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B-2 Biological Assessment of the Bald Eagle (Haliaeetus leucocephalus) and the Peregrine Falcon (Falco peregrinus) for the Delaware River Main Channel Deepening Project, Philadelphia District, U.S. Army Corps of Engineers, October, 1995.

B-3 Planning Aid Report, Comprehensive Navigation Study, Main Channel Deepening Project, Delaware River from Philadelphia to the Sea, Beneficial Use of Dredged Material, U.S. Fish and Wildlife Service, August, 1995.

B-4 Planning Aid Report, Comprehensive Navigation Study, Main Channel Deepening Project, Delaware River from Philadelphia to the Sea, Upland Disposal Sites, U.S. Fish and Wildlife Service, July, 1995.

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APPENDIX A - CORRESPONDENCE

Letters - Federal Agencies

National Marine Fisheries Service, dated 1 March 1995, commenting on the dredged material disposal areas/beneficial use sites.

U.S. Environmental Protection Agency, dated 7 June, 1996 commenting on the dredged material disposal areas/beneficial use sites.

U.S. Environmental Protection Agency, dated 30 May 1995, commenting on the upland dredged material disposal areas.

U.S. Environmental Protection Agency, dated 27 May 1992, commenting on the Final Environmental Impact Statement.

U.S. Fish and Wildlife Service, dated 18 January 1996, commenting on the endangered species biological assessment that was prepared by the Philadelphia District.

U.S. Geological Survey, dated 23 January 1996, stating that there would be no significant impact to aquifers adjacent to the Delaware River as a result of the upstream movement of saltwater as a result of channel deepening, or from infiltration of fluids leaching from the dredged material areas.

State Resource Agencies

Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, dated 1 May 1997, providing federal consistency certification.

U.S. Army Corps of Engineers, Programs and Project Management, dated 30 April, 1997, to the Delaware Department of Natural Resources and Environmental Control, Coastal Management Program agreeing to certain items pursuant to obtaining federal consistency certification.

Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, dated 14 February 1997, requesting information for making a federal consistency determination.

U.S. Army Corps of Engineers, Programs and Project Management, dated 16 July, 1996, responding to the concerns raised by the Delaware Department of Natural Resources and Environmental Control concerning the design and configuration of Kelly Island beneficial use project, possible PCB contamination, and maintenance of the project once completed.

Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, dated 17 June 1996, regarding the design of Kelly Island.

Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, dated 20 February 1996, comments on the need for a Federal Consistency Determination at the end of the current phase of study, expresses concern about the use of geotextile tubes to contain silt at Kelly Island, and about possible PCB contamination in this silt.

Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, dated 22 May 1995, comments on the beneficial use sites, expressing concerns with the composition of dredge material, reuse of stone/rock material, and locations of sand stockpiles in relationship to future use constraints.

Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, dated 31 January 1992, stating the Delaware Coastal Management Program conditionally agrees with the Corps' coastal zone consistency determination.

New Jersey Department of Environmental Protection, dated February 3, 1992, states that the Delaware River Main Channel Deepening Project is conditionally consistent with the New Jersey Coastal Zone Management Program.

Commonwealth of Pennsylvania, Department of Environmental Resources, dated February 4, 1997, stating that the project is consistent with the Pennsylvania CZM Program.

Commonwealth of Pennsylvania, Department of Environmental Resources, dated February 21, 1992, stating that the current phase of the project is consistent with the Pennsylvania CZM Program, and that future phases should be submitted for consistency review.

Letters - Cultural Resources

Delaware:

U.S. Army Corps of Engineers, Environmental Resources Branch, dated 2 July 1997, to the Delaware Division of Historical and Cultural Affairs, Bureau of Archaeology and Historic Preservation, requesting their review of the District's finding that the Main Channel Deepening Project will have no effect on the significant archaeological deposits on the shoreline of Pea Patch Island.

U.S. Army Corps of Engineers, Environmental Resources Branch, dated 6 October 1995, requesting review of a draft copy of Submerged and Shoreline Cultural Resources Investigations, Disposal Areas and Selected Target Locations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania by Delaware Division of Historical and Cultural Affairs, Bureau of Archaeology and Historic Preservation.

Delaware Division of Historical and Cultural Affairs, Historic Preservation Office, dated 21 November 1994, states concurrence with investigator's recommendation for additional underwater investigation of 11 "targets", also concurs with finding of four "targets" detected in 1987 do not meet National Register criteria, but the fifth target does meet the criteria, and expresses concerns for the destruction of two targets during maintenance dredging.

Delaware Division of Historical and Cultural Affairs, Historic Preservation Office, dated 2 August 1994, states that they concur with the assessment that the placement of additional fill at Reedy North and South will not effect any significant historical properties.

New Jersey:

U.S. Army Corps of Engineers, Environmental Resources Branch, Dated 28 September 1995, requesting review of a draft copy of Submerged and Shoreline Cultural Resources Investigations, Disposal Areas and Selected Target Locations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania by New Jersey Department of Environmental Protection, Historic Preservation Office.

New Jersey Department of Environmental Protection, Historic Preservation Office, Dated 10 February 1995, states concurrence with investigator's recommendation for additional underwater investigation of 11 "targets"; also concurs with finding that four "targets" detected in 1987 do not meet National Register criteria, but the fifth target does meet the criteria.

New Jersey Department of Environmental Protection, Historic Preservation Office, Dated 28 July, 1994, stating that placing dredged material on the proposed dredged material disposal sites will effect no cultural resources eligible for or listed on the National Register of Historic Places.

Pennsylvania:

Pennsylvania Historical and Museum Commission, Bureau of Historic Preservation, Dated 21 November 1995, states that they agree with the recommendations of this report, and that project activities will have no effect on significant submerged cultural resources in waters of Pennsylvania.

U.S. Army Corps of Engineers, Environmental Resources Branch, dated 6 October 1995, requesting review of a draft copy of Submerged and Shoreline Cultural Resources Investigations, Disposal Areas and Selected Target Locations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania by the Pennsylvania Historical and Museum Commission, Bureau of Historic Preservation.

Pennsylvania Historical and Museum Commission, Bureau of Historic Preservation, Dated 10 July 1995, states that the cultural resources investigation provided important information on submerged cultural resources in the Delaware river.

Pennsylvania Historical and Museum Commission, Bureau of Historic Preservation, Dated 20 July 1994, states concurrence with investigator's recommendation for additional underwater investigation of 11 "targets", also concurs that if Target e-2, 4:16 cannot be avoided then a phase II evaluation and any additional investigation should be conducted; and if Target e-1, 1:15 can not be avoided it should be salvaged.

FEDERAL AGENCIES



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat and Protected
Resources Division
James J. Howard Marine
Sciences Laboratory
Highlands, New Jersey 07732

March 1, 1995

Mr. John Brady
Planning Division
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Dear Mr. Brady:

We have reviewed the Delaware River Main Channel Deepening Conceptual Plans for Beneficial Use of Dredged Material faxed to us on February 14, 1995. Our comments are as follows:

Kelly Island (LC9)

In general, we support the proposed shoreline protection and stabilization using geotubes, in conjunction with creation of low marsh, along the east shore of Kelly Island, Kent County, Delaware. We wish, however, to ensure that adequate tidal exchange be provided to the created marsh. Consequently, we are concerned with the proposed installation of a weir on the Mahon River on the west side of Kelly Island. We discourage the use of weirs, or similar water control structures, that inhibit free tidal exchange. We recommend that the conceptual design for the project incorporate a free-flowing tidal gut that will not only promote uninhibited tidal exchange, but also afford access to fish and invertebrates.

Sand Stockpile

We are concerned with the proposed stockpiling of sand at LC-5. There is no apparent environmental benefits associated with the proposal. Additionally, there are evident ecological detriments associated with suffocating 500-700 acres of benthic fauna. Although environmental benefits have been demonstrated with some submerged berms, the ecological trade-offs associated with benthic faunal losses and habitat modifications must be weighed against any potential benefits. We would like to see this discussed in any updated plans.

Egg Island Point (PN1A)

In general, we also support the proposed shoreline protection using geotubes, in conjunction with the creation of wetlands and sandy beach habitat proposed along the shores of Egg Island Point, Cumberland County, New Jersey. However, as with

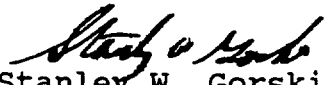


Kelly Island, we wish to ensure adequate tidal exchange between the existing marsh at Egg Island Point and Delaware Bay. Consequently, we are concerned that two miles of continuous geotubes along the southeast side, and possibly along the northwest side of Egg Island Point may inhibit free tidal exchange. We recommend that the conceptual design be modified to provide uninhibited tidal flow to the marshes of Egg Island Point, and to afford access to fish and invertebrates.

While the creation of a unconfined sand island off the tip of Egg Island Point may benefit horseshoe crabs, gulls and terns, the benefits of such a project should be weighed against any detrimental effects to benthic fauna. Since the size of the proposed island has not been determined, it is not possible to fully assess the potential impacts of the island creation. Although on a smaller scale, the impacts of island creation are similar to those that may result from stockpiling sand in the bay. Consequently, the ecological trade-offs associated with benthic faunal losses and habitat modifications must also be weighed against any potential benefits as work on the sand island proceeds. We would like to see this trade-off discussed in any updated plans.

Thank you for the opportunity to comment on the conceptual plan. We hope that these comments are helpful to you. If you have any questions or need additional information, please contact either Karen Wurst at (908) 872-3023 for Egg Island Point, or Tim Goodger at (410) 226-5771 for Kelly Island.

Sincerely,


Stanley W. Gorski
Assistant Coordinator
Habitat Program

cc: F/NE02, T. Goodger



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION II

290 BROADWAY

NEW YORK, NEW YORK 10007-1866

JUN 07 1995

Mr. Robert L. Callegari
Department of the Army
Corps of Engineers - Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Callegari:

As requested, the Environmental Protection Agency (EPA) has reviewed the studies on Wetland Restoration, Underwater Features, and Other Beneficial Uses of Dredged Material in the Delaware River Main Channel Deepening Project. EPA also obtained additional information from the U.S. Army Corps of Engineers - Philadelphia District (ACE) at its Beneficial Use Workshop on April 21, 1995. Based on our review, we offer the following comments.

Kelly Island, Delaware - The ACE should ensure that the elevations created by the disposed dredge material at this site are appropriate for the creation of tidal marsh. Furthermore, we recommend that the ACE, during the planning and development stages of the project, include vegetation planting as part of the mitigation plan. We request that copies of the mitigation plan be included in the future NEPA documentation that will be circulated for our review prior to implementation.

Egg Island Point, New Jersey - The ACE should evaluate the possibilities for beneficial use at this site through restoration of the shoreline and the large area of wetlands that has eroded. Moreover, stabilizing the sandy shoreline would improve the conditions for the leased oyster beds in the vicinity, which are currently being impacted by the fine-grained sediments eroding from this area. At a minimum, we recommend that the ACE discuss the possibilities of protecting the oyster beds with Mr. Joseph Dobarro of the New Jersey Department of Environmental Protection (NJDEP); the Delaware Bay Oystermans Association may also have valuable input.

Sand Stockpiling - The ACE proposes to move the northerly site of sand stockpiling to a location about 1.7 miles offshore from Pickering Beach. At the April 21st meeting, the representative from the Delaware Department of Natural Resources and Environmental Control was concerned that an excessive amount of material was being proposed for sand stockpiling in Delaware and in some cases it was being proposed for placement in areas that

did not facilitate its use. It is important that sites designated for beneficial use not be used merely as disposal areas. Therefore, we recommend that the ACE modify the beneficial use plan to include consideration of need for the material. We recommend that the analysis of beneficial uses consider placing additional material on Egg Island Point (as discussed above), developing agreements with the States of New Jersey and Delaware to place it in locations where the States can better use it, and developing some other type of habitat in the Bay.

If you have any questions regarding this letter, please contact Ms. Evelyn Tapani-Rosenthal of my staff at (212) 637-3497.

Sincerely yours,

A handwritten signature in cursive script, reading "Laura J. Livingston".

Laura J. Livingston, Assistant Chief
Environmental Impacts Branch



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION II

290 BROADWAY

NEW YORK, NEW YORK 10007-1866

MAY 30 1995

Mr. Robert L. Callegari
Department of the Army
Corps of Engineers - Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Callegari:

The Environmental Protection Agency (EPA) has reviewed the four draft environmental assessments (EA) prepared by the U.S. Army Corps of Engineers - Philadelphia District (ACE) for the proposed dredged material disposal areas for the Delaware River Deepening Project. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7609, PL 91-604 12(a), 84 Stat. 1709), and the National Environmental Policy Act.

The four EAs describe four separate disposal areas located in various townships throughout Gloucester and Salem Counties, New Jersey. They are identified as sites 15D, 15G, 17G, and Raccoon Island. These disposal sites are being evaluated for appropriateness in receiving the 50 million cubic yards of dredged material expected to be generated by the Delaware River deepening project, and the associated maintenance dredging to occur over the subsequent 50 year period. The four sites are all currently diked, or partially diked former disposal areas. Based on our review, we offer the following comments.

According to recent information provided by the ACE, we understand that Raccoon Island is primarily a Phragmites dominated wetland while the remaining sites are currently in cropland. Sites 15G and 15D would be used entirely and impact 5.78 and 40.32 acres of wetlands respectively. The Raccoon Island site and site 17G would be partially utilized and impact 315.00 and 33.60 acres of wetlands respectively. This information should be included in the final EAs.

Additionally, the ACE has indicated that the anticipated dredged material from the initial deepening project has been reduced from the 50 million cubic yards stated in the EAs to a current estimate of 40 million cubic yards. The final EAs should be updated to reflect these revised figures. Of this volume, approximately 10 million cubic yards are to be disposed of via "beneficial use" projects in the Delaware Bay. The four disposal areas are anticipated to eventually accommodate 78.9 million cubic yards over the 50 year life of the project.

To ensure that the wetland impacts associated with the proposed activities are properly minimized and mitigated, a wetlands management plan should be developed for the four proposed dredge disposal sites and included in the final EAs. This plan should include, but not necessarily be limited to, a dredge disposal schedule, a site subdivision plan, creation and enhancement measures, a discussion of plant recolonization, and osprey protection measures. The enclosure to this letter contains additional details.

If you have any questions about this letter, please contact Ms. Evelyn Tapani-Rosenthal of my staff at (212) 637-3497.

Sincerely yours,



Laura J. Livingston, Assistant Chief
Environmental Impacts Branch

Enclosure

cc: R. Denmark, Region III

Enclosure

1. A schedule for dredge disposal should be developed with the objective of ensuring that dredged material be deposited in the most environmentally beneficial manner possible while carrying out the project purpose. This schedule should attempt to space out disposal events within each site to the greatest extent possible.
2. The feasibility of dividing the disposal sites into separate cells to improve the management potential of these sites should be evaluated. As we understand, such a partitioning of Site 17G is currently being evaluated by the ACE. Specifically, this site would receive one disposal event prior to the creation of two internal walls. Subsequent filling would proceed sequentially among these cells, with the lowest cell being filled last. We recommend that the plan for Site 17G be incorporated into the management plan.
3. The potential for permanent wetland creation or enhancement should be pursued wherever possible. An evaluation of all potential mitigation sites within property purchased for dredged disposal should be conducted. Such sites should include any property outside of the diked areas which will be retained by the ACE or by the project sponsor. The feasibility of creating freshwater tidal marsh should be given special consideration.
4. As we understand, the ACE is currently evaluating the permanent isolation, via internal walls, of approximately 10-15 acres of mitigation within each site. Consideration in these areas should be given to planting beneficial species which may act as a focal point to potentially colonize recently deposited dredged material. Conversely, all these sites should be protected from being colonized by undesirable species, such as Phragmites, from the disposal sites. These internal sites and any other mitigation areas identified should be included within the management plan.
5. All necessary measures should be taken to reduce potential impacts or disturbance to the osprey nest identified in the vicinity of Raccoon Island.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

From S&A review:

Dir, WLRC
MRD Chief
Review manager
Econ reviewer
WLR-E (2)
WLR official file
CECW-PM (J. Kent)
S&A files
Div POC
Dist POC

MAY 27 1992

Mr. Donald A. Banashek, Director
Washington Level Review Center
ATTN: CEWRC-WLR-E (SA)
Kingman Building
Fort Belvoir, Virginia 22060-5576

Dear Mr. Banashek:

The Environmental Protection Agency (EPA) has reviewed the final environmental impact statement (EIS) for the Delaware River Comprehensive Navigation Study, Main Channel Deepening. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7609 12[a] 84 Stat. 1709), and the National Environmental Policy Act. Since the proposed project impacts both EPA Regions II and III, this letter reflects the results of both Regional Offices' reviews of the final EIS.

This project is being proposed in response to Congressional Resolutions; the Army Corps of Engineers (ACE) is seeking an exemption from the Clean Water Act's (CWA) Section 404 permitting requirements pursuant to Section 404(r). Under Section 404(r), the requirement to obtain a Section 404 permit is waived provided information is presented in an EIS to demonstrate that the effects of the discharge of dredge and fill materials, including consideration of the Section 404(b)(1) Guidelines, were evaluated. With this in mind, this comment letter includes EPA's evaluation of the project's consistency with the Section 404(b)(1) Guidelines.

The proposed project involves deepening the Delaware River channel system from 40 to 45 feet below mean low water (MLW), and widening it at bends and other selected locations, from deep water in the Delaware Bay to the Beckett Street Terminal in Philadelphia Harbor, a distance of approximately 102.5 miles. The project also includes the construction of a two space anchorage of compatible depth at the Marcus Hook Anchorage, Pennsylvania.

The ACE is proposing to dredge a total of 50,100,000 cubic yards (CY) of material for the project. The 45-foot channel would require approximately 6,156,000 CY annual maintenance dredging. Five sites have been selected for on-land disposal of the dredged

material. Two are existing upland disposal sites near the Chesapeake-Delaware Canal in Delaware (Reedy Point North and South). Three are new upland sites, one near Woodbury, New Jersey (170), the other two near Bridgeport, New Jersey (15D, and Raccoon Island). Additionally, the EIS proposes to use appropriate dredged material from Delaware Bay for beneficial projects, including marsh/island creation and offshore stockpiling for subsequent beach nourishment.

The final EIS states that the existing channel dimensions reduce the economic efficiency of larger ships transiting the Delaware River main channel. Specifically, under the present channel conditions, larger vessels that carry crude oil, coal, and iron ore periodically must undergo lightering or partial loading due to draft restrictions. The proposed project would reduce the need for these practices and, thereby, encourage the expanded utility of large ships for commercial use on the Delaware River channel system.

As noted in EPA's February 14, 1992 comment letter, the draft EIS provided information on the characteristics of the sediments to be dredged that indicates low concentrations of organics and metals. However, the document did not include information on sediment grain size. These data are important because there is a correlation between a sediment's grain size and its capacity to concentrate contaminants. Moreover, the physical characteristics of sediments influence the choice of appropriate site for dredge disposal and beneficial uses. The final EIS presents the results of grain size analyses on the cores that were collected during the ACE's 1991 sediment sampling program for the proposed project. Based on the sediment data presented, EPA believes that there will be no adverse impacts associated with the disposal of sediments generated by the project.

In a related matter, during the initial planning for this project, the ACE identified Buoy 10 in Delaware Bay as a potential disposal site for coarse grained sediments. In response to EPA's concern about this disposal site, the ACE dropped it from consideration in favor of beneficial uses. Although we believe that this is a better solution, our February 14, 1992 comment letter identified the need for additional information on the sediment stockpiling aspects of the disposal method. The final EIS indicates that approximately 11.5 million CY of sand would be aquatically stockpiled for beneficial uses. Additionally, the final EIS states that studies will be conducted during the preconstruction engineering and design (PED) phase of project development to finalize beneficial use plan alternatives to the Buoy 10 site. In this regard, the ACE commits to coordinate with EPA through the PED phase of project development, and to perform further analyses to determine the impact of open water disposal on aquatic ecosystems. Specifically, these analyses will include a benthic invertebrate sampling program to assess habitat quality at selected sites, bioassay and bioaccumulation studies, and mixing zone studies.

With respect to the beneficial use of fine grained dredge sediments, the ACE proposes the creation of wetlands with approximately 3.2 million CY of silt to be excavated from the Delaware Bay portion of the project area. We recommend that chemical screening analysis of the dredge spoil be performed to ensure that this material does not contain contaminated sediments. Lastly, the final EIS states that the ACE will coordinate with EPA in preparing site-specific environmental assessments for the upland disposal sites.

We commend the ACE on its commitment to prepare supplementary environmental analysis and documentation for the dredged material disposal aspects of the project, and recommend that the project's record of decision (ROD) reflect these commitments. Based upon the information presented, we believe that the EIS provides sufficient technical information and an appropriate evaluation framework to ensure that potential adverse environmental impacts are identified and properly mitigated.

In our draft EIS comment letter, we stated that the analysis of ground water impacts had improved markedly since the original draft EIS. However, we recommended that the ACE provide additional data in the final EIS to support the conclusions in the proposed project's ground water assessment (GA). The final EIS provides the necessary information in an expanded GA. Specifically, the document evaluates existing ground water quality, current pumping rates, sediment structural features, and depth to bedrock. Based on this information, the EIS concludes that the project will not result in significant adverse impacts to ground water quality. Accordingly, we believe the proposed project complies with Section 1424(e) of the Safe Drinking Water Act.

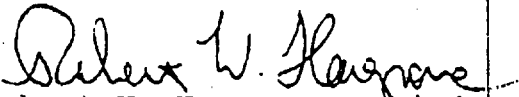
EPA stated in its previous letter that channel improvements will result in an increase in the oil loads of ships that travel the Delaware River. With this in mind, we recommended that the final EIS identify a mechanism for revising the existing Delaware River spill contingency plans to ensure compliance with the mandates of the Oil Pollution Control Act of 1990 and the Spill Prevention Control and Countermeasure (SPCC) requirements of the CWA. The final EIS notes that the ACE plans to coordinate with the regional oil spill response teams (OSRT), a 12 member group that includes EPA, during the PED phase. The OSRT provides a coordinating mechanism through which the Regional Contingency Plan (RCP) can be updated to reflect changes in vessel traffic patterns resulting from the project. We believe that participation by EPA and the ACE in this organization will provide adequate opportunity to address our environmental concerns regarding compliance with SPCC requirements on the Delaware River. We recommend that the ACE's commitments in this regard be reflected in the ROD, and look forward to a cooperative relationship with the ACE and the rest of the OSRT in developing appropriate modifications to the RCP.

With respect to the alternatives analysis, the draft EIS presented a two-way channel at a depth of 45 feet MLW as the preferred alternative. Further, the document indicated that the amount of dredged material generated by the asymmetric one-way channel alternative would be less than with the preferred alternative. With this in mind, our February 14, 1992 letter recommended that the final EIS include additional information to justify the selection of the preferred alternative. The final EIS and feasibility report provide additional information regarding the number of ship movements per year in each direction, and the degree of commerce conducted along the Delaware River. Moreover, the documents sufficiently contrast the benefits and costs of the two-way alternative and the efficient asymmetric one-way channel. Accordingly, we believe the ACE has adequately detailed the selection of the preferred alternative.

Based on our review of the final EIS, we believe that the implementation of the proposed project, which will incorporate the results of the supplementary studies performed and documentation developed during the upcoming PED phase, will not pose significant adverse environmental impacts. Moreover, we believe that the project will be in compliance with the CWA Section 404(b)(1) Guidelines. We recommend that the ROD for the project reflect the EIS's commitments to additional environmental analyses and documentation, and would appreciate receiving a copy of the project's ROD when it is completed.

Once again, I would like to commend the ACE for its extensive effort and cooperative spirit in resolving EPA's environmental concerns about the project. I look forward to EPA's continued coordination with the ACE in the subsequent phases of this project. In the interim, if you have any questions, please feel free to call me at (212) 264-1892.

Sincerely yours,



Robert W. Hargrove, Chief
Environmental Impacts Branch

cc: LTC K. Clow, USACE
C. Day, USFWS-Pleasantville



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

IN REPLY REFER TO:

ES-95/183

Tel: 609-646-9310
FAX: 609-646-0352

January 18, 1996

Robert L. Callegari, Chief
Environmental Resources Branch, Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Callegari:

This responds to the Department of the Army, Corps of Engineers (Corps), Philadelphia District's (District) October 31, 1995 request to the U.S. Fish and Wildlife Service (Service) for formal consultation regarding potential impacts to the federally listed threatened bald eagle (*Haliaeetus leucocephalus*) and endangered peregrine falcon (*Falco peregrinus*) from the proposed Delaware River Main Channel Deepening Project.

This response is provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species and does not address all Service concerns for fish and wildlife resources. These comments do not preclude separate review and comments by the Service as afforded by the Fish and Wildlife Coordination Act (48 Stat. 401, 16 U.S.C. 661 *et seq.*), if any permits are required from the Corps pursuant to the Clean Water Act of 1977 (33 U.S.C. 1344 *et seq.*), nor do they preclude comments on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

By letter dated February 10, 1992, the Service notified the District that the bald eagle and peregrine falcon are known to nest and forage within the project area and requested that the District prepare a Biological Assessment (BA) to address potential direct, indirect, and cumulative impacts to the bald eagle and peregrine falcon from proposed project activities. Of particular concern was potential exposure to contaminants from dredged materials and disturbance during the nesting period.

In response to the Service's request, the District prepared a BA addressing potential impacts to the bald eagle and peregrine falcon entitled, "Biological Assessment of the Bald Eagle (*Haliaeetus leucocephalus*) and the Peregrine Falcon (*Falco peregrinus*) for the Delaware River Main Channel Deepening Project." The BA included results of sediment testing for contaminants conducted by the District within the project area.

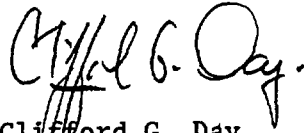
The Service has reviewed the information provided within the BA and concurs with the District's determination that the proposed Delaware River Main Channel Deepening Project is not likely to adversely affect the bald eagle or peregrine falcon. The Service's concurrence with the District's determination is based upon the following information contained within the BA:

- o Results of chemical analyses provided within the BA indicate that contaminant loads in the sediments tested are low. The mean and range of contaminant concentrations were provided for each reach of the proposed project area. Mean contaminant concentrations fell within ranges considered to be background for soils and sediments in New Jersey. Maximum concentrations that exceed background appear to be in isolated samples, and are, therefore, limited in spatial distribution. Additionally, no demonstrable acute toxicity or bioaccumulation of sediment-associated contaminants were demonstrated in laboratory tests.
- o To avoid disturbance to nesting bald eagles, the District will coordinate with the Service and the New Jersey Department of Environmental Protection (NJDEP), Endangered and Nongame Species Program (ENSP), prior to construction of upland dredged material disposal sites. If active bald eagle nests are found within 0.25 miles or a line of sight distance of 0.5 miles from the disposal area, construction of the site and the use of the site for the disposal of dredged materials will be seasonally restricted to avoid disturbance to nesting eagles.
- o To avoid disturbance to nesting peregrine falcons, the District will coordinate with the NJDEP, ENSP prior to initiating any new work at the Raccoon Island upland dredged material disposal site. No new work will be initiated at the Raccoon Island site during the beginning of the nesting period (March 15 to April 15). Prior to restoration of wetlands at Egg Island Point and Kelly Island, the District will coordinate with the NJDEP, ENSP. The District will move an existing peregrine falcon nesting structure located at Egg Island Point to a location as determined in coordination with the NJDEP, ENSP, that will be undisturbed.

The Service concurs with the District's determination that the Delaware River Main Channel Deepening Project is not likely to adversely affect federally listed species under the Service's jurisdiction. Therefore, informal consultation regarding the subject project has been concluded and formal consultation is not required. No further consultation pursuant to Section 7(a)(2) is required by the Service. If additional information on listed and proposed species becomes available or if project plans change, this determination may be reconsidered. It is the Service's understanding that periodic testing of sediments will be conducted throughout the life of the project. Should such sampling reveal the presence of any contaminated sediments within the project area, and at greater concentrations than reported in the BA, an evaluation of potential impacts on federally listed threatened and endangered species must be conducted and consultation with the Service must be re-initiated.

The Service requests that no part of this letter be taken out of context and if reproduced, the letter should appear in its entirety. Please contact Annette Scherer of my staff if you have any questions or require further assistance regarding threatened or endangered species.

Sincerely,

A handwritten signature in black ink, appearing to read "Clifford G. Day". The signature is stylized with a large "C" and "D".

Clifford G. Day
Supervisor



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Water Resources Division
Mountain View Office Park
810 Bear Tavern Road, Suite 206
West Trenton, New Jersey 08628

January 23, 1996

Mr. Stan Lulewicz
Project Engineer
Corps of Engineers, Philadelphia District
Department of the Army
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3391

Dear Mr. Lulewicz:

The U.S. Army Corps of Engineers, Philadelphia District, is evaluating the feasibility of improvements to the main navigational channel of the Delaware River, which could include deepening the channel from the existing depth of about 40 ft below mean low water (MLW) to about 45 ft below MLW from deep water in Delaware Bay to Philadelphia, Pa. and Camden, N.J. Concerns have been raised that deepening the channel may adversely affect ground-water supplies developed in the adjacent Coastal-Plain aquifers of New Jersey, particularly in the Potomac-Raritan-Magothy aquifer system where many public and private ground-water supplies have been developed adjacent to the Delaware River in the reach where the channel improvements are being evaluated.

The concerns generally focus on the potential for saltwater from the river to infiltrate into the adjacent aquifers. Hypothetically, this could occur in two ways: (1) the dredging operation might uncover a confining bed at the base of the river channel, improving a pathway for saltwater to infiltrate to a freshwater aquifer; and (2) the deepening of the river channel might allow saltwater to encroach upstream in the river to areas where infiltration of the saltwater into the ground-water system would occur. An additional concern is (3) that fluids leaching from the dredged-material disposal areas could contain contaminants of sufficient concentration that if they were to infiltrate to the aquifer with recharge water in the outcrop areas, they may adversely effect the potability of nearby water-supply wells.

The USGS has investigated the circumstances relating to these concerns in the course of several projects that have been accomplished in cooperation with the Corps of Engineers and the New Jersey Department of Environmental Protection. The results of the USGS will be discussed further from the perspective of the three concerns outlined above.

Concern (1), dredging breaches confining unit: A geophysical survey of the Delaware River bottom material was conducted by Duran (1986) to determine the configuration of aquifers and confining units beneath the river. The results of this study indicate that there are no places

between Wilmington, De. and the Philadelphia, Pa./Camden, N.J. area where a breach of a protective confining unit would occur due to the proposed dredging. Generally, upstream of Little Tinicum Island the sands of the Potomac-Raritan-Magothy aquifer system are exposed in the river bottom. Downstream of Little Tinicum Island, clay, thicker than the proposed depth of dredging, predominates in the river-bottom material.

Concern (2), saltwater in river encroaches onto well-recharge areas: Water-supply wells, to be effected by saltwater in the Delaware River, must be located in proximity to the river or its associated tidal tributaries. Furthermore, the rate of pumpage of these wells must be sufficient to draw a substantial portion of their discharge from the river. Navoy and Voronin (*in review*) tabulated wells that are located within 2 miles of existing saltwater wetlands in Gloucester, Salem, and Cumberland Counties. The reach of the river that extends through Gloucester, Salem, and Cumberland Counties is where the transition between potable and nonpotable water occurs, with respect to dissolved chloride. During annual low-flow conditions, Delaware River water with a dissolved-chloride concentration that exceeds drinking-water standards is in the vicinity of Bridgeport, N.J./Chester, Pa (at about river mile 81). In order to ascertain the likely magnitude of upstream saltwater encroachment in the river that is a result of deepening the shipping channel, the Corps of Engineers, Waterway Experiment Station, constructed a three-dimensional salinity model of the Delaware Estuary. The results of the model indicate that salinity conditions for simulated low-flow and drought conditions will be displaced approximately 1 to 2 kilometers further upstream as a result of channel deepening. The movement of a salinity interface, due to tides, wind, and changes in the freshwater discharge of the Delaware River, is on the order of many miles. Therefore, this magnitude of displacement, as simulated, does not represent a significant change and will not likely have a significant effect on ground-water supply withdrawals in the area, under average conditions. This concern then focuses on whether the 1 to 2 kilometer displacement during extreme low-flow events, such as those related to drought, may effect ground-water supplies upstream of the area where saltwater is normally seen.

Significant drawdown of aquifer water levels to below sea level, which may be indicative of conditions that could favor saltwater intrusion, occurs in the Potomac-Raritan-Magothy aquifer system in the Camden metropolitan area (Navoy and Voronin, *in review*, figs. 23, 24, and 25). The most substantial of the ground-water withdrawals in the area of aquifer drawdown, that receive recharge from the river, are located in Pennsauken Township, Camden County (near river mile 105). These areas are identified in Navoy and Carleton (1995, p. 81, fig. 53) as a "river-influenced zone". Under the most severe drought of record, the river water which exceeded drinking water standards encroached upstream to a location in the vicinity of the Ben Franklin Bridge (river mile 100) for about 21 days. Saltwater in the river, however, does not immediately effect nearby wells. The ground-water travel time from the river to the wells of the Camden Area is slow in human terms, proceeding on the order of years or decades. The rate of flow of ground water is dependent on the distance to travel and the water-level gradient, among other things. Because the distance between the wells and the river is variable, the travel time is also variable. Simulations of 6 transects representative of flowpaths in the vicinity of river-proximal wells and well fields indicated the average travel time for flow from the river ranges from slightly more than one year to 15 years (Navoy, 1991, table 6, p. 112). Travel time to wells located farther from the river could be greater than 15 years. During the time the recharge from the river, that may include salty water,

travels in the aquifer, substantial dilution takes place with fresh ground water. Based upon simulations of the ground-water system (Navoy, 1991), an intermittent low flow event, such as that due to drought, with a minimum dissolved chloride concentration in the river of between 2,000 and 4,000 mg/l for a duration of 30 days per year with a return period of 5 years is the type of condition that would result in nonpotability at river-proximal wells or well fields. These simulations compare favorably with observed data from November and December, 1964 where the 21-day encroachment of saltwater with a dissolved chloride concentration of 250 mg/l caused a 10 to 28 mg/l rise in chloride concentration at observed wells (Lennon and others, 1986, figure 15, p. 48), but no loss of potability. The conditions necessary to cause nonpotability at the river-proximal wells are in excess of those which could be attributed to the 1 to 2 kilometer displacement.

Concern (3), disposal area effects nearby wells: Along the river in Gloucester and Salem Counties are a number of sites that are presently used, or could be used for the disposal of dredged-material. The National Park and 17G disposal sites are situated within the outcrop of the Potomac-Raritan-Magothy aquifer system in Gloucester County. Based upon simulation of the ground-water system, wells east of the National Park and 17G sites draw recharge from the sites, but at most, one-quarter of the water originates from the sites and the mean travel time of ground-water from the sites to the wells is more than 25 years (Navoy and Rosman, *in review*, p. 15).

Recharge from the Oldmans #1, Pedricktown North, Pedricktown South, and 15G sites to the nearby Goodrich wells is likely, based upon a potentiometric surface analysis. The proximity of the wells to the sites and the steep head gradient indicate that the travel time to the wells could be relatively short, perhaps on the order of several years (Navoy and Rosman, *in review*, p. 26). Disposal of dredged material at the Raccoon Island, 15D, Penns Neck, Killcohook, and Artificial Island sites are not likely to effect existing ground-water withdrawals in the area because the sites are far from wells or the sites are not in good hydraulic contact with the aquifers (Navoy and Rosman, *in review*, p. 35).

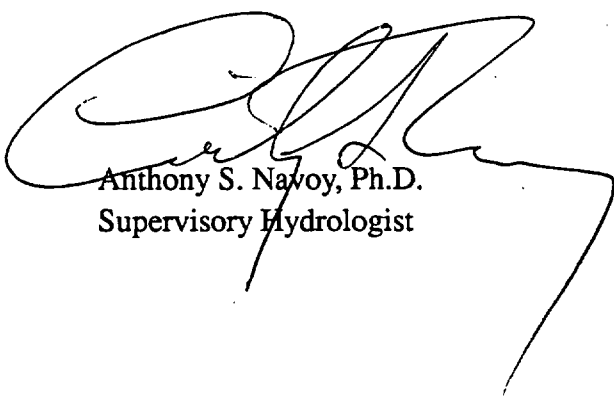
In summary, the concerns about increasing the potential for saltwater from the river to infiltrate into the adjacent aquifers, either as a result of dredging through a confining unit or as a result of the upstream movement of saltwater in the deepened channel can be set aside. No significant confining units will be breached and the saltwater will not significantly move upstream to increase the threat of saltwater intrusion.

The concern that fluids leaching from the dredged-material disposal areas could infiltrate to the aquifer with recharge water can also be set aside. A poor connection exists with the aquifer or the contributing volume of recharge is insignificant at most of the disposal sites. For the several instances where the travel time is short and the contributing volume may be higher than insignificant, the risk of contamination can still be considered low. The Corps of Engineers has investigated the potential for the presence of hazardous substances in the dredged material. Their sampling and analyses indicate that the dredged material is not likely to contain hazardous substances that will exceed regulatory levels. Therefore, even though a recharge pathway may exist and travel time may be short, the risk of contamination will be low.

REFERENCES CITED

- Duran, P. B., 1986, Distribution of bottom sediments and effects of proposed dredging in the ship channel of the Delaware River between Northeast Philadelphia, Pennsylvania, and Wilmington, Delaware, 1984: U.S. Geological Survey Hydrologic Atlas 697, 1 sheet, scale 1:48,000.
- Lennon, G.P., Wisniewski, G.M., and Yashioka, G.A., 1986, Impact of increased river salinity on New Jersey aquifers, in Hull, C.H.J., and Titus, J.G., eds., Greenhouse effect, sea level rise, and salinity in the Delaware Estuary: EPA 230/6-86-001, Washington, D.C., U.S. Environmental Protection Agency, P. 40-54.
- Navoy, A.S., and Voronin, L.M., *in review*, Hydrogeologic conditions adjacent to the Delaware River, Gloucester, Salem, and Cumberland Counties, New Jersey: U.S. Geological Survey Open-File Report, 77 p.
- Navoy, A.S. and Rosman, R., *in review*, Evaluation of ground-water flow from dredged-material disposal sites in Gloucester and Salem Counties, New Jersey: U.S. Geological Survey Open-File Report, 39 p.
- Navoy, A.S. and Carleton, G.B., 1995, Ground-water flow and future conditions in the Potomac-Raritan-Magothy aquifer system, Camden Area, New Jersey: New Jersey Geological Survey, Geological Survey Report GSR 38, 184 p.
- Navoy, A.S., 1991, Aquifer-estuary interaction and vulnerability of ground-water supplies to sea-level-rise driven saltwater intrusion: unpublished doctoral dissertation, Department of Geosciences, The Pennsylvania State University, University Park, Pa., 225 p.

Sincerely,



Anthony S. Navoy, Ph.D.
Supervisory Hydrologist

STATE RESOURCE AGENCIES



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903

OFFICE OF THE
DIRECTOR

TELEPHONE: (302) 739-3451

May 1, 1997

Robert L. Callegari
Chief, Planning Division
Philadelphia District
U. S. Army Corps of Engineers
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

**RE: Consistency Certification
Delaware River Main Channel Deepening Project**

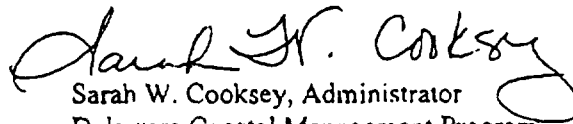
Dear Mr. Callegari:

The Delaware Coastal Management Program (DCMP) has received and reviewed your consistency determination for the above referenced project. Pursuant to National Oceanic & Atmospheric Administration regulations (15 CFR 930), the DCMP concurs with your consistency determination for the deepening of the Delaware River Federal navigation channel from a depth of 40 feet to 45 feet. The DCMP certifies this project consistent with its program policies after review of the 1997 Draft Environmental Impact Statement, post-informational studies, and conditions agreed to by the Corps of Engineers in their April 30, 1997 letter. Our concurrence will be based upon the restrictions and/or conditions placed on any and all permits issued to you for this project.

This consistency certification in no way guarantees that the State of Delaware will contribute funding to the non-federal sponsorship of this project. Due to the large scale of this project, the DCMP requests that the Corps of Engineers hold an informational public meeting for the citizens of the State of Delaware so that they may be aware of this project and understand its scope.

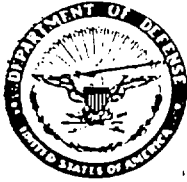
The DCMP would like to thank the Corps for their coordination and cooperation in the review of this project and we look forward to working with you in the future. If you have any questions regarding this determination please contact me at (302) 739-3451.

Sincerely,


Sarah W. Cooksey, Administrator
Delaware Coastal Management Program

SWC/jll
cc Secretary Christopher A.G. Tulou, DNREC

E:\96CONSIST\FCLF196\96 018



DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT CORPS OF ENGINEERS
WANAMAKER BUILDING 100 PENN SQUARE EAST
PHILADELPHIA PENNSYLVANIA 19107-3391

Planning Division

30 APR 1997

Sarah W. Cooksey
Delaware Coastal Management Program
89 Kings Highway
P.O. Box 1401
Dover, Delaware 19903


Dear Ms. Cooksey:

Pursuant to the Delaware Coastal Management Program's (DCMP's) federal consistency certification of the Delaware River and Bay Main Channel Deepening Project, the Philadelphia District of the Army Corps of Engineers agrees to the following:

1. To use "best management practices" during construction of the Kelly Island wetland restoration to minimize the chances of additional turbidity in Delaware Bay as a result of fine-grained material that could possibly escape from this site.
2. To include the latest design of the Kelly Island wetland restoration, dated March 1997, and the subsequent maintenance of this site after construction.
3. To assist the State of Delaware in addressing the ongoing erosion problem at Pea Patch Island.
4. To investigate the feasibility of using blasted rock from the channel deepening in the Marcus Hook region for erosion control/shoreline stabilization and habitat enhancement projects.
5. To restrict dredging for either the initial construction or subsequent maintenance of the 45 foot channel within close proximity so that no disturbance occurs to the wading bird colony at Pea Patch Island between 1 April and 30 August.
6. To coordinate with the State of Delaware Department of Natural Resources and Environmental Control during the preparation of Plans and Specifications to attempt to identify specific areas within the area to be dredged that are used by this species for spawning if there is a continuing concern for Atlantic Sturgeon.
7. To address during the Plans and Specifications phase the impacts to benthic resources from the placement of sand stockpiles underwater, specifically at site MS-19 and evaluate the possibility of placing such sand material on the shore for replenishment, protection, and wildlife habitat.

The Army Corps of Engineers understands that the DCMP's federal consistency certification of the Delaware River and Bay Main Channel Deepening project does not in any way guarantee that the State of Delaware will participate in funding the non-federal sponsorship of this project. The Corps looks forward to the federal consistency certification of this project by the Delaware Coastal Management Program based upon the agreements outlined above.

Sincerely,



Robert L. Callegari
Chief, Planning Division



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION

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TELEPHONE: (302) 739-3451

February 14, 1997

Mr. Robert L. Callegari
U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

**RE: *Federal Consistency Certification
Delaware River Main Channel Deepening Project***

Dear Mr. Callegari:

The Delaware Coastal Management Program (DCMP) has received and reviewed the Army Corps of Engineers' federal consistency determination and the January 1997 Draft Supplemental Environmental Impact Statement for the Delaware River Main Channel Deepening Project. Based upon the DCMP's review of this project and pursuant to National Oceanic and Atmospheric Administration Regulations, 15 CFR 930, the DCMP will be unable at this time to provide the Army Corps of Engineers with final federal consistency concurrence due to additional information requirements outlined in this letter.

In 1992, the DCMP granted conditional federal consistency concurrence to the Army Corps of Engineers for the Draft Environmental Impact Statement and Feasibility Stage of the Delaware River Main Channel Deepening. The conditions of the concurrence were that additional testing, assessments, and impact evaluations be conducted during the Pre-construction, Engineering and Design phase of the project and that at the end of this phase another consistency determination be submitted to the DCMP. In December of 1996, the DCMP received the Draft Supplemental Environmental Impact Statement to the original 1992 Environmental Impact Statement along with the federal consistency determination for this phase.

The information contained within this 1997 Draft Supplemental Environmental Impact Statement is not sufficient for the DCMP to make an informed decision on whether or not this project is consistent with its program policies. Specifically, the information and data that the DCMP needs to evaluate are:

1. The final design and plans for the Kelly Island beneficial use site;
2. The complete and final summary and analysis of the Mono-ortho, dye-ortho and coplanar congener specific PCB's for the channel sediment samples;

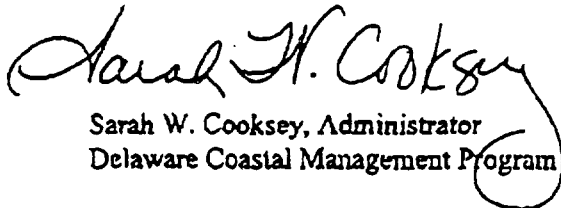
3. Additional information regarding the potential for increased erosion at Pea Patch Island associated with the deepening of the Main Channel;
4. The methods and specific time of year that dredging is scheduled to occur, in efforts to protect Delaware's wildlife resources; and,
5. The impacts of dredging upon the declining population of Atlantic Sturgeon in the Delaware River.

In light of the information requested above, the DCMP would like to request a meeting with the Corps to discuss the specific needs and informational requirements that need to be met. Prior to such a meeting, more formal, detailed, and specific comments will be forwarded to the Corps.

Since this project is so large in size and that the information in hand is not yet complete, the DCMP will defer it's final consistency concurrence until this critical information is received. At such time that the requested information is received, and adequate review time is provided, the DCMP will make a final concurrence decision.

The DCMP would like to thank the Corps for their cooperation in working with us so far, and we look forward towards achieving this project's success together.

Sincerely,



Sarah W. Cooksey, Administrator
Delaware Coastal Management Program

SWC/jll



DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3391

REPLY TO
ATTENTION OF

JUL 16 1996

Programs & Project Management

Ms. Sarah W. Cooksey, Administrator
Delaware Coastal Management Program
State of Delaware
Department of Natural Resources and
Environmental Control
Division of Soil Water Conservation
89 Kings Highway, P.O. Box 1401
Dover, Delaware 19903

Dear Ms. Cooksey:

Thank you for your letter dated June 17, 1996 with suggestions in refining the design and configuration of the Kelly Island beneficial use project, possible PCB contamination and maintenance of the project once it is completed.

In May 1996, the design report for the Delaware River Main Channel Deepening Project was approved. The plan, which includes use of Kelly Island, has been incorporated into the environmental document. Shortly, the environmental document will be circulated for agency and public comment. Also, this document will be used as the basis for requesting Delaware Coastal Zone consistency approval.

At this time, we have initiated the detailed Plans and Specifications phase of the project development. Your suggestions in the reference letter are being addressed as part of this phase. Any modification to the Kelly Island design as a result of the additional studies or procurement of supplemental sediment chemical data will be incorporated into the Plans and Specifications.

We will be working closely with your office on the ongoing efforts. If you have any questions, please feel free to call Stan Lulewicz (215-656-6586), project engineer, Delaware River Main Channel Deepening Project.

Sincerely,

Richard J. Maraldo, P.E.
Deputy District Engineer
for Programs & Project Management

Copy Furnished:

Mr. John Hughes
State of Delaware
Department of Natural Resources
and Environmental Control
Director, Division of Soil Water Conservation
89 Kings Highway
P.O. Box 1401
Dover, Delaware 19903



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION

89 KINGS HIGHWAY
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DOVER, DELAWARE 19903

OFFICE OF THE
DIRECTOR

TELEPHONE: (302) 739-3451

June 17, 1996

Mr. Stan Lulewicz
CENAP-PL-PS
U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Lulewicz:

On May 15, 1996, DNREC held an internal meeting to discuss the options for the design and configuration of the Kelly Island beneficial use project. In attendance at the meeting were representatives from sections within the Division of Water Resources, Division of Soil and Water Conservation and the Division of Fish and Wildlife. This letter reflects the concerns, ideas and suggestions made at the meeting. Issues discussed included design of structures for the containment of silt, erosion and sand transportation rates; deposition of sand, vegetation and stabilization of silt material, possible PCB contamination, and operation and maintenance of the project once it is completed.

It was the consensus of the group present that a substantial sand barrier beach, with or without a geotube layer, was preferred over the original geotube concept for erosion control and containment of the enclosed silty material. It is critical that this silty material remain contained for the purpose of protecting adjacent shellfish beds. The environmental benefits of a sandy beach for horseshoe crab and shorebird populations are clear. The environmental benefit of sand for containment of the silt is dependent upon many factors including sand grain size. Therefore, we would like to see a size distribution analysis of the material that would be used for construction of the beach. If geotubes must be utilized we suggest that they be filled with grout or sand as opposed to silty dredge spoil material.

It is our understanding that your consultant would not be able to model the erosion rates for a sand beach at Kelly Island. Since this is crucial information we recommend that the Corps recruit specialists either from the Coastal Engineering Research Center (CERC) or the University of Delaware's Center for Applied Coastal Research (CACR) to use existing analytical prediction procedures or numerical models to predict sediment transport, direction, and erosion after placement of the sand. It was felt that CERC or CACR should have the expertise to conduct such analysis. We must know the results of such analyses in order to estimate the average annual rate of sand removal, where this sand ultimately will reside and the amount of time that the placed beach will serve its function to protect the silt impoundment. With the potential for erosion of a

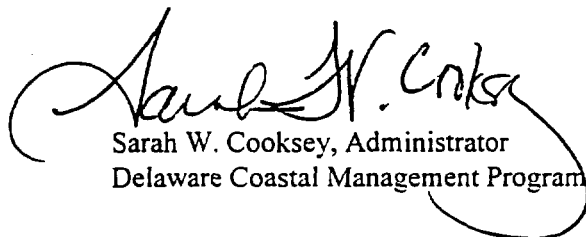
sand beach at Kelly Island we must know where sand deposition will occur. Deposition into the mouth of the Mahon River or adjacent to the jet fuel unloading facility for the Dover Air Force Base is undesirable and should be avoided. This may be accomplished by the construction of terminal structures at the edges of the created marsh and beach. Also, meeting participants emphasized the need for all tidal exchange to be through the back of the marsh and not via the face of the structure except for the occasional occurrence of storm overwash. The type of data and information that will be produced from the above mentioned analyses will be critical in DNREC's evaluation of this project.

DNREC understands that a process for establishing salt marsh vegetation at Kelly Island is obscure. We are currently forming a group of people to examine this issue and to research which methods may prove to be the most effective for stabilization at this site. DNREC is anxious to collaborate with the Corps in the development of such methods.

As previously discussed at the May 1, 1996 meeting between DNREC and the Corps the issue of PCB contamination continued to be an important topic. In order to put this issue to rest the Corps agreed to secure the supplemental data needed to resolve any questions. As a result of DNREC's internal meeting, DNREC would like to reiterate the importance of this data in decision making for this project.

The issue of responsibilities for long term maintenance of the Kelly Island project still must be discussed by DNREC and the Corps. We strongly feel that some type of formal commitment from the Corps regarding long term involvement with the operation and maintenance of this project is necessary. DNREC is ready and to work with the Corps in addressing the issues stated above and upon satisfactory resolution, is committed to this project's success.

Sincerely,



Sarah W. Cooksey, Administrator
Delaware Coastal Management Program

SWC/jll

cc: John Hughes
Gerard Esposito
Andrew Manus



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
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TELEPHONE: (302) 739 - 3451

February 20, 1996

Mr. Stan Lulewicz
U.S. Army Corps of Engineers
Philadelphia District
100 Penn Square East
Philadelphia, Pennsylvania 19107

RE: Delaware River Main Channel Deepening Project/Beneficial Reuse

Dear Mr. Lulewicz:

In response to prior meetings between the Philadelphia District of the Army Corps of Engineers and the State of Delaware Department of Natural Resources & Environmental Control (DNREC), regarding the Delaware River Main Channel Deepening project's beneficial reuse, the DNREC would like to reiterate and expand upon its prior comments and concerns.

In accordance with National Oceanic & Atmospheric Administration regulations *15 CFR 930*, and a January 31, 1992 letter from the Secretary of DNREC, Edwin Clark, the Delaware Coastal Management Program (DCMP) which is housed within the DNREC, requires another federal consistency determination from the Corps at the conclusion of the pre-construction, engineering and design phase. A proper federal consistency determination prepared by the Corps should contain; 1) a brief statement that the proposed activities will be undertaken in a manner consistent to the maximum extent practicable with the DCMP and its program policies; 2) a detailed description of the proposed activities, their associated facilities and coastal zone effects; and 3) comprehensive data and information sufficient to support the Corps consistency statement (the amount of supporting information shall be commensurate with the expected effects upon the coastal zone) *15 CFR 930.39*.

Pursuant to prior correspondence regarding comprehensive data and information, the DNREC would like to see the studies regarding the proposed marsh creation at Kelly Island. DNREC has expressed its concerns previously on the stability and design of geotextile tube placement for the marsh creation. The strength of the geotubes is crucial for enabling the silty dredge material to become stabilized for adequate marsh creation. The use of geotubes is still considered to be experimental, DNREC is not convinced that the geotextile material that the tubes are constructed of will be able to withstand the high energy environment of the Delaware Bay, sustained wind and wave action, ice packs, floating debris, general weathering, vandalism, or catastrophic weather events. Current plans for a pilot project to test the stability of the geotubes will not adequately simulate conditions at the Kelly Island site. If the pilot study will be conducted as planned for 1-3 years in a lower energy environment it would lack the ability to clearly demonstrate the geotubes long term projected performance at Kelly Island. In addition to the strength of the geotextile material, another concern is the design and placement of the geotubes upon a sand base. Questions that need to be addressed regarding the design and structure are as follows: How stable will this design be against erosive forces acting upon the shoreline in front of the tubes with the potential for settling and possible collapse of the geotube structure? How well has the continued erosion of

the shore bayward of the containment structure been modeled, calculated or predicted? Has a contingency plan been developed in the event of structure failure after construction?

DNREC concerns with the potential impacts of silt during project construction and in the event of project failure are:

1. The scale of the proposed main channel deepening project is unprecedented in recent times in terms of the volume of dredged material to be moved and placed in Delaware waters. Associated with the wetland creation at Kelly Island there will be a considerable amount of silt-clay resuspended into the Bay. These materials have the potential to smother adjacent populations of oysters and oyster habitat.
2. During placement of the silt material within the dike, an unspecified volume of silt will be released with exhaust water through water control structures.
3. Following deposition of the silt within the containment structure, the upper level of geotube will be intentionally breached in order to allow twice daily tidal flooding of the containment area. Again the amount of silt released into the bay through formation of tidal channels is unspecified.
4. The Kelly Island project proposal clearly states that there are no plans to seed, sprig or transplant wetland plants onto the 90 acre silt containment area, indicating that it will produce natural wetland vegetation on its own. The loosely compacted sediments dredged from deep mid-bay waters haven't had a wetland seed bank as part of its natural resource feature since those sediments left the fast land. It is by no means certain that natural seeding will be successful. The growth of wetland plants is imperative in the stabilization of the silt. In addition, even if wetland vegetation is successfully established, only the surface will be stabilized. The marsh will not have the deep peat mat characteristic of natural marshes, thus making it more prone to resuspension, threatening adjacent oyster resources.

There are approximately one thousand acres of commercially and ecologically important oyster seed beds in Delaware, the majority of these beds are located adjacent to Kelly Island. The community is the most productive benthic assemblage in Delaware Bay and it has historically supported a multimillion dollar oyster fishery. Presently depleted by disease, the oyster beds and oyster habitat are especially susceptible to smothering when population levels are low. The Corps consultant, Dr. Eric Powell, in his study did not address our primary concern of smothering of the oysters and their habitat. The study addressed predicted impacts of elevated suspended sediment concentrations, a more chronic effect. While these impacts can be considerable they do not address catastrophic impacts due to geotube containment failure.

In prior correspondence it has been suggested that a sufficient supply of erodible sacrificial sand be deposited in such a way to surround the perimeter of the spoil site. This erodible sand buffer would contain, for example, a 25+ year supply of sand to maintain a protective sand barrier around the disposal site and thus maintain and assure the integrity of the disposal site and provide safe and adequate spoil containment. Surrounding the geotubes with an adequate sand buffer may satisfy DNREC's concerns over the stability of the geotubes to contain the silt. We hope that the Corps is exploring this option. A benefit that the sand buffer would provide is additional breeding habitat (sand beaches) for the Delaware Bay's declining Horseshoe Crab and Diamond Back Terrapin populations.

With regard to the composition of the dredged silt material to be placed for wetland creation, DNREC's additional concerns are related to the minimization of adverse impacts associated with potential PCB concentrations within this material. Under the proper conditions, PCB's can cause a direct toxic effect on sediment-dwelling organisms and can also pose an indirect risk to wildlife and humans that

consume fish that have become contaminated via the sediment and food chain transfer. With regard to direct toxic effects to benthic organisms, scientists from NOAA believe that PCB's can begin to cause adverse effect at concentrations as low as 22.7 ppb dry weight. They call this level the "effects range low (ERL)". One approach to developing so-called bioaccumulation-based sediment quality criteria (BBSQC) that shows promise relies upon the equilibrium partition theory. The approach is based on the observation that organic contaminants like PCB's preferentially associate with the organic carbon component of sediments and the lipid fraction of fish. This phenomenon is used to translate an allowable contaminant level in fish flesh to an associated contaminant level in sediment based on simple partitioning. The factor that is used to relate the contaminant level in the organic carbon fraction of the sediment to the contaminant level in the fish lipid is referred to as the biota-to-sediment accumulation factor (BSAF).

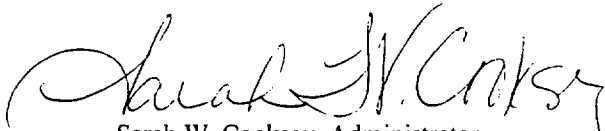
DNREC has used the equilibrium partition approach to derive target PCB concentrations for the sediments proposed for placement behind the sand berm at the Kelly Island site. Based on the derivation and calculations in the attachment, the bulk PCB concentration in the surficial sediments should be in the range between 1 and 10 ppb dry weight to keep cancer risk to exposed individuals below a *de minimus* level of 10^{-5} (1 in 100,000). The target sediment concentrations are intended to protect fishermen, their families and friends who may consume fish taken in the vicinity of the Kelly Island site. The target sediment concentrations are conservative and reflect standard exposure factors used in human health risk assessment. Fish consumption rates used in deriving the target sediment concentrations are based on a creel study specific to the area of the Delaware Estuary between the PA/DE stateline and Cape Henlopen. One final point worth noting with regard to the target human health sediment levels is that the computed values (1-10 ppb) are of the same order of magnitude as NOAA's ERL of 22.7 ppb. Therefore, if the target of 1-10 ppb to protect humans is met, direct toxic effects to benthic organisms should be prevented as well. It is not for certain that the 1-10 ppb levels will protect certain wildlife species, however the DNREC would like to see levels no higher than 1-10 ppb based upon these calculations.

In comparing the desired PCB concentration range of 1-10 ppb to actual PCB levels for the upper Bay, we note that the actual levels are 10 to 100X greater than the desired levels. In contrast, PCB levels in surficial sediments taken just off of Bowers Beach during the summer of 1995 meet the desired levels. Despite the moderate levels of PCB in the surficial sediments of the upper Bay, it is quite possible that a 5' depth-averaged concentration of PCB from the upper Bay might meet the desired level of 1-10 ppb if the actual contamination is limited to the upper 6 inches or so. In other words, if the deep sediments are clean, they will act to dilute the dirty surficial sediments. The 5' depth-averaged concentration has relevance in this situation since the proposed dredging project would deepen the existing channel by 5 feet. Unfortunately, we do not have any high quality PCB data for 5' cores.

Given the distinct possibility that the deep sediments are clean, two practical strategies come to mind for dealing with the PCB problem. The first strategy would be to make sure the surficial sediments are well-mixed with the deeper, presumably cleaner, bottom sediments upon placement in the Kelly Island wetland. The second strategy would be to place all the surficial sediment on the bottom of the wetland and cover it with the material presumed to be cleaner. This latter strategy may or may not be acceptable from a soil mechanics perspective. Both strategies obviously rely upon the presumption that the deep sediments are clean. There are two ways to deal with this uncertainty, one pre-construction, and one post-construction. The pre-construction option would involve analyzing several five foot deep cores from the area to be dredged for the Kelly Island site. The second option is to hedge a bet that the deep sediments are clean and simply take several sediment samples from the Kelly Island wetland site after construction to verify that the desired PCB levels are met. Regardless of the option, proper analytical methods for PCB's should be used.

The DNREC would like to thank the Corps for meeting with them, the opportunity to comment on the Beneficial Reuse component of the Delaware River Main Channel Deepening project, and looks forward to the Corps response on this subject.

Sincerely,



Sarah W. Cooksey, Administrator
Delaware Coastal Management Program

Enclosure

cc: Christophe A. G. Tulou, Secretary, DNREC
John Hughes, Director, DSWC
Gerard Esposito, Director, DWR



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION

89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903

TELEPHONE: (302) 739-3451

OFFICE OF THE
DIRECTOR

May 22, 1995

Mr. Stan Lulewicz
U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square
Philadelphia, Pennsylvania 19107

RE: Delaware River Channel Deepening Project/ Beneficial Reuse

Dear Mr. Lulewicz:

Pursuant to the workshop held on beneficial reuse of material from the Delaware River Channel Deepening Project, the State of Delaware has gathered comments for your review. The following comments are reflective of several different Divisions within the Delaware Department of Natural Resources and Environmental Control, specifically the Division of Fish & Wildlife and the Division of Soil & Water Conservation.

Regarding the proposed wetlands restoration on Kelly Island via geotextile tube placement, the State is interested in the composition of the dredged material that is to be placed behind the tubes in order to establish an elevation of +4.5 feet MLW. The preliminary design for the Kelly Island project illustrates that this dredged material will be composed of silt and sand. Specifically, the State would like to know the exact ratio of silt to sand and the expected stability of the material. We are concerned about the potential impacts of the material depositing on shellfish beds in the event of a catastrophic weather occurrence.

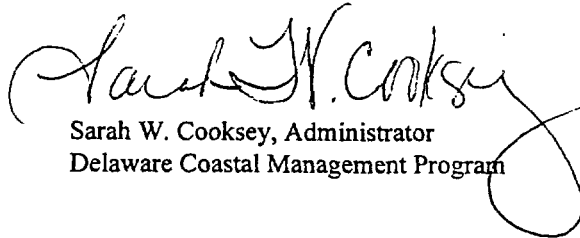
We are also interested in the Corps evaluation of the potential beneficial reuse of dredged material for shoreline stabilization along road 89 at Port Mahon. It is our understanding that the Corps is willing to evaluate this potential reuse site. We would also like to explore any opportunity to reuse the large stone/rock material that will be generated from the channel deepening in the Marcus Hook area in conjunction with shoreline stabilization at Port Mahon and Delaware's artificial reef program. Another option the State would like to consider is potential oyster bar creation using dredged sand material within the Delaware Bay. The State feels that these options for beneficial reuse are ideas that need to be expanded and looked at more closely.

As discussed in the recent workshop, ideally in the absence of technical, political, and economic constraints placed upon the disposal of the clean sand from this project, the State would prefer to see the material placed directly on the beach at our current nourishment project sites along the Delaware Bayshore (i.e. Lewes, Broadkill, Slaughter, South Bowers, Bowers, Kitts Hummock, and Pickering Beaches) and/or on the beach or in the nearshore zone in 15-20 ft. of water at Dewey and Rehoboth Beach. Recognizing the existence of the above constraints, the proposed nearshore sand stockpile sites designated as MS-19 and L-5 appear to offer a reasonable alternative for the disposal of dredged sand for beneficial reuse.

Historically, the State (DNREC) and Federal government (USACE) have placed over 761,000 cubic yards of sand at Broadkill Beach (since 1973) and the State alone has placed about 514,000 cubic yards of sand at Slaughter Beach (since 1975). The Northwestern limits of acceptable accessible offshore sand resources for this project are the offshore extensions of Roads 16 and 224. The Northwestern portion of these sand resources have been so heavily utilized in past projects that the northern portion of both project areas can no longer be nourished by our existing equipment due to the increased distance from remaining sand resources to the nourishment site. It is for the above reasons that we would request that every effort be made to locate both MS-19 and L-5 as close to shore and as far Northwest from their current proposed locations as possible given the Corps current restraints.

Thank you for the opportunity to comment on the beneficial reuse project and we look forward to future discussions with the Corps on this project. If we can provide you with any additional information or if you have any questions regarding these comments please feel free to call me at (302) 739-3451.

Sincerely,



Sarah W. Cooksey, Administrator
Delaware Coastal Management Program

SWC/jll

cc: John Hughes, DNREC-DSWC
Bob Henry, DNREC-DSWC
Jeff Tinsman, DNREC-DFW
John Brady, USACE-Philadelphia District



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL

89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903

OFFICE OF THE
SECRETARY

TELEPHONE: (302) 739-4403
FAX: (302) 739-6242

January 31, 1992

Mr. Robert L. Callegari
Chief, Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Custom House 2nd and Chestnut Streets
Philadelphia, Pennsylvania 19106-2991

Dear Mr. Callegari:

This letter is to notify you that pursuant to 15 CFR Section 930.42, the Delaware Coastal Management Program (DCMP) conditionally agrees with the Army Corps of Engineers' coastal zone consistency determination on the amendment to the Draft Environmental Impact Statement for the Delaware River Comprehensive Navigation Study, Main Channel Deepening project. This finding is the result of a Department review of the draft EIS and meeting with Corps staff to discuss our environmental concerns regarding the proposed project. Since this project and decisions related to its actual implementation will be done in phases, the DCMP pursuant to 15 CFR Section 930.37 (c), will require another consistency determination at the conclusion of the pre-construction engineering and design phase to ensure that the enforceable policies of the DCMP regarding the issues raised in this correspondence are addressed.

The Delaware Coastal Management Program policies related to the pertinent issues of habitat protection, water quality, and water supply are noted below:

HABITAT ISSUES:
Policy 5.C.3.1.

The quantity and quality of fish and wildlife habitat shall be preserved to the maximum extent possible.

Related Policies (Sec. 5.A.1), the wetland policies, (Sec. 5.A.3), the water quality policies, (Sec. 5.A.4), the coastal strip policies, (Sec. 5.B.2), the nature preserves policies, and (Sec. 5.C.5) State owned conservation lands policies.

Delaware's good nature depends on you!

WATER QUALITY ISSUES:

Policy 5.A.3.A.5.

The Quality of State waters shall be maintained at various levels to support pre-designated uses for different segments of these waters. Such uses shall include public water supply; industrial water supply; uses involving prolonged intimate body contact with water in which there is a significant chance of ingestion, such as swimming or waterskiing (primary contact recreation); uses involving water as a pleasurable setting for activities in which there is an insignificant chance of ingestion, such as wading, hiking picnicking, fishing, or boating (secondary contact recreation); maintenance, protection and propagation of fish, shellfish and aquatic life and wildlife preservation; agricultural water supply; navigation; drainage; and passage of anadromous fish.

Policy 5.A.3.A.6.

To ensure that the water quality in the various water segments can support the designated uses, specified water quality standards (criteria) for different pollution indicators shall be maintained in the different water segments.

Policy 5.A.3.A.7.

Short transition zones shall exist between adjacent zones of varying water quality.

Policy 5.A.3.A.10.

At a minimum, coastal waters shall not contain substances attributable to municipal, industrial, agricultural or other discharges in concentrations or amounts sufficient to be adverse or harmful to water uses to be protect, or to human, animal, and plant life. Such waters shall be free from floating solids, sludge deposits, debris, oil and scum.

Policy 5.A.3.B.12.

Discharges into coastal waters shall not contain debris, scum, floating materials, or substances that settle to form sludge deposits. Pollutants in discharges shall be reduced to the extent required to achieve and maintain stream quality criteria.

Policy 5.A.3.C.18.

No person or entity shall, without a permit, undertake any activity in a way which may cause or contribute to the discharge or dredged spoil, solid waste, incinerator residue, sewage, garbage, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, munitions, rock, sand, cellar dirt, or industrial, municipal, or agricultural waste into any surface or groundwater within the State.

Policy 5.A.3.F.32.

No erosion and sediment control plan shall be approved unless it meets conservation standards consistent with the general CMP coastal waters policies and the statewide comprehensive erosion and sediment control program developed by the Delaware Department of Natural Resources and Environmental Control.

WATER SUPPLY ISSUES:

Policy 5.A.3.18

No person or entity shall, without a permit, undertake any activity in a way which may cause or contribute to the discharge or dredge spoil, solid waste, incinerator residue, sewage, garbage, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, munitions, rock, sand, cellar dirt, or industrial, municipal, or agricultural waste into any surface or groundwater within the state.

It is our understanding of the Corps' Civil Works Project process that information on how these policies will be addressed will require additional environmental studies. It is therefore agreed that a conditional consistency determination is granted contingent upon the following studies and information being provided by the Corps to the DCMP during the project process.

Mr. Robert L. Callegari
January 31, 1992
Page 4

The DCMP will review the results of the studies and additional documentation requested and should the information show far reaching deleterious environmental effects, the conditional consistency determination will be revoked. The additional studies and information required of the Corps include the following:

* Bioassay testing of sediments to be dredged.

We appreciate the extensive testing of sediment chemistry that has been done using bulk and elutriate methods. In order to facilitate the evaluation of these data, we require that the COE conduct a comparison of these results with the numeric criteria contained in Delaware's Water Quality Standards (as amended February 2, 1990). A copy of these standards has been provided to your Environmental Resources Branch. This comparison will help to evaluate the impacts of discharges at disposal sites.

The existing criteria and chemical testing do not address the effects of contaminants not tested or the effects of chemicals in combination with other chemicals. We are particularly concerned with the levels of mercury detected and the potential for toxic effects on biological resources. The chemical soup (the whole) may show toxicity even though the individual chemicals (the sum of the parts) do not.

Bioassay and bioaccumulation testing are well established in evaluating the impact of point sources discharges on surface waters. EPA and the COE have developed a testing manual that identifies these types of methods specifically for dredge material, the "Green Book". This document describes a tiered approach to the testing of sediments, and the present EIS has accomplished essentially Tier I. We require that the COE implement the remaining tiers of the manual that includes bioassays and bioaccumulation protocols. We believe that a project of this size warrants the application of "state of the art" methods of testing sediment quality. (See policies 5.C.3.1. and 5.A.3.A.10.)

* Impacts of dredging activities on aquatic resources.

Regarding the impacts on the aquatic resource from the proposed dredging in the Delaware River and Bay we have several concerns. Benthic invertebrates have been shown to be good indicators of environmental quality in estuaries. A recent report prepared by the Maryland Department of Natural Resources ("Long-term Benthic Monitoring and Assessment Program for the Maryland Portion of the Chesapeake Bay:

Interpretative Report", CBRM-LTB/EST-89-2, September 1989) successfully used benthic invertebrates to evaluate the impacts of power plant discharges over the Maryland portion of the Chesapeake Bay. Due to the magnitude of the proposed main channel deepening project we will require an evaluation of the overall impact of dredging on the aquatic resources located within the channel and proposed beneficial use disposal sites of the estuary. Such a study should be coordinated with the activities of the EPA Environmental Monitoring and Assessment Program (EMAP).

* The impacts of marsh creation on existing aquatic resources in the area have not been evaluated.

The DCMP supports the beneficial use concept of using suitable dredge material for the creation of wetlands. But, before such an approach is considered for dredge material disposal, further evaluation of the technical and environmental feasibility of this concept must be demonstrated. Such an evaluation should include two parts. Part one should address site specific losses to existing aquatic resources and indirect impacts to adjacent habitats. Part two should include a technical, operational and engineering feasibility of the concept (i.e. site establishment, stabilization, design, and biological predictability). Monitoring would also be needed to measure the success of any concept implemented. Such monitoring would have to include physical, chemical and biological data collected for several years after the project is completed. (See policy 5.C.3.1.)

* Salinity monitoring before and after the proposed work should be part of this project. This is not mentioned in the EIS.

The Army Corps of Engineers will need to conduct more in-depth research of the modeling of salinity intrusion and flow patterns in the Delaware Bay. Within the EIS, we feel that the following should be considered: (1) Plants that have high value for wildlife and endangered species occur at salinities less than 15 parts per thousand. It is in these areas that biodiversity is the highest. Previous environmental impact statements have tended to under-estimate the salt water intrusion from dredging projects. (2) The dredging project will need to be monitored and more accurate estimations made on the salinity gradings which may adversely impact biodiversity of the upper reaches of the estuary or change the patterns of estuarine vegetation and animal life. (3) With regard to the scoping process and the 3-D model which has been

Mr. Robert L. Callegari
January 31, 1992
Page 6

proposed, we should included in the development of this process regarding its impact on State Species of Special Concern, Natural Communities of Special Concern, vegetation, and wildlife resources. (See policy 5.A.3.A.5.)

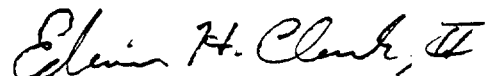
* The impacts of offshore stockpiling of dredged material for future beach nourishment needs to be evaluated.

The DCMP supports the beneficial use concept of offshore stockpiling of dredged material for future beach nourishment projects. Although this procedure was selected as a feasible option, there was no indication of the impacts that would occur to benthic resources. Before this option can be further considered, these impacts must be evaluated. Final siting of the stockpile areas will be driven by benthic studies that will be scoped with DCMP input and completed during the pre-construction engineering and design phase. (See policies 5.C.3.1. and 5.A.3.A.5.)

In addition to addressing the points raised regarding federal consistency, the Corps of Engineers prior to commencing any work on this project will need to secure all required State permits. Specifically, this will mean that the Corps will have to make application to the State of Delaware for Subaqueous Lands permits and a State discharge permit (7 Del. Code, Section 6003) from the Department of Natural Resources and Environmental Control, Division of Water Resources. Enclosed for your reference are copies of the Delaware Coastal Management Program document (which contains the policies noted above), the Subaqueous Lands Act and Regulations, and the Delaware Environmental Protection Act.

In closing, we look forward to working with the Corps during the scoping process in design of the necessary studies called for in this correspondence as this project moves into the pre-construction engineering and design phase.

Sincerely,



Edwin H. Clark, II
Secretary

EHC/AM/ccb

cc: Trudy Cox, OCRM



State of New Jersey
Department of Environmental Protection and Energy
Environmental Regulation
CN 401
Trenton, NJ 08625-0401

Scott A. Weiner
Commissioner

February 3, 1992

John R. Weingart
Assistant Commissioner

Robert L. Callegari
Chief, Planning Division
Philadelphia District, Army Corps of Engineers
Second and Chestnut Streets
Philadelphia, PA 19106-2991

RE: Federal Consistency for Delaware River Main
Channel Deepening
FC File Number: 0000-90-0005.2

Dear Mr Callegari:

The New Jersey Department of Environmental Protection and Energy, Land Use Regulation Program, Acting under Section 307 of the Federal Coastal Zone Management Act (P. L. 92-583) as amended, certifies that the above referenced project is conditionally consistent with the approved New Jersey Coastal Zone Management Program conditioned upon 15 CFR 930.39 requiring "Necessary Data and Information".

Project Description

The proposed project is the deepening of the Delaware Main Channel from Cape May and Cape Lewes to the Ports of Philadelphia and Camden, approximately one hundred river miles. The present channel depth is forty feet with the proposed channel depth to be forty five feet.

Coastal Zone Management Conditions

Pursuant to the Rules on Coastal Zone Management specifically Shellfish Beds(N.J.A.C. 7:7E-3.2) "Any coastal development which would significantly alter the water quality, salinity regime, substrate characteristics, natural water circulation pattern, or natural functioning of the Shellfish Beds during construction or operation of the development is prohibited."

As a condition of this consistency finding, the Army Corp of Engineers is required to provide the necessary data that the deepening will not alter the salinity regime to the extent that the oyster resource would suffer significant negative effects. The data should be derived through "state of the art" modeling techniques that mimic the total dimensional aspect of the channel and river cross section.


The Army Corp of Engineers is also required to show that the deepening will not significantly alter the hydrological and geomorphological features of the project area as to negatively effect the circulation patterns, current velocity, sedimentation rates and erosion rates that could adversely effect oyster larval distribution, seed bed displacement and blue crab distribution.

Upon review of information provided pursuant to the above condition requirements, if the Department of Environmental Protection and Energy determines that there would be adverse effects to New Jersey's Coastal Zone then the Department reserves the right to revoke this conditional consistency determination.

Please be advised that the Army Corp of Engineers is required to obtain Letters of Interpretation for the "upland" dredge spoil disposal sites located in New Jersey pursuant to the Freshwater Wetlands Protection Act N.J.S.A. 13:9B-1 et seq.

Thank you for your continued attention to and cooperation with New Jersey's Coast Management Program.

Sincerely,



Robert A. Tudor
Administrator

- c. Lawrence Schmidt, Program Coordination
- George Howard, Fish, Game and Wildlife
- Bernie Moore, Coastal Engineering
- Robert Runyon, Water Resources
- Steve Whitney, Regulatory Policy



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
February 4, 1997

Policy Office

Mr. Robert L. Callegari
Chief, Planning Division
Philadelphia District, Corps of Engineers
Department of the Army
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

Dear Mr. Callegari:

The Pennsylvania Department of Environmental Protection (DEP) has reviewed the draft supplemental environmental impact statement (SEIS) regarding the Delaware Main Channel Deepening Project. We have the following comments:

The Department's main concern regarding this project has been the potential for increase in magnitude and upstream migration of salinity that could result, and the possibility of a significant impact on Philadelphia's water supply, the Potomac-Raritan-Magothy aquifer, as well as increased problems to industrial users in Pennsylvania.

Sections of the SEIS that address these concerns include Chapter 5 and Sections 7.1 and 7.2. In order to develop the information of Chapter 5, the Corps has utilized a three-dimensional hydrodynamic model to predict changes in Delaware River and Estuary salinity under various flow scenarios. These scenarios were coordinated with the various water resources agencies of the Delaware River Basin.

The SEIS concludes that "deepening of the Delaware River navigation channel will have a negligible effect on the recharge characteristics of the aquifer" and that "although the proposed channel deepening is predicted by the salinity model to increase [river mile] 98 chlorinity with a recurrence of the drought of record, the resulting 30-day average chlorinity will still be below the present standard of 180 ppm." Moreover, the SEIS points out "Philadelphia's intake at the Samuel Baxter Treatment Plant at river mile 110 is well upstream of [river mile] 98 where the chlorinity standard is set."



In recent discussion with the Delaware River Basin Commission (DRBC) Operations Staff, who have independently modeled salinity changes resulting from the proposed channel deepening using a different model, DEP determined that some discrepancies still exist between modeling results from the DRBC's and Philadelphia District's salinity models. These discrepancies should be resolved. However, it does not appear that the conclusions of the SEIS would be invalidated by minor adjustments in salinity intrusion findings.

Therefore, this Department concurs with your final determination that the proposed Delaware River Main Channel Deepening Project is consistent with Pennsylvania's Coastal Zone Management Program.

If you have any questions, please feel free to contact William A. Gast, Chief of the Division of Water Use Planning, DEP's Bureau of Watershed Conservation at (717) 772-4048.

We appreciate the opportunity to comment on this proposal.

Sincerely,

A handwritten signature in cursive script, appearing to read "B. Sexton".

Barbara A. Sexton
Director, Policy Office



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

P.O. Box 2063
Harrisburg, PA 17105-2063
(717) 787-4686

Deputy Secretary for Water Management

February 21, 1992

Lt. Colonel Kenneth H. Clow
District Engineer
Philadelphia District, Corps of Engineers
Custom House - Second and Chestnut Streets
Philadelphia, PA 19106-2991

Dear Colonel Clow:

This response concerns the Division of Coastal Zone Management's (CZM) federal consistency review of the Environmental Impact Statement Amendment for the Delaware River Comprehensive Navigation Study Main Channel Deepening Project (November 1991), received on January 17, 1992. The Division has determined that this phase of the project is consistent with the Pennsylvania CZM Program as provided for under 15 CFR 930.37(c).

The Division of CZM's and the Department's main concern regarding the proposed Channel Deepening Project is the increase in magnitude and upstream migration of salinity that will result, and the possibility of a significant impact on Philadelphia's water supply, the Potomac Raritan Magothy aquifer, as well as increasing problems to industrial users in Pennsylvania.

The Commonwealth and Delaware River Basin Commission have been addressing the salinity intrusion issue by developing upstream reservoirs for increasing water releases to the Delaware River to reduce the threat of salinity intrusion. Because of the impacts of this project, it is important the Corps of Engineers identify similar or other mitigation options in future studies.

We have been informed by John Burnes and Jerry Pasquale of your staff that the development of this project will take several years to complete, requiring additional studies to be performed including mitigation plans and supplemental environmental impact statements to be developed. We have also been assured by Mr. Pasquale that there will be additional opportunities for the CZM Division to make consistency determinations on future phases of this project. With this understanding, we consider this phase of the project to be consistent with the Pennsylvania CZM Program. As you are aware, 15 CFR 930.37(c) requires that where major federal decisions are made in phases based upon developing information, a consistency determination will be required for each major decision.

Lt. Colonel Kenneth H. Clow

-2-

February 21, 1992

In conclusion, please send any additional studies or impact statements concerning future phases of this project for our consistency review.

Sincerely,

A handwritten signature in cursive script, appearing to read "Caren E. Glotfelty".

Caren E. Glotfelty
Deputy Secretary
for Water Management

CULTURAL RESOURCES - DELAWARE



DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

JUL 2 1997

Environmental Resources Branch

Ms. Alice Guerrant
Historic Archaeologist
Bureau of Archaeology and Historic Preservation
Division of Historical and Cultural Affairs
#15 The Green, P.O. Box 1401
Dover, Delaware 19901

Dear Ms. Guerrant:

This letter is pursuant to our continuing Section 106 coordination for the proposed Delaware River Main Channel Deepening Project. In a letter dated February 4, 1997, your office provided a review of the *Delaware River Main Channel Deepening Project Draft Supplemental Environmental Impact Statement (DSEIS)* and concurred with the District's finding that the proposed employment of the Reedy Point North and South disposal sites, the Buoy 10 overboard disposal site, the Kelly Island wetland restoration site and the sand stockpiling locations near Slaughter Beach (MS-19) and Broadkill Beach (LC-5) will have no impact on significant cultural resources (Enclosure 1).

However, your office did not concur with the District's "No Effect" finding regarding potential project impacts on significant shoreline archaeological deposits associated with the military occupation of Fort Delaware on Pea Patch Island, a property listed on the National Register of Historic Places.

Following the issuance of the DSEIS and the concerns expressed in your February 4, 1997 letter, the District evaluated the potential for increased shoreline erosion on Pea Patch Island resulting from the proposed deepening of the Delaware River Main Channel to 45 feet (Enclosure 2). This research analyzed various data to determine 1), if deepening the channel would increase current velocities and head values, 2) if vessels using the deepened 45 foot channel would generate larger waves than presently occur with the 40 ft. channel, and 3) if these predicted changes in current velocities, head values and wave heights would increase the shoreline erosion on Pea Patch Island.

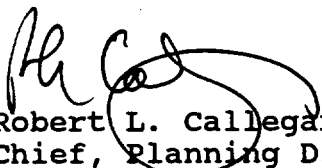
This analysis indicates that channel deepening will have a negligible effect on current velocities, water levels, and wave heights at shoreline locations adjacent to the channel on Pea Patch Island and that these changes will not increase shoreline erosion.

A review of existing shoreline profiles and hydrographic data adjacent to Pea Patch Island show the majority of channel depths well below the proposed new dredging depth of 45 feet. Only minimal new dredging in isolated high spots will occur in the vicinity of Pea Patch Island. This proposed work will not significantly effect the existing channel side-slopes and will not result in a movement of the federal channel closer to the island.

It is the Philadelphia District's opinion, based on the information provided in the attached report, that the proposed deepening of the Delaware River Main Channel to a depth of 45 feet will have no impact on the significant archaeological deposits on the shoreline of Pea Patch Island.

Please review the additional information provided in the enclosed report and provide this office with your opinion regarding our "No Effect" finding within 30 days of the date of this letter. If you have any questions regarding this project, please contact Michael Swanda of the Environmental Resources Branch at (215) 656-6555.

Sincerely,


Robert L. Callegari
Chief, Planning Division

Enclosure

OCT 17 1995

Environmental Resources Branch

Ms. Faye L. Stocum
Environmental Review Coordinator
Bureau of Archaeology and Historic Preservation
Division of Historical and Cultural Affairs
#15 The Green, P.O. Box 1401
Dover, Delaware 19901

Dear Ms. Stocum:

The U.S. Army Corps of Engineers, Philadelphia District has completed the latest in a series of cultural resources investigations for the Delaware River Comprehensive Navigation Study, Main Channel Deepening Project. A draft report, entitled Submerged and Shoreline Cultural Resources Investigations, Disposal Areas and Selected Target Locations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania (Cox & Hunter, September 1995) is enclosed for your review. This study, partly based on the results and recommendations of the report Submerged Cultural Resources Investigations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania (Dolan Research, Inc., April, 1995), involved four principal work elements at various locations in the Delaware Bay and Delaware River vicinity including remote sensing survey of proposed overboard disposal areas, shoreline survey, underwater target ground truthing and shipwreck investigations. Project areas investigated in Delaware include four potential overboard disposal areas and 11 remote sensing targets.

Remote sensing survey in Delaware was conducted in the Little River (LC-10), Slaughter Beach (MS-19), Roosevelt (L-05) and Port Mahon (LC-09) disposal areas (see report Chapter 6). Targets identified within disposal areas LC-10, MS-19 and LC-05 displayed signature characteristics typically generated by various types of modern debris, or single isolated objects on the bottom. No potentially significant cultural resources were identified in these locations.

Two magnetic anomalies, 9:534 and 9:553, were identified in the Port Mahon (LC-09) disposal area as high probability targets. Underwater ground truthing operations determined both targets as modern debris and not archaeologically significant. Sections of a modern clam dredge and 12" diameter pipe were found at Target 9:534. Target 9:553 exhibited the upper portions of a large 6" diameter, heavy gauge pipe with a welded swivel piece on top and frayed wire rope. It appears to be associated with either a modern navigational or mooring buoy (see report Chapter 7-33).

A low-tide shoreline survey within the boundaries of the Port Mahon (LC-09) disposal area identified the remains of the 1940's New Comb and Hand/Port Mahon Oyster Shucking House and the site of the 1903 Port Mahon Lighthouse, which was lost during the last decade due to severe shoreline erosion (see report Chapter 6-19). These former remains are not considered archaeologically significant.

Underwater ground truthing operations in Delaware waters were also conducted at 11 remote sensing targets identified during the 1993 field season. The results of these investigations are presented in report Chapter 7-1 thru 7-27. In summary, 6 targets exhibited bottom surface debris associated with modern navigation buoys. The remains of a modern fiberglass sailing vessel was identified at Target S-592. Divers found the remains of a wooden hulled barge in poor condition with limited structural integrity on the east channel side-slope off Pea Patch Island at Target S-33. The barge is not considered significant. The last target, S-49, exhibited a pile of partially buried iron I-beams in 57 feet of water. This site will not be impacted by proposed construction due to its location below proposed channel depth of 45 feet.

The District concurs with the report recommendations that no additional archaeological investigations are required at these locations. Based on the results of the cultural resources investigations completed for this project, the Philadelphia District finds that the proposed project will have "No Effect" on significant cultural resources in Delaware. Please review the enclosed and previously submitted documentation and provide us with your opinion concerning our "No Effect" finding within 30 days of receipt of this letter.

You may contact Michael Swanda, Environmental Resources Branch at (215) 656-6556 if you have any questions or need further information.

Sincerely,

Robert L. Callegari
Chief, Planning Division

Enclosure



STATE OF DELAWARE
DEPARTMENT OF STATE
DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
HISTORIC PRESERVATION OFFICE

15 THE GREEN

TELEPHONE: (302) 739-5685

DOVER • DE • 19901-3611

FAX: (302) 739-5660

November 21, 1994

Mr. Michael Swanda
Archaeologist
Environmental Resources Branch
Philadelphia District, Corps of Engineers
100 Penn Square East
Philadelphia, PA 19107-3390

Dear Mike:

This letter is pursuant to my review of the draft report entitled **Submerged Cultural Resources Investigations, Delaware River Main Channel Deepening Project, Delaware, New Jersey and Pennsylvania**, prepared by Greeley-Polhemus Group, Inc. and Dolan Research Inc. Based on this review, it is our opinion that the consultant has provided your agency with important cultural resource information upon which to make pertinent management decisions for this project. The consultant has identified eleven (11) anomalies within the forty-eight (48) remote sensing survey locations which should be given additional survey consideration. Also, the identification of the Excelsior in one of the five (5) target areas investigated is significant. In all cases, we concur with the consultant that further work is required, assuming that avoidance in the development of this project cannot be achieved. Presently, I'm not sure that Target e-1. 1:5 can be concluded as not eligible. The consultant does not provide sufficient justification.

Pursuant to the consultant discussion on Targets a4:4 and 13:10, there appears that these resources were destroyed as a result of maintenance dredging which occurred after 1987 and before this survey. The Corps should have provided some provisions or mechanisms to protect these targets from ongoing work. Maintenance dredging is an undertaking subject to Section 106. I strongly recommend that something be done to ensure that this does not happen to any of the significant targets which were located or investigated during this survey.

Finally, pursuant to our review of this report against the Secretary of the Interior's **Standards and Guidelines for Archeology and Historic Preservation: Preservation Planning and Identification** (48 FR 44716 - 44723), there are some concerns. Some adjustments to the text are needed to bring this report into conformance with these **Standards and Guidelines**. Comments have been attached which should be reviewed by the consultant.

Letter to Swanda
November 21, 1994
Page 2

If you have any questions, or require any additional assistance, please do not hesitate to contact me at your convenience. Thank you.

Sincerely,

A handwritten signature in cursive script, reading "Faye L. Stocum". The signature is written in dark ink and is positioned above the printed name.

Faye L. Stocum
Archaeologist

Enclosure

cc: J. Lee Cox



STATE OF DELAWARE
DEPARTMENT OF STATE
DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
HISTORIC PRESERVATION OFFICE

15 THE GREEN

TELEPHONE: (302) 739-5685

DOVER • DE • 19901-3611

FAX: (302) 739-5660

August 2, 1994

Mr. Robert L. Callegari
Chief, Planning Division
Environmental Resources Branch
Philadelphia District, Corps of Engineers
100 Penn Square East
Philadelphia, PA 19107

Attn: Mike Swanda

Dear Mr. Callegari:

I have received your letter wherein you indicate that two (2) Delaware disposal sites have been identified for use in the proposed Delaware River Main Channel Deepening Project. Please be advised that we are of the opinion that since both of these sites have been previously used by the Corps, the placement of additional fill at the Reedy Point North and South disposal sites will not effect any significant historic properties in this area of New Castle County. We concur with your assessment.

Please do not hesitate to contact me if I can be of any further assistance.
Thank you.

Sincerely,

A handwritten signature in cursive script, reading "Faye L. Stocum".

Faye L. Stocum
Archaeologist

cc: Miriam Lynam

CULTURAL RESOURCES - NEW JERSEY

SEP 28 1995

Environmental Resources Branch

Ms. Dorothy P. Guzzo, Administrator
New Jersey Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625

Dear Ms. Guzzo:

The U.S. Army Corps of Engineers, Philadelphia District has completed the latest in a series of cultural resources investigations for the Delaware River Comprehensive Navigation Study, Main Channel Deepening Project. A draft report, entitled Submerged and Shoreline Cultural Resources Investigations, Disposal Areas and Selected Target Locations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania (Cox & Hunter, September 1995) is enclosed for your review. This study, partly based on the results and recommendations of the report Submerged Cultural Resources Investigations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania (Dolan Research, Inc., April, 1995), involved four principal work elements at various locations in the Delaware Bay and Delaware River vicinity including remote sensing survey of proposed overboard disposal areas, shoreline survey, underwater target ground truthing and shipwreck investigations. Project areas investigated in New Jersey are Egg Island Point overboard disposal area [PN-1a], Steamboat "Excelsior" Site [E-2, 4:16] and Canal Coal Barge Site [E-2, 4:16].

The proposed 269 acre Egg Island Point overboard disposal area [PN-1a] is located adjacent to the shoreline on the southeastern side of Egg Island Point, Cumberland County. A remote sensing survey of the area did not identify any high probability targets resembling potentially significant submerged cultural resources. A pedestrian survey conducted along the shoreline within disposal area boundaries identified a surface scatter of bricks in the approximate location of the 1878 Egg Island Point Lighthouse. No other cultural material was observed. Phase II underwater investigations at the sites of the steamboat "Excelsior" and the sectional canal coal barge indicate that these vessels are eligible for listing in the National Register of Historic Places under criteria A, C and D.

The Philadelphia District concurs with the report's National Register evaluations and recommendations. The Egg Island Point

Lighthouse Site, "Excelsior" Steamboat Site and Canal Barge Site will be avoided during proposed construction by placing a 200 foot buffer around each site. Please review the enclosed documentation and provide this office with your opinion regarding our finding of "No Effect" within 30 days of the date of this letter. Please do not hesitate to contact Michael Swanda, Environmental Resources Branch at (215) 656-6556 if you have any questions or need further information.

Sincerely,

Robert L. Callegari
Chief, Planning Division

Enclosure



State of New Jersey

Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

DIVISION OF PARKS AND FORESTRY
HISTORIC PRESERVATION OFFICE
CN-404

TRENTON, N.J. 08625-0404

TEL: (609) 292-2023

FAX: (609) 984-0578

HPO-L94-45

February 10, 1995

Mr. Robert L. Callegari
Chief, Planning Division
Philadelphia District, Corps of Engineers
Department of the Army
Wanamaker Building
100 Penn Square East
Philadelphia, Pa 19107-3392

Delaware River Comprehensive Navigation Study
Delaware River Main Channel Deepening
Philadelphia District
U. S. Army Corps of Engineers

Dear Mr. Callegari:

I appreciate having been given the opportunity to review
a draft version of

[Cox, J. Lee, Jr.]

1994 Submerged Cultural Resources Investigations,
Delaware river Main channel Deepening Project.
Delaware, New Jersey, and Pennsylvania. Dolan
Research, Inc., Philadelphia. April 1994.
["Draft Report: volume 1" (sic)]

I concur with the investigator's recommendations for
additional underwater investigation of 11 "targets" (pp.
203-204).

I also concur with his finding that four "targets"
detected in 1987 do not meet National Register Criteria of
Eligibility as underwater historical resources. The fifth
"target", the wreck of the wooden hulled side-wheel steamer
Excelsior (1892), does meet the Criteria of Eligibility.

I recommend further investigation of the rock-filled timber crib, Target e-1, 1:5 Section 6.5.2, page 189 bottom-192 top.

This draft versions needs to be emended:


- 1) Title page must carry author's name.
Date will be day, month, and year of the revision.
- 2) Throughout, commencing with "Abstract" the terminology needs to be corrected and clarified to distinguish
 - a. the (width of the) base of the federally dredged navigation channel,
 - b. the 3:1 side-slope on both sides of a.,
 - c. the toe of slope of the side-slope,
 - d. the crest or top of slope of the side-slope.
- 3) Greater precision in descriptions throughout and employment of acceptable terminology.
- 4) (Passim) The proper Coast Guard Aids-to-Navigation and Pilot's terminology is: ranges intersect at bends in the river; the vessel changes course by executing a turn at the intersection of two ranges; bends are found in rivers and in navigation channels. It will be seen that by their nature ranges cannot "bend".
- 5) All maps and charts need a graphical scale and north arrow. All Map (boxed) detail rectangles must be oriented as the indexing rectangle on the whole-project locator maps.
- 6) The report omits mention of aboriginal navigation, Basque whaling in the 13th and 14th centuries, New England whaling in the 17th and 18th centuries, the possible invention of a kind of two-masted schooner by late 17th century Swedes, and the possible Swedish boat building tradition exemplified in the Delaware River (and South Jersey) Durham flatboat.

In view of the inappropriately large number of pages devoted to political, military, and naval history as background or "context", it would reasonably be expected that rare or unique "contexts" would be included.
- 7) Figures depicting Sonar targets need legends explaining what the strip charts show that may be culturally significant and why.

- 8) Add Jr. to all entries for Cox, J. Lee in Section 80.0 (pages 206 and 207), and at other entries in which Cox is a junior author.
- 9) When coordinates for shipwrecks are known, these should be added to Appendix I in a sole copy to be marked and retained as "Confidential" by the Philadelphia District.
- 10) The writing and organization of the report is inferior, even to the extent of misnaming one of the two "remote sensing" apparatuses. Sharper editing would be desirable; however, it will not essentially meliorate the report.

The project reviewer is Mr. Jonathan Gell; he can be reached at (609) 984-0140.

Sincerely,


James F. Hall
Deputy State Historic
Preservation Officer

JFH:vp

Code#94-1080

C:\WDATA\L94-45



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
DIVISION OF PARKS AND FORESTRY
HISTORIC PRESERVATION OFFICE
CN-404

TRENTON, N.J. 08625-0404
TEL: (609) 292-2023
FAX: (609) 984-0578

Robert C. Shinn, Jr.
Commissioner

HPO-G94-118

July 28, 1994

Lt. Colonel R. F. Sliwoski
District Engineer
U. S. Army Corps of Engineers
Wanamaker Building - 100 Penn Square East
Philadelphia, PA 19107-3390

Dear Colonel Sliwoski:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 C.F.R. Part 800: Protection of Historic Properties, as published in the Federal Register, 2 September 1986 (Volume 51, Number 169, pages 31115-31125), I am commenting officially upon the project designated below:

NATIONAL HISTORIC PRESERVATION ACT OF 1966 as amended

SECTION 106: SHPO Consultation and Comments (36 CFR Part 800)

PROJECT TITLE: Delaware River Comprehensive Navigation
Delaware River Main Channel Deepening
Dredged Spoils Disposal- Raccoon Island,
15D, 15G, and 17G
Gloucester County, New Jersey
Pre-construction, Engineering, and
Design Study

FEDERAL AGENCY: Philadelphia District
U. S. Army Corps of Engineers

I. 800.4 Identifying Historic Properties

In my opinion the proposed dredged spoils disposal sites entail no cultural resource factors.

II. 800.5 Assessing Effects

Adding dredged spoils to Disposal Sites Raccoon Island, 15D, 15G, and 17G will affect no cultural resources eligible for or listed on the National Register of Historic Places.

Additional Comments:

I would be interested to learn what records the Philadelphia District possesses concerning the creation of these four disposal sites.

If you have any questions, you may contact the project reviewer, Mr. Jonathan Gell, at (609) 984-0140.

Sincerely,


James F. Hall
Deputy State Historic
Preservation Officer

JFH/vs

c: Advisory Council on Historic Preservation
Mr. Michael Swanda, Environmental Corps
Mr. Robert L. Callegari, Planning Corps
Mr. Lawrence C. Schmidt

Code#94-1521

Disk#11A:\G94-118

CULTURAL RESOURCES - PENNSYLVANIA



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

November 21, 1995

Department of the Army
Philadelphia District, Corps of Engineers
Attn: Robert L. Callegari, Chief, Planning Division
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

Re: ER# 84-1708-042-O
Submerged Cultural Resources
Investigations: Delaware River Main
Channel Deepening Project,
Philadelphia & Delaware Counties

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Dear Mr. Callegari:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named report in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. Our comments are as follows:

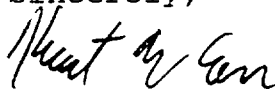
This investigation was well done and we agree with the recommendations of this report. Based on the results of this investigation, in our opinion, project activities will have no effect on significant submerged cultural resources in waters of Pennsylvania.

Although Site E-1, 1:5 lies in waters of New Jersey, this submerged canal coal barge would appear to be directly related to Pennsylvania's nineteenth century coal industry and related transportation network. We agree with the recommendation that the canal coal barge should be completely avoided by project activities and preserved in place. We also agree that the wreck should not be removed from its submerged state without the appropriate provisions for full data recovery, conservation, display and interpretation, and preservation in perpetuity.

Please send three copies of the final report (one unbound) for our files and distribution to the various repositories. Your cooperation in this matter is very much appreciated.

If you have any questions or comments regarding our review of this report please contact Mark Shaffer at (717) 772-0924.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kurt W. Carr".

Kurt W. Carr, Chief
Division of Archaeology &
Protection

KWC/ms

OCT 6 1995

Environmental Resources Branch

Mr. Kurt Carr, Chief
Division of Archaeology & Protection
Bureau for Historic Preservation
Pennsylvania Historical and Museum Commission
Box 1026
Harrisburg, PA 17108-1026

RE: ER# 84-1708-042-L
Submerged Cultural Resources
Investigations: Delaware River
Main Channel Deepening Project,
Philadelphia & Delaware Counties

Dear Mr. Carr:

The U.S. Army Corps of Engineers, Philadelphia District has completed the last in a series of cultural resources investigations for the Delaware River Comprehensive Navigation Study, Main Channel Deepening Project. A draft report, entitled Submerged and Shoreline Cultural Resources Investigations, Disposal Areas and Selected Target Locations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania (Cox & Hunter, September 1995) is enclosed for your review. This study, partly based on the results and recommendations of the report Submerged Cultural Resources Investigations, Delaware River Main Channel Deepening Project, Delaware, New Jersey, and Pennsylvania (Dolan Research, Inc., April, 1995), involved four principal work elements at various locations in the Delaware Bay and Delaware River vicinity including remote sensing survey of proposed overboard disposal areas, shoreline survey, underwater target ground truthing and shipwreck investigations. Project areas investigated in Pennsylvania are located in Tinicum Range and include Targets S 13 and S 49a (page 7-28 in report).

Underwater investigations determined that these two targets contain various modern debris and do not represent significant cultural resources. The District concurs with the report recommendations that no additional archaeological investigations are required at these locations. Based on the results of the cultural resources investigations completed for this project, the Philadelphia District finds that the proposed project will have "No Effect" on significant cultural resources in Pennsylvania. Please review the enclosed and previously submitted documentation

and provide us with your opinion concerning our "No Effect" finding within 30 days of receipt of this letter.

Please do not hesitate to contact Michael Swanda, Environmental Resources Branch at (215) 656-6556 if you have any questions or need further information.

Sincerely,

Robert L. Callegari
Chief, Planning Division



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

July 10, 1995

Department of the Army
Philadelphia District, Corps of Engineers
Environmental Resources Branch
Attn: Robert L. Callegari, Chief, Planning Division
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

Re: ER# 84-1708-042-N
Final Report, Submerged Cultural
Resources Investigations: Delaware
River Main Channel Deepening
Project, Philadelphia & Delaware
Counties

Dear Mr. Callegari:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named report in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. These requirements include consideration of the project's potential effect upon both historic and archaeological resources. Our comments are as follows:

Thank you for sending the additional copies of the above referenced report. This investigation has provided important information on submerged cultural resources in the Delaware River and the copies of the report will be sent to the appropriate report repositories. Your cooperation in dealing with this matter is appreciated.

If you have any questions or comments regarding our review of this report please contact Mark Shaffer at (717) 772-0924.

Sincerely,

Kurt W. Carr, Chief
Division of Archaeology &
Protection

KWC/ms



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

July 20, 1994

Department of the Army
Philadelphia District, Corps of Engineers
Attn: Robert L. Callegari
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3391

Re: ER# 84-1708-042-M
Submerged Cultural Resources
Investigations, Delaware River Main
Channel Deepening Project,
Philadelphia & Delaware Counties

Dear Mr. Callegari:

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

The above named report has been reviewed by the Bureau for Historic Preservation (the State Historic Preservation Office) in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. Our comments are as follows:

This investigation was well done. We agree with the recommendation that additional archaeological investigation of the eleven high probability targets identified through this survey be conducted to assess their National Register eligibility.

If Target e-2, 4:16, the Excelsior, cannot be avoided by project impacts, we agree that a Phase II evaluation and any additional investigations should be conducted as appropriate. If Target e-1, 1:15, the Revolutionary War-era timber crib, cannot be avoided, in our opinion, it should be salvaged and conserved because it has interpretive value and a museum or historic site in the Delaware Valley may be interested in curating it.

In accordance with our state guidelines, please provide three copies of this report, one of which should be unbound. If you have any questions or comments regarding our review of this report, please contact Mark Shaffer at (717) 772-0924.

Sincerely,

Brenda Barrett
Director