposal area at Hart and Miller Islands. The answer depends both on our national goals and the point of view from which those goals are being assessed.

When an industry makes a capital investment, its goal is straightforward: motivated by "the love of profits and the threat of bankruptcy," it is seeking the highest available return on its investment;[1] profit and loss statements are a measure of the success of their investment. However, when government makes an investment in a large project, both its goal and the measures of its success are less apparent. In funding a navigation project, for example, the goal may be the maximizing of "social welfare" or, less grandly, the promoting of national in-

terest in a water-borne transportation system. In either case, it is difficult to measure just how well the goal is, in fact, being furthered. Utilization does not assure that the project "pays its own way" since users are not charged.

It is often assumed that congressional approval of a project provides some assurance navigation projects are in the public interest. But congressional approval is an inherently unreliable indicator of public support. Congress approves water improvement projects in a highly political manner. Through "log-rolling" procedures, various congressmen obtain their share of the "pork barrel." And the U.S. Army Corps of Engineers, while nominally a part of the executive branch, is closely aligned with Congress: promotion of water projects is part of its job.

Port-dependent industries seek to maintain the lucrative tradition of the federal subsidy as do state and local governments, which indirectly benefit from products that port business generates. Hence, the proposal to deepen the channel to Baltimore Harbor to 50 feet has, among its supporters, the United States Congress, the U.S. Army Corps of Engineers, the Bethlehem Steel Corporation, Humble Oil and Refining, the Chessie System, the State of Maryland and the City of Baltimore.

Other interests, however, which do not benefit economically from the projects are often more critical. The Office of Management Budget, the Environmental Protection Agency and the Fish and Wildlife Service, for example, all expressed reservations concerning the Baltimore projects, some of which were never dispelled. Although citizen opposition to the 50-foot channels never developed, a law suit challenged the Hart and Miller Islands Project; complaintants included residents near Hart and Miller Islands, environmental groups and Representative Clarence D. Long. Although the suit was lost, it focused so much public attention on potential environmental hazards of dredge disposal that the state has established a citizens oversight committee for the disposal project.

Congress, in recognizing the bias of different interest groups, has adopted several procedural "reforms for the funding of waterway projects." Among them, environmental impact assessments (EIS) and benefit-cost analyses have in com-

mon the intention of providing objective, unbiased assessments of federal waterway projects.

Can the EIS be relied upon to provide an objective appraisal of environmental effects of these projects? Federal courts have stopped some projects until the EIS has been done to the court's satisfaction.[2] In the past, the U.S. Supreme Court demanded that such statements be more than *post hoc* rationalizations for conclusions already reached.[3] More recently, however, the Supreme Court has chastised federal courts for making policy choices under the guise of judicial review of agency action. Speaking for the Court, Justice Rehnquist wrote:

> NEPA does set forth significant substantive goals for the Nation, but its mandate to the agencies is essentially procedural. . . . . It is to insure a fully informed and well-considered decision, not necessarily a decision of the judges of the Court of Appeals or this Court would have reached had they been members of the decision making unit of the agency. Administrative decisions should be set aside in this context, as in every other, only for substantial procedural or substantive reasons as mandated by statute . . . , not simply because the court is unhappy with the result reached."[4] (citations omitted)

Based on these decisions, it appears that courts are directed to examine the EIS to ensure that the specified procedures are followed and specified contents included; however, courts are not authorized to stop projects because there is evidence that the agency was predisposed towards project approval. Hence, while the National Environmental Policy Act of 1969 (NEPA)[5] requires that the Corps prepare thorough environmental impact statements on major water projects with which it is associated, NEPA does not require that the Corps exorcise all of its prejudices and predispositions.

The final EIS for the Hart and Miller Islands diked disposal area was filed in 1976. It is an encyclopedic compilation of unorganized information. It lacks cost estimates and design specifications for the project. Although it neatly lays out alternatives to a diked disposal island (i.e., open water dumping,

on-land disposal, commercial utilization of dredged spoil, seventy other locations for diked disposal areas, discontinuation of dredging), it curtly dismisses the alternatives by concluding they are too costly or, from an engineering perspective, impracticable. There is strong circumstantial evidence that the Corps was using the EIS to justify the project rather than engaging in an open-minded search for the best alternative. (Ironically, the Hart and Miller Islands EIS provided a good deal of information that opponents of the project then used in a law suit.)

The EIS for the 50-foot channel project was filed in 1981. It is in the format specified by 1978 guidelines prepared by the President's Council on Environmental Quality, which were designed to ensure a concise explanation of the environmental effects of the project. Although the format has been changed, this EIS is like the Hart and Miller Islands EIS in that it seems designed to rationalize a decision already made; moreover, it lacks the detail of the 1976 EIS that proved so useful in debating the viability of the Hart and Miller Islands diked disposal area.

More than forty years ago, Congress recognized its own unreliability as an arbiter of water projects. In the Flood Control Act of 1936, it required as a prerequisite to approval an independent economic evaluation establishing that benefits exceed costs for any given project. But benefits and costs can only be measured in terms of a goal when there are competing demands on public resources. Benefits are a measure of the effectiveness of a project in achieving a goal; costs are a measure of the expenditure of funds and other resources. And as has been seen, Congress has never really come to grips with the national goals it seeks to achieve in funding water projects. Hence, benefit-cost analysis has little value when comparing water projects with other federal programs that pursue social goals. For example, benefit-cost analysis has little utility in dividing expenditures among water projects, social welfare programs and national defense.

Benefit-cost analysis is a useful tool for evaluating the design specifications for water projects which have been previously approved. In the Baltimore Harbor and Channels Project, the benefit-cost analysis prompted the Office of Management

and Budget to recommend consideration of narrower channels, and the separation of the "inner harbor" segment from the remainder of the project. A "one-way" channel was appealing since most of the commerce requiring the deeper channel is imported, not exported (costs could be significantly reduced with little reduction in benefits). The "inner harbor" segment was appealing since its benefit-cost ratio was significantly superior to that of the overall project. The Corps unfortunately considered and rejected these design changes without rigorous analyses.

Furthermore, even if national economic efficiency is accepted as the goal of public investment in water projects, the benefits claimed for the Baltimore Harbor and Channels Project remain problematic. The direct benefits claimed for this project in the benefit-cost analysis are a result of savings in the cost of transportation of commodities resulting from the use of large, deeper-draft vessels. But even ignoring the accounting difficulties of whether such savings constitute a real net benefit, a fundamental question remains. Past trends have been extrapolated to predict future trade, but the future is uncertain. There are a number of instances where transportation systems became unexpectedly obsolescent, from the obsolescence and economic failure of various canals to the bankruptcy of the Penn-Central Railroad. The benefits attributed to the Baltimore Harbor project are based upon expectations of future demand for vessels that do not exceed a 47-foot draft. Thus, a fleet of super-colliers with drafts in excess of 60 feet could not use Baltimore Harbor. It could be more cost-effective to construct an off-shore deep water port in the Atlantic Ocean with mid-ocean transfer capacity than to use smaller carriers. The benefits then claimed for the 50-foot channels would be largely illusory.

Despite the limitations of benefit-cost analysis, it still supplies important data that might not otherwise be available. This is well illustrated in comparing the available facts for the Baltimore Harbor and Channels Project and the Hart and Miller Islands Project. Because benefit-cost analysis is required for federally-funded projects, there is a detailed breakdown of cost originally prepared in 1969. The costs were updated in 1974, 1977 and 1981. Equivalent information is not available for the construction of a diked containment area at Hart and

Miller Islands. The only cost estimates were prepared in 1969, and they are hopelessly out of date.

The results of benefit-cost analysis are better understood as an advocate's brief in support of a project, containing useful information for the public record but flawed by the failure to effectively consider the full range of benefits and costs and the error factor in the estimation of real benefits and costs.

There may be an irony in the fact that benefit-cost analysis, which has so long been used for justifying dubious federal water projects can be used to provide a strong argument for doing away with direct federal support. The Reagan Administration has introduced into Congress S. 809,[7] a bill that would require reimbursement to the federal government for the full cost of Corps of Engineers navigation projects. The bill does not specify the collection mechanism, but funds would presumably be created by user fees. The Administration bill is only one of several now in Congress. For the Baltimore Harbor and Channels Project, the results of benefit-cost analysis create compelling evidence in favor of such user charges. The benefits attributed to the project are a direct subsidy in excess of $20 million annually benefitting such firms as Bethlehem Steel, Exxon and Domino Sugar, and an indirect subsidy worth hundreds of millions of dollars annually to coal exporters and transporters such as the Baltimore and Ohio Railroad, Occidental Petroleum and Conoco. Hence, the benefit-cost analysis targets the beneficiaries and provides information useful in calculating an annual charge.

8

Footnotes

FOOTNOTES - INTRODUCTION

1. U.S. Department of the Army, Baltimore District Corps of Engineers, *Supplemental Information, Baltimore Harbor & Channels*, Appendix A (Corps of Engineers 1974).

2. U.S. Department of the Army, Baltimore District Corps of Engineers, *Final Environmental Impact Statement, Hart and Miller Islands A66-67* (1976).

3. Greater Baltimore Committee, *Report on Export Coal and the Future of the Port of Baltimore* (1980).

CHAPTER 1

1. Moser, *Dig They Must, the Army Engineers, Securing Allies and Acquiring Enemies*, Smithsonian, December 1976, P. 43.

2. Act of Mar. 16, 1802, ch. 9, § §26, 27, 2 Stat. 132, 137.

3. General Survey Act of May 24, 1824, ch. 139, 4 Stat. 32 (codified at 33 U.S.C. § 540 (1970)).

4. Rivers and Harbors Act of 1890, ch. 907, §7, 26 Stat. 426, 454 (codified at 33 U.S.C. § §401, 407 (1970)). *See* Power, *The Fox in the Chicken Coop: The Regulatory Program of the U.S. Army Corps of Engineers*, 63 *Va. L. Rev.* 503 (1977).

5. H. Marcus, J. Short, J. Kuypers, P. Roberts, *Federal Port Policy in the United States* 87 (1976) (footnotes omitted) (hereinafter cited as Marcus & Short).

6. *Id.* at 77.

7. *Id.* at 121.

8. *Id.* at 3.

9. *See, e.g.*, J. Ferejohn, *Pork Barrel Politics* (1974) (hereinafter cited as Ferejohn); Marcus & Short, *supra note 5, at 125.*

10. Marcus & Short, *supra* note 5, at 90-93.

11. *Id.* at 94-95.

12. J. Ferejohn, *supra* note 9, at 9.

13. A. Maass, *Muddy Waters* 23 (1951). (Remark attributed to Representative Mansfield.)

14. Ferejohn, *supra* note 9, at 19.

15. *See, e.g.*, O. Eckstein, *Water-Resource Development: The Economics of Project Evaluation* (1958).

16. Rivers and Harbors Act of Sept. 19, 1890, § 6, ch. 907, 26 Stat. 426, 453-454 (1890) (reaffirmed in Rivers and Harbors Act of Mar. 3, 1899, § 13, ch. 425, 30 Stat. 1121, 1152 (1899).

17. Power, *supra* note 4, at 510. The Corps itself acknowledges the single-minded administration of the 1890-99 Acts; "(u)ntil 1968, the Corps administered the 1899 Act regulatory program only to protect navigation and the navigable capacity of the nation's waters." 42 Fed. Reg. 37122 (July 19, 1977).

18. Power, *supra* note 4, at 512.

19. Rivers and Harbors Act of Mar. 3, 1899, ch. 425, 30 Stat. 1121, 1151 (current version at 33 U.S.C. § 401 (1970)).

20. 42 Fed. Reg. 37122 (July 19, 1977). If the waters are intrastate, the consent of the state legislature is required.

21. Rivers and Harbors Act of Mar. 3, 1899, ch. 425, 30 Stat. 1121, 1151 (current version at 33 U.S.C. §403 (1970).

22. 33 C.F.R. §209.120(f)(1)(1976). *See also* a brief history of this development at 42 Fed. Reg. 37122 (July 19, 1977).

23. 33 U.S.C. § §407, 1342 (Supp. 1977).

24. 33 U.S.C. §1344 (Supp. 1977).

25. 33 U.S.C. §1413 (Supp. 1977).

26. 40 C.F.R. § §228, 230 (1977).

27. 40 C.F.R. §230.1(a)(1)(1977).

28. 42 Fed. Reg. 37133 (July 19, 1977).

29. 33 U.S.C. §1344(c)(Supp. 1977).

CHAPTER 2

1. H. Kanarek. *The Mid-Atlantic Engineers* (1977).

2. Baltimore Harbor Advisory Committee, *Baltimore Harbor Plan* 14 (Draft Supp. Sept. 30, 1974)(hereinafter cited as *Harbor Plan*).

3. *Id.*

4. *Id.* at 15.

5. *Id.* at 16. The Advisory Committee stated that the facilities were 50 percent obsolete.

6. *Id.* at 18.

7. H. Kanarek, *supra* note 1, at 41.

8. *Id.*

9. *Id.* at 5 Stat. 130 (1836).

10. H. Kanarek, *supra* note 1, at 42.

11. H. Kanarek, *supra* note 1, at 43. The channel was named after Captain Henry Brewerton, who was Baltimore District Engineer during this period.

12. *Id.* at 45.

13. *Id.* at 47. Naturally, the new channel was named the Craighill Channel.

14. *Id.*

15. *Id.* at 49-50.

16. *Id.* at 50.

17. *Id.* at 56.

18. *Id.* at 55. The figures are low because they reflect the then existing value of the dollar.

19. *Id.* at 51.

20. *Id.* at 53.

21. *Id.*

22. *Id.* at 58.

23. *Id.* at 143.

24. *Id.* at 142. Again, this figure is not inflated to present value.

25. *Id.* at 143. "Oyster interests estimated that between 1904 and 1906 approximately 1,000 acres of oyster beds had been destroyed" by the dumping of dredged mud.

26. *Id.*

27. *Id.* 40 Stat. 250, 253 (1917).

28. H. Kanarek, *supra* note 1, at 144. 46 Stat. 918, 921 (1930). This Act required local interests to either provide suitable disposal areas and pump the dredged materials, or contribute a sum equivalent to the additional cost to the U.S. for such disposal. U.S. Dep't of the Army, Baltimore District, Corps of Engineers, *Review Report: Baltimore Harbor and Channels 21-22* (June 1969) (hereinafter cited as *Review Report*).

29. *Review Report, supra* note 28, at 22.

30. *Id.*

31. *Id.* at 17.

32. H. Kanarek, *supra* note 1, at 146.

33. *Id.* at 147.

34. *Id.* at 147-48. 72 Stat. 297 (1958).

CHAPTER 3

1. U.S. Department of the Army, Baltimore District, Corps of Engineers, *Review Report: Baltimore Harbors & Channels* (1969)

2. *Id.* at Appendix A-1.

3. *Id.* at 43.

4. *Id.* at 70. Benefits were computed on the basis of increased navigability. Analysis concentrated on those commodities and trades which would benefit from the deeper channels, i.e., iron ore imports, crude petroleum imports, residual fuel oil imports, coal exports, chrome ore imports, and bulk sugar imports. Costs were computed strictly on the basis of construction costs.

5. *Id.* at 17.

6. *Id.* at 21.

7. River and Harbor Act of 1970, Publ. L. No. 91-611, §101, 84 Stat. 1818 (1970).

8. U.S. Department of the Army, Baltimore District, Corps of Engineers, *Baltimore Harbor & Channels, Maryland and Virginia: Supplemental information requested by the Office of Management and Budget to June 1969 Review Report* at Appendix A (letter from William A. Morrill, Assistant Director, OMB, to Robert F. Froehlke, Secretary of the Army (Feb. 7, 1973)) (hereinafter cited as *Supplemental Information Report*).

9. *Id.*

10. *Id.* at 32.

11. *Id.* at 12.

12. *Id.*

13. *Id.*

14. *Id.* at 17.

15. *Supplemental Information Report*, *supra* note 8 at 31.

16. *Id.* at 32.

17. These figures are taken from Table 5, entitled Summary of Estimated First Costs. *Supplemental Information Report*, *Id.* at 18.

18. 41 Stat. 1010, c. 252, §2 (1920) (current version at 33 U.S.C. §547 (1970)):

> Every report submitted to Congress in pursuance of this section or of any provision of law for a survey hereafter enacted, in addition to other information which the Congress has heretofore directed shall be given, shall contain a statement of special or local benefit which will accrue to localities affected by such improvement and a statement of general or national benefits, with recommendations as to what local cooperation should be required, if any, on account of such special or local benefit.

19. *Supplemental Information Report, supra* note 8, at 27.

20. *Id.* at 27-28. Exxon responded that they would need no more than a 39-foot channel, less than the present 42-foot channel. Letter from Exxon Co. of Baltimore, Md. to Department of the Army, Balto. District Corps of Engineers (Dec. 6, 1973) (Appendix A).

21. Estimates of local costs had jumped from $3.5 million in 1969 to $32.8 million by 1974. Subsequently, a 1977 estimate put local costs at $46 million, while most recently (1980) they have been put at approximately $70 million. The requirement that local governments subsidize disposal of dredged material dates back to 1917. *See* Chapter 2 *supra* notes 27-30 and accompanying text.

22. *Supplemental Information Report, supra* note 8, at 30.

23. *H.R. Rep.* No. 94-1223, 94th Cong. 2d. Sess. 47 (1976); *S. Rep.* No. 94-960, 94th Cong., 2d Sess. 48 (1976), statutory text reprinted in (1976) *U.S. Code Cong. & Ad. News* 889.

24. *H.R. Rep.* No. 95-379, 95th Cong., 1st Sess. 55 (1977); *S. Rep.* 95-301, 95th Cong., 1st Sess. 48 (1977), statutory text reprinted in (1977) *U.S. Code Cong. & Ad. News* 797.

25. U.S. Department of the Army, Baltimore District, Corps of Engineers, *Baltimore Harbors & Channels*, Maryland and Virginia, Advanced Engineering and Design: Final Plan of Study (May, 1977) (Hereinafter *Final Plan of Study*).

26. *Id.* at 2-5. The benefit-cost ratio was given as 2.5 to 1. Costs continue to go up. Estimates in 1980 place the federal cost at $160 million (*Greater Baltimore Committee, Report on Export Coal and the Future of the Port of Baltimore*, p. 1(1980)) and the local cost at $70 million (*The Baltimore Sun*, January 22, 1981, A8 col. 3).

27. *Final Plan of Study, supra* note 26 at 4-1.

28. U. S. Department of the Army, Baltimore District Corps of Engineers, *Main Report & Environmental Statement: Baltimore Harbor and Channels, Maryland and Virginia* (Draft/May 1981)

(hereinafter cited as *Main Report & Environmental Statement* (1981)).

29. *Id.* at 0-12.

30. Greater Baltimore Committee, *Report on Export Coal and the Port of Baltimore* (1980).

31. *Compare Supplemental Information Report* (1974) *supra* note 8 at p. 26 with *Main Report & Environmental Statement* (1981) *supra* note 27A at p. L-20. This change is even more dramatic considering that the 1974 benefit-cost ratio was arrived at using a 5-5/8% interest rate while the 1981 benefit-cost ratio employed a 7-3/8% interest rate.

32. 84 Stat. 1818 (1970), *supra* note 7.

33. Baltimore Harbor Planning Advisory Committee, *Baltimore Harbor Plan*, Draft 35-36 (Sept. 30, 1974).

34. 1969 Md. Laws 1168.

35. Green Assoc. & Trident Engineering Assoc., *Selection and Preliminary Design of Diked Disposal Areas for Dredged Spoil from Baltimore Harbor*, vol. 1 (December, 1970).

36. *Id.* at 16-17.

37. U. S. Department of the Army, Baltimore District, Corps of Engineers, *Final Environmental Statement: Permit Application for Diked Disposal Island, Hart and Miller Island, Baltimore County, Maryland* 9 (Feb., 1976) (hereinafter cited as *Hart & Miller EIS*).

38. *Id.* at 64.

39. *Id.* at 82-95.

40. *Id.* at A19.

41. *Id.* at 95.

42. *Id.* at 99.

43. *Id.*

44. *Id.* at A29.

45. *Complaint of Plaintiffs, Hart and Miller Islands Area Environmental Group, Inc., et al.* v. *The Corps of Engineers of the United States Army, et al.*, Civil Action No. HM 77-973 at 9 (D. Md., filed June 20, 1977). [case hereinafter cited as *Area Environmental Group* v. *Corps of Engineers.*] Dep't. of the Army Permit No. NABOP-F/2 (Md. General Services). Complaint of Plaintiffs, *supra* note 42, at Exhibit No. 1.

46. Department of the Army Permit No. NABOP-F/2 (Md. General Services). Complaint of Plaintiffs, *supra* note 42, at Exhibit No. 1.

47 *Area Environmental Group* v. *Corps of Engineers*, *supra* note 42 at 14.

48. This has been the Corps' historical interpretation of these two sections of the 1899 Act.

49. Complaint of Plaintiffs, *supra* note 42 at 14.

50. *Area Environmental Group* v. *Corps of Engineers*, 459 F. Supp. 279 (D. Md. 1978).

51. *Area Environmental Group* v. *Corps of Engineers*___F.2d 1281 (4th Cir. 1980).

52. ___U.S.___(1980).

53. Defendant's Answer to Interrogatory, No. 77, Area Environmental Groups v. Corps of Engineers, *supra* note 42.

54. *Area Environmental Group* v. *Corps of Engineers*, Civil No. HM77-973, December 23, 1980.)

55. *Supplemental Information Report*, *supra* note 8 at p. 18.

56. *Main Report & Environmental Statement (1981)*, *supra* note 27A at 0-12.

57. *The Baltimore Sun*, June 11, 1981, A1.

58. Senate Bill No. 977 (1981) to be codified at *Annotated Code Md., Natural Resources*, sections 5-1202.1, 5-1202.2, 8-1602.1, and 8-1602.2.

CHAPTER 4

1. *See* J. Ferejohn, *Pork Barrel Politics* (1974) (hereinafter cited as J. Ferejohn).

2. *See* Chapter 2.

3. *U.S. Department of the Army, Baltimore District, Corps of Engineers, Review Report: Baltimore Harbor and Channels, at Appendix A* (June, 1969) (herinafter cited as *Review Report*).

4. *Id.* at 30.

5. *Id.* at Appendix A.

6. *Id.* at A6-7.

7. *Id.* at 70. This excludes the costs and benefits of deepening the Northwest Branch Channels to 42 feet.

8. J. Ferejohn, *supra* note 1 passim (1974).

9. *Id.*

10. *Id.*

11. U.S. Department of the Army, Baltimore District Corps of Engineers, *Baltimore Harbor and Channels, Maryland and Virginia: Supplemental Information requested by the Office of Management and Budget to June 1969 Review Report* at Appendix A (July 19, 1974) (hereinafter cited as *Supplemental Review Report* (1974)).

12. U.S. Army Engineer District, Baltimore, Maryland, *Final Environmental Statement, Permit Application for Diked Disposal Island Hart and Miller Islands.* Appendix A p. A-4 (February

1976) (hereinafter cited *Final Environmental Statement, Hart and Miller Islands* (1976)).

13. *See e.g.*, O. Eckstein, *Water-Resource Development: The Economics of Project Evaluation* (1958).

14. U.S. Department of the Army, Baltimore District Corps of Engineers, *Main Report & Environmental Statement: Baltimore Harbor and Channels, Maryland and Virginia* (August 1981) (hereinafter cited as *Main Report & Environmental Statement* (1981)).

15. *Id.* at P-1 through P-19.

16. Greater Baltimore Committee, *Report on Export Coal and the Future of the Port of Baltimore*, at 20-21 (December 1980).

17. *Id.*

18. *Main Report & Environmental Statement* (1981) at P-56.

19. *Id.*

20. University of Maryland, *The Economic Impact of the Port of Baltimore on Maryland* (1975).

21. *Id.*

22. Water Resources Planning Act of July 22, 1965, 79 Stat. 245, §101, 42 U.S.C. §1962(a) (1970).

23. Created by the Marine Resources and Engineering Development Act of 1966. *Pub. L. No.* 89-454, §5(a), 80 Stat. 205 (codified at 33 U.S.C. §1104(a)(1970).

24. These recommendations are described in H. Marcus, J. Short, J. Kuypers, P. Roberts, *Federal Port Policy in the United States* 29-31 (1976).

25. *Washington Post*, Dec. 19, 1977, at A1, col. A4, col. 1.

26. Statement attributed to Senator Pete Dominici (July 1, 1977) 8 *Environment Reporter*, Current Developments 347 (BNA).

27. S. 809, 97th Congress, 1st Session (March 26, 1981).

28. Discussion with Ralph Rothwell, attorney for the plaintiffs, on June 22, 1978.

29. Telephone conversation with Joseph Bormel, July 3, 1981.

30. Letter from Arthur W. Sherwood, Director of the Chesapeake Bay Foundation to Senator Paul S. Sarbanes (June 6, 1979).

CHAPTER 5

1. 42 U.S.C. §4321 (1970).

2. *Id.* §4332.

3. *Environmental Defense Fund* v. *Corps of Engineers*, 384 F. Supp. 916, 927-28 (n.D. Miss. 1972), *aff'd*, 492 F. 2d 1123 (5th Cir. 1974).

4. *Id.* 492 F. 2d at 1132.

5. 42 U.S.C. § §4341-47 (1970).

6. R. Andrews, *Environmental Policy and Administrative Change* 42-43 (1976).

7. *See* e.g., *Calvert Cliffs Coord. Comm.* v. *Atomic Energy Comm.*, 449 F. 2d 1109 (D.C. Cir. 1971) *cert. denied* 404 U.S. 942 (1972).

8. 38 Fed. Reg. 20550-20562 (1973).

9. 40 C.F.R. Parts 1500-1508 (July 30, 1979).

10. U.S. Department of the Army, Baltimore District Corps of Engineers, *Environmental Statement, Baltimore Harbors and Channels, Maryland and Virginia* (25 September 1970).

11. *Id.* at 5.

12. *Id.*

13. *Id.* at 6.

14. *Id.* at 7, 4.

15. U. S. Department of the Army, Baltimore District, Corps of Engineers. *Final Environmental Statement, Hart and Millers Islands* (1976) (hereinafter cited as *FEIS, Hart and Miller Island* (1976)).

16. The absence of a single system of pagination makes it difficult to determine the exact length of the manuscript.

17. *FEIS, Hart and Miller Islands* (1976) *supra* note 15 at *summary.*

18. *Id.*

19. Letter from Regional Director, FWS, to District Engineer, Baltimore District, Corps of Engineers at 1-2 (Oct. 8, 1975).

20. Interagency Memorandum to Director of the Office of Ecology and Environmental Conservation, from Regional Director, National Marine Fisheries Service, of U.S. Departmemt of Commerce in the Federal Building, 14 Elm Street, Gloucester, Mass. 0930, at 1, 9-11 (Sept. 7, 1976).

21. Permit Number NABOP-F/2 (md. General Services) 2 (Nov. 22, 1976, found in files of Baltimore District, Corps of Engineers.

22. 40 C.F.R. §1502.14 (1980)

23. Letter from the Regional Director, National Marine Fisheries Service, to the District Engineers, Baltimore District, Corps of Engineers (Sept. 7, 1976).

24. See footnote 18 and supporting text.

25. *FEIS, Hart and Miller Island* (1976) at 52-57.

26. *Id.* at Appendix C.

27. *Id.* at 59-62.

28. *Id.* at 62.

29. *Hart and Miller Islands Area Environmental Group* v. *Corps of Engineers*, Civil No. HM 77-973, (U.S. Dis. Md. decided December 23, 1980).

30. U.S. Department of the Army, Baltimore District Corps of Engineers, *Environmental Statement, Baltimore Harbor and Channels, Maryland and Virginia* (25 September 1970); Dept. of the Army, Baltimore District, Corps of Engineers, *Final Environmental Statement, Operation and Maintenance of Baltimore Harbor and Associated Channels, Maryland and Virginia* (1974)) (hereinafter *FEIS, Operations and Maintenance* (1974)).

31. 359 F. Supp. 1289 (S.D. Texas 1973), modified on other grounds, 499 F. Supp. 982 (5th Cir. 1974).

32. 40 C.F.R. §1502.4(a)(1978).

33. *Id.* at §1501.7 and *Supplementary Information.*

34. *FEIS, Operation and Maintenance, supra* note 16, at 145.

35. *FEIS, Hart and Miller Islands, supra* note 17, at 1.

36. *Id.* at 45, 63.

37. *Hart and Miller Islands Area Environmental Group* v. *Corps of Engineers*, Civil No. HM 77-973 (U.S. Dis. Md., decided December 23, 1980).

38. *Id.* at p. 19.

39. *Id.* at pp. 16-24.

40. U.S. Department of the Army, Baltimore District Corps of Engineers, *Main Report and Environmental Statement: Baltimore Harbor and Channels, Maryland and Virginia*, pp. EIS-1 through EIS-43 (August 1981).

41. 40 C.F.R. Parts 1500-1508.

42. *See* C.E.Q., Environmental Quality 1977, Appendix A, p. 362 (1977).

43. 40 C.F.R. §1500.1(c).

44. 40 C.F.R. §1502.2 and Parts 1500-1508.

45. *See, Environmental Statement, Baltimore Harbor and Channels, Maryland and Virginia* (Draft/May 1981) *supra* note 39.

46. *Id.* at EIS-11.

47. *See Feis, Hart and Miller Islands* (1976), *supra* note 15.

48. *Compare Environmental Statement* (1970), *supra* note 10 with *Environmental Statement* (1981), *supra* note 39.

49. *See Environmental Statement, Baltimore Harbor and Channels, Maryland and Virginia* (June 24, 1981), *supra* note 39, at p. EIS-3.

50. *The Baltimore Sun*, (June 24, 1981) A-1, Col. 4.

CHAPTER 6

1. Flood Control Act of June 22, 1936, ch. 688, §1, 49 Stat. 1570, (codified at 33 U.S.C. §701a (1970).

2. *U.S. Department of the Army, Baltimore District, Corps of Engineers, Review Report: Baltimore Harbor & Channels* (1969) (hereinafter cited as *Review Report* (1969)); *U.S. Department of the Army, Baltimore District Corps of Engineers, Baltimore Harbor & Channels: Supplemental Information request by OMB* (1974) (hereinafter cited as *Supplemental Information* (1974)); *U.S. Department of the Army, Baltimore District, Corps of Engineers, Baltimore Harbor & Channels, Final Plan of Study* (1977) (hereinafter cited as *Final Plan of Study* (1977)); *U.S. Department of the Army, Baltimore District, Corps of Engineers, Main Report & Environmental Statement: Baltimore Harbor & Channels* (1981) (hereinafter cited as *Main Report & Environmental Statement* (1981).

3. *Id.*

4. *Compare Review Report* (1969) at 65 with *Main Report & Environmental Statement* (1981), at 0-12.

5. *Compare Review Report* (1969) at 77 with *Main Report & Environmental Statement* (1981) at P-56.

6. *Compare Review Report* (1969) at p. 77 with *Main Report and Environmental Statement* (1981) at L-16.

7. *U.S. Department of the Army, Baltimore District, Corps of Engineers, Public Meeting Notice/Information Pamphlet, Baltimore Harbor and Channels* (24 June 1981).

8. *Id.*

9. *Id.*

10. *Review Report* (1969) at 62.

11. *Id.* at 64.

12. *See Main Report and Environmental Statement* (1981) at G-1.

13. Letter from William Morrell, Assistant Director, OMB, to Robert F. Froehlke, found in Appendix A to *Supplemental Information* (1974).

14. *Supplemental Information* (1974) at p. 26.

15. *Id.* at 30-32.

16. O. Eckstein, *Water Resource Development: The Economics of Project Evaluation* 62 (1958).

17. Department of Transportation Act of Oct. 15, 1966, §7(a), 80 Stat. 931, 942, (codified at 49 U.S.C. §1656(a) (1970)): The standards and criteria for economic evaluation of water resource projects shall be developed by the Water Resources Council. . . .For the purpose of such standards and criteria, 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 rates 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 water . . . .

18. R. Haveman, *The Economic Performance of Public Investments* 47-52 (1972).

19. Water Resources Planning Act of July 22, 1965, 79 Stat. 245, § 101 (codified at 42 U.S.C. § 1962a (1970)).

20. 38 Fed. Reg. 24,788, 24,822 (1973).

21. Water Resources Development Act of 1914, § 80, 80 Stat. 12, 34 (Codified at 42 U.S.C. § 1962d-17 (1976)).

22. *See* U.S.C. § 1962d-17 (1980).

23. J. Ferejohn, *supra* note 7, at 73-74. The author recounts a specific discussion during Senate Appropriations Committee hearings wherein one Senator was quoted as having commented that lump-sum funding "would make the initiation of a large project almost impossible.

24. 97th Congress, 1st session.

25. The Baltimore Sun, Section C, Col. 1, July 17, 1981.

26. 33 U.S.C. §701a (1970).

27. *Supplemental Information* (1974) at 5.

28. *See Main Report & Environmental Statement* (1981), Section P.

29. *Id.* at P-56.

30. *Review Report* (1969) at B-14.

31. *Review Report* (1969) at 60.

32. *Greater Baltimore Committee, Report on the Export of Coal and the Future of the Port of Baltimore*, at 19-21 (December 1980).

33. *Main Report & Environmental Statement* (1981) at P-55.

34. Office of Technology Assessment, *Coal Exports and Port Development* (April 1981) at 56.

35. *Id.* at pp. 58-62.

36. *Main Report & Environmental Statement* (1981) at L-15, L-20.

37. *Id.* at pp. L-18, P-4; Calculated as 55 percent of annual iron ore saving.

38. *Id.* at pp. L-18, L-19.

39. Office of Technology Assessment, *Coal Exports and Port Development* (April 1981) at pp. 16-27.

40. *Id.*

CHAPTER 7

1. R. McKean, *Efficiency in Government Through Systems Analysis* 10(1958).

2. *See e.g., Sierra Club* v. *Froehlke*, 359 F. Supp. 1289 (S.D. Tax. 1975); *see, generally*, F. Anderson, *NEPA in the Courts* (1973).

3. *Citizens to Preserve Overton Park, Inc.* v. *Volpe*, 401 U.S. 402 (1971).

4. *Vermont Yankee Nuclear Poer Corp.* v. *Natural Resources Defense Council*, 434 U.S. 810 (1978).

5. 42 U.S.C. §4321 *et seq.* (1970).

6. 97th Congress, 1st Session (March 26, 1981).