



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
WASHINGTON, D.C. 20314-1000

REPLY TO  
ATTENTION OF:

CECW-PC

MAR 12 2004

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

SUBJECT: Delaware River Main Channel Deepening Project, February 2004 Supplement to Comprehensive Economic Reanalysis Report December 2002

1. PURPOSE: To transmit the subject final report and supplement on the project for the Delaware River Main Channel Deepening Project. The Supplemental Report was prepared based on concerns expressed on the December 2002 report by the principal crude oil lightering company. The Supplemental Report supports the economic feasibility of the proposed project.

2. BACKGROUND:

a. The main channel of the Delaware River from the mouth of the river to Philadelphia Harbor, Pennsylvania and Camden, New Jersey, a distance of approximately 100 miles, was authorized for deepening from 40 feet to 45 feet in Section 101 (6) of the Water Resources Development Act of 1992 as modified by Section 308 of the Water Resources Development Act of 1999. In response to a June 2002 General Accounting Office (GAO) report (GAO-02-604) entitled "Delaware River Deepening Project: Comprehensive Reanalysis Needed," a comprehensive economic reanalysis of the authorized project was conducted and completed in December 2002. The December 2002 report of the Philadelphia District found the authorized 45-foot project to be economically justified. The reanalysis identified \$24.7 million in annual benefits and \$20.9 million in remaining annual costs, with a resulting benefit-cost ratio of 1.18 at 5-7/8 percent discount rate. The December 2002 report, along with the report of an External Review Panel and the HQUSACE Policy Compliance review documentation, and associated documents, were provided to your office by memorandum dated 18 December 2002, Subject: Findings of the U.S. Army Corps of Engineers, Comprehensive Reanalysis of the Delaware River Deepening Project.

b. Following public release of the December 2002 comprehensive economic reanalysis report, the crude-oil lightering company which operates in the Delaware River provided comments on the methodology and results. The lightering company believed that the Corps analysis overestimated the benefits attributable to reduced lightering since it did not account for the volume lightered off-shore. The company further informed that operational considerations would preclude it from reducing the size of its fleet, even recognizing that there would be a significant reduction in volumes lightered under the with project condition. As a result, the

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Philadelphia District reviewed the matter with the company and agreed to reanalyze the lightering. The Philadelphia District also examined the most recent traffic patterns on other benefiting commodities. The purposes of the new reanalysis were to:

- Re-estimate crude oil transportation cost savings including lightering;
- Review projections for other benefiting commodity types based on new additional data on vessel movements that have occurred since the 2002 report and revise benefit estimates as appropriate;
- Present the results of the revised reanalysis as a supplemental document to the December 2002 Report

### 3. DISCUSSION.

#### a. Reanalysis Findings.

(1) The total project cost is \$264.6 million, with the general navigation features at \$231.0 million, LERR's \$10.7 million, and local service facilities \$22.6 million. The non-Federally funded local service facilities are predominately deepening of berthing areas to make use of the deeper channel. The February 2004 Reanalysis has included the additional air emission mitigation costs of \$12,600,000. The mitigation costs are cost shared as part of general navigation features. The economic justification has been reconfirmed by a more detailed lightering analysis necessitated by concerns expressed by the principal crude-oil lightering company operating on the Delaware River and a reanalysis of container benefits due to significantly changed conditions since the December 2002 report.

(2) The February 2004 report supplement of the Philadelphia District identifies \$24.2 million in annual benefits and \$21.0 million in remaining annual costs, with a resulting benefit-cost ratio of 1.15 at 5-5/8 percent discount rate. Preconstruction, Engineering and Design (PED) costs of \$10,025,000 were previously expended, and therefore are considered "sunk costs" and not included in the project economic analysis. However, for information purposes, if these costs were included the project benefit-cost ratio would remain positive at 1.11 to 1.

(3) Principal changes between the February 2004 Supplement and the December 2002 Reanalysis report pertain to crude oil lightering benefits and container cargo benefits. Crude oil lightering benefits decreased by about \$3 million due primarily to use of more complete lightering operations data and revised lightering resource cost estimates. Container cargo benefits have increased about \$2.6 million due in large part to changes in shipping practices and volumes than were expected in the December 2002 report. No changes have been made in the bulk commodities and petroleum product benefits, other than the change in the discount rate from FY 2003 to FY 2004.

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b. External Independent Review. I engaged the firm of Planning Management Consultants Limited (PMCL) to establish a panel of experts to conduct the external independent review of the Philadelphia District Supplemental Report. PMCL constituted a panel of navigation and economic experts to perform the review. The Independent External Review Panel members consisted of Dr. Ken Casavant, Professor of Agricultural Economics, Washington State University; Dr. Michael Bronzini, Professor Civil, Environmental, and Infrastructure Engineering Department, George Mason University; and, Dan Smith, expert in navigation economics and principal of the Tioga Group.

c. External Independent Review Panel Findings. The External Independent Review Panel completed their review on 15 January 2004 based on draft documents provided on 24 December 2003. A copy of the final review panel report is attached.

(1) The review panel found that the majority of benefit analysis to be sound, well supported and a reasonable basis for a decision by the Corps. In the panel's opinion, the estimates of benefits from lightering, tanker operations and bulk vessel operations appear to be based on the best available information, developed using appropriate methods and adequately documented.

(2) The review panel identified significant uncertainties associated with the estimation of container traffic benefits. The primary basis of the uncertainties was that the estimates rely on prospective benefits to container services provided by only two consortia of vessel sharing agreements, which make these benefits sensitive to the individual policies and future actions of only a few benefiting participants

d. HQSACE Review. The February 2004 Supplement to the December 2002 report was not furnished to the External Independent Review Panel as the contract for review services expired. Rather, the HQSACE Policy Review team reviewed the final report, responses to comments, and made an assessment of the resolution of remaining issues. The HQSACE review assessment is attached. In summary:

(1) The HQSACE reviewers recognize that not all uncertainties identified by the Review Panel have been removed from the analysis of container shipments. However in the final report, the Philadelphia District has cross checked various data with other sources and revised the containership reanalysis in order to more clearly describe the data sources, assumptions, and conclusions. It remains that a significant portion of the container benefits is based on the projections of a very few individuals in the shipping industry with respect to near term growth in traffic, and the manner in which these additional shipments would be transported to the Philadelphia area. The most significant without project condition projection involves

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using different ocean carriers to transport excess Philadelphia-bound cargo that cannot fit on the existing container shipping services on the Delaware River given current channel depth constraints. It is assumed that, in the absence of channel deepening, certain containerized cargo will be delivered to the New York/New Jersey area, where it will then be trucked to the Philadelphia region. With a deeper channel on the Delaware River, this cargo would be shipped directly by ocean carrier to the Philadelphia region, thus reducing total transportation costs.

(2) The HQUSACE reviewers find that the final report supplement of the Philadelphia District reflects the dynamic character of the overseas shipping line port service patterns and also reflects the rapid increases in container volumes and corresponding increases in containership sizes. In addition, it is noted that benefits are not claimed for the potential future growth in container traffic beyond the assumed base year of 2009. The February 2004 final report supplement provides information to support deepening of the Delaware River for improvement of transportation infrastructure to the U.S. port system. Even though some uncertainties remain, the final report supplement findings are reasonable and defensible.

4. Documentation and Enclosures. The following are the documents that have been prepared under the comprehensive reanalysis and constitute the full record of HQUSACE review:

- a. Philadelphia District Report dated December 2002 with the February 2004 Supplement. (TAB A)
- b. North Atlantic Division Endorsement dated 5 March 2004. (TAB B)
- c. Documentation of HQ review. (TAB C)
- d. External independent review report dated 15 January 2004. (TAB D)

5. SUMMARY. The Supplemental Report supports the economic feasibility of the proposed project and serves as the basis for the Philadelphia District to continue its coordination on other project implementation issues. It is our intention to post on the Corps website on Friday, 19 March 2004, a complete copy of this review record as set forth in this memorandum and enclosures.

FOR THE COMMANDER:



CARL A. STROCK  
Major General, USA  
Director of Civil Works

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