



Delaware Deepening -- Comment on Army Corps Dec. '08 notice -- More Proof Project a Threat

December 30, 2008

Mr. Minas M. Arabatzis,
ATTN: Environmental Resources Branch,
U.S. Army Corps of Engineers,
Wanamaker Building,
100 Penn Square East,
Philadelphia, PA, 19107-3390

Re: Delaware River Main Channel Deepening, Public Notice CENAP-PL-E-09-01

Dear Mr. Arabatzis:

Please accept these comments on behalf of the Delaware Riverkeeper and the Delaware Riverkeeper Network ("DRN").

I. Comments Regarding Procedural Defects

On December 17, 2008, the United States Army Corps of Engineers ("the Corps" or "the Army Corps") issued a public notice providing fourteen days for agency and public review and comment on matters related to the proposed Delaware River Main Channel Deepening Project ("the Project"). However, the notice fails to specify what law, regulatory requirement or goal the Army Corps seeks to fulfill or achieve as a result of this effort. Instead, the public notice merely states that the information collected during the comment period will be used to "determine whether further environmental work and analyses are needed." From this scant description, it appears that the Army Corps may be seeking to achieve some level of compliance with the National Environmental Policy Act ("NEPA") - perhaps to determine whether additional environmental analyses and/or a Supplemental Environmental Impact Statement ("SEIS") for the Project are needed - although that is not totally clear. If NEPA compliance is indeed the objective, the approach taken by the Army Corps in this notice is not in conformance with the legal requirements of NEPA. The notice fails to describe a complete project for which it is seeking review and comment; fails to identify the relevant legal or regulatory obligations spurring the notice; fails to provide all of the materials, issues, information, studies and analyses in a completed form for public review and comment; fails to provide a meaningful document as described and required by law that will allow the public to fully and fairly assess the impacts of the project and potential alternatives; fails to provide up to

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date scientific and legal materials; and fails to provide the quality and quantity of information the public needs to assess environmental, community, engineering and economic ramifications of the project. As such, the notice significantly fails to provide a meaningful opportunity for complete and informed agency, expert and public review. In addition to these serious flaws, the exercise noticed by the Corps purports to invert the entire project perspective, by improperly shifting the Corps' burden -- to define the scope of the project, to assess the body of knowledge in existence since the 1997 SEIS and to determine whether an SEIS is needed -- to the public. In short, the Corps appears to ask the public for a great deal of help, help that the public has no obligation to provide.

If the Corps indeed intends to use this notice to determine the necessity of a supplemental EIS for the Project, or to comport with NEPA in some other fashion, then the notice is legally deficient and not in accordance with law. As such, the comments submitted herein cannot be considered as the exclusive or binding opinion of the Delaware Riverkeeper and DRN with regard to the sufficiency of the Corps review of subsequent environmental data. There may be additional data, studies or information that significantly change the environmental or economic projections of which the Delaware Riverkeeper and DRN are unaware, yet that information, if relevant, must be considered by the Corps in its analysis.

As noted in our prior comment dated December 18, 2008, to the extent that the Army Corps insists on utilizing this deficient legal process for its decision making, the Delaware Riverkeeper Network once again restates our request that the comment period be extended 90 days, or until March 30, 2009. It has been over 11 years since the last environmental impact statement was completed for the Delaware River Deepening project. The Army Corps released a public notice on the evening of December 17, 2008, allowing for comment only until December 31, 2008. The notice later makes the bold statement that, "[a]t present, the Philadelphia District has found no factors precluding the project from moving forward based on previous studies." The volume of information the Army Corps refers to as part of this notice, coupled with the additional information requiring review and proper comment is significant. A fourteen-day time frame, taking place over one of the biggest holiday seasons of the year is clearly not enough if the Corps is truly interested in informed and serious input from either sister agencies at the local, state and federal level or from the public. The Delaware Riverkeeper and DRN request that with regards to this notice, the Army Corps undertake a true public process - one that will allow 90 days for review and comment on the relevant documents and positions.

Given these considerations, it is clear on its face that an updated EIS is necessary for the Project, in order for the Army Corps to comply with the requirements of NEPA. Much of the data used to inform the 1997 SEIS is outdated and likely no longer accurately reflects current conditions in the Delaware River, Estuary and Bay. The materials referred to in the Army Corps's notice document, given the considerable wealth of information and data released by a variety of agencies and experts since 1997, are clearly inadequate to fulfill the requirements of NEPA. Significant additional information has been released during the past eleven years regarding the potential environmental and community impacts of the proposed Project. DRN alone has raised a significant number of issues to the Army Corps during the past decade, as have other groups, individuals and resources agencies. The information that has been provided to the Corps amply documents and demonstrates the inadequacies of the 1997 SEIS, such that the Army Corps cannot claim good faith ignorance of the need for an updated EIS process. A decision not to undertake an updated EIS would clearly be a decision that is arbitrary and capricious and not in accordance with law.

II. Comments Regarding the "Summary of Changes" Document Provided in the Public Notice of December 17, 2008

1. Decrease in Dredge Spoils

The process by which the Army Corps reached its estimated dredged materials quantities needs to be subject to review and comment by outside agencies and experts. The volume of spoils is a critical issue. The spoil disposal plan for this project, as well as quantity calculations, have been a moving target for the last 11 years. The new calculations, including the assumptions and methods used to achieve them, are fundamental to the economic and environmental ramifications of this project and therefore it is important that they be subjected to a full and valid NEPA EIS process.

The public notice asserts that a change in data regarding sea level rise has affected the spoil quantity calculations. The appropriate value to be used in calculations for sea level rise is under considerable scrutiny in our region, it is important to understand what values for sea level rise the Army Corps has used in its calculations and for this value to be the subject of agency, expert and public review. Did the Army Corps rely upon the study by Cooper, Beevers & Oppenheimer, Future Sea Level Rise and the New Jersey Coast, Assessing Potential Impacts and Opportunities, November 2005? Or are they using new figures coming out of the University of Pennsylvania this past year? Or are yet other, older and less supportable figures those relied upon? What are the figures used and upon what basis are they selected and defended?

New research shows that the figures used for sea level rise may have ramifications for the tidal marshes of the Delaware Estuary. "tidal marshes require a suitable supply of sediment to accumulate at pace with sea level rise. This raises the possibility that maintenance dredging, which will be even more vigorous with a 45' channel, could accelerate the demise of estuary's tidal wetland coast." (Memorandum From D. Kahn, Div. of Fish and Wildlife & C. Sommerfield, College of Marine and Earth Studies, Univ of DE, Subject: Effects of Proposed Channel Deepening on the Sediment Budget and Marshes of the Delaware Estuary. April 21, 2008 ; D. Kahn, C. Sommerfield, Briefing Paper, Effects of Proposed Channel Deepening on the Sediment Budget and Marshes of the Delaware Estuary, May 13, 2008) This is a new and significant ramification which has been identified for the proposed deepening project - the sea level rise assumptions and calculations, coupled with this new science and understanding of the relationship between the tidal marshes, sea level, sediment transport and deepening, is significant. What consideration has been given to this impact and the research that is being conducted at the University of Delaware's College of Marine and Earth Studies?

In addition, the sea level rise figures have ramifications regarding movement of the salt line and to what degree Philadelphia's drinking water supplies might be affected and oyster populations in the estuary and bay may be impacted. Not only is it unclear whether the most recent data regarding sea level rise for our river and region has been used, but also whether the same assumption regarding sea level rise has been used for each potential impact and calculation - e.g. calculation of spoils as well as movement of the salt line.

2. Disposal Sites

The Army Corps states that it is no longer proposing to use sites 17G, Raccoon Island, 15D and 15G for spoil disposal. It is critical that the Army Corps commit to a final disposal plan in order for this project to be properly reviewed and considered both ecologically and economically. The Army Corps in this public notice is not committing to rejecting the use of these sites, it is simply "considering eliminating" their use. The Army Corps has taken the same stance with regards to economic loading - it does not commit to not using this strategy as part of the deepening project, but has used the mere possibility that it will not use economic loading as a rationale for not fully reviewing or considering the water quality, oyster and other environmental harms of using this approach. This is not a valid strategy for ignoring very real and potential harms from the project. The Army Corps needs to commit to a dredge spoil disposal plan so that the experts, agencies and public can fully review and consider the ramifications of the plan. The same should be said for economic loading.

That being said, disposal of all deepening spoils in existing confined disposal facilities raises a different set of environmental, community and economic issues than the previous plan, it does not negate their existence. The new spoil disposal option of using only existing Confined Disposal Facilities ("CDFs") is a significant change with potentially significant ramifications that must be subject to the NEPA EIS process.

According to an April 11, 2008 Army Corps document, in order to accommodate all spoil disposal in existing Army Corps CDFs the dikes on most of the federally owned facilities would need to be raised higher than was originally anticipated or planned for. Disposing of all of the spoils in existing federal CDFs requires the raising of dikes in NJ at:

- National Park facility from 30 ft to 60 ft (10 ft higher than the 50 ft already anticipated for the current channel),
- Pedricktown North from 44 ft to 94 ft (44 ft higher than the 50 ft previously anticipated),
- Oldmans from 30 ft to 60 ft (10 ft higher than the 50 ft anticipated),

- Pedricktown South from 44 ft to 74 ft (24 ft higher than the 50 ft anticipated),
- Penns Neck from 30 ft to 40 ft (10 feet lower than 50 ft anticipated),
- Artificial Island from 20 ft to 60 ft (10 ft higher than the 50 ft anticipated),

and in DE at:

- Killcohook 1 from 40 ft to 80 ft (30 ft higher than the 50 ft anticipated),
- Killcohook 2 from 50 ft to 80 ft (30 ft higher than the 50 ft anticipated),
- Killcohook 3 from 46 ft to 66 ft sites (16 ft higher than the 50 ft anticipated).

The community, engineering and environmental ramifications of these dike raisings have not been subject to Army Corps, State, other Agency, expert or public review and comment. The environmental, engineering, community and economic ramifications of raising the dikes are likely to be substantial and therefore must be subject to the NEPA EIS process. For example, the host communities have not formally been made aware, by the Army Corps, of the plan to raise the dikes and been given the opportunity to understand the ramifications of, or to comment upon, a spoil disposal facility with a dike 10 to 44 feet higher than expected - a spoil disposal site that is 44 feet higher could have significant ramifications for a community, and they should be given the opportunity to review, understand and comment. In 2008 the Salem County Board of Chosen Freeholders passed resolution 2008-336 stating its belief that the original disposal plan will be "detrimental" to their farmland and open space preservation and their tourism initiatives, the ramifications of any new plan should be subject to their consideration and review - clearly they have a significant interest and level of concern. Increasing the height of dikes also raises significant and numerous environmental and economic threats, questions and concerns that need to be subject to a full EIS process including agency, expert and public review.

Even with the change in the Water Resources Development Act of 1996, which allows the use of federal sites to fulfill the disposal obligation, the ability to dispose of project spoils in federally owned facilities as opposed to facilities provided for by the local sponsor is not without limitation. The Water Resources Development Act of 2008 (33 USC § 2326a(b)) states that the use of existing federal disposal facilities should only be allowed if there is a determination that such use will not reduce the availability of the facility for project purposes. The current disposal plan does not calculate the reduction in life of the existing CDFs - it states that that as a result of the raising of the dams there is no reduction in useful life. But of course this is not accurate. Expanding the size of the disposal facilities today, removes the opportunity to expand and utilize this additional capacity in the future, when it will most certainly be needed to continue to maintain the channel after the traditional 50 year calculation period. In addition, according to the 1992 EIS the possibility of non-federal use of federal disposal areas was considered and it was said that if this were allowed it "should cause no significant reduction in the remaining life of Federal sites, considering 10% or less to be an acceptable change." In 1992 the concept of using all federal disposal sites to accommodate the local sponsor's spoils obligation from the deepening project was rejected as this use would far exceed the 10% reduction in expected life - the calculated reduction in the useful life of considered disposal areas included a 45% reduction (21 years) for National Park; 24% reduction (10 years) for Pedricktown N, S and Oldmans; an 18.5% reduction (11 years) for Killcohook and Penns Neck; a 39% reduction (36 years) for Artificial Island. Similar calculations under the current proposal do not appear to have been conducted; there is merely a qualitative assessment that because of the raising of the dikes and a reduction in anticipated spoils from the project there is no reduction in project life anticipated. This issue needs to be subject to a thorough legal review under NEPA.

It is also not clear who will be bearing the costs for the expansions of the existing CDFs. The Water Resources Development Act (33 USC 2211 and 2326a) indicates that the costs should be borne by the Philadelphia Regional Port Authority (PRPA). While the local share agreement between the Army Corps and the PRPA contains language that would allow for this it does not affirmatively state or require it. Considering the Army Corps' documented plan to only use existing Army Corps sites for the spoil disposal, it is perplexing why they would not explicitly articulate this obligation if they were intending to enforce it. It is important to ensure this financial obligation would be shouldered by the PRPA and not by the federal taxpayers, including those in Delaware and New Jersey who are not interested in this project being undertaken. (If our interpretation of the financial obligation is incorrect and there is no local sponsor contribution required for expanding the capacity of the

existing CDFs to accommodate project spoils, then at a minimum there is no investment that could be credited to the local sponsor's financial obligations to the project).

Further, there remain outstanding questions as to the aquatic and wildlife implications of the confined disposal facilities that would be used for the deepening project - the Army Corps needs to fully and formally review and respond to these potential hazards, which have been articulated since the 1997 SEIS.

For example, the US Fish and Wildlife Service ("USF&WS") has stated, "...the question of wildlife exposure to hazardous sediments placed in CDFs remains unanswered. ...the [US Fish & Wildlife] Service cannot dismiss concerns regarding the possible exposure of wildlife to hazardous toxicant concentrations, because reliable estimates of the toxicant concentrations in the dredged material remain unknown. Such estimates depend upon (1) the volume of bend material to be dredged relative to the volume of main channel material to be dredged and (2) the delegation of dredged material from specific areas to certain CDFs." (Letter from Clifford G. Day, Supervisor, USF&WS NJ Office to Robert L. Callegari, US Army Corps of Engineers, June 8, 1999.)

Additionally, New Jersey's Division of Fish and Wildlife has stated: "concern exists that the current levels of toxins in the fisheries resources of the river to both migratory and nonmigratory populations may increase due to the re-suspension of contaminated sediments during dredging operations and surface discharges from the upland CDFs." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

The potential threat from confined disposal facilities articulated by the environmental protection agencies of the region, regardless of the final plan put forth by the Army Corps, needs to be fully explored, reviewed, discussed, and considered as part of an updated NEPA process. The Army Corps has never done so.

3. Placement of Sand on Broadkill Beach

There are significant concerns about the proposal to place sand on Broadkill Beach as part of the deepening project - this is a substantial issue in need of agency, expert and public analysis and review.

The USF&WS has expressed concerns about impacts of dredge spoil disposal plans which include Broadkill Beach, for horseshoe crabs. These concerns have been raised since the 1997 SEIS. The USF&WS has noted that additional NEPA documentation is necessary in order for the agency to make a determination on proposals to place dredge materials at certain identified sites including Broadkill Beach. The USF&WS has expressed concern about the potential of the Corps' proposed beach nourishment projects to kill one to two year-classes of juvenile horseshoe crabs during initial construction and during each renourishment period. Biologists have expressed concern that smothering even one generation of juvenile horseshoe crabs could further threaten the sustainable population. (Letter of Clifford G. Day, New Jersey Field Office, U.S. Fish and Wildlife Service to John Brady, U.S. Army Corps of Engineers, Philadelphia District, November 14, 2001, and personal communication by David Conrad, National Wildlife Federation with NJFO fisheries biologists, December, 2001.)

The concerns about the threat of the Broadkill Beach, Kelly Island and Port Mahon proposals with regards to their impacts to horseshoe crabs are greatly magnified by the science of recent years focused on the health and viability of the horseshoe crabs of Delaware Bay as well as the migrating shorebirds dependent upon them. Eggs laid by the horseshoe crabs, historically at very abundant levels, are an irreplaceable food source critical for the migration of Red Knot rufa and other shorebird species. The eggs of the horseshoe crab are so critical that recent declines in their abundance are threatening the future survival of the Red Knot. In 1982, 95,530 Red Knots were counted on the shores of the Delaware Bay. In 2006 only 13,445 were observed during the same time period and more recent study continues to show declines and low weight gain for the birds that do arrive to feed on horseshoe crab eggs. The Red Knot rufa is now predicted to go extinct within 10 years because of the decline of the horseshoe crab and their eggs. In 2008, the combined peak counts of the Red Knot, Ruddy Turnstone, and Sanderlings during the six-week aerial survey period was 50,110 individuals. This is a 72% decline from the 1986 total (177,490) for the three species. Other shorebirds that rely on horseshoe crab eggs, such as Ruddy Turnstone (*Arenaria interpres*), Semipalmated Sandpiper (*Calidris pusilla*), Sanderling (*Calidris alba*),

Dunlin (*Calidris alpina*) and Short-billed Dowitcher (*Limnodromus griseus*) have also declined in number on the Delaware Bay migratory stopover. During the period from 1998 to 2007, all of these species declined by approximately 64%. The Ruddy Turnstone declined by a severe 84%. The Sanderling declined by 61% and the Short-billed Dowitchers suffered a decline of 74%. The breeding populations of these three species, as well as Delaware Bay migrants Dunlin (*Calidris alpina*) and Short-billed Dowitcher (*Limnodromus griseus*), have declined according to the Canadian Wildlife Service's breeding bird surveys. These species and Red Knots make up 99% of the shorebird concentration in Delaware Bay. All are dependent upon horseshoe crab eggs for all or most of their diet during the stopover, and all have declined in population.

This ecological phenomenon is responsible for supporting a multi-million dollar ecotourism industry - therefore its loss also means tremendous economic and community damage to South Jersey and the Delaware Bayshore region.

Clearly, any project that threatens harm to horseshoe crabs is of major and substantial concern. The data about the horseshoe crabs, the Red Knot and the other migrating shorebirds has been amassed on an annual basis. The ramifications of the Broadkill Beach proposal must be the subject of full EIS study, review, comment and response before a fully informed decision can be made.

The threat to the horseshoe crabs and migrating shorebirds must also be viewed in the context of other threats to the species' posed by the deepening proposal - there are cumulative harms that must be considered and fully assessed.

In 2003, the State of Delaware, Department of Natural Resources and Environmental Control ("DNREC") held a hearing on the Corps' state permit application. The administrative hearing officer's report expressed specific concerns about the Kelly Island project and the dredge spoils placement aspects of the project to horseshoe crabs. It stated: "The local horseshoe crab population (and thereby indirectly shorebirds) will be directly and adversely impacted should the protective window be suspended for project construction. This issue ... is unavoidable if the project is approved as currently proposed." The report further stated that, "I find that the project as proposed will result in unavoidable direct adverse impact to site horseshoe crab populations during construction and unavoidable potential secondary impacts to nearby oyster beds." (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003, p. 44.)

The June 2005 Army Corp document, Pre-Construction, Horseshoe Crab Monitoring; Egg Island, New Jersey and Kelly Island, Delaware Wetland Restoration Areas, prepared by Versar, Inc., ("the Versar Report") does not lay to rest the concerns for impacts to horseshoe crabs. There is no indication on the record that this report was ever reviewed or commented on by the US Fish & Wildlife Service and it does not include the Broadkill Beach site. The report acknowledges that the Army Corps, in its project implementation, will violate the April 15 to August 31 biological window on shoreline construction projects for protection of horseshoe crabs to carry out beneficial reuse projects. The rationale is that while the impact to the horseshoe crabs is "unavoidable" the benefits are overriding. But this does not mesh in light of the USF&WS concern that the replenishment project will require renourishment after initial construction and the concern of experts that smothering even one generation of juvenile horseshoe crabs could further threaten a sustainable population. (Letter of Clifford G. Day, New Jersey Field Office, U.S. Fish and Wildlife Service to John Brady, U.S. Army Corps of Engineers, Philadelphia District, Nov. 14, 2001.)

Questions that remain outstanding from the Versar report include: how often will renourishment be required; what will be done to prevent re-erosion of these areas after construction as compared to pre-construction and at what rate would new erosion occur (i.e. at a rate that increases the level of renourishment required); what information is there to indicate (other than use of other nearby beaches) that the lesser used areas by horseshoe crabs identified on Kelly Island will be put to greater use after construction, perhaps there are other limiting factors at work yet to be considered; and how can the Army Corps claim the Kelly Island project as part

of their dredge spoil disposal plan when they do not have approval for a waiver of the applicable biological window?

The spoil disposal plan, which includes dumping on Broadkill Beach is also a major threat to *Sabellaria vulgaris*, a species of special significance to the Estuary and region, and one that is important to a number of other aquatic species as well as for the protection of bay beaches.

According to Delaware's Hearing Officer, in his report issued in 2003, after the 1997 EIS was finalized: "... the Corps initially overlooked *Sabellaria* impact and that studies conducted and proposed to date have not demonstrated the project as proposed will minimize or avoid harm to long-term *Sabellaria* populations at Broadkill Beach and Port Mahon. (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003, p. 81.) The Army Corps has not released any new information or studies that would alter this conclusion - clearly more work, agency, expert and public review is required.

In addition, the Army Corps has failed to undertake the regulatory process necessary to consider and address the fact that the *Sabellaria vulgaris* sand reefs meet the criteria of Essential Fish Habitat ("EFH") under the federal Magnuson-Stevens Fishery Conservation and Management Act. This is a critical issue involving legal requirements and review and communications with other regulatory agencies. Additionally, because these colonies meet the definition of EFH under the Magnuson-Stevens Act, extensive consideration as part of the EIS process would be required for such projects to proceed.

Sabellaria vulgaris is a species of polychaetous annelid sand-building worms which construct colonies of sand reefs. The reefs provide intricate habitat for a number of small crustaceans and minute species that are key parts of the aquatic food chain, as predators for plankton and prey for fish. The colonies are feeding, hiding, spawning, and nursery areas for a large number of sportfish including black sea bass, summer flounder, scup, weakfish, black drum, and others. Sportsmen may find that their sportfishing opportunities would significantly diminish if these reefs were eliminated. As noted in the 2008 State of the Basin Report, the weakfish populations of the Delaware Estuary are depressed with populations in recent years further declining. So in addition to the overall ramifications of losing the *Sabellaria* reefs on the variety of species dependent upon them, the impacts to *Sabellaria* as it pertains to the existing decline of weakfish is another particular consideration in need of analysis and review.

"While the species ranges from Cape Cod to Georgia (Gosner, 1978), the formation of reef structures seems unique to Delaware Bay..." (Dr. Douglas Miller, Pre construction *Sabellaria Vulgaris* Baseline Monitoring at Broadkill Beach Sand Placement Site, Sussex County, Delaware, Revision Jan. 3, 2002.) Moreover, *Sabellaria* reefs can provide a degree of protection from the effects of wave action, stabilizing beach sands and intercepting the force of waves near the low tide mark. (Wells, H.W. 1970.) Delaware Bay *Sabellaria* reefs are of considerable geological importance and should be considered in the analysis of factors influencing sedimentation on beaches. (Wells, H.W. 1970);(Dr. Douglas Miller, Pre construction *Sabellaria Vulgaris* Baseline Monitoring at Broadkill Beach Sand Placement Site, Sussex County, Delaware, Revision Jan. 3, 2002.)

"While they [*Sabellaria vulgaris*] have some capability to withstand burial under thin layers of sand, shoreline restoration would be expected to bury the present reefs at Broadkill Beach resulting in a substantial loss of this habitat." (Dr. Douglas Miller, Pre construction *Sabellaria vulgaris* Baseline Monitoring at Broadkill Beach Sand Placement Site, Sussex County, Delaware, Revision Jan. 3, 2002.) The Army Corps' report regarding this species found that activities associated with the Deepening could adversely impact the *Sabellaria vulgaris* and identified three mitigation options, but no supporting data or research are cited in support of the untested mitigation actions. In addition, the cost of these plans has not been included in the cost of the Project.

A study by Dr. Gary F. Smith, (Subtidal Pre-Construction *Sabellaria vulgaris* Monitoring in Delaware Bay at Broadkill Beach and Port Mahon Sand Placement Sites, and Kelly Island and Slaughter Beach Control Sites, Draft Report (Sub-Contract Number 003951), April 2005), does not address the outstanding concerns. There are no

other more recent studies released by the Army Corps which addresses the concerns, threats and issues raised by the experts as cited above. The finalized report by Dr. Miller confirms some of his findings and in no way allays any of the issues raised above.

4. Deferment of Egg Island Point

Once again the Army Corps states it is "considering" a change of plan, in this instance to defer the Egg Island Point project. It is important that the Army Corps make a decision and state it as part of their final project plans. Until such time as this is officially and irrevocably removed from project plans all must still consider it a viable part of the deepening project and one that must be considered as part of any environmental and economic reviews for the project.

III. Comments Regarding the Asserted "known changes to the affected environment since the 1997 SEIS"

The Army Corps notice identifies only two "known changes to the affected environment since the 1997 SEIS": the Athos I Oil Spill and some new information regarding shortnose sturgeon. By no means are these the only known changes to the affected environment since the 1997 SEIS. The Army Corps has been made aware of numerous other new and known changes by its sister agencies at the state and federal level and by the Delaware Riverkeeper Network. In addition, there are other known changes that have been released in a variety of public venues, including the press, that are impacted by, and that impact, the proposed Delaware River deepening and must be the subject of an updated NEPA review. Let us first address the two Army Corps identified issues.

1. Athos I Oil Spill:

November 26, 2004, 265,000 gallons of heavy crude was released into the Delaware Estuary from an oil tanker coming into port, exposing 115 miles of river, 280 miles of shoreline, 16,500 birds, as well as fish, shellfish, wildlife and a variety of important habitats to this toxic pollution. The crude was very heavy and therefore was released into, sank, and interacted with the river bottom, the water column, and riparian habitats. Still today we hear reports of oil still seeping from the sediments, marshes and ecosystems of the estuary. The ramifications of the Athos I spill for the deepening project needs to be analyzed. In 2007 New Jersey already asserted the need for an evaluation of the "relative risk of contaminants in the dredged material to human health, wildlife, and especially endangered species such as bald eagles and peregrine [sic] falcons" with the evaluation to include sediment data collated by NOAA, NJDEP and others after the Athos I Oil Spill of 2004. (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007).

2. Shortnose Sturgeon:

As far as the Delaware Riverkeeper Network understands, the Army Corps has never finalized the Endangered Species Act consultation process for the deepening project. We understand that the Army Corps has been notified of this deficiency in writing already. This process needs to be concluded and included as part of an updated EIS process.

It is clear from statements on the record and to the Army Corps that sister environmental agencies have already determined that additional consultation and decision-making is required with regards to the Shortnose Sturgeon. In 2003 letters from the US Fish and Wildlife Service to the Army Corps it was reiterated that the "principal threats to" Shortnose Sturgeon species "survival are mortality resulting from dredging, impingement on the cooling water intake screens, and incidental capture. Secondary threats include habitat degradation or loss by dredging, bridge construction and dams (National Marine Fisheries Service, 1998)." (Letter from US Fish and Wildlife Service to the Army Corps of Engineers Philadelphia District, February 6, 2003; Letter from US Fish and Wildlife Service to the Army Corps of Engineers Philadelphia District, February 11, 2003.) Also in 2003 the DNREC Hearing Officer determined that, "[t]here is a reasonable expectation of unacceptable harm to shortnose sturgeon, and efforts to minimize this impact remain unresolved." (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003)

As recently as 2007 NJDEP's Division of Fish and Wildlife has expressed the need for addressing "impacts to new wintering areas for Shortnose Sturgeon that were not evaluated in the previous SEIS." According to NJDEP Division of Fish & Wildlife Shortnose Sturgeon have been documented using the River all the way down to south of the C&D Canal, with young of year documented around the mouth of Oldman's Creek. (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

IV. Comments Regarding Significant Known Changes to the Affected Environment Omitted by the Corps (Including Agency and Expert Questions and Concerns, and Scientific Findings and Study Since the 1997 SEIS)

Since the Army Corps' 1997 SEIS, there have been significant other findings, scientific research, and agency determinations that demonstrate, unquestionably, the need for an updated Environmental Impact Statement, including, but by no means limited to the following:

1. Atlantic Sturgeon

While prior attention has been given to the impacts of the deepening to Shortnose Sturgeon, as the federally listed endangered species, since the 1997 SEIS, significant science and evidence now demonstrate that closer attention and scrutiny must be paid to impacts to Atlantic Sturgeon.

While the Atlantic Sturgeon is not listed on the federal list of endangered species it is widely recognized that the Atlantic Sturgeon may in fact be at greater risk - see for example the Delaware River State of the Basin Report, 2008: "The shortnose is currently a federal endangered species, but the Atlantic sturgeon may be even more imperiled." In fact the 2008 Basin report which is based on the science collected in the region describes the status of the Atlantic Sturgeon as "poor and getting worse" with numbers "estimated to be less than 1,000 and probably less than 100 across the Estuary." New Jersey's Division of Fish and Wildlife has expressed concern that Atlantic Sturgeon may be at even greater risk than Shortnose Sturgeon because of their declining populations. According to the NJ Division of Fish & Wildlife "The spawning area for Atlantic sturgeon remains unknown at this time. It may well be the rock outcropping at Marcus Hook that will have to be blasted" as part of the deepening project. (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

The September 2005 Army Corps commissioned study titled "Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005" acknowledges that "Little is known regarding the occurrence and distribution of juvenile shortnose sturgeon in the Delaware River." "While blasting in the winter months should protect most fish species that use the Delaware River in the spring and warmer months, Atlantic sturgeon (*Acipenser oxyrinchus*) and Shortnose Sturgeon (*Acipenser brevirostrum*) may be susceptible to blasting mortality if they use the Marcus Hook area during winter." In fact, during this study, Sturgeon were observed near the Marcus Hook area during the winter time frame when they would be at risk from planned deepening activities including blasting. (Versar Inc. prepared for the Army Corps of Engineers, Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005, September 2005) While the study discusses concepts for deterring Sturgeon from entering the blasting zone during the critical period, the report concluded "At present, there is no 'out-of-the box' behavioral deterrent system for excluding sturgeon from an underwater blasting area." (Versar Inc. prepared for the Army Corps of Engineers, Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005, September 2005) This additional information about the potential ramifications of the deepening project on the federally endangered Shortnose sturgeon and on Atlantic sturgeon is significant and in need of full agency, expert and public review, vetting, comment and most likely further study.

While the Atlantic sturgeon is not listed as federally endangered, in 2000 (post-1997) it was listed as an endangered species in Delaware. Atlantic sturgeon is also listed as endangered in Pennsylvania. In light of the fact that Atlantic Sturgeon is listed in two states, that recent science and experts indicate that they are present during the time and location of proposed blasting, that it is recognized that the species uses main channel habitats and that dredging may be changing salinity and bottom habitats in a way that impacts their habits (See

Delaware River State of the Basin Report, 2008), it is clear that Atlantic Sturgeon need to become a focal point for additional review.

2. Information on Toxins and Heavy Metals

Since 1997, significant concerns about discharges of toxins and heavy metals from new and/or existing confined disposal facilities associated with the deepening project have been raised which need to be fully addressed and reviewed. Since 1997 a variety of findings, questions and concerns have been raised that need to be addressed as part of a vetted and full EIS process.

For example, the existing Money Island and Fort Mifflin disposal facilities were found to discharge Cadmium, Lead, Copper, Zinc and total suspended solids at significant levels. In some instances the discharge concentration exceeded the DRBC's acute and/or chronic criteria, although the DRBC criteria are for dissolved metal. The two disposal facilities reviewed were found to be the eighth largest discharger to the estuary and in the case of lead to discharge more lead than all 78 point source dischargers to the estuary combined. The following discharges were identified at the two sites:

	Money Island	Fort Mifflin	Acute Criteria	Chronic Criteria
(total)	(total)			
Metals				
(ug/liter)				

Lead 268.1 242.0 48 16

Copper 229.7 76.7 13.3 9.1

(Dr. Tom Fikslin, Delaware River Basin Commission, presented to the Toxic Advisory Committee November 4, 1998.)

"CDFs have the potential to impact aquatic life through acute and chronic toxicity, and human health through the bioaccumulation of organic compounds such as PCBs and DDX." (Dr. Tom Fikslin, Delaware River Basin Commission, presented to the Toxic Advisory Committee November 4, 1998.)

While the Army Corps has provided information about the Pedricktown CDF indicating that toxic discharges are not an issue to the same degree at that particular location it has not provided information regarding the other existing CDFs or the potential ramifications of placing more spoils in those locations than originally planned/anticipated.

"...the question of wildlife exposure to hazardous sediments placed in CDFs remains unanswered. ...the [US Fish & Wildlife] Service cannot dismiss concerns regarding the possible exposure of wildlife to hazardous toxicant concentrations, because reliable estimates of the toxicant concentrations in the dredged material remain unknown. Such estimates depend upon (1) the volume of bend material to be dredged relative to the volume of main channel material to be dredged and (2) the delegation of dredged material from specific areas to certain CDFs." (Letter from Clifford G. Day, Supervisor, USF&WS NJ Office to Robert L. Callegari, US Army Corps of Engineers, June 8, 1999)

3. Information on Sediment and Water Quality

Since 1997, significant questions have been raised about the accuracy of the Army Corps' sediment and water quality claims. The Delaware Estuary is already heavily affected by pollution, including PCBs. The deepening would be a new pollution source. The concerns regarding the deepening as a potential new and significant source of pollution is of paramount concern and must be addressed.

Army Corps studies that indicate no water quality concerns have been challenged in a variety of ways by a number of sources.

Historically the Corps has represented that according to their data, levels of toxins in River bottom sediments are not high enough to pose any adverse environmental impact. In a review of Army Corps data, Rick Greene of DNREC found that the Corps' data showed that among the areas to be dredged (especially the bends to be widened) there are toxic "hot spots". According to Greene's studies, the Corps improperly used mean values (averages) to assess the level of toxics in River sediments. The result was that toxic "hot spots" were hidden in the numbers. Toxics found at levels indicating possible to probable impacts include: Antimony, Arsenic, Copper, Lead, Mercury and Zinc. (Rick Greene, DNREC, "Independent Review of Impacts Delaware River Channel Deepening" presented to the DRBC Toxics Advisory Committee November 4, 1998).

In a 1998 white paper, the University of Delaware's Sea Grant Program states: the "Corps' heavy metal and pesticide data disagree with ADL [Arthur D. Little] data by 800% to 2800% for similar parts of the river -- ADL values being higher, and that Corps conclusions are "doubtful" because Corps data "is often lacking many of the details, or appropriate references, as provided by ADL..." ("Sedimentary Impact of Dredging the Delaware Estuary: Geochemical Impacts and Natural Radionuclide Transfers, A White Paper Report", by Najid Hussain and Thomas M. Church, Graduate College of Marines Studies, University of Delaware, Newark, DE, December 16, 1998).

A cornerstone Army Corps position has been that not enough sediment would be redistributed during dredging to raise water quality concerns as a result of the dredging process itself. But as the Delaware Riverkeeper Network has stated at public meetings to the Army Corps, this conclusion is based on assumptions that are the results of studies conducted on other, dissimilar waterbodies, and therefore cannot be readily transferred to the Delaware system.

The 2003 DNREC Hearing Officer's Report also expressed concern about the assumptions and therefore the conclusions of the Army Corps with regards to water quality implications of deepening dredging. "The concern regarding water quality impacts from dredging at the point of excavation is valid upstream of approximately the C&D Canal." "A valid concern remains based on the fact expert judgment and not empirical data was used to create the standard of 250 mg/l of Total Suspended Solids (TSS) a distance of 200 feet from the point of excavation.... A valid concern remains because it is unknown whether the proposed TSS standard can actually be met..." (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003).

In addition, the Army Corps continues to leave open the option of using the practice of economic loading during dredging operations. Economic Loading would allow sediment-laden water to overflow from dredge barges directly into the Delaware River. (US General Accounting Office, Delaware River Deepening Project, Comprehensive Reanalysis Needed, GAO-02-604, June 2002, pg 22) "Economic loading of dredged material above the C&D Canal will result in unknown toxic mobilization and dispersion impacts similar to mechanical dredging, which has not been studied or modeled ..." (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003). The water quality and other environmental ramifications of economic loading are a concern and need expert and agency review, consideration and inclusion in project analysis and EIS documentation. If the Army Corps would like to continue to ignore the potential ramifications of economic loading then it needs to commit to not using this tactic in the Delaware River and Estuary system.

The Army Corps has provided contradictory information regarding the flow of Delaware River water through the C&D Canal - in two different reports, the Corps concluded that the same water moved in different directions - corresponding to the direction most beneficial to the project being studied. In a 1999 study conducted by the Army Corps to assess deepening the channel of the Chesapeake and Delaware Canal, the Army Corps conclusion "about the direction of water flow through the canal is totally reversed from the ... study performed to assess the impact of deepening the Delaware Shipping Channel. The Delaware River Study concluded net westward flow through the canal for the 1965 simulated period whereas the [C&D canal] study concludes eastward!"

(Letter from John M. Williams to Frank R. Master, Army Corps of Engineers/Philadelphia District, February 7, 2000. [Referring to, Assessment of Channel Deepening in the Chesapeake and Delaware Canal and Approach Channels in Upper Chesapeake Bay; A Three Dimensional Numerical Model Study; USACE/WES, August 1999, Draft Report; page 43; Assessment of Channel Deepening in the Delaware Bay; A Three Dimensional Numerical Model Study; USACE/WES, Tech. Report CHL-98-29, September 1998; page 45.]) While the Army Corps has since developed an explanation for these contradictory findings, it would be important for this information and their explanation to be released for expert, agency and public review, consideration and comment.

4. Information on Drinking Water Impacts

Since 1997, significant concerns about the impacts of the deepening project on drinking water supplies have been raised, which need to be fully and formally assessed, reviewed and addressed. The Delaware River is a known and major drinking water supply for a number of communities including Philadelphia. The potential threat to these supplies is known to experts and the Army Corps. New information has become known since 1997, and there are new environmental conditions that have also come to bear since 1997, and so have not been included in EIS review or decisionmaking.

The University of Delaware's Sea Grant Program has expressed concern about the leaching of heavy metals from confined disposal facilities to aquifers below. Noting that in much of the regional groundwaters of the Delmarva peninsula "...concentrations of several heavy metals...are very close to the EPA's potable water limits," the authors point out that metals reaching groundwater from disposal sites (by leaching action of acid rain or from oxidized sulfide in the spoils themselves) "can potentially make...concentrations in shallow groundwaters exceed limits." ("Sedimentary Impact of Dredging the Delaware Estuary: Geochemical Impacts and Natural Radionuclide Transfers, A White Paper Report", by Najid Hussain and Thomas M. Church, Graduate College of Marines Studies, University of Delaware, Newark, DE, December 16, 1998).

The Army Corps has told local community representatives that the Potomac-Raritan-Magothy Aquifer would be "nicked" during the dredging process. Concerns have been raised that this will result in contamination of this major drinking water supply with River water. ("Will dredging 'nick' aquifer?", Gloucester County Times, May 7, 1999.) While the Army Corps currently asserts this is not an item of concern, it is important that this issue be formally responded to on the record.

One of the biggest known changes to the river and region has been a change in the way the New York City reservoir flow releases are managed. The flows from the reservoirs have a major impact on a variety of issues in the River and Estuary, including the location of the salt line, particularly during low flow conditions. The most recent reservoir management plan, called the Flexible Flow Management Plan, was only put into affect in 2007, and is still under analysis, review and minor alteration. Until very recently the Army Corps failed to consider the ramifications of the reservoir release program when combined with the deepening project for the drinking water supplies of Philadelphia. Finally, in 2007, the combined ramifications of a deepened channel, sea level rise, and the flexible flow management plan were given a level of attention. In 2007 the Army Corps did submit the findings of a review of these three issues combined to the Delaware River Basin Commission. But, this study has not been reviewed or vetted by the regulatory agencies of the region (State, Federal or Regional) - it has been a unilateral effort conducted by the Army Corps out of the view of the agencies, experts and the public. The Delaware Riverkeeper Network obtained a copy of the draft report and has already identified a number of concerns with the report including the value for sea level rise that was utilized, its inputs and assumptions regarding the reservoir flexible flow management plan, that it only uses a 2040 horizon for analysis and more. Most notably, with regards to drinking water, while the report provides information regarding 30 day averages for salinity level changes, the Philadelphia Water intakes would be impacted by absolute maximums and therefore the report needs to research and report in detail on this threat, on the absolute maximums as opposed to averages. Of telling concern is that the Philadelphia Water Department and other agencies in the region have not been part of this review and analysis process, and their comment on the report has not been sought. The implications of the deepening, reservoir management and sea level rise for drinking water supplies

and the oysters of the estuary and Bay are significant, are known changes to the affected environment, and are absolutely in need of full NEPA review.

5. Information regarding Wetlands and Marshes

Since 1997, there has been significant increasing scientific concern that the deepening could affect ecologically important wetlands and marshes in the Delaware Estuary. These marshes, part of the affected environment of the deepening, are known and have not been addressed as part of EIS review, mitigation planning or cost sharing with the local sponsor.

The marshes of the estuary are critical ecologically, economically, for community quality of life, and for the health and safety of the region. Ecologically the marshes provide vital habitat to a large number of species. These species fuel a tremendous ecotourism industry that helps to sustain our region. The marshes are part of the life of the bay shore area providing a variety of beneficial qualities to the region's communities. And as communities and regulators are appreciating with increasing vigor, wetlands are important protection from floods and dramatic storm events. The ramifications of causing or contributing to the decline of the marshes of the estuary is a significant issue that must be addressed with the full benefit of expert, agency and public review and input. It is a significant, known impact and potential change to the environments to be affected by the deepening project.

There is growing scientific concern that the deepening could affect the sediment supply needed to sustain tidal marshes in the Delaware Estuary. "The axial channel is now about twice as deep as it was prior to dredging, and the adjacent flats are generally shallower due to deposition. Sediment budget estimates indicate that, on average, maintenance dredging removes more sediment from the estuary than that supplied by rivers, suggesting that the system as a whole has a deficit of sediment. This could be crucial, because tidal marshes require a suitable supply of sediment to accumulate at pace with sea level rise. This raises the possibility that maintenance dredging, which will be even more vigorous with a 45' channel, could accelerate the demise of estuary's tidal wetland coast." (Memorandum From D. Kahn, Div. of Fish and Wildlife & C. Sommerfield, College of Marine and Earth Studies, Univ of DE, Subject: Effects of Proposed Channel Deepening on the Sediment Budget and Marshes of the Delaware Estuary. April 21, 2008 ; D. Kahn, C. Sommerfield, Briefing Paper, Effects of Proposed Channel Deepening on the Sediment Budget and Marshes of the Delaware Estuary, May 13, 2008.)

NJ DEP's Division of Fish and Wildlife has expressed the importance of modeling, "monitoring and mitigating for any freshwater marsh conversions to salt water marshes that will occur due to increased salinity. The freshwater wild rice marshes are critical wildlife habitat" including for a "wide array of T&E species and are valuable to waterfowl (Federal trust species) as migration and wintering areas." Currently Wild Celery is rebounding in the freshwater areas of the river according to NJDEP Division of Fish & Wildlife, and so "concerns exist about possible negative habitat change and loss of this protected specie by siltation and/or deepening." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

"Past studies and ongoing research ... has shed light on the impacts of past dredging on the morphology, hydraulics and sediment transport in the Delaware estuary. These impacts are significant and have not been adequately addressed by USACE environmental impact statements (1) and modeling studies (2) designed to assess potential effects of the 45' shipping channel." Potential impacts include drinking water impacts, higher disease mortality in oysters, a change in the natural deposition and scouring patterns of the estuary, a change in the hydraulic geometry of the estuary and impacts to tidal wetlands. (Memorandum From D. Kahn, Div. of Fish and Wildlife & C. Sommerfield, College of Marine and Earth Studies, Univ of DE, Subject: Effects of Proposed Channel Deepening on the Sediment Budget and Marshes of the Delaware Estuary. April 21, 2008)

The Water Resources Development Act states that "costs of constructing projects or measures for the prevention or mitigation of erosion or shoaling damages attributable to Federal navigation works shall be shared in the same proportion as the cost sharing provisions applicable to the project causing such erosion or shoaling.

The non-federal interests for the project causing the erosion or shoaling shall agree to operate and maintain such measures." The prevention or mitigation of the damage to the marshes of the estuary as the result of accelerated erosion and/or degradation resulting from deepening the channel and associated dredging is nowhere included in project plans for the deepening, not in the EIS and not in the cost sharing agreements as required in the quoted paragraph - this needs to be remedied.

6. Information Regarding Oysters

Oysters are ecologically and economically important to the region. Millions of dollars have been invested in their restoration. Since 1997, significant new science, information, and agency questions and concerns have been raised regarding potential harms the deepening could inflict on the oyster populations of the Delaware Estuary and Bay. These threats are known and have never been adequately addressed in an EIS. In addition, new concerns and information continue to emerge on the potential harms.

Experts from NJ DEP's Division of Fish & Wildlife, the Delaware Division of Fish & Wildlife, the University of Delaware's College of Marine Science and Earth Studies, and the Haskins Shellfish Research Laboratory have as recently as 2007 and 2008 expressed concern that a change in salinity levels may have an effect on oyster resources in the Estuary and have expressed the need for full consideration of this potential harm. (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007; D. Kahn, C. Sommerfield, Briefing Paper, Effects of Proposed Channel Deepening on the Sediment Budget and Marshes of the Delaware Estuary, May 13, 2008; personal email communication J. Kraeuter, Haskins Shellfish Research Laboratory to M. van Rossum, the Delaware Riverkeeper Jan 14, 2008) "With the continued presence of oyster diseases in the bay, and since their extent and overall effects are primarily controlled by the salinity, anything that increases the salinity of the bay will be detrimental to the oyster population. I call attention to the distribution of oysters within the system. They occupy large areas in the lower part of the Estuary, but the dense population currently exists where the bay begins to narrow. A small rise in salinity would force the oysters farther up bay, but there is less and less area in that portion of the system. (Email communication J. Kraeuter, Haskins Shellfish Research Laboratory to M. van Rossum, the Delaware Riverkeeper Jan 14, 2008.) The very recent date on these documents demonstrates that these agencies and experts are still concerned about the impacts of the deepening and associated salinity changes on Delaware Bay oysters.

How a deepened channel combined with sea level rise and the Flexible Flow Management Plan for the New York City reservoir system would affect the salt line as it pertains to the oysters of Delaware Bay needs to be fully assessed. This is a known affect that, through impact to the oysters, could have substantial ecological, cultural and economic ramifications for the region.

NJDEP Division of Fish & Wildlife has also, as recently as 2007, articulated a concern about the "potential siltation of the natural seed beds and leased grounds in the lower bay." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

DNREC's Hearing Officer identified concerns about the Kelly Island project and the dredge spoils placement aspects of the project to oyster beds, including:

- "... the project has the potential to cause secondary adverse impacts to nearby oyster beds from sedimentation..."
- "I find that the project as proposed will result in unavoidable direct adverse impact to site horseshoe crab populations during construction and unavoidable potential secondary impacts to nearby oyster beds."

(State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003, p. 44)

The Army Corps' primary response to concerns expressed regarding impacts to oysters has been to conduct monitoring pre- and post- the deepening project to, after the fact, determine if any adverse environmental impacts occurred as a result of the deepening. With regards to the pre-project monitoring that was done the US Fish & Wildlife Service noted that "environmental contaminants were not a component of the study. ... The Service remains concerned that dredging activities in the Delaware River may result in the release of buried contaminants from localized 'hot spots.' Baseline body burden levels need to be established for representative groups (oysters, dominant fish species) prior to any dredging activities." (Letter of Clifford G. Day, New Jersey Field Office, U.S. Fish and Wildlife Service to John Brady, U.S. Army Corps of Engineers, Philadelphia District, November 14, 2001.)

In an often-expressed concern that the Army Corps has been pursuing the Deepening project with a set of pre-determined findings and outcomes, USF&WS wrote the following about the Army Corps' oyster monitoring report: "The Service also recommends modifying the statement presented in the Summary and Conclusions section of the Versar, Incorporated, report (Page 4.1). The concluding paragraph reads: 'it is intended that these data could then be used to direct any mitigation that may be required in the unlikely (emphasis added) event that significant impacts are detected by the post-construction monitoring.' As written, the statement appears pre-determining." (Correspondence from John C. Staples, USF&WS, NJ Field Office, to John Brady, US Army Corps of Engineers, October 3, 2001.)

Clearly more study and agency review and analysis is needed - this issue has not been fully or satisfactorily addressed to date.

7. Information Regarding Impacts to Additional Species

Since the 1997 SEIS, numerous significant concerns have been raised about potential impacts to other species. In addition, there have been some new findings about species located within the affected project area. These issues have not been subjected to the NEPA process at this time, and they need to be.

In 1999, the Secretary of Commerce approved several Fishery Management Plans identifying and describing Essential Fish Habitat. The Essential Fish Habitat designations applicable to New Jersey and Delaware were compiled into a document by the National Marine Fisheries Management Council and transmitted to the Army Corps of Engineers with a cover letter stating: "As you can see, several life stages of numerous Federally managed species occur in the Delaware River that are likely to be impacted by this deepening project. Impacts to all the relevant life stage/species will have to be addressed in the habitat assessment report for this project." (Letter from Daniel T. Furlong, Mid-Atlantic Fishery Management Council, to Mr. Robert L. Callegari, Army Corps of Engineers/Philadelphia District, August 19, 1999.) These are issues that were not included in the 1997 SEIS and therefore have not been subject to NEPA review or analysis. We do not believe that the Essential Fish Habitat consultation process has been initiated and completed by the Army Corps.

"The potential impact from blasting on historical gas storage caverns has not been adequately addressed. As proposed, it is reasonable to conclude there will be cumulative and secondary impact to the aquatic ecosystem, although this concern may be minimized via permit conditions. As currently proposed the project will adversely harm finfish, but this may be resolved." (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003).

Study is starting on the plight of the sand tiger shark. Concerned about the species' decline (so much so that they are candidates for listing as an endangered species) research is underway which, according to an assistant professor of fisheries and a researcher at Delaware State University, could have policy implications for beach replenishment projects and the dredging of the Delaware River shipping channel. (DSU on sharks' trail, Study of sand tigers could impact future plans for Delaware Bay, by Molly Murray, The News Journal, July 22, 2007) Additionally, there has been a new finding of colonies of sponges on the floor of the Delaware Bay; new research is underway on the recent discovery. (Researchers find sponges living in Delaware Bay, The Associated

Press, July 27, 2008.) These emerging discoveries and bodies of research have not been considered by the Army Corps in their assessment of environmental impacts, biological windows, or costs associated with deepening but need to be.

According to NJDEP's Division of Fish & Wildlife, "American Eel (elvers) were not addressed in the original EIS. Potential impacts should be addressed in the new SEIS." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

New Jersey's Division of Fish & Wildlife takes the position that "Impacts to new anadromous fish (shad) spawning areas in the lower river tributaries need to be addressed." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

New Jersey's Division of Fish & Wildlife has also written that the impact of "increased ballast water intakes cumulative effect to early life stage fishes needs to be addressed." That the "SEIS should quantify the anticipated withdraws by increased and/or larger capacity ships." And that "data should be gathered and/or collected addressing potential adverse impacts to ichthyoplankton and/or early life stage fisheries." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.)

8. Information Regarding Effects on Birds

Since 1997, there have been significant concerns raised about the threat the deepening and associated spoil disposal poses for birds and other wildlife. There are a variety of paths by which birds and wildlife may be affected by the project. Resident and migrating birds and wildlife are an important part of the Delaware River and Estuary ecosystem. They are within the affected environment of the project. The affects to these species which are known and have been raised since the 1997 SEIS also support the demonstrated need for an updated EIS for the deepening project.

In the past decade there has been a tremendous investment of time and resources by regulatory agencies and experts into the pollutant loadings in the water column and sediments of the Delaware Estuary and River, as well as enhanced study into new and existing pollution inputs. As a result of some of this work new questions and concerns have been raised about the potential ramifications of the deepening project and associated endeavors.

Private channel deepening would be necessary if oil facilities are to take advantage of a deepened main channel; in fact six oil facilities are to receive 50% to 80% of the project benefits depending upon which of the economic reviews for the project one embraces. In 2003 the USF&WS expressed concerns about the dredging of private channels and berths on the Bald Eagle, as the result of toxic contaminants being reintroduced into the water column and food chain (Letter from US Fish and Wildlife Service to the Army Corps of Engineers Philadelphia District, February 6, 2003.) In addition, since the 1997 SEIS, the EPA has questioned whether the Army Corps sufficiently considered the environmental impacts of private channel deepening and spoil disposal -- "... impacts related to the dredging of the private facilities and several port facilities owned or operated by the local sponsors, and potential impacts associated with the development of new sites for dredged material disposal were not fully evaluated in the original EIS. Accordingly, these activities will have to be evaluated under NEPA..." (Letter from Robert H. Hargrove, Chief, Strategic Planning and Multi-Media Programs Branch, US EPA Region II, to Mr. Robert Callageri, Army Corps of Engineers/Philadelphia District, June 30, 1999)

To the extent the Army Corps did do sampling of sediments in the private channels it did not include sampling at Motiva (a facility that was included in the 2002 economic benefits calculation of the project). And the sampling that was done found that sediments contained a variety of toxins and metals such as PCBs, DDE and pesticides including DDD, DDT and Endrin. In addition, while the Corps provides multiple explanations and dismissals of the findings, their SEIS did find that NJDEP residential soil clean up criteria were exceeded for cadmium, thallium, ideno (123-cd) pyrene, 2,4-dinitro toluene, and N-nitrosodi-n-propylamine. (See Delaware River Main Channel

Deepening Project, Supplemental Environmental Impact Statement, July 1997, pgs 4-52 thru 4-77). The Army Corps dismisses these findings by saying they are at levels comparable to what was found in the main channel and that the sediments would be disposed of on land. In light of the questions and information provided in this Review document, including the questions raised by sister agencies, the Army Corps has clearly not settled the question of whether dredging the private channels, including upland disposal of contaminated sediments, will have an adverse environmental impact.

In 2003 the USF&WS also expressed concerns about other aspects of the deepening project on both Bald Eagle and Peregrine Falcon - essentially revoking its previous findings of no harm. "In a letter to the Philadelphia District dated January 18, 1996, the Service concluded that the Delaware River Main Channel Deepening was not likely to adversely affect the Bald Eagle or Peregrine Falcon (*Falco peregrinus*). ... the Service has acquired new information on the contaminants in the Delaware River, suggesting that the previous not likely to adversely affect determination may no longer be appropriate." (Letter from US Fish and Wildlife Service to the Army Corps of Engineers Philadelphia District, July 31, 2003.) Similarly, New Jersey's Division of Fish & Wildlife has stated: "concern exists that the current levels of toxins in the fisheries resources of the river to both migratory and nonmigratory populations may increase due to the re-suspension of contaminated sediments during dredging operations and surface discharges from the upland CDFs." (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007).

New Jersey has also asserted the need for an evaluation of the "relative risk of contaminants in the dredged material to human health, wildlife, and especially endangered species such as bald eagles and peregrine [sic] falcons." According to New Jersey, such an evaluation should include sediment data collated by NOAA, NJDEP and others after the Athos I Oil Spill of 2004. (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007).

9. Information Regarding Biological Windows

Since the 1997 SEIS, the Army Corps has made clear its plans to ignore some of the biological windows significant to protecting species from the deepening project and associated activities. The ramifications of ignoring the biological windows will be significant. This change in the project - in that there is a stated position to ignore biological windows - is significant and must be subject to EIS review as well as be part of any Essential Fish Habitat and Endangered Species Act consultations and reviews. For those biological windows that are not to be ignored, the Army Corps has failed to include them in their project plans and economic calculations for the project.

Current project plans fail to provide or economically account for biological windows necessary to protect critical species in the Delaware Estuary including, horseshoe crab, winter flounder and blue crab. While a number of environmental windows were identified in the 1997 Final SEIS, several key issues were deferred to subsequent planning, and other significant new issues have arisen since then. The Corps has admitted it must violate biological windows in order to proceed with the Deepening project. The full environmental ramifications of such violations and waivers are yet to be evaluated. (Corps of Engineers Responses to Exhibits/Transcript Submitted in DNREC's Letter Dated December 21, 2001 To Corps of Engineers, at p. 277; additional detail on this issue can be found in Delaware River Deepening Project: Outstanding Environmental And Community Issues, Delaware Riverkeeper Network & National Wildlife Federation, August 9, 2002)

The DNREC Hearing Officer also noted that the "...Corps has not demonstrated the harm resulting to winter flounder from the subject beach nourishment projects is either avoided or minimized by suspending the protective environmental window." (State of Delaware, DNREC, Hearing Officer's Report, Recommendation to the Secretary, US Army Corps of Engineers Application for Permit Delaware River Main Channel Deepening Project, Timothy Bureau Hearing Officer, December 2003, p. 81).

10. Information Regarding Oil Spill Ramifications

Prior to the 1997 SEIS, the ramifications of a deepened channel for oils spills including harm to aquatic, riparian and wetland ecosystems has not been properly assessed by the NEPA EIS process. A significant study addressing this issue was released in 2003 and found that in fact a deepened channel may increase the risk of hazardous spills on the River. This reported findings must be adopted and included in an updated EIS process.

With a deepened channel ships will come up the Delaware River more heavily laden, if there is another catastrophe like the Athos I of November 26, 2004 (a possibility not unchanged by a deepened channel) the volume of oil available to leak and wreak havoc on the environment and our communities will be greater and therefore more dangerous. The EIS needs to adopt and include this real world concern. A catastrophic spill of greater proportions due to a deepened channel increases dramatically the potential harm to the environment, communities, power plants, local and regional businesses and economies. This known effect on the project environment addressed in reports since the 1997 SEIS need to be subjected to NEPA review.

To date, the Army Corps has wrongly claimed that a deepened channel will reduce the risk of hazardous spills on the River. Yet, according to the sole study that has directly considered this issue, "According to the model, a marginally greater number of hazardous-commodity spills are projected for the deepened channel than for the channel at its current depth. These findings are for the years 1990-2010." (Jack Faucett Associates for the Delaware Estuary Program, Projected Vessel Casualties and Hazardous Spills in the Delaware River and Delaware Bay With and Without Channel Deepening, 1990-2010, April 1993)

Another source noted that: "In considering the environmental impact of a deeper main channel, the same number of crude oil tankers would have to be lightered at Big Stone Beach Anchorage, only the amount of crude oil transferred would be reduced. The most environmentally challenging aspect of lightering operations is the activities associated with bringing the barge along side and hooking up and later unhooking the cargo hoses. These activities would not be changed as a result of a deepening main channel." (Report from "Charles Zeien Associates, Naval Architects, Shipping and ShipBuilding consultants, "Impact on the State of Delaware of a deeper Delaware River Main Channel, March 18, 1998. In 2008 an article in the Cape Gazette titled Delriver: on call 24/7 to protect Delaware's environment, confirmed that that oil tankers still come into Delaware Bay with a draft of 50 to 55 feet, thus still requiring lightering. Delriver: on call 24/7 to protect Delaware's environment, by Ron MacArthur, Cape Gazette, 10/10/2008.)

11. Information on Availability of Alternatives

Since 1997, other alternatives have become available for the oil facilities, the primary project beneficiaries, which should be evaluated as part of an EIS process. In addition, there is new information about the safety and continuation of oil lightering that needs to be included in an updated alternatives review. Further, the record becomes increasingly clear that a deepened channel is not the preferred option for the oil facilities and that if it happens many are not likely to take advantage of a deepened channel.

Other alternatives have emerged for the oil facilities with regards to their shipments that should be included in an EIS alternatives analysis. In 2001, Sun Oil put into operation a shallow draft crude carrier. The vessel, a Stena Vision, carries "more crude oil than any other ship in the river's history" - the tanker design allows cargo intake to be increased by 20 to 40% compared to Very Large Crude Carriers and up to 70 to 100% more than Suezmax tankers. "This results in an extremely competitive transport economy to ports with draft restrictions, with potential savings of 15-30 cents per barrel." The vessel, which has a design draft of 16.76 m, floats higher in the water and allows more oil to be carried directly to the refinery thereby reducing or avoiding altogether the need for lightering. These shallow draft vessels have double hulls and therefore are also safer from an oil spill perspective. ("Stena Vision - The Biggest Kid on the Block", The Beacon, September/October 2001, p. 7 ; Stena V-Max, Investment in safety and flexibility" Classification News 2.2001, p. 5) These vessels allow oil refineries to carry more oil up the River at lower cost with lessened and/or no lightering, just as a deepened channel could provide. This alternative, non-structural approach for cost savings to the oil refineries has not been addressed by the Corps in their EIS documentation.

According to the Corps' 1998 Limited Reevaluation Report more than 80% of the projects benefits are attributed to six oil facilities. In its 2002 Economic Reanalysis, 60% percent of the benefit from the proposed deepening project accrues to seven oil facilities. According to the 2004 Economic Reanalysis 50% of the benefit of the deepening project accrues to Delaware River oil facilities. In each case the oil facilities are the largest beneficiaries of this project. Thus, it is of vital import that the record grows increasingly strong that a deepened channel is not the preferred alternative for the oil facilities operating along the Delaware River.

For example, EPA Region II noted that "With regard to the project's B/C ratio, the original project scope included six petroleum facilities as project beneficiaries. However, we have seen no documentation that any of these facilities plan to dredge their private channels. To the contrary the limited documentation we have indicates that one or more of the petroleum companies believe that it is not in their best economic interest to participate. Moreover, if these facilities are not committed to participate, we would argue that the scope of the project would be modified, which would require the Corps' to recalculate the B/C ratio." (Letter from Robert H. Hargrove, Chief, Strategic Planning and Multi-Media Programs Branch, US EPA Region II, to Mr. Robert Callageri, Army Corps of Engineers/Philadelphia District, June 30, 1999.)

Coastal Eagle Point Oil Co. continues to express concerns about the impacts of the deepening project on its operations. According to the 2002 Economic Reanalysis, Coastal is projected to receive 7.25 % of overall project benefits and 12% of the benefits attributable to the oil facilities - their concerns about benefiting from or utilizing the project are significant. In a September 2003 letter to the Army Corps the Coastal Eagle Point Refinery wrote:

- "Coastal is physically limited to process approximately 140,000 bbl/day of crude; while refinery processes and products may change slightly over time this will not increase with a deeper channel."
- "Coastal uses Suezmax ... and Panamax tankers. ... A deeper channel would not benefit the ship by allowing it to load more and claimed savings by the ACOE due to this are not realistic."
- "In summary, the potential for significant savings from crude lighterings exist, however, not to the extent stated by the ACOE and subject to any increase in rates or reduction in equipment which would significantly reduce or eliminate these savings."
- "While Coastal understands that a deeper channel would be beneficial to some users ... Coastal is unable to support the stated savings and considers it possible that their transportation costs could increase under with-project conditions."
- "Coastal other main concern is with the docks and notes that ... costs associated with berth modifications necessary to accommodate deeper vessels are unknown at this time and may be prohibitive."

(Letter from Andrew R. Mortensen, Loss Control Supervisor, Coastal Eagle Point Oil Company to Department of the Army, Philadelphia District, Corps of Engineers, September 3, 2003")

Motiva refinery, a Delaware-based facility, which has been ascribed a benefit in the 2002 economic reanalysis (nearly 3% of overall project benefit and nearly 5% of the oil facilities' benefit) has said that "the dredging project will increase shoaling at the refinery by a factor of 1.5 to 2.0 (Mantzianous, 2001)." As a result, their annual maintenance costs will be increased. (Thomas A. Grigalunas, Ph.D. and James J. Opaluch, Ph.D., Proposed Delaware River Channel Deepening Project: Review and Critique of Economic Analysis, prepared for DNREC, April 2002) As a result, Motiva has indicated they are not supportive of the project.

A local newspaper reported that:

Three oil refineries along the river won't commit to dredging their ships' berths to match the deepening of the channel to 45 feet. The largest refinery is interested but would have to blast through a granite shelf at a cost exceeding its benefits to reach the new channel depth. The Westville-based Coastal refinery has 'no plans to deepen' the spur channel to its dock, said Greg Clock, a company spokesman. Richard H. Chlan, chief of public affairs for the Corps, has said depth at Coastal's docks is already 45 feet, therefore 'Coastal doesn't need to dredge.' Clock says Coastal's dockside depth is 40 feet. ... Patrick Prosser, a spokesman for Tosco refinery in Marcus Hook, PA, said 'At this point in time, (Tosco) is not committing any resources to improve the dock in order to support ships of greater tonnage.' He added that Tosco hasn't made a decision whether to dredge its berth. Claire Riggs, a spokesperson for Valero's Paulsboro refinery, said, 'Our position is if this project goes

through, we'll definitely consider dredging our docks. We don't have any capital funding allocated to it, because it's not something out there for us to consider (now).

("Critics Claim no benefit to dredging", Gloucester County Times, September 17, 2000.)

Another source summarized:

[T]he Courier surveyed the four companies that operate five Philadelphia area refineries to gauge their interest in the project. Only Valero Refining Co. in Greenwich - the region's smallest refinery - says it is considering deepening its own berths to take advantage of a deeper channel. The others - Sun, the largest refiner on the river with plants in Marcus Hook, PA and Philadelphia; Coastal in West Deptford; and TOSCO in Trainer, PA - all say they have no plans to deepen berths in the vicinity of their docks. Coastal is worried deepening its berths could undermine the integrity of its docks. 'We have no plans to deepen,' said Coastal Spokesman Greg Clock ... Sun, which refines more than 40% of the crude shipped up the river, said it would have to do a detailed economic analysis to determine if the project would benefit the company, spokesman Gerald Davis said ... TOSCO said the deepening should benefit the port in general, but the company has concerns about undermining its docks. 'We would need to do studies' ... spokesman Pat Prosser said."

("Questions haunt economics of \$311 million river project." Courier Post, April 16, 2000.)

Considering the high level of benefit ascribed to these companies and their public statements that they do not support the project and/or will not benefit from the project and/or that they have concerns about how the project may negatively affect their operations are significant. According to the 2002 economic reanalysis Coastal is projected to receive 7.25% of overall project benefits and 12% of the benefits attributable to the oil facilities and Tosco is projected to receive just over 5% of overall project benefits and nearly 9% (8.81%) of benefits attributable to oil facilities, Sun is projected to receive over 25% (25.24) of overall project benefits and 42% of the benefits attributable to the oil facilities.

These documents are in addition to the pre-1997 documentation that had already demonstrated that a deepened channel was not the preferred option forward for the oil companies. For example:

- "The position of Sun is that due to overall concern for the economics of deepening the Delaware River to 45', the company won't support the project.... An internal Sun report estimates that Marcus Hook and Ft. Mifflin facilities would save only \$2-\$2.5M per year in crude oil lightering costs. This figure does not reflect the impact of additional berth area costs. This low figure presents no economic advantage to Sun. ... Based on actual experience when the Delaware River was dredged to 40', Sun has a significant concern over the costs to deepen their berthing/access area to 45'. A ledge of intrusive rock (granite) outcrops over one half of their berthing area. In addition they have breasting cells that sit as a gravity structure on rock at 40'. Deepening would cause these structures to become unstable and necessitate replacement. This impact would raise berthing area costs...." (Memorandum for the Files. By John E. Tunnell, P.E., CENAP-PL-P (1105-2-10a), April 16, 1991.)
- "Sun Pipe Line Company has indicated that they see no advantage to a 45 foot deepening at their facility at this time and the tanker berths will remain "as is"" (ST Hudson Engineers, Correspondence to Army Corps of Engineers, August 3, 1994.)
- "Sun Pipe Line Company sees to advantage to a 45 foot berth at their Fort Mifflin Terminal at this time." (ST Hudson Engineering, Meeting Minutes dated July 1, 1994)
- Regarding Mobil Oil Corporation, Paulsboro Refinery, Paulsboro, NJ - "Mobil Oil Corporation has indicated that they see no advantage to a 45 foot deepening at their facility at this time and the tanker berth will remain "as is." (ST Hudson Engineers, Correspondence to Army Corps of Engineers, August 17, 1994.)
- Regarding Mobil Oil Corporation - "At this time, the tanker berth will remain "as is". ... Mobil sees no advantage to a 45 foot berth at their facility at this time." (ST Hudson Engineers, Minutes of Meeting, May 23, 1994)

The reality that a deepened channel is not a preferred option for Delaware River operators is supported by recent investments from the Delaware River lightering company. On September 6, 2005 Maritrans, now OSG, announced that it had signed a contract "to build three new articulated tug-barge units, each having a carrying capacity of 335,000 barrels" in order to replace the existing 3 vessel fleet the company current uses for Delaware Bay/River lightering operations. OSG's/Maritrans' current, without project (as the Corps calls it), fleet

has a capacity of 910,000 barrels. Its new fleet will have a capacity of 1,005,000 barrels. OSG/Maritrans is clearly expanding its fleet carrying capacity in order to accommodate a future without project scenario and sees this as the best investment for their company.

V. Comments Regarding Required Permitting and Approvals for Project

The record should reflect that the Army Corps does not have all of the state approvals necessary for the project to move forward. The Delaware Coastal Zone Consistency Determination was conditional on the Army Corp addressing a large variety of issues. Not all conditions have been met.

The project is in need of a valid New Jersey Federal Coastal Zone Consistency Determination. The New Jersey Consistency determination issued in 1997 for the Project was revoked by letter dated September 30, 2002, from former NJDEP Commissioner Bradley Campbell. This determination of revocation was based upon a 5-year lapse of time since issuance of the Determination (now more than a decade), the significant amount of new economic and environmental information that had been received on the project, and changes to the Project. Since revocation, the project has continued to evolve and new information continues to emerge. Governor Jon Corzine of New Jersey reiterated his position in 2008 that the Army Corps must comply with all applicable state regulations. (Correspondence from Governor Jon Corzine to John Paul Woodley, Jr., Assistant Secretary for Civil Works, Army Corps of Engineers, dated June 27, 2008)

Pursuant to Clean Water Act Section 401, New Jersey issued a Certification for the Delaware River Main Channel Deepening Project to the Army Corps of Engineers. According to the State, the Certification expired on its own terms in 2002. While the Army Corps has taken a position that the Delaware River Main Channel Deepening Project does not require a Section 401 water quality certification from New Jersey, there appears to be ample precedent to support the need for a renewed certification, including the Corps having previously subjected itself to this process.

VI. Comments Regarding the Materials/Studies Referenced in the Corps' December 17, 2008 Notice

The document titled Delaware River Main Channel Deepening Project Summary of Supplemental Information Compiled by the Corps of Engineers (1998-2007) (Summary Document) that accompanied the public notice the Army Corps explicitly states that the intent of its new research and data gathering efforts was not to assess and evaluate potential harms for the purposes of making an informed decision regarding the potential impacts and values of a deepened channel, but rather that "the information will be used as the project moves forward to insure that all practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan and to identify any unanticipated impacts during the construction process." The goal statement of a research, scoping or information-gathering project is critical and guides how and what information is collected. Information-gathering for purposes of objective assessment is very different than information-gathering for purposes of moving a project forward. Clearly, the studies undertaken by the Army Corps are unlikely to yield the type, breadth and quality of objective information necessary to inform an EIS process or objective decision-making required by NEPA.

A summary of the data collection and/or studies conducted by the Army Corps since the 1997 SEIS is provided in the Summary Document. The list includes:

1. Studies of the Delaware Bay Oyster beds in the vicinity of the proposed restoration projects
2. Collection of sufficient pre-construction monitoring data in the vicinity of the Kelly Island restoration project to verify and evaluate ecological effects and benefits
3. Species specific studies for blue crab, horseshoe crab, Sabellaria vulgaris, shorebirds and sturgeon to address habitat utilization and verify previous findings
4. Water quality modeling efforts to obtain additional information "to confirm that the project would not adversely impact water quality with regard to dredging and placement"

5. Collection of sediment data and water quality monitoring of maintenance dredging "to provide further validation of previous findings."

Even the most cursory review of these studies demonstrates that the Army Corps has failed to fully address the wealth of changed conditions, questions and concerns that have been raised by experts and agencies from throughout the region with regards to the deepening proposal.

1. General Criticisms

Oyster studies were undertaken not to identify potential threats to oysters for purposes of determining whether undertaking the deepening proposal was a wise decision, but were undertaken to collect data to merely assess what was happening to the oysters as the deepening progressed. The goal was not informed decision-making, but rather after-the-fact mitigation. The same can be said for the Kelly Island studies.

Concerns/deficiencies regarding the species specific studies and water quality studies have been articulated throughout this comment document.

The language used to describe items 4 ("Water quality modeling efforts to obtain additional information "to confirm that the project would not adversely impact water quality with regard to dredging and placement") and 5 ("Collection of sediment data and water quality monitoring of maintenance dredging "to provide further validation of previous findings.") supports the notion that much of the work conducted by the Army Corps with regard to the Project has been carefully designed to achieve a pre-determined outcome, rather than obtaining objective information for an objective decision-making process. (See USF&WS letter, *supra*, recommending modification of certain Corps language because, "As written, the statement appears pre-determining.")

The myriad deficiencies in the Corps' listed studies include, but are not limited to the following: Most of the studies are already dated; they have not been subject to public, agency or expert review and input; they fail to address directly the questions and concerns raised by the variety of agencies and experts cited previously in this comment; and they fail to answer the critical questions that need to be answered for informed decision-making under NEPA and other applicable legislative and regulatory programs. Additional deficiencies in each of the studies are exemplified below - this is not a complete identification of questions, problems and concerns, but merely a demonstration of the wealth and variety of deficiencies yielded by the shortened review necessitated by the improperly shortened comment period.

2. Preconstruction Oyster Studies to assess condition of oyster populations prior to Project construction.

The Pre-Construction Oyster Study, according to the Summary Document, was not to identify potential harms to oysters from the deepening, but merely to assess the condition of the oyster populations prior to construction of the deepening. Thus, this study is unlikely to provide the kind of information needed for EIS review or decisionmaking.

The Pre-construction Oyster Study is dated. The Pre-Construction Oyster Study needs peer review. For examples, the assumptions used for sea level rise are significant. As this study was undertaken in 2000-2001 it is unlikely that it included the 2005 and 2008 sea level rise studies and reviews that have been released. And yet, these more recent figures are based on a new and more substantive body of science with regards to potential sea level rise and therefore are likely to be more informed and accurate figures for such a review. In addition, the study could not possibly have included or anticipated the new Flexible Flow Management Plan in place for the New York City reservoirs as that effort was initiated only in recent years. And yet, the freshwater flows from the NYC reservoirs are important in the location and assessment of the Estuary salt line, including its proximity to, and affect upon, the oyster populations of the Bay.

3. Species-specific studies for blue crab, horseshoe crab, *Sabellaria vulgaris*, shorebirds and sturgeon to address habitat utilization and verify previous findings

The Delaware Bay Winter Crab Surveys were conducted with data collected in the winter months of 2001 and 2002. Like so much of the information the Army Corps is referencing in this most recent public notice, the data is relatively dated. In addition it is study and analysis that has not been subject to full agency, expert and/or public review and comment. While there was some review and discussion, we understand, with DNREC, there was not a release to the full array of regulatory agencies and experts in the region, and to the public, for their review and input as part of a comprehensive NEPA process. This information needs to be subjected to the NEPA process. Simply providing the Army Corps' summary of this and the other studies referenced in the notice is not defensible nor does it lend itself to full and informed agency, expert and/or public review and comment.

The findings of the Winter Crab surveys did demonstrate the presence of crabs in the main navigation channel. It talked about abundance of crabs being higher in areas that had not been the subject of maintenance dredging. There are areas of the channel that are naturally deeper and so do not undergo dredging or as frequent dredging. Going from 40 to 45 feet will increase the surface area of navigation channel that will need to be dredged repeatedly and therefore will increase the number of crabs impacted; while the 2002 study focused more on these spatial differences the data in fact seemed to suggest that there would be a greater take as a result. And there does not appear to be a focus on the impacts of the loss of crabs to population, reproduction, species diversity and survivability - the greatest focus is on the distribution of the crabs, where they are located on the bay bottom as opposed to what would the ramifications be to the population by the increased volume of crabs the deepening is likely to take on a repeat and regular basis. While to the Army Corps a take of 22% of the crabs may not sound high; to the crab population this volume of take could have significant ramifications. Study needs to consider the population impacts in order to be truly helpful in understanding impacts and to support informed decision-making. In addition, the study was based on a limited data set, two years of data, with no discussion as to annual conditions which may have affected the location of the crabs during the limited period of the study - more frequent sampling and annual studies would be required to determine if the data obtained is representational of normal conditions.

The goal of the Kelly Island study in 2001 was not to further assess environmental ramifications of the proposed deepening, but was merely to "provide a baseline ecological characterization of Kelly Island habitats prior to construction activities...." Again, this was not a study released and subjected to a full and informed review process, but was simply an Army Corps effort to collect data for assessing its deepening project after the fact.

Concerns articulated by DNREC's Hearing Officer in 2003 that the Kelly Island project "as proposed will result in unavoidable direct adverse impact to site horseshoe crab populations during construction and unavoidable potential secondary impacts to nearby oyster beds" is not addressed by the Kelly Island study of 2001 or by subsequent study. In fact, a 2005 Army Corps commissioned study (as discussed above) provides further support for the threats posed by the Kelly Island project.

The 2001 Preconstruction Shorebird Monitoring Study is, at this point, quite dated. There has been a tremendous volume of research that has been done on the horseshoe crabs and migrating shorebirds in the Delaware Estuary and Bay, this study reflects none of that research. Since 2001, as noted previously in this comment, there continues to be tremendous changes in the horseshoe crab and shorebird populations of the Delaware Bayshore - in both number and location. Those changes have been recorded and studied by numerous experts. None of that study is reflected in the Shorebird Monitoring Study or the other Army Corps materials that are part of the December 17, 2008 public notice. Nor does the Shorebird Monitoring Study address the full array of concerns articulated by the DNREC hearing officer or the US Fish & Wildlife Service on these matters.

The 2001 Pre-Construction Horseshoe Crab Egg Density Monitoring Study is also, at this point, dated. Since 2001, as noted previously in this comment, there has continued to be tremendous changes in the horseshoe crab and shorebird populations of the Delaware Bayshore. Those changes have been recorded and studied by numerous experts. None of that study is reflected in the Horseshoe Crab Egg Density Study or the other Army Corps materials that are part of the December 17, 2008 public notice. Nor does the Horseshoe Crab Egg Density Study address the full array of concerns articulated by the DNREC hearing officer or the US Fish & Wildlife Service on these matters.

The 2004 Horseshoe Crab Monitoring Study is dated. Events on the ground with regards to horseshoe crabs and dependent shorebirds are changing swiftly. Experts are monitoring and counting both the crabs and the birds annually, carefully tracking their behaviors and numbers. A 2004 study is not up to date and does not present the most current information and analysis available and necessary for making informed decisions on species that are already highly impacted and at high risk from additional harms.

The goal of the 2004 Horseshoe Crab Monitoring study, as with previous studies, was to gather "baseline information of horseshoe crab use of the islands prior to reconstruction and to provide a means to compare post-construction conditions to gauge the effectiveness of the beneficial use of sediments." The Study was not an analysis of the population harms (to horseshoe crabs and/or dependent migrating shorebirds) of the proposed spoil disposal activities proposed. As such the Study does not address the array of concerns presented by other agencies and experts. Very obviously, the study fails to include the ramifications of proposed efforts on Broadkill Beach, part of the Army Corps' new project dredge spoil disposal plan. (As stated in the Army Corps Summary document "The principal objective of this study was to evaluate horseshoe crab spawning on Egg Island, New Jersey and Kelly island Delaware.) While this unreviewed project suggests that "impacts to horseshoe crabs will be unavoidable for at least one spawning season" it fails to analyze the ramifications of such a loss of eggs to shorebirds which are already on the brink of extinction as the result of their inability to find enough eggs to fuel their annual migration. It also fails to directly state that to undertake this effort as proposed requires violating biological windows that would be put in place for the deepening.

The 2001 and 2004 Sabellaria vulgaris monitoring studies confirmed the presence of Saballaria vulgaris at proposed spoil disposal locations and confirmed that the Sabellaria populations would be buried and thereby killed as a result of the project as proposed. These studies confirmed that as a result there would be a "substantial loss of this habitat." The 2004 study then proposes 3 mitigation options, but no supporting data or research are cited in support of the untested mitigation actions. In addition, the cost of these plans has not been included in the cost of the deepening project. And it does not appear that those agencies who should be involved in reviewing this project ever were - for example the National Marine Fisheries Service that is responsible for consultation regarding Essential Fish Habitats.

The Winter 2005 Adult and Juvenile Sturgeon Survey did confirm the presence of sturgeon in the region of the River where blasting is to occur, during the time of year when the blasting would happen. The Army Corps Summary takes great pains to minimize these findings by asserting that "large aggregations of sturgeon do not exist in the blasting area" although it does acknowledge that "impacts to even a small number of Shortnose or Atlantic sturgeon may not be acceptable to fisheries agencies." The summary of the study in the Summary Document concludes that measures would be required to move fish away from the blast zone. What this summary fails to tell you is that the report also stated "At present, there is no 'out-of-the box' behavioral deterrent system for excluding sturgeon from an underwater blasting area." The Sturgeon study fails to discuss the very low numbers of Atlantic Sturgeon surviving in the River - as few as 100 across the Estuary according to the 2008 Basin Report - and the potentially devastating ramifications of killing even a small number of sturgeon. Further, this study was based on one winter's data - this is not a large data set upon which to be making decisions regarding activities that could have such large and irreparable impacts to both the Shortnose and Atlantic Sturgeon species in the Delaware River. And the Delaware, New Jersey and federal resource agencies that have questioned the level of threat and harm the deepening could pose for sturgeon in the Delaware River were not a part of this commissioned study.

4. Water quality modeling and sediment data collection to obtain additional information "to confirm that the project would not adversely impact water quality with regard to dredging and placement" and "to provide further validation of previous findings."

The Near-Field Water Quality Modeling of Dredging Operations study does not lay to rest the concerns about reintroduction of PCBs and metals during dredging operations. Clearly the study has not addressed the outstanding concerns raised by the resource agencies regarding the reintroduction of metals and PCBs during dredging. In 2003 the DNREC Hearing Officer stated "A valid concern remains based on the fact expert judgment

and not empirical data was used to create the standard of 250 mg/l of Total Suspended Solids (TSS) a distance of 200 feet from the point of excavation.... A valid concern remains because it is unknown whether the proposed TSS standard can actually be met..." In 2007 the NJDEP in a memorandum (as noted previously) also continued to question this potential pollution input.

The PCB Mobilization During Dredging Operations and Sequestration by Upland Confined Disposal Facilities study is another effort that has not been subject to the review and vetting of other resource and regulatory agencies and their experts. The study assumes a 99.9% efficiency rate in terms of keeping PCBs on site at CDFs based on Army Corps review of three operating CDFs, but it fails to discuss or consider operating CDFs such as Fort Mifflin and Money Island that have been found to be a significant source of metals and toxins. The rate of sequestration is based on site specific conditions of a CDF and therefore it is inappropriate to apply a uniform figure to all CDF locations. Separate sampling should have been conducted for each CDF that is proposed for use and then these site specific figures applied. In light of the questions and concerns raised by the resource agencies (as discussed above) this site specific and therefore accurate data is necessary for informed review. In addition, this study does not address the questions and concerns that have been raised by other experts who have conducted similar sampling (as discussed previously in this comment) - the Corps merely dismisses those other studies and findings. In addition, the study fails to consider the existing PCB total maximum daily load requirement in place for the Delaware River, as well as the phase II total maximum daily load requirement that is under construction. The Delaware River is already impaired as the result of PCBs and has many species of fish which are the subject of fish advisories as the result of PCB contamination - the Army Corps needs to consider, and the resource agencies need to review, the potential contribution of PCBs from the deepening and confined disposal facilities on this existing condition.

The Reedy Point South Water Quality Modeling has also not been subject to the public review process, including review by the numerous state and federal resource agencies which should be involved. As in so many other instances, this study which did find that at least "four contaminants, copper, lead, mercury, and nickel, may exceed water quality criteria near the point of dredging and at the weir discharge", was largely dismissed by the Army Corps with assertions that the model over-predicted the level of contaminants that will enter the water column and that TSS concentrations will be lower than the 250 mg/l assumed. But the asserted conservativeness (over-estimation) of using a TSS concentration of 250 mg/l was already challenged by the DNREC hearing officer in the context of other Army Corps studies when it said: "A valid concern remains based on the fact expert judgment and not empirical data was used to create the standard of 250 mg/l of Total Suspended Solids (TSS) a distance of 200 feet from the point of excavation.... A valid concern remains because it is unknown whether the proposed TSS standard can actually be met..." In other words, the Army Corps stated in its study findings that 250 mg/l TSS was too high a figure and that in their assessment TSS concentration should be even lower; and yet the hearing officer is on record question whether in fact 250 mg/l is already too low a figure. The kind of routine dismissal of detrimental findings is all too common when it comes to the Army Corps and the deepening project. Clearly independent review and comment of this and other Army Corps studies and conclusions are required by other experts and agencies.

VII. Conclusion

The public notice that has been put forth by the Army Corps fails, on its face, to fulfill any legislative or regulatory requirement. Moreover, it improperly attempts to place the burden of identifying relevant significant changes on the public. The Army Corps has also failed to provide for a comment period that will result in informed and meaningful review and comment by agencies, experts and members of the public.

The public record clearly demonstrates that the Army Corps is in need of an updated EIS for the deepening project before it can move forward. In addition, the Army Corps needs to engage in and complete Endangered Species Act consultation for the project, needs to engage in and complete Essential Fish Habitat consultation for the project, and needs to engage in and complete a number of permitting and approval processes at the state level. And the Army Corps should wait until completion of the Government Accountability Office review of the project that has been granted and is soon to begin.

What seems most clear is that the Army Corps, along with the Philadelphia Regional Port Authority, the project sponsor, and Governor Ed Rendell and Senator Arlen Specter, the Project's primary supporters, seek to press this project forward in an attempt to "groom" it for federal funding under anticipated initiatives focusing on funding infrastructure projects. But this project has not fulfilled the legal requirements at the State or Federal level necessary to even consider movement towards construction. And neither the decisionmakers nor the public have full information on the project that is to be implemented, and/or the its environmental, engineering, economic and community ramifications and/or more recently available and less invasive alternatives that is needed for informed decisionmaking.

Before this project can be considered for further federal and local funding, significant work must be done to fulfill the Project's legal and regulatory obligations.

For your further consideration, I enclose and incorporate by reference two reports on the Project. Each was submitted to the Army Corps of Engineers when released:

- Strike Three: The Corps Fails Again to Justify the Delaware River Deepening", A report done by Dr. Robert Stearns for the Delaware Riverkeeper Network and National Wildlife Federation, July 14, 2003
- Delaware River Deepening, Dumped Again, Delaware Riverkeeper Network & National Wildlife Federation, March 2007

Respectfully submitted,

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