The Delaware River Deepening Defies Sound Economic Principles and Current American Investment Values

Army Corps Cooks the Books Again

In his most recent review of the Army Corps' updated economic assessment for the proposed Delaware River Deepening project, Dr. Robert Stearns demonstrates that at best the Army Corps can claim 10 cents of net taxpayer benefit for every dollar invested in the project (i.e. a benefit-cost ratio of 1.1 to 1) based upon their own limited assumptions, and that "(i)f the appropriate adjustments were made to the Corps' analysis, it is a virtual certainty that project costs would exceed project benefits." **In this supplemental analysis we discuss and document additional shortcomings of the Army Corps' May 2011 analysis that if taken into consideration support the conclusion that when accurately assessed, the Delaware Deepening project yields less than $1 of benefit for taxpayers for every $1 they invest – i.e. it is a net loss for the taxpayers and therefore cannot warrant the nearly $300 million the project requires for construction.** This is without even considering a large range of environmental harm and damage to river-dependent jobs that will result if this project is allowed to move forward.

The Delaware Deepening's claimed benefits are far too low to justify the significant taxpayer investment.

The Army Corps' May 2011 analysis asserts a 1.64 benefit-cost ratio for the Delaware Deepening. As shown by independent analysis, this figure is highly overstated. But even if one accepts the Army Corps' figure, a benefits ratio of 1.64 is still too low a level of economic benefit to support such a significant taxpayer investment. The project requires $277 million, $185 million in federal tax dollars. None of the cost is to be borne by the claimed recipients of the project's benefits. Even at a 1.64 ratio the project would only provide, according to the Army Corps, an annual benefit of $13,655,000. Further, in the past, the Office of Management and Budget, at the President's behest, has required at least a 2.5 to 1 ratio for a project to be even considered for such large sums of funding; 1.64 is less than 66% of the targeted 2.5 ratio.

The Army Corps reassesses claimed benefits for the project but not claimed costs.

The Army Corps' 2011 assessment considers changes on the benefits side of the equation for the project, but fails to consider changes on the cost side – this is a gross oversight that skews the analysis. The 2011 reanalysis document does not address the project cost assumptions or calculations to any degree. It is contrary to sound economic comparison and analysis to adjust for changed benefit figures over a 7 to 9 year period, but to assume that costs over that time remain constant.

Delaware Riverkeeper Network
925 Canal Street, Suite 3701
Bristol, PA 19007
Office: (215) 369-1188
fax: (215)369-1181
drn@delawareriverkeeper.org
www.delawareriverkeeper.org

In addition to the very questionable practice of asserting a new benefit-cost ratio that is based upon updating "benefits" without concurrently updating the projects "costs", the Corps has failed to display the BCR with the 7 percent discount rate, as is normally requested by OMB Circular A-94 for budget considerations, and which provides a standardized picture of what can be expected with regards to project returns. By using an ever changing discount rate, with 4.125% being that used in the May 2011 Assessment as compared with the 5.625% used in the 2004 economic reanalysis, the Army Corps is comparing apples to oranges rather than allowing for consistent comparison amongst assessments.

The Army Corps Analysis fails to include the known increase – by perhaps has much as 38% – of spoils that will have to be disposed of from deepening, thereby skewing the costs side of the equation and environmental impacts.

The Army Corps' consideration, discussion, and analysis of the spoil disposal plans for the Deepening Project are not based upon the most recent facts, analysis, data, science, information, or reports. The deepening dredging that has taken place in the small section of the project called Reach C has documented that the Army Corps has, at least for one section of the project and by extension maybe for the whole project, underestimated the quantity of spoils that will need to be disposed of by as much as 38%. It is the Army Corps' reduction in their spoils calculation that has allowed them to claim significantly lower spoil disposal costs than they had in economic calculations of the past. Their apparent failure to accurately assess the quantity of spoils that will need to be handled severely undermines their cost benefit calculation even further.

The Army Corps' had asserted, prior to dredging Reach C of the project, the only section allowed to proceed to date, that approximately 2.6 million cubic yards of materials would be dredged from Reach C. After completion of that portion of the project, what they found was "the need to dredge and dispose of approximately 1 million cubic yards of *additional* material not anticipated in the Reach C contract." (emphasis added; See Declaration of Anthony DePasquale filed with US District Court District of Delaware and attached to this report.) This means that the Army Corps' estimates of the volume of spoils that would need to be dredged for Reach C were wrong by a stunning 38%. This significant increase in volume means greater disposal needs, greater costs, greater level of contaminants by virtue of the greater volume of contaminated materials dredged up and disposed of, potentially the need for additional spoil disposal locations in new communities (as had been previously proposed), and the list goes on. This increase also means that all of the Army Corps' costs, calculations, assumptions, data, information, and claims put forth for this project, Reach C and beyond, are demonstrably off.

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 14 years. The new calculations, including the assumptions and methods used to achieve them, are fundamental to the economic and environmental ramifications of this project. All of the costs, disposal needs, and impacts of this project need to be recalculated assuming 38% greater volume of dredge spoils from all reaches of the Deepening Project.

Army Corps assumptions regarding the oil industry continue to be out of date and inaccurate.

While the Army Corps finally acknowledges in its May 2011 analysis the closing of the Eagle Point Refinery, it fails to consider the closing of other refineries, including Sunoco Marcus Hook which has been announced for immediate shut down (12/1/2011) and which claims 19% of the tanker

transportation savings benefits calculated by the Corps, and it should be noted that we are unable to assess the lightering benefit claims for this facility as the Army Corps carefully did not provide the needed level of detail on this significantly higher figure. Removing 19% of the oil industry benefits from the project are significant when one considers that even with the Corps "assessment" assumptions the BCR is extremely marginal.

The Army Corps asserts that in the future the PBF Delaware Facility is going to take advantage of the deepening like other refineries up the River because they deepened their access channel to 40 feet, the current depth of the main channel.[1] The idea is that because they are taking full advantage of a 40-foot channel they will also do so for a 45-foot channel. But this assumption denies the information provided by Motiva (who previously owned this facility) in public testimony regarding the deepening. At a public hearing in 2001 Motiva representatives testified "the dredging project will increase shoaling at the refinery by a factor of 1.5 to 2.0 (Mantzanious, 2001)." As a result their annual maintenance costs would be increased[2] and so they announced that they were not supportive of the Deepening Project. While the Corps did not formally include benefits for this facility in their 2011 calculation, they are asserting that there are benefits that will accrue in the future – this is a contrary claim to the facts of the past.

The Corps continues to claim benefits from Broadkill Beach that are challenged by the State.

The Corps claims $591,000 of benefit for the use of spoils at Broadkill Beach, despite a very detailed and lengthy analysis by the State of Delaware that identifies the Broadkill Beach project as a harm to the economically and ecologically important horseshoe crabs of the Delaware Bay. The benefits the Army Corps claims in its May 2011 analysis cannot be supported in light of Delaware demonstrations that the Deepening Project is not an economic or environmental benefit to the region, but in fact would be a harm.

The spoil disposal plan for the Deepening Project depends upon 2.5 million cubic yards of dredge spoils being dumped at Kelly Island and 1.6 million cubic yards being dumped on Broadkill Beach. A recent State of Delaware report, titled "Investigation and Review of the Surface and Sub-Surface Sediment Distribution of Reach E for the Delaware River and Bay Main Channel Deepening Project," documents that the Broadkill Beach and Kelly Island spoil disposal projects will significantly harm horseshoe crabs, their spawning success, and the viability and development of eggs laid on those spoil disposal areas. Findings of the report include (emphasis added):

- ✓ "The potential Broadkill Beach nourishment by the PD-ACOE does not meet the beneficial use requirements for this project, if anything it would negatively impact the prevalence of horseshoe crab spawning habitat and **impede horseshoe crab egg development**."
- ✓ "…numerous discrepancies and sampling errors were found. The existing data collected by the PD-ACOE is therefore considered inadequate …"
- ✓ "The sediment sampling errors, discrepancies in grain size descriptions, and gaps in core locations reduce the validity of the PD-ACOE's efforts to accurately characterize the sub-surface sediments for Reach E."
- ✓ "The discrepancy between grain sizes means that **the requirements set by the ASMFC Fishery Management Plan for Horseshoe Crab** that placed sediment matches existing conditions **would not be met**."

[1] See Corps of Engineers 2011 Updated Economic Assessment, p 14.

[2] *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.*

- ✓ **"…these beneficial use sediments would be inadequate for horseshoe crab habitat."**
- ✓ **"… the proposed beach to be constructed would likely have a detrimental effect on horseshoe crab spawning habitat**."

The United States Fish and Wildlife Service (USFWS) has also expressed concerns about the impacts of dredge spoil disposal plans on horseshoe crabs. The USFWS has expressed concern about the potential of the Army 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 state that smothering even one generation of juvenile horseshoe crabs could further threaten the sustainable population.

The Delaware Bay "is one of the most important stopover sites in North America for long distance migratory shorebirds." Each spring, at least 11 species of birds, including the red knot *rufa*, stop over on the Delaware Bayshore to feed on the eggs of the horseshoe crab and fuel their annual spring migration.

Much of the recreation and culture of the Bayshore is linked to the spawning of the horseshoe crabs and the annual arrival of the migratory shorebirds, including the red knot. The arrival, feasting and migration of the shorebirds supports a multi-million dollar ecotourism industry. Birding and outdoor enthusiasts from all over the world flock to the Delaware Bay shore to watch the spectacular feeding frenzy. During their visits, they buy recreation-related goods and services, stay in the region's hotels, visit parks and patronize restaurants and local shops. According to one report, horseshoe crab-dependent ecotourism generates between approximately $7 million and $10 million of annual spending in Cape May, New Jersey alone, and creates 120 to 180 related jobs, providing an additional $3 million to $4 million in social welfare value. According to a New Jersey Department of Fish and Wildlife report, the economic value of the horseshoe crab and migratory bird phenomenon seasonally for the Delaware Bay shore area is over $11.8 million with over $15 million of economic value generated if other beneficiaries beyond New Jersey are included. Annually, it provides $25 million in benefits to the Delaware Bay shore region and $34 million regionally. Because most of these expenditures occur in the "off-season," they are particularly valuable to local economies.

The continuing existence of the horseshoe crab and migrating shorebird phenomenon is vital for the related ecotourism industry. Of those surveyed, only 6.6% said that the horseshoe crab and shorebird phenomenon was unimportant to their visitor satisfaction. On average those surveyed said they would be willing to pay as much as $212.45 (in decreased annual household income) annually for a program to protect these resources; and that they would "be willing to tolerate no more than 50.7% decline in Horseshoe Crabs and migratory shorebirds before they would cease visiting the Delaware Bay shore area."

The harm caused by the Kelly Island and Broadkill Beach dredged spoil disposal projects to horseshoe crabs and their spawning success is also a threat to the biomedical industry that gets a large proportion of their crabs for bleeding from the Delaware Bay horseshoe crab community. Any project that will further diminish the horseshoe crab populations of the Delaware Bay affects the biomedical industry, the economic contributions it provides to the nation, and the health and safety benefits it provides to the nation and world.

A decision not to deepen will not diminish Delaware River port jobs – But perhaps deepening will.

Throughout the life cycle of the deepening Project the Army Corps has made clear that the economic benefits of the project come in the form of increased efficiencies, reduced lightering, and transportation cost savings. It is hard to see how reducing the number of ships traversing the River or transporting goods to the region, whether by boat or truck, will increase port jobs.

That being said, not deepening, as demonstrated by the Army Corps and highlighted by Dr. Stearns, will not halt or diminish deliveries to the Delaware River ports, it will simply require them to occur on vessels that can traverse the 40 foot depth. And while the Army Corps goes to great pains to point out that at 40 feet the Delaware is more shallow than the Port of NY/NJ which will be at 50 feet by 2014 and Norfolk which is already at 50 feet, it overlooks that the Delaware is not projected to reach the 50 foot depth at any point in the future. The Army Corps makes the case that because at 40 feet the Delaware is more shallow than these other two east coast ports that it will be by-passed by larger vessels visiting the Port of NY/NJ and Norfolk. But considering that the Delaware sits along the cost between the Port of NY/NJ and Norfolk, it is difficult to see how an additional 5 feet, which is still 5 feet less than the other two ports changes this dynamic. According to the Corps, "…vessels will go directly to the PONYNJ from the east coast of South America and then continue down the east coast to Norfolk without going to Philadelphia." But if the ports of Philadelphia are still shallower than the two ports on either end, it is unclear that this dynamic changes.

But again, the Army Corps' analysis makes clear that the most cost efficient strategy for transporting goods to the Delaware River region and hinterlands is via vessel, not truck, and so even without a deepened channel goods will continue to ship up the River and to Delaware River ports, supporting our region's ports and their jobs.