

**STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL**

**HEARING OFFICER'S REPORT
RECOMMENDATION TO THE SECRETARY**

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR PERMIT

DELAWARE MAIN CHANNEL DEEPENING PROJECT

**UNDER THE REGULATORY AUTHORITY OF
TITLE 7 OF DELAWARE CODES:**

CHAPTER 60 - ENVIRONMENTAL CONTROL

CHAPTER 66 - WETLANDS

CHAPTER 72 - SUBAQUEOUS LANDS

**Timothy Bureau
Hearing Officer**

December, 2003

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I. STATUTORY AUTHORITIES

The subject permit application to deepen the main shipping navigation channel of the Delaware River and Bay was submitted to the Delaware Department of Natural Resources & Environmental Control (hereinafter DNREC) under the regulatory authority of Title 7 of the Delaware Code. Three Chapters of Title 7 contain jurisdictional permit requirements or standards for the project.

Chapter 60, Environmental Control, Section 6003, requires a permit be obtained for any activity "...which may cause or contribute to discharge of a pollutant into any surface or ground water (dredging and disposal process); or ...which may cause ... the collection, transportation, ... or disposal of solid wastes (dredge material), regardless of ... source..." Chapter 60, Section 6004, contains the provisions for Public Noticing a permit application and holding a Public Hearing, should one be requested or deemed in the best interest of the State. Pertinent promulgated regulations include Delaware's Surface Water Quality Standards, as amended February 26, 1993.

Chapter 66, Wetlands, Section 6604, provides permitting authority over any activity in a wetland (dredge disposal, beach nourishment, marsh creation). Section 6609 provides for a Public Notice and provisions for Public Hearing, as well as requiring in subsection (3) "A verbatim transcript of testimony at the hearing shall be prepared and shall, along with the exhibits and other documents introduced by the Secretary or other party, constitute the record." Regulatory authority includes DNREC's promulgated Wetland Regulations, per Section 6607.

Chapter 72, Subaqueous Lands, Section 7205, states "No person shall ... remove or extract materials (dredging, blasting) from ... submerged lands ... without having first obtained a permit ..." Sections 7208 and 7209 contain provisions for hearings and notices, respectively, and are similar to those cited above. Regulatory authority includes DNREC's promulgated Subaqueous Lands Regulations, per Section 7212.

This project also requires a State-Issued Section 401 Water Quality Certification (Clean Water Act) and Delaware Coastal Zone Management (CZM) approval.

II. DESCRIPTION OF PROCEEDINGS TO DATE

The U.S. Army Corps of Engineers, hereinafter "Corps", submitted a permit application to the Delaware Department of Natural Resources and Environmental Control, hereinafter "DNREC", on January 19, 2001. Prior to actual submittal of the permit application and supplemental materials, the Corps met with DNREC on several occasions and exchanged correspondence in regard to information the State wanted addressed in the permit application. The Corps also held a public informational meeting on June 6, 2001, and prepared three binders of information in response to questions and issues discussed at the meeting. This information was made part of the Record for the permit application review and is designated as Exhibit 40. Throughout this process, the Corps information and supporting documents have been available to the public via the Corps website.

Subsequent to the application submittal in January of 2001, DNREC and the Corps had several meetings and exchanged additional correspondence and information. When DNREC received all the supplemental information it requested and was satisfied the application was complete to the extent public comment could be solicited, a Public Notice and Notice of Public Hearing was published on October 21, 2001. The Public Hearing was conducted on December 4 and 5, 2001, at Delaware State University in Dover. Attendance at the two Hearing dates was significant, with a total of well over 200 individuals attending and with 45 oral presentations and comments provided.

Following the Public Hearing, the public was accorded an additional 15 days, or until December 20, 2001, to submit written comments and questions to the file Record. A total of 54 written comments were received either at the Hearing or within the allotted 15-day comment period.

The transcripts of the two Public Hearing sessions, public written comments and questions, and a list of questions prepared by DNREC staff were transmitted to the Corps on December 21, 2001. The Corps was provided up to 45 days, until February 8, 2002, to review, comment, and answer questions contained within the transmitted packet of

documents. The Corps summary response document was received by DNREC on February 8, 2002, and contained not only responses and comments to the public and DNREC questions and concerns, but also included seven (7) scientific studies not previously submitted to DNREC.

The Corps summary response document was then made available to all those entities who commented during the Public Hearing process. These documents were made available in either digital or paper format, and could be accessed on the Corps website. Commenting entities were provided 30-days, or until March 18, 2002, to provide any additional comments or critique or rebuttal data pertaining to the Corps summary response document. This additional public comment period was intended to allow the public the opportunity for final comments based on answers to the multitude of questions raised during the review process to date. Twelve (12) written comments were received from the public regarding the final Corps submittal documents, and these were transmitted to the Corps and to the economic consultant on March 22, 2002.

On April 17, 2002, final DNREC staff comments, along with the contracted economic evaluation, were received by the Hearing Officer. At that time, these two documents completed the Record for the application for permit, which consisted of a total of 125 exhibits. Based upon the Record to date, the findings and recommendations to the Secretary were due by July 16, 2002.

In June, 2002, the federal General Accounting Office released it's review report on the Corps economic analysis and justification of the project, concluding a comprehensive reanalysis was required. This document was made part of the Record by DNREC.

On June 27, 2002, DNREC received a letter from the Corps requested suspension of the permitting review pending an economic reanalysis. DNREC acknowledged the suspension on July 3, 2002, cautioning the additional information to be submitted was limited to the economic reanalysis and its relevance to Section 3 of Chapter 72. The DNREC position

was reiterated in a July 26, 2002, letter to the newly appointed Colonel Chapman of the Corps Philadelphia District. The DNREC letter requested confirmation of the understanding regarding limitations on scope of resubmittal materials, and the Colonel Chapman acknowledged and concurred by letter dated August 12, 2002.

On December 16, 2002, DNREC sent a letter to the Corps stating the resubmittal information must be received by December 31, 2002. The Corps submitted the revised economic information on December 20, and DNREC acknowledged receipt by letter on the same day.

DNREC proceeded to renegotiate contracts with the Hearing Officer and the economists for continued review, and then secured funding for the effort. DNREC then published a Public Notice regarding the new economic documents on May 14, 2003, providing the public with 60 days to file written comments to the Record, or until July 14, 2003. A total of 43 comments were received prior to the end of the Notice period and were made part of the Record.

The Corps economic resubmittal, along with all comments from the resultant Public Notice, were provided to the State economic consultants for review and reporting. The report was provided to DNREC in October and provided to the Hearing Officer on November 12, 2003. This report comprised the final exhibit to the Record, for a total of 132 exhibits, many of which contain multiple documents.

Based upon the final Record, the Hearing Officer recommendations and report to the Secretary is due by December 12, 2003.

A List of Exhibits comprising the Record for Decision is appended to this document.

III. SUMMARY OF THE APPLICATION FOR PERMIT RECORD

A. Project Description

The Corps agreed to file a State of Delaware permit application for the Main Channel Deepening (hereinafter MCD) project based on documentation and assertions provided by DNREC and various Department Secretaries since 1992 (Exhibits 52, 63 and 125). The application for permit (Exhibits 1-17) was submitted by the Corps on January 19, 2001. In that application, the project is described as follows (as modified by later exhibits):

The project encompasses the Delaware River Estuary from Philadelphia, Pennsylvania and Camden, New Jersey to the mouth of Delaware Bay. The project borders the Commonwealth of Pennsylvania, and the States of New Jersey and Delaware. The local sponsor is the Delaware River Port Authority, hereinafter DRPA. The project modifies the existing Delaware River Federal Navigation channel from 40 to 45 feet at Mean Low Water with an allowable dredging overdepth of one foot following the existing channel alignment from Delaware Bay to Philadelphia Harbor, Pennsylvania and Beckett Street Terminal, Camden, New Jersey.

Activities in Delaware:

The existing 40-foot deep, 80 mile long, 400 to 1000 feet wide, Federal Navigation Channel would be deepened to 45 feet, including widening 7 bends. The channel side slopes will be 3 horizontal to 1 vertical.

A total of up to 22,533,000 cubic yards of material was proposed to be dredged from a portion of Reach B to the Bay, covering a distance of 80 miles. This number was revised in the Corps Response Document (Exhibit 120) to a reduced total of 17.7 million cubic yards. In addition, up to 22,200 cubic yards of rock blasting will occur and that material will also be removed.

Approximately 2.4 million cubic yards (revised to 2.5 million cyds in Exhibit 120) of dredged material is proposed to be placed at the Kelly Island Restoration Site. Another 2.4 million cubic yards (revised to 2.04 million cyds in Exhibit 120) is proposed to be placed along selected Delaware beaches. The remaining material is proposed to be placed within existing upland confined disposal facilities (CDF) currently receiving dredge spoils from Main Channel maintenance and three new upland confined disposal sites to be built within the State of New Jersey. The

existing CDF's in Delaware which will receive dredge spoils are Reedy Point South (340,000 cyds) and Killcohook (3,409,000 cyds). Revised quantities taken from Exhibit 120. Other than removal of the blasted rock, all dredging was proposed to be by hydraulic means. However, in Exhibit 120, the Corps indicates a contractor may choose to mechanically dredge some areas or for entire projects.

The Kelly Island Wetland Restoration plan consists of filling currently submerged land to create 60 acres of new wetland, including over 5,000 lineal feet of beach. The application states (Appendix H) the total proposed fill area channelward of mean high water to be roughly 120 to 140 acres with an additional 3.5 acres of vegetated wetland to be filled by the sand containment dike. Associated structures include a stabilizing low-profile groin field and an outfall device with 100 cubic yards of related riprap.

The beach nourishment proposed included up to 306,000 cubic yards at Port Mahon, 1,305,000 cubic yards at Broadkill Beach and 1,540,000 cubic yards at Rehoboth Beach/Dewey Beach. In Exhibit 120, these figures are revised to 340,000 at Port Mahon and 1.7 million at either Broadkill or Rehoboth/Dewey. Maintenance dredging will be increased to approximately 6 million cubic yards per year and will be placed in approved CDF's.

A total of 53 Exhibits were part of the record at the time of Public Noticing in October of 2001. These Exhibits include the final design and supplemental Environmental Impact Statement (FSEIS, Exhibit 4) completed in 1997 (Record of Decision signed in 1998) and Environmental Assessments (EA) or EIS's for Port Mahon (Exhibit 3), Broadkill Beach (Exhibit 5), and Rehoboth/Dewey Beaches (Exhibit 6); various documents and studies which pertain to one aspect of the project or another, but were not specifically prepared for this project, such as Exhibits 19, 41, 42, 43, 44, and 45; and supplemental studies either requested by DNREC or provided by the Corps, which include Exhibits 13, 20, 23 - 29, 32, 33, 36, 37, 49, and 50.

B. Prior to Public Notice

1. Informational Meeting

A Public Workshop was held by the Corps on June 6, 2001. A transcript of that workshop and the Corps responses to questions raised at the workshop are included in the Record as Exhibits 39 and 40, and were available on the Corps website. The workshop was held,

in part, to ensure the documentation supporting the permit application was as responsive to public and agency concerns as practical prior to issuing a Public Notice. Representatives from the Corps responded to questions and statements from a variety of attendees including industry groups, environmental groups, and individuals. The focus of the workshop was divided between project need and benefit, accountability and responsibility, and environmental concerns.

2. Corps Correspondence and Meetings with DNREC

The Record of agency interaction begins with documentation of a meeting between DNREC and the Corps on September 27, 2000 (Exhibit 21). The meeting notes reference three previous items of correspondence between the agencies in 2000, and describe discussions including requests for a variety of data gathering and monitoring, the Kelly Island plan, beach sanding, dredge windows, and a listing of action items to be completed. However, interaction on the project began well before the September, 2000 meeting, as is evidenced by Exhibit 52, which contains 33 letters dating from September, 1990, to July, 2001. This exhibit contains the three letters referenced in Exhibit 21. Exhibit 52 reveals there were dozens of meetings and points of interaction between the agencies since 1990 on the proposed project. Recurrent themes throughout this exhibit include DNREC requests and Corps responses to water quality and PCB studies, habitat and species protection, project methodologies, and dialogue over whether a State permit application was required and if it would be submitted by the Corps. Exhibits 30, 31, and 34 pick up the agency correspondence documentation where Exhibit 52 ends. These three exhibits contain responses to DNREC questions and requests for information necessary to deem the permit application “complete”. The final Corps response (Exhibit 34) resulted in DNREC accepting the application as “complete” and publishing the Public Notice for Public Hearing (Exhibit 54) in October of 2001.

C. Public Notice

The Public Notice for the project and Notice of Public Hearing was published on October 21, 2001 (Exhibit 54). In addition, copies of the completed application were made available at DNREC’s Dover, Wilmington, and Georgetown offices. All supporting documentation

and studies to date were also made available on DNREC's and the Corps websites. As a result of the Notice of Public Hearing, a total of 33 entities preregistered to speak at the Hearing.

1. Exhibits and Comments

There were ten (10) additional Exhibits entered into the record by the time of the Public Hearing. These included written correspondence both in support (Exhibit 55 - 31 letters) and in opposition (Exhibit 56 - 25 letters) to the proposed project. The letters in support were primarily from those property owners who would benefit from the proposed beach sanding component of the project, along with several shipping related firms. The letters of concern or opposition were primarily from individuals with specific concerns relating to various aspects of the project. DNREC also entered into the record various documents, including the Statewide Dredging Policy Framework (Exhibit 57), appointment of the Hearing Officer (Exhibit 59), copies of any requests to speak at the Public Hearing (Exhibit 60), and a file which includes examples of similar permitting requirements in other States (Exhibit 63).

D. Public Hearing

The Public Hearing was held on December 4 and 5, 2001, at the MBNA Building, Delaware State University, Route 13, Dover, Delaware. Both evening sessions began at 6:30 p.m., with the December 4 session concluding at 10:20 p.m. and the December 5 session concluding at 8:06 p.m. A total of 34 individuals commented the first evening and 11 the second evening.

1. Extended Public Comment Period

The Public Hearing Record remained open for 15 days following the Public Hearing. Comments could be made in writing or e-mailed to DNREC by 4:30 p.m., December 20, 2001. The purpose of the additional comment period was to provide the public with ample opportunity to comment, particularly since the significant turnout at the Public Hearing resulted in limited speaking time for many attending. Thus, the comment period allowed expansion and clarification of comments verbally presented at the Hearing. Also, since the public heard the up-to-date Corps project presentation at the Public Hearing, the extended

comment period allowed time to formulate additional questions or comments provoked by comments at the Hearing. All commenting procedures and timelines were proposed by the Hearing Officer and accepted by the Corps and DNREC.

2. Exhibits and Comments

Many of those presenting comments at the Public Hearing also submitted their presentations in writing. A total of 45 individuals spoke at the Hearing and 28 written comments (Exhibits 64 through 91) were received either prior to or at the Hearing. In the 15-day comment period following the Hearing, a total of 26 additional comments or information was received by DNREC (Exhibits 92 through 117). In accordance with statutory requirements, a written transcript of the Hearing was also prepared (Exhibit 118).

E. Applicant Response to Public Comments and Questions

The commenting timeline established by the Hearing Officer included providing all comments received as a result of the Public Notice and Hearing to the Corps for comment. The Corps was provided 45 days in which to prepare a response document.

1. Exhibits and Comments

All comments and the Hearing transcript was mailed to the Corps with a cover letter from the Hearing Officer on December 21, 2001. This transmittal letter also included as an attachment questions prepared by various DNREC staff and a request for the Corps to address same (Exhibit 119) in their response document.. The Corps was provided until February 8, 2002, to prepare and submit any response they deemed appropriate. In an effort to provide adequate time, the Corps was allowed slightly more than 45 days to acknowledge the holidays during the response period. The Corps submitted a comprehensive response document to DNREC on February 8, 2002 (Exhibit 120). The Corps response also included seven (7) additional reports or studies, which are part of Exhibit 120.

F. Public Comment on Applicant Response Document

The Corps response document was made available in digital or paper format to all those who commented during the Public Hearing period and was also available on the Corps and

DNREC websites. The public was provided 30 days in which to review and comment on the Corps response document.

1. Exhibits and Comments

A Memorandum dated February 13, 2002 (Exhibit 121), was prepared by the Hearing Officer which provided the public until March 18, 2002, to comment on the Corps response document. Twelve (12) comments were received (grouped as Exhibit 122), which originated primarily from interest groups. One of these groups included an economic analysis of the Corps project by Dr. Robert Stearns. Copies of all documents received were forwarded to the Corps and to the independent economic evaluation contractor.

G. DNREC Contracted Economic Evaluation

DNREC entered into a professional services contract with Economic Analysis, Inc. of Rhode Island to conduct a review and critique of the Corps benefit-cost analysis for the project. The scope of this review and evaluation was to determine, in their professional opinion, whether the Corps studies adhere to economic “best practices” and, given the State cost share required, whether the project will result in an economic benefit to the people of the State of Delaware.

1. Exhibit and Comments

The economic review was completed and a report submitted to DNREC (Exhibit 124) in April, 2002. This report was made part of the Record per the information and commitment conveyed at the Public Hearing and was transmitted to the Hearing Officer.

H. DNREC Agency Evaluation

Upon receipt of all submittal documents and comments, DNREC Divisions conducted an internal evaluation of the project and the application Record. There was no timeline established for this final review period by DNREC.

1. Exhibit and Comments

The final DNREC comments were received by the Hearing Officer by U.S. Mail on April 17, 2002. This document and the attachments became (at the time) the final Exhibit (125) for

the Record, and the Hearing Officer was provided 90-days by contract to complete this report and provide recommendations to the Secretary of DNREC by July 17, 2002.

I. Applicant Suspension of Permit Process

In June of 2002, the federal General Accounting Office issued a report on the economics of the project, concluding the cost/benefit analysis was flawed. The Corps began the process of reanalysis of the project economics. As a result of the GAO report, on June 27, 2002, by letter to DNREC Secretary DePasquale, Colonel Brown of the Philadelphia Corps District requested processing of the pending permit application be suspended until an economic reanalysis could be completed and submitted. Letters were exchanged between DNREC and the Corps regarding the scope and timing of the resubmittal, which was received by DNREC on December 20, 2002.

1. Exhibits and Comments

Based upon the Corps suspension request (Exhibit 127), DNREC entered the GAO report into the Record (Exhibit 126). Four letters were exchanged between the Corps and DNREC (Exhibits 128) in the last half of 2002. The submitted Economic Reanalysis and related documents, including DNREC's acknowledgment letter, comprise Exhibit 129.

J. Second Public Notice

DNREC Secretary DePasquale, while acknowledging the Corps suspension request in July 2002, committed to public noticing any Corps resubmittal documents, thus allowing the public an additional period to review and comment on the new documents. The Public Notice was published by DNREC on May 14, 2003, providing 60 days for the public to file responsive comments. The intervening time period was used to negotiate contracts and secure funding for continued review of the project.

1. Exhibits and Comments

DNREC received 43 responses to the second Public Notice (Exhibit 130). These comments (grouped as Exhibit 131) were divided between support and objection to the proposed project. Many of the comments pertained to the issues of concern contained within the original Record and were not pertinent to the Economic Reanalysis. The Public

Notice clearly states the additional comment period is intended for review of the economic reanalysis. Therefore, this report and the regulatory analysis of all issues, with the exception of the economic discussion in Chapter 72, will not cite these exhibits. It is appropriate to note all of the comments were reviewed, and all of the issues and concerns contained within the responses were already well documented within the Record to date.

K. DNREC Contracted Economic Evaluation

DNREC entered into a professional services contract with Economic Analysis, Inc. of Rhode Island to conduct a review and critique of the Corps economic resubmittal package, along with all comments received during the second Public Notice period, to determine whether there would be a cost or benefit to the State of Delaware as a result of the project.

1. Exhibits and Comments

The report on the review and critique of the Corps Economic Reanalysis was received in October, 2003. Per the standards established earlier, this report was made part of the Record and constitutes the final exhibit (Exhibit 132). The contracted report was received by the Hearing Officer via transmittal from DNREC on November 12, 2003. The DNREC transmittal letter requested this report within 30 days, or is due to the Secretary by December 12, 2003, or 30 days after receipt of all exhibits.

IV. STATUTORY AND REGULATORY REVIEW - ENVIRONMENTAL CONTROL (CHAPTER 60)

One of the primary concerns identified by individuals, interest groups and the State about the proposed project is water pollution. The concerns regarding pollution are varied, but focus on 1) resuspension of toxic sediments during the dredging process and the impacts therefrom, particularly from PCB's, and 2) mobilization of toxics from CDF's and beach fills, via dewatering back into surface waters (or leaching into ground water). These concerns are addressed by Delaware's Surface Water Quality Standards, as amended February 26, 1993, promulgated under the authority of Chapter 60. In addition, the State of Delaware must decide whether to issue a Section 401 Water Quality Certification under authority of the federal Clean Water Act (33 U.S.C. 1341).

A. Procedural and Review Requirements

The Corps must obtain a State Section 401 Water Quality Certification for the project (Exhibits 1, 57, 63). In order to obtain a 401 certification, the project must, among other items, meet promulgated State Water Quality Standards. The statutory standard in Chapter 60 is clear:

No person shall...undertake any activity: (2) In a way which may cause or contribute to discharge of a pollutant into any surface or ground water,... (Section 6003(a), 7 Del. C.).

Section 6004 of Chapter 60 requires provisions for noticing and public hearings, which will be addressed in the Chapter 66 section of this report.

Therefore, the statutory permitting question is whether the project, as finally modified and proposed, will meet State Water Quality Standards.

B. Substantive Requirements and Findings

The topic of water quality has been an issue in this project from the beginning of the Corps process in assembling the federal environmental record. USEPA has accepted the Corps conclusion of no significant impact to water quality as a result of the project (Exhibit 4). The requirement to meet water quality standards is clear, but the issues and complexity of studies involved are far from simple and without controversy. Both DNREC (Exhibits 21, 30, 34, and 52) and the public (Exhibits 39, 56, 67, 69, 70, 73, 75, 77, 78, 80, 83, 84, 87, 88, 93-95, 99, 101, 102, 104, 111, and 122) repeatedly raised issues regarding water quality and in particular, dispersion of PCB's during dredging, storage, and dewatering of dredge spoil areas, both from CDF's and beaches. The Corps has worked closely with DNREC to address the issue of meeting State Water Quality Standards, including the methodologies used and monitoring required to ensure compliance. The Corps has conducted extensive sediment testing and modeling, along with submitting monitoring proposals (Exhibits 4, 7, 9, 19, 27, 33, 35, 36, 38, 40, 46, 53, 110, and 120) , but the Record reveals significant public concern remains regarding the approaches, assumptions, methods, and locations selected and utilized for the testing and proposed for monitoring (Exhibit 122).

Based upon the Record, the following facts are hereby concluded regarding potential water quality impacts:

At Dredge Location:

1. The concern regarding water quality impacts from dredging at the point of excavation is valid upstream of approximately the C&D Canal. The Record reveals it is common knowledge the upper river portion of the estuary is impacted by toxic contamination and has high levels of fish and shellfish contamination, resulting in fish consumption health advisories (previously cited exhibits plus Exhibits 123 and 125).
2. Toxic contaminant mobilization and dispersion from dredging is a highly complex issue and any evaluation and decision-making must necessarily rely

on professional expertise and findings, such as those contained in Exhibits 110 (Versar) and 125 (DNREC), among others. The assessment methodology used was closely coordinated between agencies and both concur as to the model validity and conclusions derived from the resultant data.

3. A valid concern remains based on the fact expert judgement 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 (dredge cutter head). No applicable direct measurements have ever been made (Exhibit 125) for a dredge of the size proposed.
4. A valid concern remains because it is unknown whether the proposed TSS standard can actually be met in practice, and what will occur if the standard is not achieved at the point of excavation (Exhibit 125). The Corps does acknowledge that if water quality violations occur at the point of dredging, the contractor will be required to alter the dredge techniques to achieve compliance (Exhibit 120). Therefore, this becomes a significant issue, as altering dredge techniques will increase costs to an unknown but potentially significant degree.
5. All modeling and evaluations were based on hydraulic and not mechanical means for dredging (Exhibit 125, as proposed by Exhibit 1). A major concern has been created because the Corps, in Exhibit 120, states a contractor may use mechanical dredging if deemed economically beneficial. Although this technique may be acceptable in certain areas, additional studies may be necessary prior to allowing such methods to be employed.
6. 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 during the permit application review process.
7. Dredging will occur just upstream of Delaware waters. In addition, there are existing Tosco (within 3500 feet) and Sun (straddling the State line) berthing facilities which may be dredged (Exhibit 31). Because sediment plumes from

upstream dredging, particularly if mechanical, will move into Delaware waters, a regulatory approach to address meeting Standards and monitoring same is warranted.

At Confined Disposal Facilities:

8. The Corps has effectively demonstrated that proper operation of CDF's have resulted in trapping, confinement and sequestration of "a vast majority of" contaminants pumped into them (Exhibits 40 and 110). DNREC agrees (Exhibit 125). The public remains concerned (Exhibit 122).
9. There are two CDF's proposed for use in Delaware, Reedy Point South and Killcohook.
10. The Corps has proposed monitoring the Reedy Point South CDF (Exhibit 9) effluent more extensively than previous monitoring recently conducted at the Killcohook and Pedricktown CDF's, and DNREC concurs with this approach (Exhibit 125). The Corps further states in Exhibit 120 that if any violations of water quality standards result from the CDF dewatering process, dredging will be shut down until compliance is achieved.
11. The issue of ground water monitoring remains disputed. The Corps maintains a ground water monitoring plan has been submitted to DNREC and they are awaiting a response (Exhibit 120). DNREC acknowledges receipt of the proposed plan by email in May of 2001, but asserts this plan was not part of the permit application, nor is it part of the Record (Exhibit 125). It is noted, however, that the Scope of Work for Installation of Ground Water Monitoring Wells for Reedy Point is included in the Record as Exhibit 53. The public maintains there exists potential for contamination of potable aquifers from leaching from CDF's (Exhibits 67, 69, 77, 115, and 122 among others), while the Corps asserts this concern was adequately addressed by the U. S. Geological Survey in Exhibit 19.

At Beach Nourishment Sites:

12. The material used for beach placement will be taken from the mid to lower Bay portion of the project area (permit application documents).

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13. Sediment testing in these areas revealed "... contaminant levels are quite low and pose no significant risk to human or ecological receptors (DNREC, Exhibit 125)." This conclusion supports the findings of the Corps with USEPA concurrence (application and SEIS documents), and supports beneficial utilization of the material.
 14. Economic loading is not a toxic contamination concern in the Bay areas from which beach placement of dredged materials is proposed (DNREC, Exhibit 125). This opinion does not relate to any other concern involving economic loading in these areas, such as possible sedimentation impacts.

Overall Water Quality:

15. The public raises the issue of existing contamination in the River adjacent to the proposed dredge corridor, particularly PCB's, the concentrations of which can be exponentially higher than human health criteria. This relates to two concerns which, based on the Record, appear valid, but are not part of this permitting review. However, since the issuance of this permit could be viewed as enabling subsequent impacts, this review should acknowledge those concerns. First, by deepening the main channel, the potential for future lateral access corridor dredging is increased, and those are some of the most heavily polluted areas of the river. The concern is that the investment in completing this project will be justification, and in fact the very reason, for advocating issuance of such future permits. Second, although the proposed project may meet State Water Quality Standards, it will result in elevating already high concentrations of pollutants such as PCB's, both in the initial phase and subsequent maintenance dredging, as adjacent sediments may drift into the maintained corridor.
16. In Exhibit 125, DNREC makes a final evaluation of the submitted information and reports which conclude: "... the excavation will not cause violations of water quality criteria for the protection of human health or aquatic life." DNREC concurs with both the overall conclusion and the methodologies used in preparing the reports.

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17. The final public review and response documents (Exhibit 122) maintain the Corps sampling methodology is flawed, particularly regarding potential chronic toxicity and the resultant unknown impacts in areas of spoil use outside of CDF's.

Findings

Based on the Record and the derived facts outlined above, I find:

The procedural requirements of Chapter 60 have been met, as proper Noticing occurred and a Public Hearing was held, with ample opportunity for extended and additional public review and comment. There is no exhibit in the Record which disputes this finding, nor is there any complaint or concern regarding the process established to create this Record.

It is appropriate to use Total Suspended Solids (TSS) as the indicator of compliance at the point of dredging, as most contaminants of concern are associated with the sediment particles and most biotic concerns are associated with redeposition of suspended sediment.

The project as proposed and as modified by the Corps will meet State Water Quality Standards and the intent of Chapter 60, provided conditions, specifications, and requirements listed below are addressed within the permit.

The permit conditions, including the extensive monitoring components, are a reasonable and prudent action on behalf of the State to meet the intent and purpose of Chapter 60, Section 6001(a)(5), which mandates public health and safety concerns be protected. Public health is an issue in this project due to potential reintroduction of toxics into the ecosystem. The fact that fish consumption advisories are already present, and certain chemical concentrations already exceed health standards (Exhibit 125), justify

and support subjecting the project to rigorous and prudent conditions and specifications.

Section 6001(a): The General Assembly hereby makes the following findings...

(5): The land, water, underwater and air resources of the State must be protected from pollution in the interest of the health and safety of the public;

The following conditions are recommended for consideration of inclusion in any DNREC permit for this project, and should be provided to the Corps for concurrence. Use of these or similar permit conditions are the basis for finding the proposed project has met the regulatory and statutory criteria for permit issuance. It is noted some of the suggested conditions will be modified for prudent considerations.

- A. Standard and typical conditions placed on any DNREC water quality permit.
- B. The Corps shall conduct suspended solids source strength measurements in a manner and frequency to be specified by DNREC. The measurement results shall be provided in a timely manner determined by DNREC. The Corps shall also include any additional water quality testing requirements as may be deemed prudent by DNREC. Should these monitoring results demonstrate that the mathematical modeling used for the project does not adequately describe actual conditions, and the resultant changes result in non-compliance with Water Quality Standards or necessitate revision of the project standards contained herein; dredging should cease, new modeling should be developed, and new dredge techniques proposed by the Corps and approved by DNREC, if it is reasonable to conclude compliance will be achieved.
- C. The Corps shall monitor, at a frequency specified by DNREC, to ensure that TSS concentrations are no greater than 250 mg/l at a distance of 200 feet from the cutter head. All such monitoring results shall be provided to DNREC in a timely manner determined by DNREC.

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- D. No mechanical (i.e., bucket dredging) dredging or economic loading shall occur unless specific proposals for same are submitted by the Corps and approved by DNREC. These methods shall not be used in project areas upstream of Reach E.
 - E. A ground water monitoring plan shall be formally submitted to DNREC for the Reedy Point South CDF and shall be approved and implemented prior to the facility receiving any spoils from authorized dredging.
 - F. DNREC shall issue specific approval, which may include modifications, deletions, or additions to the effluent monitoring plan for the Reedy Point South CDF, submitted as part of this permit application. This approval shall be issued prior to the facility receiving any spoils from authorized dredging.
 - G. In the event of exceeding State of Delaware Water Quality Standards, either at the point of dredging or dewatering from Reedy Point South CDF, specific and sequential reactive and remedial steps shall be proposed by the Corps and approved by DNREC prior to conducting any authorized dredging. This plan shall include and specify the allowable reaction time in stopping or modifying the dredging if monitoring reveals standards are being exceeded. The plan shall also include stipulated consequences, potentially including penalties, for each incident of violation.
 - H. Because of the potential for human health impacts should Water Quality Standards be exceeded, disregard or continued non-compliance with any permit requirement contained herein should be a valid and conclusive basis for revocation of the permit in accordance with Delaware law.
 - I. All water quality monitoring, for each aspect or component of the project, shall be summarized by the Corps and approved by DNREC prior to conducting any authorized dredging. Said summary shall include each sampling location, methodology employed, parameters to be sampled, frequency and duration of sampling, reporting requirements, and specific sequential and time-specific contingency steps to be taken should water quality standards be exceeded.
 - J. Should new information or data be obtained regarding contamination, toxicity, or water quality in Delaware River or Bay which represents, in DNREC's opinion, an

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- identifiable potential adverse effect on health or water quality standards should the project proceed, the State may order new testing and suspension of dredging until it is assured water quality standards will be met and/or health concerns are adequately addressed.
- K. Corps contracted dredging upstream of the State border which results in conveyance of sediment into the State of Delaware must meet State Water Quality Standards at the border. Any such dredging, within a distance of the border to be specified by DNREC, must be by hydraulic means, shall be monitored at the border for compliance, and the results provided to DNREC. The monitoring regimen, frequency, and contingencies for exceedance of Standards shall be submitted by the Corps and approved by DNREC prior to initiating any construction authorized by this permit. Any private dredging authorized by the Corps under Section 10 of the River and Harbor Act of 1899 or under Section 404 of the Clean Water Act of 1972 within the DNREC-specified distance of the State line shall contain a permit specification and condition requiring the same testing and monitoring, with results to be provided to DNREC.
- L. The use of CDF's outside the State is acknowledged. However, these site discharges will ultimately reach Delaware waters. Should a cause for concern be identified by DNREC, such as proximity of effluent release to Delaware waters or a variance in State water quality standards allowing effluent to exceed Delaware standards, DNREC may require testing and monitoring to ensure compliance with State Water Quality Standards at the border.
- M. Dredge spoils shall be placed in locations as indicated in the permit application, or as may be modified by written consent and concurrence from DNREC.
- N. The Corps and DRPA shall indemnify and hold harmless the State of Delaware and its departments, agencies, officials, employers, agents and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representatives of the permittee, undertaken in connection with this project. Any authorization shall not be construed as an indemnity by the State of Delaware for the benefit of the permittee or any other person.

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- O. In considering this permit application, DNREC has relied upon the information and data which permittee has provided in connection with the permit application. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, DNREC may modify, revoke, or suspend any authorization, in whole or in part, in accordance with the new information.
- P. The permittee shall cause all contractors to acknowledge, in writing, their receipt, understanding, and acknowledgement of pertinent conditions and specifications contained in any authorization. The Corps shall retain such documentation throughout the duration of the project and provide same to DNREC upon request.
- Q. The State of Delaware may hold the permittee, any property owner, contractor, and any agent in obtaining authorizations or managing the project responsible to ensure the project is constructed in accordance with all drawings, specifications, and representations within the permit application.
- R. Any other conditions which are deemed appropriate by DNREC.

The unknown costs to comply with these provisions may have project cost/benefit and State cost-share implications.

V. STATUTORY AND REGULATORY REVIEW - WETLANDS (CHAPTER 66)

The aspects of the Main Channel Deepening project which are regulated by Chapter 66 include the proposed Kelly Island wetland restoration component and placement of dredge spoils along selected shoreline areas. These components of the project are deemed beneficial uses of dredge material by the Corps. As such, the “avoid wetland, minimize impact, compensate for unavoidable loss” typical wetland project review scenario does not apply, except perhaps to varied components of the beneficial uses. In an attempt to organize this project review as simply as possible, I have included the shoreline beach nourishment discussion and findings along with the remainder of the project aspects in the Subaqueous Lands, Chapter 72, portion of this report. Therefore, this section will focus on the proposed wetland restoration at Kelly Island.

A. Procedural and Review Requirements

The procedural permit application processing requirements of Chapter 66 (Wetlands) are more precise and detailed than those found in Chapter 60 (Environmental Control). Section 3 of the promulgated regulations for Chapter 66 detail the procedures for permit applications, including 3.07, which provides authority to DNREC to request additional information until it is satisfied the application is complete. DNREC had asserted since 1992 that the Corps required State authorization for this project (Exhibits 52, 63 and 125), and the Corps did ultimately agree, submitting this permit application. Even prior to the permit application, interaction between the agencies was significant and ongoing. Many meetings and discussions on information required for a permit application were conducted, which resulted in DNREC requests for studies, additional information, and clarification of provided information (Exhibit 52). Once the permit application was received in January of 2001, DNREC did request additional information several times (Exhibits 34 and 52) and the Corps held a Public Workshop (Exhibit 39), which resulting in submission of more information (Exhibit 40).

Once DNREC was satisfied the permit application was complete for a Type II process (Regulations, Section 3.04), a Public Notice was issued in accordance with Sections 6608 and 6609 in the statute, and Section 6 within the promulgated regulations, which detail procedures for processing permit applications and holding Public Hearings (Exhibit 54). A Public Hearing was held and a verbatim transcript of the testimony (Exhibits 64 through 118) was prepared in accordance with the referenced statutory and regulation requirements. The public and applicant were both allowed additional time for comment and response, with the public provided the final opportunity to comment on Corps responses to the Public Hearing issues (Exhibits 119 through 122). In addition, the economic reanalysis process provided both the applicant and public ample time for input (Exhibits 126-132). The fact is that this project has received more agency and public scrutiny, including repeated and ample opportunity for interaction and comment, than any previous permit application to DNREC (personal communication to Hearing Officer from DNREC).

I find the procedural requirements of Chapter 66 have been met. The process described in the Wetland Regulations has been followed, evidenced by DNREC requests for additional information until the application was complete, the public workshop, the proper Public Noticing, and the Public Hearing. There is no item in the Record which disputes this finding, nor any objection or concern raised regarding the process established to create this Record.

The wetland regulatory aspect of the Main Channel Deepening project involves proposed restoration of 60 acres of tidal wetlands on Kelly Island within Bombay Hook National Wildlife Refuge (NWR). The application for permit (Exhibit 1), with additional clarification provided by the Corps response document (Exhibit 120), states approximately 2.5 million cubic yards of dredged material will be used to construct a containment dike and fill the interior for wetland restoration. The dike will have a geotextile core and the seaward facing beach will have groins installed to restrict lateral sand movement. A discharge structure will be placed and ability to control interior water levels will be included. Controversial elements of this MCD project component include the contamination aspect of the dredged

materials (See Chapter 60 discussion for pertinent exhibits and findings), the economic aspects (See Chapter 72 review of Economic Benefit), the use of dredge windows to protect involved species, concern regarding present use by shorebirds and horseshoe crabs, and protection of nearby oyster beds from siltation impacts (Exhibits 52, 70, 77, 89, 108, 119, and 125).

B. Substantive Requirements and Findings

Section 3.05 of the Wetlands Regulations contains a listing of elements required in the permit application documents. Pertinent parts include Subsection B, which requires an applicant explain the need for the activity, and Subsection H, which details Environmental Summary requirements.

Section 3.05B A written explanation of the proposed activity and its need, ...

Section 3.05H An Environmental Summary which includes an evaluation of the project in relation to the factors listed in Section 7 (of the Wetland Regulations) subheadings and:

- (1) The reasons that structures cannot feasibly be located on adjacent property of the owner other than wetlands.
- (2) Temporary and permanent changes which would be caused by, the proposed project and the impact of these changes on the project area and adjacent areas.
- (3) Alternatives to the proposed action which would reduce or avoid environmental damage.
- (4) All measures to be taken during and after the completion of the proposed project to reduce detrimental effects.
- (5) Adverse environmental impact which cannot be avoided.
- (6) The Secretary may require more detailed evaluations in proposed activities that have a major impact on wetlands.

The regulations place a sequence of requirements on an applicant to define the project, demonstrate there exists a need for the project, demonstrate wetlands impacts are avoided

if possible, that unavoidable impacts are minimized, and proactive protective measures are taken during and after construction. Since the regulations require the Secretary to evaluate these factors in relation to a more extensive listing of standards in Section 7, it appears both prudent and logical sequentially to make findings relating to Section 3.05 B and H, and then apply these findings to the standards for permitting. For example, if it is determined the project could be achieved in uplands, the evaluation of the standards is moot, as meeting the statutory purpose requires the upland be utilized “to preserve and protect ... wetlands ... and to prevent their despoliation and destruction ...” (Section 6602, 7 Del. C.).

Purpose and Need (Section 3.05 B)

The Corps justifies the need for the Kelly Island project both politically and physically / environmentally. This project is also used economically to create MCD project benefit. Politically, the State of Delaware requested this area be considered for protection as part of the MCD project (Exhibits 1, 4, 8 and 120). The physical / environmental need is based upon existing erosion of the Kelly Island shoreline, with a resultant loss of tidal marsh, adverse impact to horseshoe crab spawning habitat, exposure of the Mahon River navigational channel to increased wave energies, potential impact to wetlands landward of the Island, and adverse impact to existing habitats at Bombay Hook NWR (Exhibits 1, 4, 8, and 120). The Delaware Riverkeeper (Exhibit 77) and Delaware Wildlands (Exhibit 108) comments are representative of public concerns questioning the need, but primarily the cost and benefit of the proposed Kelly Island wetland restoration. The basic project purpose (the reason for the activity) is derived to be: Wetland restoration to protect and enhance Kelly Island. There was no contrary position in the Record to this definition of purpose.

I find there is a demonstrable need for the project, as evidenced primarily by the State request for and advocacy of the project. In addition, the beneficial use of unpolluted dredged materials should be a basic goal of any dredge project. Need, however, does not necessarily justify adverse impacts, which is why the regulations require a balancing of reasonably anticipated benefits versus potential and foreseeable detriments.

Thus, the overall effect of the project must be judged (Section 7.01 of Wetland Regulations). **I find there is no dispute in recognizing the basic project purpose is wetland restoration to protect and enhance Kelly Island.**

Environmental Summary (Section 3.05 H)

Section 3.05 H(1). Why must the project be located in wetlands? A review of the record did not reveal any public or agency concern with the location of the project if Kelly Island is to be protected by restoring tidal marshlands contiguous to the remaining island. Since the basic purpose of the project is to restore these wetlands, the project is wetland dependent. There is a portion of the containment diking which will fill approximately 3.5 acres of wetlands depicted on the 1988 Delaware wetlands map (Exhibit 1). However, the Corps asserts the dike needs to be located as proposed and that most of these wetlands have been lost to subsequent erosion, and the Record does not dispute this assertion.

I find the project is dependent upon its location in wetlands to achieve the basic purpose. There is no upland alternative which will accomplish the project goals.

Section 3.05 H(2). What changes would result from the project and what is their impact on and adjacent to the project site? Exhibit 1 summarizes the proposed site changes as filling 120 to 140 acres of shallow water habitat, shorelines, and wetlands to create 60 acres of restored tidal marsh and over 5,000 lineal feet of beach suitable for horseshoe crab spawning. The Record reveals the State requested this action and that the Corps worked with State and federal agencies in preparing the plan (Exhibits 1, 4, 8, and 120). No one who spoke at the Public Hearing (Exhibit 118), nor anyone who submitted written comments prior to the Hearing (Exhibit 56) voiced concern over the proposed conversion of shallow water habitat to marsh and beach. However, the Sierra Club (Exhibit 106) asserts "The Corps should be required to estimate the total bio-mass and diversity of benthic organisms that will be killed ...as a result of burial under millions of cubic yards of dredge spoils ..." Within the Economic Evaluation commissioned by DNREC (Exhibit 124), it is noted that NOAA has expressed concern over loss of shallow water habitat and the

associated benthic community. The report concludes that although the Corps found the fill area was not biologically unique, the impacts could be important and that a quantitative analysis would assess this significance, and that there is a cost/benefit which can then be calculated. I agree with Exhibit 124 that just because the Corps states “No significant differences were found between any of the beneficial use sites and background conditions in Delaware Bay ... Therefore, no significant impact will occur to benthic resources ...” (Exhibit 120) is flawed logic. The Corps logic would mean that any similar loss of typical benthic habitat in Delaware Bay would be insignificant, and that is clearly not the case. However, since most involved agencies acknowledge this portion of the MCD project will have positive net biological benefit, the quantification of benefit does not appear necessary under the statutory regulations. Also, the SEIS (Exhibit 4) characterizes the area as having some of the poorest benthic habitat with considerably less diversity than background communities, contrary to the summary phrase contained within the “Essential Fish Habitat Evaluation (Exhibit 120, 11/01). Based on the SEIS and interaction between agencies, the conclusion of net benefit appears tangible and logical.

I find there will be permanent changes resulting in a net environmental benefit at the site. The term “adjacent” is not defined in the Wetland Regulations, so adjacency in this context was presumed to be areas contiguous to the project site. With that definition, this finding does not include consideration of siltation impacts on nearby oyster beds which may otherwise be construed to be adjacent to the project site.

Section 3.05 H(3). What alternatives are available to reduce or avoid environmental damage? The Corps SEIS details the efforts expended to identify and include Kelly Island as a preferred beneficial use site (Exhibit 4). There is no objection in the Record to this selection process. Therefore, accepting the fact alternative sites are not available, the alternatives examined must therefore be site and project design specific. The first step is to determine what potential environmental damage the project may cause. Both DNREC (Exhibits 12, 31, 34, 52, 119, and 125) and the Sierra Club (Exhibit 77) have focused

concerns regarding the Kelly Island plan on potential sedimentation impacts on nearby oyster beds.

In addition, DNREC's concerns (and general concerns listed by many others) have included documenting existing use by shorebirds and horseshoe crabs at the Kelly Island project site in order to quantify anticipated benefit or adverse effect on these resources. The Corps has responded to the latter concerns by completing and submitting draft reports addressing pre-construction existing use (Exhibit 120). A review of these reports indicate they do not contain any recommendations for project alterations to benefit the established goals (and indeed, that was not the purpose of the studies). The horseshoe crab study did find the existing beach area was very dynamic, with expected erosion having a continued impact on beach availability to crabs for spawning. This study concluded only half of the beach area was suitable horseshoe crab spawning habitat at the time of the survey in 2001. Therefore, it is derived that since DNREC worked with the Corps in developing the Kelly Island plan, and the agency did not identify for the Record any preferred design alternatives during the latter part of the project review, that no design alternatives have been suggested which would minimize or avoid the potential impact to spawning horseshoe crabs during construction, other than compliance with the established protective environmental window (see continuing discussion below).

The concern regarding sedimentation impacts to oyster beds is from dewatering and gradual erosion of the installed beach system (see previous cites). In addition, there exists potential for a breach or catastrophic failure of the containment dike, resulting in significant sedimentation impacts to a large portion of Delaware's nearshore bay area (Figure 9-2, Exhibit 4). The SEIS further states these nearby oyster beds do not have reserves necessary to withstand the turbidity levels which may result from a breach (Section 9.3.1.3, Exhibit 4). There is no alternative contained within the Record which would effectively eliminate these concerns. The Corps has proposed in the Kelly Island plan and reiterated in their response to DNREC questions (Exhibit 120) that should it be determined sedimentation is impacting oyster beds, a responsive remediation plan would be developed

at that time. DNREC has identified a concern with this type of wait and see responsive approach (Exhibit 125), and does not feel the proposed approach adequately addresses the concern. However, DNREC has not offered an alternative to the Corps proposal. See also discussion of oyster impacts below and in the Chapter 72 portion of this report.

The final potential environmental impact is related to environmental windows. Concerns regarding environmental windows are typically represented by comments in Exhibits 73, 76, 77, 111, and 115. An environmental window to protect spawning horseshoe crabs from impacts due to beach nourishment or sand placement was established by the Atlantic States Marine Fisheries Commission in 1998 (Exhibit 34). The established protective window is from April 15 to August 31. The Corps has proposed eliminating this window for one construction season (Exhibits 34 and 120) because seasonal interruption of construction greatly increases the potential for “total failure of the (Kelly Island) project.” The Corps has also requested relief from the winter flounder window (January 1 through May 31) for the same reasons. Further, the Corps states in Exhibit 120 that coordination with the National Marine Fisheries Service (hereinafter NMFS) regarding winter flounder indicated work could be performed within the window “without significant impact to this species.”

The public objects to the Corps request to eliminate the protective window for horseshoe crabs (parts of Exhibit 122) and DNREC states that the Corps request for relief from all environmental windows “has not been resolved” (Exhibit 125). There does not appear to be any specific objection, or basis relating to same, to the proposed suspension of the winter flounder window for the Kelly Island project. (Note there are objections to winter flounder impact resulting from other portions of the project.) The Record does not appear to contain any alternatives or ways to minimize avoidance of these two windows in order to accomplish the Kelly Island project, nor does it contain any rebuttal to the Corps stated position that any interruption of the project increases probability of total failure. In fact, the author of the Corps preconstruction horseshoe crab study states it will be extremely difficult and perhaps not possible to build the Kelly Island project while adhering to environmental

windows (Exhibit 120). As will be discussed later, there remain studies to conduct and analyze, meetings and discussions to be held with agencies and experts, and agreement reached on whether waiver of the subject window will cause acceptable impact to crab use and spawning at Kelly Island (See discussion in 3.05 H(4) below).

I find that in order to achieve the basic project purpose of restoring 60 acres tidal wetlands and one mile of horseshoe crab spawning beach at Kelly Island, there are no locational, configurational, methodology, or design alternatives identified in the Record which would minimize or avoid potential impacts. This finding does mean the potential environmental impact is acceptable, but is only relevant to available and identified alternatives which could minimize this potential. For example, while agreeing with the Corps there does not appear to be any prudent alternative at this time to suspending the two windows to construct the project, the impact of such a decision on resources is not addressed in this finding.

Section 3.05 H(4). Evaluate proposed measures to reduce “detrimental effects” during and after the project completion. This subsection appears to address both contingency plans and performance specifications during construction and monitoring/remediation upon completion, since the above subsection addressed alternatives. Thus, this subsection specifies evaluation of the effectiveness and acceptability of proposed monitoring and construction impact contingencies, as well as plainly including evaluation of liability, remediation responsibility, and permit compliance enforcement capability after construction. The discussion and evaluation of the Corps proposal relating to Section 3.05 H(4) is divided into three parts. First, proposed impact minimization and protective measures during construction will be examined; next, proposed monitoring and action needs resulting therefrom will be assessed; and finally, responsibility for compliance and any necessary or prudent remediation will be discussed.

The Corps states in the permit application one way to reduce (minimize) impact (detrimental effect) during construction “...consists of avoiding the times of year that are

critical to sensitive resources, ..." (Exhibit 1). However, in Exhibit 120, the Corps requests a one year waiver on protective windows for horseshoe crabs and winter flounder. It is noted that in the Kelly Island goals and objectives plan, there is no listing either as a goal or an objective to protect existing horseshoe crabs or winter flounder (Exhibit 1). It is also noted that in the SEIS (Exhibit 4), there is a statement that "... windows will require a phased, timed approach to construction to avoid and minimize impacts on organisms, especially horseshoe crabs and shorebirds." The Corps identified the method to reduce impact in the SEIS and permit application by abiding by established windows or working carefully within them on project aspects with minimal potential for impact. Yet, at the end of the permitting process, a Corps request for a total one season suspension of the horseshoe crab window is based upon a contention that "observing these windows is (cost) prohibitive ... since any interrupted construction activity has a high degree of risk associated with total failure of the project." (Exhibit 120). The Corps has submitted studies regarding shorebird and horseshoe crab use at Kelly Island to establish pre-construction conditions and to determine if work could be accomplished within the window (Exhibit 120). The Corps admits it intends to further study the crabs in 2002, then meet with agencies and experts to "...discuss ... construction techniques that may be able to avoid or minimize impacts to horseshoe crabs." (Exhibit 120). The public concern with windows was evident at the Public Hearing (Exhibit 118) and throughout the public comments (Exhibits 73, 76, 77, and 115). The public remains highly critical of the Corps request to waive windows, particularly in the case of Kelly Island horseshoe crabs (Exhibit 122). The request to waive the crab window for a year is incongruous with the Corps stated intent, or at least premature, as the assertion of risk is not sufficiently discussed or documented in the Record, there is no agency consensus, and studies critical to this decision-making process have yet to be completed and evaluated. This conclusion is supported by other Corps statements in Exhibit 120: "The Corps of Engineers will not work within the window established by the Atlantic States Marine Fisheries Commission unless studies show and the State and federal resource agencies agree that the work can be done without significantly impacting the horseshoe crabs," and suggested to the U.S. Fish & Wildlife

Service (hereinafter USFWS) that a decision should wait until the 2002 data is collected and discussions occur. Further, in Exhibit 34 (9/21/01), the Corps states:

“Absent results that demonstrate minimal impact on the designated species, the Corps will work outside the environmental windows, should a permit be granted. In other words, the Corps is not seeking a decision from DNREC on this issue at this time, and we fully recognize that it is our burden to provide this data to DNREC’s satisfaction should we seek to work within these otherwise closed environmental windows.”

DNREC has not agreed to the window waiver and has asserted since prior to the permit application that the window would be applied unless specific information and data was provided to demonstrate otherwise (Exhibits 21 and 52).

There certainly is nowhere near the confusion and controversy regarding the request to waive the winter flounder window. The Corps appears to have a sound and rational basis for their request (Exhibit 120). DNREC has placed only a general objection, stating the window waiver requests are unresolved (Exhibit 125), and the public is silent except for comments on the extremely late timing of the waiver request (Exhibit 122). However, Exhibits 51 and 120 contain identical Corps proposed procedures for requesting planned changes to environmental windows. There is no documentation in the Record that this procedure, which requires coordination with and concurrence from State and federal agency personnel and experts, has been followed for the winter flounder request at Kelly Island.

I find the Corps has not met the regulatory burden of demonstrating there is no feasible or prudent way of reducing the anticipated detrimental effect of waiving the window for horseshoe crabs on Kelly Island. I find the Corps has preliminarily demonstrated there will be no significant impact to the species from waiving the winter flounder window for Kelly Island, but the Corps has failed to gain concurrence from DNREC, in accordance with Record procedures.

There being no other controversy or concern regarding the way or method by which the Kelly Island project will be constructed (provided sequencing and methodology remain as indicated in the Record), the proposed protective measures during construction will be examined. The procedures to be taken during construction to “reduce detrimental effects” are outlined in the Kelly Island Goals and Objectives Table (Exhibit 1), in the SEIS (Exhibit 4), and are summarized by the Corps in Exhibit 120. These measures focus on monitoring potential impact to nearby oyster beds and construction performance standards. There does not appear to be any concern or objection in the record to the proposed pre-construction monitoring, monitoring during construction, or the project design standards and sequencing developed by agreement between the agencies (public comments and Exhibit 125). There is widespread concern regarding potential impacts to the nearby oyster beds by both the public and DNREC (Exhibits 21, 30, 70, 80, 84, 104, 108, 111, 118, 119, 122, and 125), but no suggestion on how to further minimize potential impact beyond that presently proposed (remedial measures are discussed below). There is also repeated concern by the public relating to potential contamination of dredged sediments and their use at Kelly Island, with resultant potential leaching or remobilization impacts (see citations relating to water quality in Chapter 60). DNREC is satisfied the project will meet State Water Quality Standards, the Corps has agreed to monitor the effluent, and this report recommends an outline of protective specifications and conditions (see Chapter 60 discussion).

I find the Corps has met the regulatory burden of attempting to minimize detrimental environmental effects during construction. As stated previously, this finding does not mean resultant potential impacts are acceptable, simply that the Record does not contain any suggestion for further impact minimization. **I further find the pre-construction and during construction monitoring approved by DNREC is a proactive measure to identify and reduce long-term net detrimental effect.**

The regulations then require an evaluation of measures to reduce detrimental effects after construction is completed. The regulations require DNREC evaluate “All measures to be

taken ... after completion ... to reduce detrimental effect.” Holding a permittee responsible for any future problems resulting from the project, or lack of compliance, is a standard and accepted method to ensure minimization of detrimental effect. Without such acknowledgment of responsibility, there is no measure to reduce effects and the regulatory evaluation will be negative. The Record does contain concerns with several components of the Kelly Island project subsequent to initial construction. These include sedimentation impacts to oysters (see previous list of cites), continued need to maintain the beach (Exhibits 68, 70, 108, 117, 122), sedimentation into the Mahon River channel which will require ongoing maintenance dredging (Exhibits 68, 70, 108, 117, 122), and the question of long-term responsibility and liability should anything go wrong (Exhibits 52, 68, 73, 79, 84, 93, 101, 107, 119 and 122).

Using pre-construction studies and DNREC-approved monitoring, a good baseline understanding and mapping of the oyster beds and intervening areas near Kelly Island should be achieved (Exhibits 1, 4, 21, 30, 52, 120). All parties agree it is necessary to obtain as complete an understanding as can reasonably be accomplished prior to construction. As stated above, there does not appear to be any specific criticism or suggestion for improving current and proposed studies. Therefore the concern focuses on two ways in which the beds could be impacted. First, a sediment or sand plume could originate from the project effluent discharge and/or from erosion of the established beach; or second, and much less likely, a catastrophic breach of the dike occurs (Figure 9-2, SEIS, Exhibit 4). The proposed remedial responses are included in the Kelly Island goals and objectives table provided with several Corps documents, including the application.

As to the potential for a dike breach, the Corps has committed to develop “An operation and maintenance plan ...that will include repairs to prevent any breach or potential breach from occurring.” (SEIS, pg. 9-20) The Corps response plan for oyster bed sedimentation (which results in increased smothering from anaerobic conditions) is to find out who and what is responsible, and provided the Corps determines they are responsible, then look at various restoration methods and technology, and then restore the oyster habitat (Exhibits

1, 120, and various Corps documents). The Corps response plan to a sand and/or sediment plume migration toward the beds is to look at various choices for diversion, build them, and if it doesn't work, then restore the oyster habitat (various Corps documents). DNREC concludes these proposed remedial measures are inadequate (Exhibit 125), but does not provide the basis for their position. In Exhibit 21, however, there is documentation, signed by DNREC, that the Kelly Island goals and objective table and design were finalized in cooperation and with agreement from DNREC staff.

If the DNREC objection is based on further definition or expansion of the outlined plans, then the concern can be addressed by using permit conditions and requirements. For example, does restoration of habitat include restoration of a thriving and viable oyster population? What are the timelines anticipated in these plans? What constitutes "significant" impact? If the remediation plan doesn't work, what mitigation is proposed? These all seem like reasonable and pertinent questions, considering the Corps position is that impacts on these oyster beds is not anticipated to occur at all, and recognizes oysters are critical to the economic and environmental health of the area.

I find the Corps proposed monitoring and responses regarding potential oyster impacts adequate to reasonably minimize detrimental effects after completion of construction. However, clarification and expansion of the proposed remedial actions is necessary and should be developed in further coordination with DNREC.

The Corps acknowledges in the SEIS and in other documents that the created beach will need maintenance. They state the project design using groins and geotextile tubes will minimize this anticipated loss (Exhibits 1, 4, 120). The source of the needed maintenance sand could be from ongoing maintenance dredging of the main channel or potentially from maintenance of the Mahon River channel. The public concerns seem to focus on the cost of such maintenance and the uncertainty associated with ultimate sand movement (Exhibits 68, 70, 108, 117, and 122). Assuming such maintenance could be accomplished outside of any protective environmental windows, the Record does not contain substantive

environmental concerns with beach maintenance. It should be noted there are some public concerns which postulate the Corps may be underestimating the beach removal rate and may find it difficult to keep up with the loss, particularly resulting from a major storm (for example, Exhibit 117).

I find the Corps proposed monitoring and maintenance of the created beach and wetlands at Kelly Island adequate to reasonably reduce and minimize detrimental effects after completion of construction.

The Corps acknowledges in the SEIS (Exhibit 4, plus 120) that there will be an unknown quantity of sand moving from Kelly Island into the Mahon River navigational channel and have proposed ongoing studies to determine the frequency of maintenance dredging required. The initial plan is to dredge every three years and conduct shoaling surveys for at least the first five years. Public concerns are similar to those mentioned for maintenance of the Kelly Island created beach. As with beach maintenance above, the Record does not contain any substantive environmental concerns regarding proposed monitoring and maintenance of the Mahon River navigational channel.

I find the Corps proposed monitoring and maintenance plan regarding sedimentation to the Mahon River adequate to reasonably reduce and minimize potential detrimental effects after completion of construction.

Long-term liability relating to reducing detrimental effects consists of two parts. First, maintenance of the permitted project; and second, responsibility should anything unforeseen occur which needs remedial or restorative action. The proposed maintenance of the Kelly Island project, including maintaining the beach, structures, and berms (Exhibits 1, 4, 118, and 120) appear to be without controversy except as discussed above. Conforming to the project "Goals and Objectives" document (various Corps exhibits) is sound and appropriate, with the exception of the oyster damage response, as it has been developed in conjunction with DNREC and various federal agencies (Exhibits 1 and 52).

The question then becomes what contingencies should be in place? (For example, developing a defined response plan to a catastrophic breach of the containment dike.) While there are several commitments to make inspections, conduct studies, and provide data, what recourse does the State have if proposed actions are deemed unacceptable or requirements or commitments are left unfulfilled? For example, when asked if the Kelly Island project will be maintained for the 50-year project life (Exhibit 73), the Corps replied it will inspect the project and maintain the beach, but did not respond to the duration of such a commitment (Exhibit 120). When repeatedly queried regarding liability and responsibility for remedial action (Exhibits 52, 68, 73, 79, 84, 93, 101, 107, 119 and 122), the Corps responded (Exhibit 120):

If an environmental problem arises during dredging, the Corps and the project sponsor, the DRPA, will be responsible for any environmental remediation costs that occur during dredging of the Delaware River Main Ship Channel. This responsibility will be detailed in the Project Cooperation Agreement (hereinafter PCA) to be signed by the Corps and the DRPA. Further, as the applicant for the DNREC permit, the Corps is legally and financially accountable for any remediation that falls within the permit parameters. Contrary to statements made at the December 4 and 5, 2001 Public Hearing, the State will not incur any financial burden if the dredging causes an environmental problem.

The Corps responds that any decisions regarding CERCLA remediation would be made by USEPA in conjunction with the State, then goes on to say:

Any other environmental remediation will be decided upon by the Corps unless such remediation is a requirement of any valid State permit or water quality certification in which case the State will decide upon the need, type and degree of remediation required.

There are two questions which arise in a reading of the Corps position. First is the conditional phrase which appears to limit Corps and DRPA responsibility to "during dredging"; and second, another apparent limitation by using "valid" to describe the permit

requirements. If the project is complete, and the permit and certifications have expired, are they still “valid”? However, noting the Corps has acknowledged responsibility to comply with permit “requirements” and “parameters” and to accept legal and financial long-term responsibility and liability for the project (public scepticism notwithstanding), there remains only agreement on the method and wording to accomplish what appears to be identical intent from the Corps, DNREC, and the public.

I find there is a need and regulatory obligation to ensure there is perpetual, defined, and legally-binding responsibility acknowledged by the Corps in order to minimize known and potential detrimental effects after construction. I also find, therefore, that the conditions and specifications placed on any authorization, including acceptance of liability, responsible parties, and long-term requirements and validity, are of utmost importance to ensure compliance with regulatory intent. I find that upon concurrence between the Corps and DNREC on long-term liability and responsibility, all reasonable measures to ensure minimization of detrimental effects after construction have been taken.

Section 3.05 H(5). What adverse environmental impacts cannot be avoided? The Record is clear that 120 to 140 acres of existing shallow water habitat will be converted to 60 acres of tidal marsh and 5,000 lineal feet of beach (Exhibit 1). However, since DNREC and the public have not objected to or characterized this conversion as an adverse impact, and the Corps convincingly asserts this project will result in net benefit to resources, the “adverse” impact would be temporary and not be a net loss. To label the shallow water conversion as adverse is effectively refuted by facts within the Record which clearly show the conversion of tidal marsh to shallow water is common and unwanted throughout Delaware coastal regions, including significant loss at this project location (Exhibits 1, 4, 40, and 120). Thus, the very reason for conducting the restoration project can hardly be deemed an unavoidable adverse impact, as it is by desire and choice.

There is, however, another direct impact recently proposed by the Corps (Exhibit 120). 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 remains contentious with DNREC (Exhibit 125) and the public (Exhibit 122), and is unavoidable if the project is approved as currently proposed. As the Record and current studies reveal, it is not possible at this time to determine whether this unavoidable loss is acceptable or if the anticipated benefit will outweigh the foreseeable detriment.

The second level of consideration of unavoidable impacts involves identified or potential secondary impacts resulting from the project. There does not appear to be any indication in the record of any identified secondary impacts which are not associated with the direct filling of the shallow water acreage. However, the project has the potential to cause secondary adverse impacts to nearby oyster beds from sedimentation (see previous discussion). This impact is acknowledged by DNREC, which focuses its' concern on the inadequate remedial actions proposed by the Corps should this secondary impact occur (Exhibit 125) .

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. As discussed in previous findings, this conclusion does not imply or mean that these impacts are acceptable or not, simply that they will or may occur should the project proceed.

Next we move to Section 7 of the Wetlands Regulations (which mimics Section 6604, Chapter 66, Title 7 of Delaware Codes), in that it contains the “standards” or specific findings required during DNREC consideration of a permit application. Section 7.01 instructs the Secretary to consider the overall effect of a proposed activity and provides authority to add permit conditions and specifications necessary to “further the purpose of the Act.” Section 7.02 through 7.08 provides a listing of factors which shall be considered

in the application review, and these subsections will be discussed one at a time in relation to the findings from Section 3.05 B & H above.

Section 7.02. Environmental Effect - Environmental Effect shall include consideration of the effect of site preparation and the proposed activity on the following wetland values:

A. Value of tidal ebb and flow.

- (1) Production Value: carrying organic matter to adjacent estuaries and coastal waters which serve as breeding areas for certain animal species (especially fish and shellfish).

The very nature and purpose of the tidal wetland restoration project will result in increased biological production. The application for permit (Exhibit 1), the SEIS (Exhibit 4), and the Kelly Island Goals and Objectives table (11/00, various Corps submittals) all outline the anticipated benefit to be realized to coastal production values. There does not appear to be any item in the Record which disputes the wetland production benefit should the project design intent be realized. Although some existing production value will be lost as the project is proposed (horseshoe crabs, benthic and shoreline organisms within the project footprint), the intended net benefit will be positive to biological diversity and vitality in and adjacent to the project.

I find the net environmental effect of the project to tidal ebb and flow production values will be positive and beneficial.

- (2) Value as a natural protective system of absorption of storm wave energy, flood waters, and heavy rainfall, thereby decreasing flood and erosion damage.

It is acknowledged there is no flood control element, either positive or negative, associated with this project. Although the Corps permit application documents state this item is not applicable to the review (Exhibit 1), one of the touted benefits of the project is to stop

existing erosional loss of Kelly Island. Another is to protect the Mahon River navigational and fuel dock facilities and landward wetlands from overwash and loss. The public concern is focused on erosional loss of the constructed beach, continual beach nourishment maintenance requirements, and resulting need to periodically dredge the Mahon River channel (Exhibits 68, 70, 108, 117, 122). DNREC, who can be construed to be a participant in development of the plan (Exhibit 21) and who advocated the project long ago (Exhibit 4), thereby acknowledges the decrease in erosional damage which will result from the project.

I find the environmental effect of the proposed project to the tidal ebb and flow absorption of storm wave energy and decrease in erosion damage will be positive and beneficial.

- (3) The prevention of silting in certain harbors and inlets thereby reducing dredging.

Again the Corps claims in the application document (Exhibit 1) that this item is not applicable to the project.

I disagree. There is both the consideration of protecting the entrance to the Mahon River and the anticipated maintenance dredging of the River navigational channel (Exhibits 1, 4, 21, 52 and 120). The project is in part justified in the SEIS as a measure to reduce increasing wave energy in the Mahon River and the potential for wetland impact landward of the project from overwash and loss (Exhibit 4). As is mentioned above, the public has identified the continual need to periodically dredge the Mahon River navigational channel as a negative aspect of the project. DNREC is silent on this issue. It appears the balance is between the benefit of increasing protection of the river mouth from wave energy and the maintenance dredging need which results from the project. Although the record appears silent on the existing Mahon River dredging needs, it seems logical to assume should the uncontested Corps prediction of increasing wave energy impacts be realized (resulting in

the potential for erosional loss of the southerly point of Kelly Island, which currently protects the river entrance), then the future anticipated maintenance dredging should actually result in less effort than that needed to maintain the river navigational channel should nothing be done. The Corps also makes the point that if 40,000 cubic yards of sand were dredged from the river every 3 years, that material may be used to replenish the dike and beach protecting the tidal wetland restoration.

I find the environmental effect of the proposed project on tidal ebb and flow relating to silting of inlets and maintenance dredging needs will have a net positive and beneficial effect when compared to the potential needs resulting from no protective action.

(4) Removal and recycling of inorganic nutrients.

The Corps states in their permit application that restoration of the 60 acre tidal marsh will “increase the ability of the ecosystem to remove and recycle inorganic nutrients (Exhibit 1). There is no contrary opinion in the record. The statement makes logical and biological sense considering the basic project purpose and project design elements.

I find the environmental effect of the proposed project on the tidal ebb and flow relating to removal and recycling of inorganic nutrients will be positive and beneficial.

(5) Effect on the estuarine waters.

The Corps asserts the project will be beneficial to the estuary. DNREC agrees by advocating the project and participating in the project design development. All of the benefits to be realized from the proposed wetland restoration, beach restoration, and navigational protection are positive to the estuary. However, the previous findings of unavoidable impact to horseshoe crabs and potential impact to nearby oyster beds must be considered in weighing the net effect. Even with the identified impacts, and in consideration of the efforts to prepare and respond to them, the project appears to provide significant long-term net benefit to resources.

I find the environmental effect of the proposed project on the tidal ebb and flow relating to effect on the estuarine waters will have a net positive and beneficial effect.

B. Habitat Value

- (1) Habitat for resident species of wildlife including furbearers, invertebrates, finfish.

As discussed previously, the project intentionally proposes to convert shallow water habitat to tidal marsh and sand beach habitats. Tidal marshes and sand beaches suitable for horseshoe crab and migrating shorebird use are declining in the State due to erosional conversion to coastal shallow water habitat. The project will logically increase habitat for marsh and beach species while decreasing shallow benthic habitat. As determined in the above findings, the net environmental, ecological, and habitat impact is positive. As outlined before, the Record does not include objections to the proposed habitat type conversion.

I find the net environmental effect of the proposed project on habitat value for resident species of wildlife will be positive and beneficial.

- (2) Habitat for migratory wildlife species including waterfowl, wading birds, shorebirds, passerines, finfish, shrimp.

The project is designed to create long-term benefit to migrating waterfowl, wading birds, and shorebirds, with inherent passive secondary benefit to passerines. There will be a temporary disruption of use and habitat during construction, with a resultant net increase in habitat after construction. The same scenario will occur for the horseshoe crab, with unknown impact on local populations during construction if the protective window is waived. Regardless, the project will create more habitat than presently exists. There will be a net loss of habitat for fish and other organisms occupying or using the present shallow water area within the project footprint, but this is by intent.

I find the net environmental effect of the proposed project on habitat value for migratory wildlife will be positive and beneficial.

- (3) Rearing area, nesting area, breeding grounds for various species.

Based on the previous findings and discussions, I find the environmental effect of the proposed project on habitat value for rearing, nesting, and breeding will be positive and beneficial.

- (4) Habitat for rare or endangered plants.
- (5) Presence of plants or animals known to be rare generally, or unique to the particular location.
- (6) Presence of plants or animals near the limits of their territorial range.

The Corps SEIS for the project addresses the issue of rare, threatened, or endangered species either known to occur on site or anticipated to use the completed project (Exhibit 4). In coordination with other State and federal agencies, the Corps did not find any species of concern, rare, or unusual species at or using the site. There is no evidence in the Record which would dispute these findings and DNREC has not raised rare species as an issue or concern associated with the project. (Note there are species of concern involved with other aspects of the MCD project, which will be discussed in the Chapter 72 evaluation.)

I find the environmental effect of the proposed project on the habitat value for species of concern is negligible, and will not threaten the continued existence of any species. This finding pertains only to the Kelly Island restoration portion of the project.

- (7) Presence of unique geologic or wetland feature.

Again, the SEIS concludes there are no geologic formations or features worthy of note at the site. There is nothing unique left about the remnant wetlands at the site. Neither DNREC or the public have raised this topic as an issue of concern.

I find the environmental effect of the proposed project on the habitat value for unique geologic or wetland features to be nonexistent.

7.03 Aesthetic Effect - Consideration of the aesthetic effect may include:

- A. Presence of plants or animals of a high visual quality.
- B. The presence of an associated water body.
- C. Wetland type of topographic diversity.

It is uncontested in the Record that the habitat to be created will restore habitat for animals of high visual quality, such as waterfowl and shorebirds, that the creation of a tidal marsh will enhance associated Delaware Bay, and that the project will be topographically compatible with the surrounding landscape.

I find the effect of the proposed project relating to aesthetic values will be positive and beneficial.

7.04 Impact of Supporting Facilities

The supporting facilities to be considered include any public or private construction, whether or not the construction occurs in the wetlands, which would be required for the construction or operation of the proposed wetlands activity, such as roads, sewage disposal facilities, electric lines, water supply systems, and schools. Effects shall be separately determined for the lands neighboring such facilities.

The Corps states in the permit application there will be no supporting facilities as all construction will be accomplished from the water (Exhibit 1). The public does not disagree,

although one comment pondered how the Corps was going to get equipment such as bulldozers onto the island for grading of spoils and beach construction. DNREC does not identify any concern regarding support facilities.

I find the effect of the proposed project relating to support facility adverse impact is negligible.

7.05 Effects on Neighboring Land Uses

- A. The effects of the proposed wetland activity on neighboring land use are to be considered whether or not the neighboring lands are wetlands.
- B. The environmental, aesthetic and economic effects of the proposed wetland activity on land uses neighboring the lands on which supporting facilities will be located may be considered.

As found in Section 7.04 above, there are no support facilities required on adjacent lands. The proposed wetland restoration is certainly compatible with adjacent lands and uses and per the finding in Section 7.03, the aesthetic impact will be positive.

I find the effect of the proposed project relating to effects on neighboring land uses will be positive and beneficial.

7.06 Federal, State, Regional, County and Municipal Comprehensive Plans

Compliance of the proposed activities with the plans of the jurisdiction in which it is proposed to take place, and its impact on the plans of other affected jurisdictions.

The Corps states the project was reviewed by all pertinent agencies, authorities, and jurisdictions during the NEPA review process (Exhibit 1). There is no contradictory evidence in the Record. Logically, the project may have a long-term impact on planning,

particularly regarding CDF's and facilities which may benefit from the project, but this is not discussed in the Record.

I find the effect of the proposed project relating to compliance with all jurisdictional planning to be minimal and undefined.

7.07 Economic Impact

Economic Impact shall include a short and long-term evaluation of the following factors to the extent the effect is directly attributable to the proposed activity:

A. Jobs created or lost and the net income effect of jobs.

The Corps asserts that 300 jobs will be created in Delaware during the four-year MCD construction period (Exhibit 1 - Project Fact Sheet). There is no breakdown of how many of these jobs are associated with the wetland restoration at Kelly Island. The first Economic Review commissioned by DNREC (Exhibit 124) touches on this aspect of the economic picture: "This study provides little if any useful information ... since it is based on inappropriate concepts and assumptions ..." (p. 20). The second Economic Review states the benefits from Kelly and Egg Island restorations are unquantified in the Corps Economic Reanalysis, but list them as unquantified project benefits (Exhibit 132).

B. Increases in revenues to or increases in expenditures by State, County and local governments (e.g., increased taxes from an increased tax base and increased expenditure for maintaining supporting facilities).

The State of Delaware portion of project costs is presently estimated to be \$7.5 million. A breakdown of what percentage of this cost-share is for Kelly Island is not present in the Record. Similarly, although the Corps claims there will be \$4 million in revenue to the State and local units of government from income taxes, it is not possible to extract the portion related to the Kelly Island portion of the total MCD project. The first Economic Review commissioned by DNREC (Exhibit 124) criticizes the study from which these numbers were derived (see above quote). The second Economic Review concludes "...we are unable to

provide a quantitative estimate of prospective incremental non-market benefits from restoration and protection of Delaware salt marsh..." (Exhibit 132).

- C. Increases or decreases in the value attributable to the wetland as a source of nutrients to finfish, crustacea and shellfish and as habitats of such species or other flora or fauna of significant actual or potential economic value.

The Corps permit application claims wetland restoration inherently creates increased value, even considering the loss of submerged habitat. The first Economic Review commissioned by DNREC (Exhibit 124) criticizes the Corps lack of quantification of the adverse effects of filling the shallow water benthic habitat (p. 25). The review also addresses the claimed biological benefit as "... largely national and international in scope." (P. 18). The economic resubmittal and subsequent review, however, both conclude there is a net benefit from the project, although as quoted above, the benefits from Kelly Island are unquantified (Exhibit 132).

- D. Increases or decreases in the value of the land as a recreational area.

The Corps logically asserts there will be a net increase in value, based on all the benefits and biological production which will ensue, in recreation due to use of and observation of wildlife and fisheries. The first Economic Review commissioned by DNREC (Exhibit 124) notes the Record does not contain any "... quantitative study estimating the benefits to Delaware outdoor recreation users from the Kelly Island project," nor have they seen such a study (p. 18). To my knowledge, this topic is not raised in either the Corps reanalysis or the review.

- E. Increases or decreases in the cost of flood control or expected flood damage which might be caused by the effect of the activity on the natural capacity of the wetland to reduce flood damage.

As discussed previously in Section 7.02 A.(2), there is no flood storage or flood control aspect of the project.

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- F. Increases or decreases in the costs of maintaining navigable harbors and waterways which would result from altering the capacity of the wetlands to absorb silt.

The project site is currently producing siltation to the Delaware estuary. As previously reported, the maintenance dredging of the Mahon River navigation channel is estimated at 40,000 cubic yards every 3 years. The Corps terms this cost “negligible” (Exhibit 1, Fact Sheet, p. 6). Regardless, the necessary dredging will not be a result of “... altering the capacity of the wetlands to absorb silt.” The first Economic Review commissioned by DNREC (Exhibit 124) does not directly address this issue, nor does the second (Exhibit 132).

- G. The net economic effect, both public and private, of any contemplated supporting facilities.

There are no contemplated support facilities, so this item does not apply.

- H. The net economic effect, both public and private, of the proposed activity on neighboring land uses.

The adjacent and neighboring land uses are primarily wetlands and shallow water habitat. The economic impact of increasing the overall biological production of the area has value, but the first economic review states this benefit is largely national and international in scope and is not quantified for Delaware.

As an overall observation, the first Economic Review commissioned by DNREC (Exhibit 124) also concludes that the \$74 million to build Kelly Island and nourish beaches which the Corps attributes as a benefit is actually a cost (p. 27), and that from a overall MCD perspective, they “...question whether the project benefits to Delaware are adequate to justify the Delaware cost share.” The second Review concludes much differently, as quoted above (Exhibit 132), and concludes a net benefit to the State of Delaware.

The public has both questioned the overall economics of the MCD (Exhibits 56, 71, 73, 76, 77, 79, 80, 82, 84, 85, 88, 90, 91, 101, 106, 107, 108, 109, 115, 117, 122, and 131) and

supported the project as economically beneficial (Exhibits 55, 74, 81, 86, 92, 97, 105, and 131). Of the 43 comments (Exhibit 131) received during the second Public Notice relating to Economic Reanalysis, 12 espoused economic benefit, while 19 continued to dispute various aspects of the Corps resubmittal (the remaining 12 responses did not comment on economics). Unfortunately, there is little contained within the public comments which is on point of the Kelly Island economics, with the exception of some portions of the Stearns report (Exhibit 122).

I find, based on the Record, it is valid to conclude the Kelly Island wetland restoration project will have economic benefit for the State of Delaware. I further find there is basic logic which concludes such a beneficial use project must be economically beneficial in the MCD project context, albeit unquantified (Exhibit 132).

It is noted the second economic review and notice comments are cited in this section, even though Secretary DePasquale limited the resubmittal and related comments applying only to Section 3 of Chapter 72, Subaqueous Lands. Due to the interrelated nature of the regulatory authorities, it was deemed appropriate to use the information and data in these findings.

I find the Corps has adequately demonstrated the Kelly Island wetland restoration project will result in an economic benefit to the State of Delaware.

7.08 Project design that eliminates or substantially lessens damage to the wetlands.

This subsection is different than 3.02 H(3) in that the alternatives sought are specifically limited to minimizing adverse wetland impact rather than overall environmental damage. Based on the previous findings that the project is wetland dependent, will provide net wetland benefit, and will restore previously lost wetlands, minimal damage to existing wetlands will occur as a result of the project.

I find there is no identified alternative which would result in less wetland damage.

The above discussion completes the review of standards in the Wetland Regulations upon which a permit application must be evaluated. Section 7.01 of the regulations now specifies: The Secretary shall consider the overall effect of the proposed activity.

A brief summary of the findings to date is in order, so as to view the project as a whole. The findings which demonstrate the proposed project meets the regulatory intent of Chapter 66 and are potentially beneficial and permissible include:

- A. There is a demonstrable need for the project.
- B. The project is wetland dependent and cannot be located in uplands.
- C. There will be semi-permanent beneficial changes to the area.
- D. There are no identified alternatives which would eliminate or reduce potential impact while achieving the basic project purpose in a feasible and prudent manner.
- E. The Corps has demonstrated they have minimized potential for detrimental effects during construction of the project.
- F. The proposed pre-construction and during construction monitoring is a positive and proactive manner by which to minimize potential long-term adverse effects.
- G. The Corps has adequately addressed post-construction monitoring and response to potential oyster impacts. However, the response procedure must be better defined in cooperation with DNREC.
- H. The Corps has demonstrated monitoring and maintenance of the created beach and wetlands is adequate to minimize potential effects after construction.
- I. The proposed monitoring and maintenance plan to maintain the navigational channel of the Mahon River is adequate to minimize the potential for adverse effects after construction.

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- J. The net effect to tidal ebb and flow production values is positive and beneficial.
 - K. The net effect to tidal ebb and flow energy absorption is positive and beneficial.
 - L. The net effect to protection of the Mahon River navigability is positive compared to the potential adverse effects of no action.
 - M. The net effect to tidal ebb and flow removal of nutrients is positive and beneficial.
 - N. The net effect on estuarine waters is positive and beneficial.
 - O. The net effect on resident species will be positive and beneficial.
 - P. The net effect on migratory species will be positive and beneficial.
 - Q. The net effect on rearing, nesting, and breeding will be positive and beneficial.
 - R. The effect on rare species or habitats or geologic formations is negligible or non-existent.
 - S. The overall aesthetic effect will be positive and beneficial.
 - T. The impact from any support facilities will be negligible.
 - U. The net effect on neighboring land uses will be positive and beneficial.
 - V. The net effect on governmental planning is minimal, and not identified in the Record.
 - W. There are no identified alternatives to further minimize wetland impact.
 - X. The project has an unquantified net economic benefit to the State.

The findings which demonstrate or support the conclusion there will be negative environmental effects contrary to the intent of Chapter 66 include:

- There will be an unavoidable net loss of shallow water habitat.
- There will be an unavoidable potential secondary impact to nearby oyster beds.
- There will be an unavoidable adverse effect on horseshoe crabs.
- The Corps has failed to demonstrate there is no feasible or prudent way to comply with the horseshoe crab window.
- There is a need and obligation to assure future unknown adverse effects are minimized by ensuring a legally responsible and liable party is held

accountable for such effects. This matter remains to be negotiated between DNREC and the Corps, but is unresolved at present.

- The Corps has failed to comply with the procedures established for requesting changes in closed environmental windows for both the horseshoe crab and winter flounder.

On the balance, the project appears positive, which is what one would expect from a wetland restoration project. However, there are serious issues that remain unresolved and potentially harmful to the State and natural resources.

I find the Corps has failed to provide sufficient and necessary information to meet the regulatory burden to obtain a permit under the authority of Chapter 66, as potential adverse effects have not been proven to be minimized.

However, I find that a permit could be issued provided the Corps provides acceptable resolution to two primary issues:

- 1. Compliance with procedures established for waiving established environmental windows, or acceptance of same.**
- 2. Section 3.05H (4) of the Wetlands Regulations requires minimizing the potential for adverse effects during and after completion of the project. The only way to accomplish this is to have a responsible party, willing and liable to fix problems and stand by their work. Although it is apparent this issue is of paramount concern to the public, effective resolution may be achieved through agreement with the State.**

The finding potentially allowing permit issuance is contingent that certain permit specifications and conditions are met. The Corps must agree to these conditions.

The following paragraphs essentially identify the information and agreements necessary to meet the purpose and intent of the statute.

Section 7.01 states in pertinent part:

The Secretary may impose permit conditions designed to further the purpose of the Act.

Prior to consideration of permit issuance, it is recommended the following permitting requirements, conditions and specifications for Chapter 66 considerations be provided to the Corps for concurrence. The findings of meeting the regulatory intent and requirements are, in part, dependent upon compliance with these conditions. It is noted some of the suggested conditions will be modified for prudent considerations.

- A. Standard and typical conditions placed on any similar DNREC wetland permit.
- B. Prior to contracting this portion of the MCD project, the Corps shall coordinate the request to waive the winter flounder protective window in accordance with submitted procedures, and shall provide documentation to DNREC that all other consulted agency and expert opinions agree the proposed modification can be accomplished without significantly impacting the species. DNREC staff must agree with these findings. The result may include a shortening of the window, careful construction sequencing within the window, or a combination of approaches which do not necessarily result in a one year waiver of the protective window. DNREC shall provide written concurrence and approval to the Corps.
- C. Prior to contracting this portion of the MCD project, the Corps shall coordinate the request to waive the horseshoe crab protective window in accordance with submitted procedures, and shall provide

documentation to DNREC that all other consulted agency and expert opinions agree the proposed modification can be accomplished without significantly impacting the species. DNREC staff must agree with these findings. The result may include a shortening of the window, careful construction sequencing within the window, or a combination of approaches which do not necessarily result in a one year waiver of the protective window. DNREC shall provide written concurrence and approval to the Corps.

- D. Due to the enormity of the potential adverse effect should the containment dike breach, the Operation and Maintenance Plan for the Kelly Island wetland restoration project shall be provided to DNREC prior to initiating the work authorized herein. DNREC shall review and concur with the plan, and in particular the dike maintenance and defined emergency response plans, to ensure the potential for breach has been minimized and the reaction should a breach occur is appropriate .
- E. All identified items regarding research, reports, and monitoring proposed by the Corps and DNREC shall be conducted.
- F. All dike maintenance, excluding emergency repairs, shall be conducted in accordance with established environmental protective windows (i.e., horseshoe crabs, shorebirds, etc.).
- G. The Corps shall confer with DNREC and reach agreement on the monitoring and response plan to protect oyster beds prior to initiating the work authorized therein. This requirement acknowledges the proposed Corps plan, and is intended to broaden the scope and definition of those proposals., including reporting requirements and timelines for action.
- H. The proposed Kelly Island wetland restoration plan shall be maintained for the life of the authorized federal project, which is currently 50 years, unless DNREC authorizes a reduction.

- I. The proposed Mahon River monitoring and maintenance plan shall be conducted for the life of the authorized federal project, which is currently 50 years, unless DNREC authorizes a reduction.
- J. The Corps and the State of Delaware must agree on how to most effectively assure that any future liability is the responsibility of the Corps, and potentially the project sponsor, the DRPA. Such agreement should include acceptance of legal and financial liability, define the responsible parties, and address long-term responsibility and validity covering potential problems and resulting damages from all aspects of the entire MCD project within the State. This agreement must be functioning prior to initiating any work authorized herein.
- K. As the Corps has proposed, only dredged material from "Reach E" of the MCD project may be used in the Kelly Island wetland restoration project. Consideration of use from any other Reach will necessitate further DNREC review and concurrence.
- L. Any other permit condition as may be deemed appropriate by DNREC.

The unknown costs to comply with these provisions may have project cost/benefit and State cost-share implications.

VI. STATUTORY AND REGULATORY REVIEW - SUBAQUEOUS LANDS (CHAPTER 72)

This chapter regulates the remaining State permitting aspects of the MCD project. The dredging itself, placement of excavated material in CDF's and along beaches for nourishment and other beneficial uses, and planned maintenance of the deepened channel are regulated under Chapter 72. Section 1.02(A) of the promulgated "Regulations Governing the Use of Subaqueous Lands," adopted May 8, 1991, and amended on September 2, 1992, deals with the applicability of the regulations to projects:

1. The extent of jurisdictional authority over public or private subaqueous lands includes any activity in a navigable stream or waterbody, which have a hydrologic connection to natural waterbodies.
2. These Regulations shall apply to all activities upon or affecting public and private subaqueous lands within the State of Delaware.

The Regulations further state which type of projects require permits for use of public subaqueous lands in Section 1.04:

- B. The following types of activities on public subaqueous lands require a lease, permit, or letter of authorization from the Department:
 2. Dredging, filling, excavating, or extracting of materials.
 8. Maintenance dredging of existing or new channels, ditches, dockages, lagoon and other waterways to maintain or restore the approach depth and width (letter of authorization).
 11. New dredging activities of channels, ditches, dockages, or other waterways.

Based on the citations, there is no question a permit is required from DNREC for the proposed MCD project, and the exemptions contained in Section 1.08 are not applicable to any aspect of the project.

A. Procedural and Review Requirements

The Corps submitted a permit application in accordance with Section 2.01, which details the information required to be included in an application. DNREC requested additional information in accordance with Section 2.02, which provides such authority. It is pertinent to note Section 2.03, Burden on Applicant:

The burden shall be on the applicant to satisfy the Department that the requirements of these Regulations have been met; and if the granting of the permits, lease, or approval will result in losses to the public of a substantial resource, that the loss has been offset or mitigated.

Sections 7207, 7208, and 7209 of Chapter 72 specify the permit application process, the holding of a Public Hearing, and the Notice required for the project and Public Hearing. It is noted these procedures are not as defined or as precise as those similar requirements outlined in Chapter 66 (Wetlands) of Title 7 of Delaware Code (see information, discussion and findings in the Chapter 66 portion of this report).

I find the procedural requirements of Chapter 72 have been met (see Chapter 66 discussion). The process described in the statute has been followed, evidenced by DNREC requests for additional information until the application was deemed complete, the public workshop, the proper Public Noticing, and the Public Hearing. There is no item in the Record which disputes this finding, nor any objection or concern raised regarding the process established to create this Record, except for a request by the Mid-Atlantic Environmental Law Center for an additional Public Hearing based on the Economic ReAnalysis submittal (Exhibit 131). Another Public Hearing was not held.

The following proposed activities define the regulatory authority and jurisdiction of Chapter 72 over the project (taken from the permit application documents as later modified by subsequent exhibits):

- Dredge by hydraulic method 17.7 million cubic yards of material by deepening the existing main channel from 40 to 45 feet in depth. This will inherently widen the channel, which will have side slopes of 3 horizontal to 1 vertical. The allowable dredging overdepth is one foot.
- Place 13.2 million cubic yards of dredged material in existing CDF's and three proposed new CDF's to be located in New Jersey.
- Place 2.04 million cubic yards of dredged material at Port Mahon beach and either Broadkill or Rehoboth/Dewey beach.
- Blast 22,200 cubic yards of rock from the channel corridor and place in existing CDF.
- Maintenance dredge up to 6 million cubic yards of material annually and place in CDF's.

All of these regulatory elements have proven to be controversial with both DNREC and the public. There is also significant support, justification, and scientific basis for the project contained within the Record. The filling of subaqueous lands for the Kelly Island wetland restoration is also regulated by Chapter 72. Since the Department, the Corps, and various agencies agree the conversion of shallow water to marsh and horseshoe crab spawning beach is environmentally beneficial, and is the project component evaluated under Chapter 66 review, that portion of the project will only be discussed intermittently in this Chapter.

B. Substantive Requirements and Findings

Section 3 of the "Regulations Governing the Use of Subaqueous Lands" (hereinafter the "Regulations") contains the criteria, considerations, and elements DNREC is required to include in their review of a permit application. Section 3.01 states:

Each application shall be reviewed based on the consideration of the performance specifications, standards and other criteria listed in the section for the type of activity proposed.

An application may be denied if the activity could cause harm to the environment, either singly or in combination with other activities or existing conditions, which cannot be mitigated sufficiently.

With regard to an evaluation of the overall public benefits from the proposed activity or structure, the following criteria may be used to determine whether or not to issue a permit, easement, lease, fee simple interest, or other instrument, with or without mitigating measures and conditions.

Section 3 contains a sequence of evaluation categories, some of which are project dependent. The pertinent parts for this project application review are 3.01A - Public Use Impact, 3.01B - Environmental Considerations, 3.01C - Other Considerations, and 3.05 - Activities involving dredging and filling.

Section 3.01 A. Public Use Impact

The Department shall consider the public interest in any proposed activity which might effect the use of subaqueous lands. These considerations include, but are not limited to, the following: (in pertinent part)

3. The potential effect on the public with respect to commerce, navigation, recreation, aesthetic enjoyment, natural resources and other uses of the subaqueous lands.

This item for consideration is a compendium of factors for which findings will be made later in this Chapter. The final findings for Chapter 72 will revisit this item based the discussions and findings to that point.

3.01(A)(4). The extent to which any disruption of the public use of such lands is temporary or permanent.

The public use of subaqueous lands will be interrupted during placement of sand nourishment on the beaches. This effect will be localized and restrict beach use while sand is being placed. This effect will obviously be temporary, and the result is viewed as positive from the public whose use was temporarily restricted (Exhibits 55, 96, and 103). There will also be a temporary use restriction in the immediate vicinity of the dredging operation. This disruption will be temporary and negligible.

I find the disruption of public use of subaqueous lands from the proposed project will be temporary, and in the case of beach nourishment, will ultimately enhance the use which is restricted. There is no item in the Record which disputes this finding.

3.01(A)(5). The extent to which the applicant's primary objectives and purposes can be realized without the use of such lands (avoidance).

The primary purpose and objective of the project is to deepen the main shipping channel in the Delaware River and Bay. This purpose cannot be achieved by avoiding impact to subaqueous lands. It is documented in early project review that dredged sand disposal did not have to include beach nourishment (Exhibits 3, 4, 5, 6, 7, 8, 42, and 57). Because beach nourishment is a beneficial chosen use, this purpose as well cannot be achieved without filling subaqueous lands. Some exhibits argue that the need for the project does not exist as new technologies allow for the same benefit to be achieved without dredging (Exhibits 56, 67, 73 with various inclusions, 80, 85, 88, 90, 91, 93, 101, 106, 108, 109, 111, 114, 115, 118, 122), while others (Exhibits 55, 64, 74 containing 8 advocacy letters, 81, 86, 92, 97, 105, 118 and 120) maintain the need for the project is greater than ever.

I find the basic project cannot be accomplished, nor can beach replenishment be conducted, by avoiding use of subaqueous lands. There is no item within the Record which disputes this finding. **I also find this subsection does not address the "need" for**

the project. Unlike in Chapter 66, Section 3.05(B), Chapter 72 does not appear to contain a provision requiring the demonstration of need in order to obtain a permit.

3.01(A)(6). The extent to which the applicant's primary purpose and objectives can be realized by alternatives, i.e., minimize the scope or extent of an activity or project and its adverse impacts.

Alternatives for minimizing impact will be evaluated for each forthcoming topics of discussion. Therefore, the final Chapter 72 findings will revisit this item based on evaluation and findings to that point.

3.01(A)(7). Given the inability for avoidance or alternatives, the extent to which the applicant can employ mitigation measures to offset any losses incurred by the public.

Since this subsection follows in logical sequence from the determination of impact minimization, the subsequent findings for this Chapter evaluation must be considered. Therefore, the final Chapter 72 findings will revisit this item based on evaluation and findings to that point.

3.01(A)(8). The extent to which the public at large would benefit from the activity or project and the extent to which it would suffer detriment.

This subsection is also a requirement to take a holistic perspective on the project. Therefore, the findings for the entire Chapter must be considered, and this item will be revisited in the concluding findings.

3.01(A)(9). The extent to which the primary purpose of a project is water-dependent.

I find the basic project purpose, which is to deepen the existing shipping channel, is water- dependent. There is no item in the Record which disputes this finding.

Section 3.01 B. Environmental Considerations

3.01(B)(1). The Department shall consider the impact on the environment, including but not limited to, the following:

-
- a. Any impairment of water quality, either temporary or permanent, which may reasonably be expected to cause violation of the State Surface Water Quality Standards. This impairment may include violation of criteria or degradation of existing uses.

The Chapter 60 portion of this report discussed water quality considerations and concurred with DNREC that the project, as proposed and modeled, would meet water quality standards. These conclusions are based on performance criteria which will be monitored. Contingency plans for exceeding standards are required as a condition of approval. Note this issue is the one which drew the most public comment and concerns (Exhibits 56, 67, 69, 70, 73, 75, 77, 78, 80, 83, 84, 87, 88, 95, 99, 101, 102, 104, 111, and 122).

Based on DNREC findings, I concur the proposed project will not cause impairment or violation of State Water Quality Standards, provided conditional permit specifications are followed. See Chapter 60 discussion and findings.

- 3.01(B)(1)(b). Any effect on shellfishing, finfishing, or other recreational activities, and existing or designated water uses.

This section deals with recreation, and specifies fishing as a primary element of evaluation. One concern raised regarding recreation is the impact on migratory birds (from impacts to horseshoe crab from beach nourishment) (Exhibits 72, 101 and 111) and therefore birdwatching. However, this and other concerns with recreation impacts (Exhibit 122) such as “impact to fish and then to fishing” are secondary impacts from more defined direct effects. Therefore, it is more appropriate to examine the alleged direct impact under the regulatory criteria, and should these prove to be significant, the secondary effects will be noted. The only direct recreational impact identified is that of use restriction during beach sanding operations. Other impacts are temporary, such as no fishing in the immediate area of a working dredge.

I find there will be minimal and temporary direct impacts to recreational activities from the proposed project. It is acknowledged there may be secondary recreational impacts of import should direct relational impacts be significant.

3.01(B)(1)(c). Any harm to aquatic or tidal vegetation, benthic organisms or other flora and fauna and their habitats.

This is obviously a key item in the evaluation mandated by Chapter 72 Regulations, and will therefore be subject to lengthy analysis in this report.

In the permit application (Exhibit 1), the Corps asserts there is no vegetation in the proposed dredge area and the Record does not appear to contain any rebuttal or opposition to this statement.

I find there is no documented harm anticipated to aquatic or tidal vegetation. This finding is also supported by the benefit to vegetation realized by creating 60 acres of tidal marsh at Kelly Island.

As to benthic organisms in general, these potential impacts were discussed in the EIS and the SEIS (Exhibits 7 and 4). The potential benthic organism impacts due to the Kelly Island wetland restoration project (Exhibit 4) are discussed in the Chapter 66 portion of this report and the conclusion reached is that a net environmental benefit will be realized when comparing the loss of shallow water habitat to the anticipated value and productivity of the created tidal marsh and crab spawning beach habitat. The benthic and fisheries impacts resulting from blasting will be discussed later in this report. There are two other aspects of potential benthic impact in the Record due to the proposed MCD project, those being the immediate area impact of the existing channel deepening and the disturbance resulting from proposed beneficial use of dredge spoils for beach nourishment.

In regard to the point of dredging potential impact, the Corps found (Exhibits 4, 7 and 120) that motile organisms will for the most part avoid the immediate dredge area, that sessile organisms will be impacted but will rapidly recolonize the area once dredging is completed (albeit in a potentially different community makeup), and that current maintenance dredging does not appear to appreciably impact local populations of benthic organisms. The “Essential Fish Habitat Evaluation” (11/01 Exhibit 120) concludes that within the dredge footprint organisms with bottom dwelling life stages will be destroyed, such as “... some life stages of ... winter flounder, windowpane flounder, Atlantic sea herring, summer flounder, scup, black sea bass, sand tiger shark, Atlantic angel shark, sandbar shark, and Atlantic sharpnose shark.” Sandbar sharks and winter flounder are discussed separately below. The potential impact to the listed species includes unavoidable entrainment of eggs, larvae, and juveniles into the dredge itself. The potential impacts from dredging on specific identified species of concern, such as blue crabs and turtles, are also discussed below, along with discussion of protective environmental windows for each species. Other than the species of concern which will be discussed separately, DNREC and the public did not place much concern on point of dredging impacts to benthic biota, other than a request for the Corps to estimate the total biomass and diversity of benthic organisms the dredging itself will kill (Exhibit 106). This lack of overall, long-term benthic impact makes sense when considering the corridor is presently subjected to periodic maintenance dredging and repeated prop wash. It is also pertinent to note DNREC and the public were responding to the permit application, in which the Corps stated all dredging would be accomplished by hydraulic means. Alternative methodologies, such as economic loading or mechanical dredging have not been evaluated by DNREC or the public, and there are potential impacts, for example in this context, the potential sedimentation impact on adjacent benthic communities, which have not been assessed.

I find there will be unavoidable harm to benthic organisms in general at the point of hydraulic dredging. I also find this impact does not rise to a level of unacceptable effect as there will be minimal adverse impact to any given species, nor would the

benthic dredging locations place any species at risk. This finding does not apply to alternative dredging methodologies, which must be evaluated separately. This finding does not include those species for which there are separate discussions below.

The potential impact to benthic communities as a result of spoil placement along beaches has been raised as a concern (Exhibits 106, 111, and 122). The Corps proposes to place dredge spoils for beach nourishment at either Broadkill or Rehoboth-Dewey beaches (Exhibit 120). The EIS (Exhibit 5) recognizes the placement of fill in the shallow water littoral zone will result in smothering of organisms present. However, the EIS also notes this nearshore community is highly resilient, that the offshore community may be damaged by sediment loading of fines washed from the beach fill, and that biotic recovery is heavily dependent upon the grain size of the replenished beach. It is noted in Exhibit 120 that these two beaches have received sand nourishment in the past. The SEIS (Exhibit 4) concludes “The loss of the benthic community due to dredged material disposal would be expected to be a short-term adverse impact.” This unavoidable short-term effect does not deter DNREC or the affected riparians and communities from advocating and requesting beach nourishment, in fact, DNREC will have input on the final beach chosen (Exhibit 120). It is also noted by the Corps that these two projects can proceed independent of the MCD project (Exhibit 120). The public concerns and questions focus on species which may be impacted, such as horseshoe crabs or sandbar sharks, but have little to say on benthic impact of beach placement, except for the Sierra Club in Exhibit 106, which requests the Corps be required “...to estimate the total bio-mass and diversity of benthic organisms that will be killed as a result of burial ...”

I find there will be an unavoidable harm to benthic communities during deposition of dredge spoils at either beach. I also find this harmful effect to be short term, which does not rise to the level of unacceptable effect. Beaches are nourished every year all along the coastline. The impacts (other than to selected species of concern) have

not led to a suspension of or retreat from this common practice. This finding does not include those species for which there is a separate discussion below.

The other proposed beneficial use dredge spoil location which may entail benthic impacts is along the shoreline at Port Mahon. The public has repeatedly raised concerns with placement of sand at this site (Exhibits 68, 70, 72, 73, 94, 108, 115, 117, and 122). However, most of these comments concentrate on individual species concerns (see below), contamination of the sand to be placed (addressed in Chapter 60 findings), or the project economics, which will be discussed later. Therefore, the basis for benthic impact findings at either Broadkill or Rehoboth/Deway appear valid for Port Mahon as well.

I find the benthic considerations of sand placement at Port Mahon, excluding specific species of concern, are the same as for other beaches, with no long-term adverse impact anticipated.

Beyond the benthic effect consideration, this subsection of the Regulations requires DNREC also consider any harm to “flora and fauna and their habitats.” After water quality concerns and criticisms of the project economics, the potential adverse impacts to various species drew the most volume of public comment and concern. These identified concerns are focused on various species which may be effected by the MCD project. These species are blue crabs, *Sabellaria* (sandbuilder worms), shortnose sturgeon, sandbar sharks, oysters, and the horseshoe crab / shorebird interaction. In addition, the species covered by proposed environmental protection windows are also included, such as winter flounder and sea turtles. Since the Corps has identified most, if not all of the potential species which may be impacted (Exhibits 1, 3, 4, 5, 6, 7, 12, 40, 52, and 120), and the comments of both DNREC and the public focus on particular species, this report will examine the Record concerning each of these species and make findings on each.

Blue Crabs

The public concern with potential blue crab impacts is well documented in the Record (Exhibits 68, 72, 84, 104, 111, and 122), and is based on the environmental and economic value of the species to the State of Delaware. The evaluation and concern has been further complicated by the Corps request for potential waiver of the protective environmental window for dredging during construction of Port Mahon, Broadkill Beach, and Egg Island Point (all of which are considered beneficial use sites)(Exhibit 120).

The blue crab hibernates overwinter in the sediment and is relatively inactive. Mature female crabs prefer deeper waters for hibernating. The concern exists because the Corps plans on dredging a portion of the MCD project in the winter when crabs are vulnerable to impact. From communication with DNREC, the crabs prefer the side walls of the existing navigation channel, which will be totally removed during the deepening project.

DNREC requested information on overwintering female blue crabs (Exhibit 30) and the Corps has completed the first year of study, issuing a final report in October of 2001 (Exhibits 1(scope), 23(draft), 24(final), and 26(draft)). The Corps states this final report was issued after consultation and review by DNREC and NOAA staff. This study was to be duplicated in 2002 (Exhibit 120), with a larger sampling effort. The result of the first year study was that the "...deepening during the winter will have a negligible impact on hibernating blue crab stock because only a small area with relative low density of crabs will be affected." (Exhibit 24) The study finds this mortality (approximately 70,000 crabs) is equal to less than 0.1% of the total population, which will not increase total mortality above the threshold required to maintain a sustainable, healthy stock. Further, the Corps commits to continuing the pre-construction blue crab monitoring until construction begins and that they will continue to work with DNREC on methods of impact minimization.

Several parts of Exhibit 122 contest the Corps and study conclusions, stating the sample was too small to draw conclusions, that more data is needed, that monitoring with a

contingency plan is needed, and that this study is at odds with DNREC's own study (11/19/01) which concluded the blue crab stock is fully exploited and cannot withstand additional mortality. DNREC did not comment for the Record on blue crabs, it's own study, or state a position, which is curious if the public (Exhibit 122) comments are accurate.

The protective environmental window established for overwintering female blue crabs is from December 1 through March 31 below river mile 32 (Exhibit 120). Although it is noted the Corps has requested a potential waiver regarding protective blue crab windows for portions of the MCD project, there is no documentation in the Record of compliance with the procedure for requesting changes in windows (Exhibit 51), and DNREC's comment is a general one stating "The issue of relief ... from 'environmental windows' has not been resolved."

I find the initial study evidence suggests dredging can occur in selected areas during the winter without long-term adverse impact to blue crab populations, although there will be an unavoidable loss (harm) should the project proceed as currently proposed. However, I find the Corps has failed to comply with the established procedure for requesting changes to environmental windows, and therefore has not demonstrated, with concurrence from the various agencies, the waiver will not significantly impact the species. Therefore, the Corps has not met the regulatory burden of reasonably avoiding harm to the blue crab by adhering to the established protective window, but it may through complying with the procedure to modify windows. These findings must recognize the blue crab study is ongoing and future data may reveal a basis for changing these conclusions. However, unless final evidence is conclusive, the public suggestion that a monitoring and contingency plan should be developed is a reasonable one which will assure minimization of harm during construction to such an important economic species.

Shortnose and Atlantic Sturgeon

The shortnose sturgeon is a federally-designated endangered species. Dredging restrictions were established for the species, effective April 1997, by the Delaware River Basin Fish and Wildlife Management Cooperative (Exhibit 1). A portion of the river is covered by restrictions on hydraulic dredging, but do not apply to the federal maintained channel or established anchorages. It is unclear whether the hydraulic dredging restrictions apply to expansion of the maintained channel in width, or to expansion and creation of additional turning basins and anchorages. In this reach of river, from the Delaware Memorial Bridge to the Kinkora Range, bucket dredging is restricted from March 15 to May 31, and hydraulic dredging is restricted from April 15 to June 21. Regardless, the Corps does plan on adhering to this established window (Exhibit 120), and has not applied to the State for bucket (mechanical) dredging. The primary focus of concern for the shortnose sturgeon is related to the blasting proposed in the Marcus Hook area.

There is an additional protective window established by the Cooperative for rock blasting between March 15 and November 30 for the reach of River between the Delaware Memorial Bridge and the Betsy Ross Bridge. It is noted a majority of the proposed blasting area lies outside the State of Delaware. The Corps confirmed in Exhibit 120 that there is no blasting proposed within the established protective environmental window. Exhibit 22 is the biological opinion required from the National Marine Fisheries Service (hereinafter NMFS) under the authority of the federal Endangered Species Act. This opinion states: "... the proposed action may adversely affect but is not likely to jeopardize the continued existence of the Delaware River subpopulation of the shortnose sturgeon. No critical habitat has been designated for this species, therefore, none will be affected." The Record indicates there is very little known about juvenile sturgeon in the Delaware River system, and significant gaps in knowledge about the species habits exist, for example, identification of spawning areas (Exhibits 1, 4, 7, 22, 40, and 120). NMFS has determined an incidental take of two fish is allowed for the project (Exhibit 22), and has created a protocol for monitoring and reporting. The Corps states in Exhibit 120 that they will develop a scope

of work which will "... include all of the conservation measures, including monitoring, that are listed in the Biological Opinion from the NMFS."

In regard to Atlantic sturgeon, DNREC requested the Corps monitor the dredging take similar to that protocol developed to monitor turtle impacts, and the Corps has agreed (Exhibits 30 and 120). This window of monitoring has been established from May 1 to October 1 between Bombay Hook and the upstream Delaware state boundary. There is minimal comment in the Record on this topic from either the public or DNREC.

The public remains very concerned about the potential impact to shortnose sturgeon (Exhibits 56, 73, 77, 84, 89, 111, 116, and 122). The Delaware Riverkeeper comments typify public opinion and provide the most extensive critique of the Corps submittals (Exhibits 77 and 122). In short, the Riverkeeper asserts the conclusions drawn by the Corps cannot be relied upon because they are based on faulty logic and lack of data, information, or understanding of the species habits, particularly the location of the young fish. I find the Riverkeeper critique to be persuasive, and in fact the Corps acknowledges little is known about various life stages of the sturgeon and their spatial or temporal location or distribution in the River/Bay during these life stages. There does not appear to be any dispute that juvenile fish may well be located in the blasting zone during the time proposed for construction, and that they aggregate and move with the salinity gradient, which migrates back and forth through the blasting area dependent upon time of year and meteorological conditions. The Corps concludes, with apparent concurrence from NMFS, that proposed impact minimization measures will be effective. DNREC, however, states in their concluding findings (Exhibit 125): "Conservation measures to address concerns of blasting rock on shortnose and Atlantic sturgeon have not been developed."

I find that harm to endangered sturgeon is likely as a result of channel deepening by blasting. I find concluding otherwise to be founded on the basis of "tolerable" risk and assumptions, per the critique of Corps assertions found in the Record. For

example, assuming impact minimization techniques will be effective when they are untried and unproven in relation to the species is a risk tolerant assumption. There simply is not enough information and knowledge available to conclude impact and harm to the species will not occur. It may well be that the Corps conclusions are accurate and proposed procedures will be effective in protecting the species. However, risking such an endangered population does not meet the regulatory intent of Chapter 72 and is unwise at best. **I also find it may be possible for the Corps to demonstrate blasting during certain time periods will not harm the species.** The Corps has committed in Exhibit 120 that “A scope of work will be developed to include all of the conservation measures, including monitoring, that are listed in the Biological Opinion from the NMFS.” (Response to Exhibit 73) Thus, by expanding and coordinating the scope of pre-construction studies, this finding could potentially be addressed (and resolved) through permit specifications and conditions as are suggested later in the report. In doing so, the decision on the adequacy of the plan to protect the species will ultimately be made by DNREC. **I find adherence to the established protective windows for sturgeon in regard to hydraulic dredging does minimize potential harm to both species from this activity, provided NMFS and DNREC provide concurring statements.** Additional testing and monitoring protocol and/or studies may be necessary to assure minimization of harm to the greatest extent practicable.

Sandbar Sharks

The concern with potential impact to sandbar sharks is with the proposed placement of dredged sand as beach nourishment at Broadkill Beach. The young shark pups highest use area is in the shallow nearshore flats and surf zone (Exhibit 120 and personal communication with DNREC). The “Essential Fish Habitat Evaluation” (11/01, Exhibit 120) states: “The greatest concentration of young sharks occur off Broadkill and Primehook Beaches, Delaware.” This area has been designated as a “Habitat Area of Particular Concern” by the NMFS, and consequently for beach nourishment in such areas NMFS has recommended a sandbar shark protective environmental window from May 1 to September

15 (Exhibit 120). The Corps has requested a waiver of the window based on development of a method of construction which would minimize potential harm to the species during the established window period, and asserts the effectiveness of the proposed mitigating or “conservation” measures were concurred with by NMFS in November of 2000 (Exhibit 120). It is noted the Record does not appear to contain any statement from NMFS confirming this agreement. The Record is also lacking documentation of compliance with the proposed procedure for requesting changes in environmental windows (Exhibit 51). Upon conclusion of their final review, DNREC is silent on the sandbar shark issue with the exception of the previously cited general comment in regard to proposed changes in environmental windows (Exhibit 125).

The public concern is contained within comments from the Delaware Nature Society (Exhibit 76) and the Mid-Atlantic Environmental Law Center (Exhibit 111), which state the subject area is known for periodic high concentrations of sandbar sharks and therefore concern regarding “...potential for severe impact to this fishery is real.” The final public comments (Exhibit 122) focus on the requested change to the windows, “...which are controversial and have not been agreed to ...”

I find that potential harm to sandbar shark populations will occur should beach nourishment at Broadkill occur within the established protective window. I also find the Corps proposed construction methodology to avoid harm during window work is logical and may well minimize any potential harm to the species. However, the Corps has not adhered to the procedure for changing the environmental windows, nor is there documentation the NMFA concurs, and therefore the regulatory consideration of avoidance and minimization of impact and harm has not been met. With the appropriate concurrence from DNREC and NMFA, this finding may be reversed.

Oysters

Several public comments raise the issue of potential oyster bed impacts as a result of the MCD project (Exhibits 70, 80, 84, 104, 108, and 111). Half of these comments involved concerns for the oyster beds near Kelly Island as a result of the proposed wetland restoration project. The remainder of the comments were concerned about oyster populations in Delaware Bay as a whole and the potential for the initial and maintenance dredging to impact these populations, primarily by redeposition of suspended sediment on the beds. DNREC's comments regarding oysters were focused on the monitoring and response plan for beds near Kelly Island. For discussion of the Kelly Island related concerns, see Chapter 66 portion of this report. In response to the concern with potential oyster impacts, the Corps proposed and executed pre-construction monitoring. At this time the first annual report has been finalized (Exhibit 120). Additional monitoring is planned for 2002, during the dredging process, and continuing after completion. Should the monitoring indicate impacts have occurred or are imminent to the beds as a result of the MCD project, the Corps has proposed to restore the oyster habitat. Thus, the findings regarding potential oyster impacts mirror the findings in Chapter 66:

I find the Corps proposed monitoring and responses regarding potential oyster impacts adequate to reasonably minimize detrimental effects and ultimate harm to the species, provided any impacts are mitigated after completion of construction. However, clarification and expansion of the proposed remedial actions is necessary and should be developed in further coordination with DNREC. See also the recommended Chapter 66 permit conditions which address this topic.

Sabellaria vulgaris

These sand reef building worms became a matter of concern in the Record when the public raised the issue at the Public Workshop held in the summer of 2001 (Exhibit 39). The public has since demonstrated this issue to be of biological significance in review of potential MCD impacts, and maintains the Corps has not demonstrated avoidance or

minimization of harm to the species (Exhibits 39, 68, 70, 115, 117, and 122). In response to this concern, the Corps agreed to study the occurrence of *Sabellaria* at Broadkill Beach. They did not include Port Mahon in the study, yet Exhibits 70 and 117 include (the same) photographs of *Sabellaria* at Broadkill as well as Port Mahon, which is confirmed by others in the same documents. The Corps has now agreed to include Port Mahon in the 2002 study (Exhibit 120). The 2001 study results were submitted to DNREC in draft form (Exhibit 28) and in final form (Exhibit 120). The Corps has also acknowledged NEPA documentation for *Sabellaria* at Broadkill and Port Mahon remains to be accomplished and that *Sabellaria* reefs are considered Essential Fish Habitat (hereinafter EFH)(Exhibit 120). The Corps indicates appropriate NEPA documentation will be completed, and that *Sabellaria* implications will be included, prior to initiating the project and that consultation regarding the EFH designation and required evaluation is proceeding with NMFS (Exhibit 120). DNREC has not raised *Sabellaria* as an issue, and assisted in selecting the beaches proposed for nourishment.

The submitted Corps study found the *Sabellaria* colonies at Broadkill Beach to be in association with man-placed rock groins and a jetty, and that these colonies would be destroyed by the project as proposed. Although the study suggests some possible restoration options for the unavoidable loss of these colonies, the public (Exhibits 117 and 122) presents a good case that the potential restoration techniques are untested, that there presently exists no backup plan if the remedial reef substrate is not colonized, and that the responsibility for and cost of ultimate mitigation has not been addressed (Exhibit 120).

I find 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. With *Sabellaria* colonies having been designated as EFH by the NMFS, there appears to be significant study and consultation effort required to adequately assess potential impacts and mitigation thereof, as well as appropriate discussion and evaluation to be included in

future NEPA approval efforts by the Corps. It may prove the result of these efforts demonstrates the unavoidable harm to subject *Sabellaria* populations and interrelated biota is insignificant or that it can be adequately mitigated. **Based on future studies and the results of the NEPA process, and with the concurrence of DNREC and NMFS, this finding can be reversed.**

Winter Flounder

The concern over winter flounder centers on the impact caused by placement of sand for beach nourishment (Exhibits 111 and 122). The Corps Essential Fish Habitat Evaluation (Exhibit 120) finds it is unlikely dredging of the channel itself will result in more than minimal impact to winter flounder, and there is little, if any, disagreement in the Record (the Corps states the NMFS also agrees, but provides no documentation). According to the Record, the protective window for winter flounder was established by NMFS to be January 1 to May 31 for both dredging (below river mile 35) and sand placement on beaches. Winter flounder were a repeated agenda item during pre and post-application discussions with DNREC (Exhibits 21, 30, and 31, 34, and 52), which included potential for work within the established window. DNREC has not included any specific objection to winter flounder impacts in their final conclusions, other than "...relief that the Corps is seeking from environmental windows has not been resolved." (Exhibit 125) Refer also to Chapter 66 discussion, which includes recognition of potential long-term benefit to the species resulting from the Kelly Island wetland restoration. Although the EFH Evaluation concludes there will be minimal impact from beach placement of sand on winter flounder for a variety of reasons, the Mid-Atlantic Environmental Law Center (Exhibit 122) makes the point that comparison of population densities to another State is immaterial, the question is whether these beach restoration areas are critical for Delaware winter flounder.

I find 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. I do find the evidence regarding dredging in

the channel itself demonstrates little concern for species impact. However, the procedure established to change environmental windows has not been followed and there is no evidence of concurrence from NMFS or DNREC. If such concurrence can be obtained, this finding can be reversed. The ability of the Corps to gain approval from DNREC also depends upon the outcome of the yet to be initiated NEPA process for both Port Mahon and Broadkill Beach, within which the Corps should address the winter flounder issue.

Horseshoe Crabs and Migratory Shorebirds

There is significant comment and concern over the interrelated potential impact to horseshoe crabs and migratory shorebirds. The public has raised this issue throughout the DNREC permit process (Exhibits 56, 68, 70, 72, 76, 84, 101, 108, 111, 112, 115, and 122). The concern focuses on changes to the beaches which are presently crab habitat and the Corps request to waive the environmental window during construction. The Corps maintains placement of sand at Port Mahon and Kelly Island will ultimately increase and enhance habitat at both locations (Exhibit 120). Initial Corps studies of these beaches found only 50% suitable spawning habitat at Kelly Island and 27% at Port Mahon (Exhibit 120).

The import of the potential impact is significant, not only to the crabs, but to the shorebirds which depend upon them for migratory fuel. The potential secondary impact to birdwatching and related tourism is also of concern to the public. Widener University's Environmental and Natural Resources Law Clinic points out the *Ramsar Convention on Wetlands of International Importance*, ratified by the United States in April of 1997, lists "... the Delaware estuary as (an) internationally significant resource due in part to Horseshoe Crabs." (Exhibit 112) For these reasons, among others, the Interstate Fishery Management Plan for Horseshoe Crab (Atlantic States Marine Fisheries Commission, 1998) established a protective window of April 15 to August 31, which applies to all three beneficial use sites (Exhibit 120).

This topic was evaluated from several perspectives in the Chapter 66 discussion, and one of the pertinent findings was that the Corps did not adequately demonstrate there is no feasible, prudent, or practicable way of reducing the potential impact from waiving the protective window for horseshoe crabs. Part of the Chapter 66 discussion applies to this evaluation: The request to waive the crab window for a year is incongruous with the Corps stated intent, or at least premature, as the assertion of risk is not sufficiently discussed or documented in the Record, there is no agency consensus, and studies critical to this decision-making process have yet to be completed and evaluated. This conclusion is supported by other Corps statements in Exhibit 120: "The Corps of Engineers will not work within the window established by the Atlantic States Marine Fisheries Commission unless studies show and the State and federal resource agencies agree that the work can be done without significantly impacting the horseshoe crabs," and suggested to the U.S. Fish & Wildlife Service (hereinafter USFWS) that a decision should wait until the 2002 data is collected and discussions occur. Further, in Exhibit 34 (9/21/01), the Corps states:

Absent results that demonstrate minimal impact on the designated species, the Corps will work outside the environmental windows, should a permit be granted. In other words, the Corps is not seeking a decision from DNREC on this issue at this time, and we fully recognize that it is our burden to provide this data to DNREC's satisfaction should we seek to work within these otherwise closed environmental windows.

DNREC has not agreed to the window waiver and has asserted since prior to the permit application that the window would be applied unless specific information and data was provided to demonstrate otherwise (Exhibits 21 and 52).

I find the Corps has not demonstrated the harm resulting to horseshoe crabs, wading birds, and associated secondary impacts from the subject beach nourishment projects is either avoided or minimized by suspending the protective environmental window. I do find the evidence regarding less concern for Broadkill

Beach. However, the procedure established to change environmental windows has not been followed and there is no evidence of concurrence from, USFWS, NMFS or DNREC. If such concurrence can be obtained, this finding can be reversed. The ability of the Corps to gain approval from DNREC also depends upon the outcome of the yet to be initiated NEPA process for both Port Mahon and Broadkill Beach, within which the Corps should address the crab/shorebird issue, as well as recognizing potential resultant secondary adverse impact to recreation and tourism. It is pertinent to note these projects are beneficial use requests/prioritization from DNREC (Exhibit 120).

Sea Turtles

The NMFS requires whale and turtle observer monitoring of all hopper dredge activities within the Corps Philadelphia District. According to Exhibit 120, the observers are required on board all such operating vessels from June 1 through November 30, actively observing for 50% of the operating time. The area of monitoring is from Delaware Memorial Bridge to the sea, and the Corps has not requested any changes to this observation window. There were two public comments contained in Exhibit 56 which opine the project will threaten endangered sea turtles. DNREC does not comment on sea turtles. Analysis of potential turtle and whale impacts is discussed in the SEIS (Exhibit 4), which also outlines the proposed monitoring efforts.

I find the Corps has demonstrated minimal potential for harm to turtles and whales from the proposed project, and agrees to monitor in accordance with NMFS requirements.

Pea Patch Island and Wading Birds

Although several public comments raised the issue of protection of the heron rookery at Pea Patch Island (Exhibits 73, 118), the restoration work on the island has been proposed and previously permitted by DNREC (Exhibit 120). The Corps has agreed to comply with the window established to protect the rookery from disturbance, which is no dredging within

a half mile from April 1 to August 31(Exhibits 1 and 120). In response to questions in Exhibit 73, the Corps clarified this window would also be observed during future maintenance dredging. There have been no other related issues identified in review of the record.

I find complying with the established protective environmental window for wading birds on Pea Patch Island meets the regulatory criteria of minimization of impact, and that no harm should result to these populations as a result of the main channel dredging.

Other Fisheries

Although not a topic of specific species concern or significant public comment, the proposed protective environmental windows contain two components to protect fisheries in general (Exhibits 1 and 120). These two windows are not discussed in the above species evaluation.

The first window is for all fish, and relates to the blasting proposed in the vicinity of Marcus Hook. The window is from March 15 to November 30, covering the river reach from the Delaware Memorial Bridge to the Betsy Ross Bridge (river mile 76.4 to 84.6). The Corps has agreed to abide by this window. In Exhibit 1, the Corps chart of windows states there will be monitoring done in association with the dredging and techniques will be used to limit blasting impacts on fish. This could be construed to mean blasting will occur during the window with impact minimization efforts taking place. However, these conditions are not included in the summary of windows provided by the Corps in Exhibit 120, and therefore the Record shows no blasting activity will occur within this window. In response to the NMFS Biological Opinion (Exhibit 22) and public inquiry (Exhibit 74), the Corps agreed to prepare a scope of work "... to include all of the conservation measures, including monitoring,..."(Exhibit 120) to protect fish during blasting. DNREC reiterates this expectation in Exhibit 125.

The second window is designed to protect anadromous fish from impacts of bucket dredging. The established window is from March 16 to May 31 and cover the entire river above mile 62 (Pea Patch Island). Although the Corps has agreed to abide by this window, it is not relevant to this permit application as no mechanical dredging has been requested by the Corps, and recommended water quality considerations contain a prohibition on mechanical dredging during the MCD project anywhere in Delaware waters unless further studies demonstrate no concern (See Chapter 60).

I find the established protective environmental windows for all fish relating to time of blasting to be sufficient to minimize potential harm to fisheries. I find the window to protect fish from bucket dredging is immaterial, as no request to conduct mechanical dredging occurs within the permit application and such methodology is prohibited due to water quality considerations (see discussion in Chapter 60). However, a scope of work to protect fish during blasting outside the window remains to be developed, and this plan must gain concurrence from NMFS and DNREC.

As a summary conclusion for Section 3.01(B)(1)(c), I find there will be harm to fauna as a result of conducting the project as proposed in the Record. See individual species findings above.

3.01(B)(1)(d). Any loss of natural aquatic habitat.

This topic was discussed in relation to Kelly Island and found to be a beneficial change (Chapter 66). There will also be loss of surf zone in the beach nourishment areas as the fill is placed. These beneficial use sites are planned losses and conversions. There will be temporary loss of habitat in the dredge corridor as it is deepened, but this disturbance occurs regularly during maintenance dredging.

I find there will be a loss of aquatic habitat, but that the loss is planned, intended, and beneficial.

3.01(B)(1)(e). Any impairment of air quality, either temporarily or permanently, including noise, odors, and hazardous chemicals.

The issue of air quality has not been raised in the Record as a concern by either the public or DNREC. There will be temporary noise and emissions associated with the varied construction sites, but nothing unusual or consequential.

I find air quality is not an issue or concern in the Record for the Corps MCD project.

It is noted the responses to the final Public Notice on Economics and the DNREC Economic Report both contain new references to air quality concerns (Exhibits 131 and 132).

3.01(B)(1)(f). The extent to which the proposed project may adversely impact natural surface and groundwater hydrology and sediment transport functions.

It is this section which addresses concerns regarding potential salinity changes resulting from the project (Exhibits 56, 78, 83, 87, 89, 100, 101, 104, and 116), which has a bearing on the Motiva Refinery concern of sedimentation impacts within their riparian use area (Exhibits 66, 98, 100, 107, 109, 111, and 122).

In regard to evaluation of the salinity concern, the Corps conducted repeated modeling and verification studies on potential salinity changes in the River/Bay throughout the 1990's. The modeling was developed and utilized by the Corps Waterways Experiment Station (hereinafter WES). WES is acknowledged to have established a credible record of accuracy and sound methodology in their studies (personal experience of author, common peer knowledge). According to the SEIS (Exhibit 4), significant coordination and interaction occurred between WES and various agencies during model development. The Corps

states in Exhibit 120: "The coordination process was conducted with open invitation to any and all interested participants, including the University of Delaware. Periodic meetings were held to solicit comments on the scope, model development, scenarios to be modeled and to review results." The public concern is that if salinity changes occur to any appreciable degree, there may be pronounced impacts on biota and sedimentation patterns. An example of this is the interaction of Shortnose Sturgeon and the salt line (Exhibit 116). There is no public critique of the Corps modeling effort other than stating the model is inaccurate and the Corps did not welcome local input (typified by Exhibit 83). The Sierra Club notes in Exhibit 100 that changes in sedimentation may result in future hidden costs to both the State and private interests in relation to potential future dredging need and frequency. The public comments seem to confirm the accepted fact the salinity gradient within the Bay is constantly changing depending upon a variety of interrelated factors, and is therefore difficult to model accurately.

The results of the study and modeling efforts was that under certain conditions, for example watershed drought, there will be small but finite increases in salinity. The SEIS (Exhibit 4) concludes the salinity impact will be negligible compared to natural variations within the system. However, it is acknowledged in the permit application (Exhibit 1) that the New Jersey Department of Environmental Protection was concerned with potential impact to oyster beds and that the Corps agreed to conduct a study to determine the impacts, if any, resulting from the proposed MCD. The study began in 2000 with the collection of pre-construction data. DNREC has not raised potential salinity increases as a matter of concern, and it is not clear whether they will receive the data and reports from the New Jersey salinity monitoring effort. The Corps further concludes there will be no changes in the distribution of shoaling as a result of the project (Exhibit 1).

This leads to the contention of Motiva Enterprises' Delaware City Refinery that the MCD will "...cause an increase in the deposition of silt at the Refinery's docks, cooling water intake channel and spur channel areas." (Exhibit 66)(see also Exhibits 39 and 122) Motiva

brought the concern to the attention of the Corps at the June, 2001, Public Workshop. Motiva submitted a report by CoastWatch at the Public Hearing. This study concludes deposition of silt "... at the refinery could increase by a factor of 1.5 to 2.0." (Exhibit 66) The Corps submitted their preliminary critiques of the report to DNREC subsequent to the Public Hearing (Exhibit 98), and also responded in Exhibit 120: "In summary, we find the CoastWatch report and its conclusions seriously flawed." Coastwatch responds to the Corps in Exhibit 122 by stating: "... their review comments on and full understanding of the content of the CoastWatch findings are limited, rendering further discussion moot."

The CoastWatch comments seem to undermine the basis of initial Corps responses to the report findings. In fairness, however, the Corps had very limited time to review and critique the Motiva report and admit their comments are preliminary. There remains a marked difference of opinion on the veracity of the contention siltation will increase at the facility. Since the Corps and Motiva cannot agree on the appropriateness of the study approach, methodology, and conclusions, the issues need to be further refined and defined such that the core basis for disagreement can be identified and assessed. As WES was to perform a more thorough review of the Motiva study, and said review is not part of this Record, the issue remains at the interactive stage between Motiva and the Corps. Several public comments (including Exhibit 122) suggested DNREC commission an independent study of the sedimentation issue.

I find the Corps (WES) studies and simulations regarding salinity changes resulting from the proposed MCD project demonstrate a reasonable expectation of minimal impact. I find the contention of Motiva that they will experience increased sedimentation impacts as a result of the MCD to be credible, but that the Record is inconclusive and the issue remains unresolved.

There is also one other issue within the Record which should be clarified in regard to groundwater hydrology and geology impacts. David R. Keifer, former Delaware State

Planner, raises the concern of blasting effect on historical natural gas storage caverns straddling the DE / PA State line (Exhibits 89, 118, and 122, and again raised in Exhibit 131). The Corps responded in Exhibit 120 stating vibrations will be monitored and any damage to existing structures will be the responsibility of the contractor, which is not the concern. Mr. Keifers' point is that underground caverns were used to store gas and then abandoned due to leakage. The question, which from a precautionary perspective is very credible, is: Could potential fracturing of rock result from proposed blasting in the immediate vicinity, causing potential flooding and/or subsidence should the underground cavern structure be impacted? It is acknowledged there is no evidence this may happen, simply that the potential has not been examined and should be.

I find it is prudent and reasonable to address the issue of blasting on former gas storage caverns.

Section 3.01(B)(3). The Department shall consider whether the activity under review could have the potential to cause any adverse environmental impacts, taken in conjunction with the existing situation and with other activities under construction or review. To assess the cumulative and secondary impacts, the Department may require the applicant to provide the following information:

- A. Determination of cumulative effects on the aquatic ecosystem, natural surface and groundwater hydrology.
- B. Determination of secondary effects on the aquatic ecosystem, natural surface and groundwater hydrology.

A review of the Record did not reveal any request from DNREC that the Corps address either of the above considerations. However, the Record does reveal there may be cumulative and secondary impacts associated with some of the MCD components.

An example of an identified cumulative impact is likelihood of direct harm to a species of concern (winter flounder, horseshoe crab, shortnose sturgeon, *Sabellaria*, blue crab) and the resultant species ability to sustain or increase population densities or colonize or recolonize natural and created habitats (secondary impact on species as a whole within estuary). Another example would be the inability to adequately restore or mitigate, with the same results to the species as a whole. The Mid-Atlantic Environmental Law Center in Exhibit 111 contends that other examples of cumulative impact are the incremental increase in already elevated pollution loading levels (regardless of whether the project meets Water Quality Standards) in the estuary and the resultant incremental impact on the estuary "... as a source of food, recreation and aesthetic enjoyment ... and anyone who depends on these waters for their livelihood or enjoyment."

Examples of potential secondary impacts identified include impacts to shorebirds and recreation/tourism from horseshoe crab impacts, impacts to dependent and associated organisms from impacts to *Sabellaria* colonies, and impacts to fishing from impacts to winter flounder and blue crab populations. It could also be asserted there are secondary economic impacts associated with all impacts and all permit conditions.

I find the the MCD project as presently proposed has a likelihood of causing cumulative and secondary impacts to the aquatic ecosystem. However, an incremental increase in pollution loading, which may result even if State Water Quality Standards are met, is not deemed a reasonable or viable basis for sustaining a permit denial on its own. Further, there exists potential to address and resolve all other identified impacts through compliance with environmental windows, submissions of studies and proposals, and/or gaining concurrence of impact minimization from all appropriate agencies. **It is possible through correction of deficiencies and compliance with proposed specifications and conditions that the potential for and concern with**

cumulative and secondary impacts will be minimized, and thus this finding may be reversed.

Section 3.01(B)(4), dealing with the possibility of mitigating impacts will be discussed at the end of the Chapter 72 evaluation, in combination with Section 3.01(A)(7), which also addresses compensatory mitigation.

Section 3.01 C. Other Considerations

The Department shall also consider the following to determine whether to approve the application:

1. The degree to which the project represents an encroachment on or otherwise interferes with public lands, waterways or surrounding private interests.

A review of the Record does not reveal any identified concerns with this regulatory consideration element. There is a question raised in the Record regarding obtaining permission from private riparians within the proposed beach nourishment boundaries at Broadkill Beach or Rehoboth/Dewey Beach (Exhibit 73), and the Corps responded once the final decision is made on where to place sand, they will begin real estate actions. There is no objection in the Record from any beach owner where the Corps may place sand, and that makes sense as beach nourishment will provide significant benefit to each affected riparian owner.

I find the proposed MCD project will not encroach or interfere with public or private lands or public waterways. The Corps asserts, and it is the acknowledged basic project purpose, that the MCD will result in benefit to public commercial waterways.

Section 3.01(C)(2). The degree to which the project incorporates sound engineering principles and appropriate materials of construction.

The public has been concerned with the quality and texture of sand proposed to be utilized for beach nourishment (Exhibits 68, 73, 93, 106, 111, and 122) and the potential resultant

adverse impact to tourism and recreation should the nourished beaches consist of black silt and mud. The Corps has submitted study information revealing the typical sand dredged from Reach E of the MCD will, for all practical purposes, match that of the recipient beaches (Exhibit 120). The Corps permit application (Exhibit 1) states the material to be placed at Rehoboth/Dewey Beach is >95% sand and 0% to 5% silt, while the material which would be used at Broadkill Beach is characterized as >95% sand. As a corollary, the sand to be placed at Port Mahon (which does not carry the same recreation implications) will be 95 to 98% sand and 2 to 5% silt. The Corps provided grain size information to DNREC subsequent to the permit application (Exhibit 31), which demonstrated the proposed fill is similar in grain size to each beach proposed. DNREC does not object to use of the material proposed and has chosen the beaches to be nourished.

There is public and federal Office of Management & Budget (letter appended to several Exhibits) concern regarding the fact the beach at Port Mahon will erode away without periodic replenishment (Exhibits 68, 70, 72, 73, 94, 108, 115, 117, and 122), questioning the soundness of such a proposal from both a fiscal and design perspective. The Corps response is contained in Exhibit 120 and refers to letters from USFWS to the Corps and from the Corps to the OMB. The fact the Port Mahon area was specified for beneficial use, the cost and temporary nature of the beach establishment and maintenance is recognized and has been considered by the Corps, a NEPA amendment process must still occur, and USFWS and DNREC have not objected are combined persuasive evidence all parties proceeded with knowledge of design implications.

I find there is no evidence to support the contention MCD dredged material proposed for beneficial use projects is unsuitable or inappropriate for each use. I further find there is no evidence the engineered project components proposed by the Corps will not function as designed. The forthcoming NEPA process will address many of the

issues at Port Mahon, including impacts to *Sabellaria*, which may result in project design changes.

Section 3.01(C)(3). The degree to which the proposed project fits in with the surrounding structures, facilities, and uses of the subaqueous lands and uplands.

There is no concern in the Record which addresses any of the elements of this consideration parameter. In fact, the project is asserted to be a benefit to subaqueous lands and uplands from beach nourishment and the Kelly Island wetland restoration.

I find the MCD project is compatible with surrounding uses of subaqueous lands and uplands.

Section 3.01(C)(4). Whether the proposed activity complies with the State of Delaware's Surface Water Quality Standards both during construction and during subsequent operation or maintenance.

The findings within the Chapter 60 portion of this report include acceptance of the Corps models which demonstrate these Standards can be met, provided all recommended permit conditions and specifications are included.

I find the MCD project will comply with State Water Quality Standards during and after construction.

Section 3.01(C)(5). The degree to which the proposed project may adversely affect shellfish beds and finfish activity in the area.

The previous Section 3.01 discussion evaluated the potential project impact on a species of concern basis. As long as any of these previous negative findings regarding finfish remain unresolved, there will be adverse impact. The finding regarding potential impact

to oyster beds depends on the ability of the Corps to furnish further detail on the proposed response and remedial action plan.

I find the MCD project as proposed will adversely effect finfish. This finding may be reversed, as it is dependent upon previous negative findings on a species by species basis, all of which may be resolvable. I find that adverse impacts to shellfish (oyster) beds are unlikely, and the proposed monitoring and response plan is adequate to minimize potential harm (see previous finding).

The above discussion completes the regulatory evaluation mandated by Section 3.01 of the Regulations Governing the Use of Subaqueous Lands (Chapter 72) (hereinafter Regulations). The next applicable section of the Regulations is Section 3.05, which deals with dredging and filling.

3.05 Activities Involving Dredging, Filling, Excavating or Extracting Materials

- A. Objectives. Projects shall be designed to meet the following objectives:
1. Conform to the pertinent objectives, classification system, environmental considerations, and criteria of the "Inland Bays Dredging Study, Volumes I and II," dated April , 1986, as adopted by the Department on July 18, 1986.
 2. Maintain the navigability of channels.
 3. Maintain or improve the environmental quality of the State's water resources, subaqueous lands and wetlands.

The basic project purpose is to maintain and deepen the existing shipping channel. The beneficial use aspects of the proposed project are asserted to improve environmental values, functions, and habitats. The Record does not indicate any relevance to Item 1. Although there are many previous findings relating to potential biotic impact, it is construed this regulation refers to the basic ecotones and community structures provided by habitat characteristics, or similarly, the maintenance of water quality. It is the intent of beneficial use components of the MCD project to improve environmental functional attributes.

I find the project as proposed meets the Objectives outlined in Section 3.05A.

Section 3.05 B. General Evaluation Consideration. The Department shall consider the following additional factors in reviewing a dredging, filling, excavating, or extracting application:

1. Any environmental impacts at and surrounding the dredging sites.

The biotic impacts at point of dredging were discussed previously. The suggested permit conditions address means by which to minimize potential adverse impact. The findings thus far indicate there will be potentially avoidable adverse impacts on benthic organisms such as blue crabs, with the primary consideration being compliance with established protective windows. The potential water quality and contiguous sedimentation impacts at point of dredging are minimized by adhering to DNREC specifications and the proposed permit conditions. However, the finding of adverse impact on shortnose sturgeon during blasting is not resolved.

I find there will be adverse impacts to organisms at the point of dredging, but that the impact does not rise to a point of unacceptability, provided environmental windows are observed or waiver of same is obtained in accordance with Record procedures. This finding relates primarily to blue crab populations. **I find there will be impact to sturgeon resulting from blasting, and the acceptability or potential minimization of impact is not resolved.**

Section 3.05(B)(2). Any environmental effects of the disposal of the dredged materials at and surrounding the disposal or fill sites, before or after mitigation, during and following the disposal of fill activities and particularly impacts on water quality as described below in Paragraph C.

The disposal of dredged materials is proposed by using two different means. Spoils from Reach E bayward are proposed for beneficial use site at Kelly Island, Port Mahon, and

either Broadkill or Rehoboth/Dewey Beaches. Spoils generated upstream of Reach E will be placed in CDF's, including the rock from the blasting area.

As to the beneficial use sites proposed, previous findings have determined potentially avoidable adverse impact will occur to horseshoe crabs, sandbar sharks, and *Sabellaria* colonies. In the case of the motile organisms, the impact identified is associated with working within protective windows. In the case of *Sabellaria*, the impact on the species and related interdependent organisms has yet to be determined. The beneficial use sites must also be recognized as having a significant long-term potential benefit to some species, such as creating beach spawning habitat for horseshoe crabs and restoration of coastal marsh.

As to the disposal proposed in existing and to-be-constructed CDF's, previous findings indicate the State is satisfied with the monitoring and reactive mechanisms proposed by the Corps, although the Reedy Point groundwater monitoring plan must still be approved by DNREC. Although public comments indicate the most prevalent concern is in connection with disposal of potentially contaminated dredge spoils in CDF's, and the resultant effluent and leachate quality (see Chapter 60 discussion), the Record evidence and proposed permit conditions satisfactorily address this issue. DNREC (Exhibits 52 and 125) and the public (Exhibits 73, 77, and 122) continue to question the disposal of blasted rock spoils in a CDF rather than using the rock beneficially (this item will be discussed within the analysis of potential compensatory mitigation).

Another aspect of dredge spoils disposal is that the DRPA has not obtained the land necessary for disposal of all the anticipated dredge material. This is reasonable considering the regulatory approval uncertainty, as it does not make sense to obtain lands prior to obtaining all necessary approvals for the project (Exhibit 120). None of the identified new CDF's are proposed in Delaware (Exhibit 1). To address public concern (Exhibits 73, 83, 89, and 106), the Corps has assured the existing and to-be-constructed

CDF's will have adequate capacity for both the initial project and 50 years of maintenance dredge spoils (Exhibits 1 and 120).

The Record indicates the Project Cooperative Agreement (PCA) has not been signed by the DRPA and the Corps, and indeed, the reasonable Corps intent is to wait to execute the document. As a result, questions regarding long-term liability, assignment of responsibilities, and who should be the applicant or permittee permeate the Record (Exhibits 73, 76, 84, and 125 plus many other public comments regarding liability). As some of the proposed and existing out-of-State CDF's may discharge effluent ultimately into Delaware waters, the PCA terms and agreements may have a significant bearing on response and remediation procedures and responsibilities which is of legitimate concern to the State of Delaware. The regulations do not limit the analysis of disposal impacts to within the State of Delaware. Therefore, assessing the content of the PCA, in relation to Delaware regulations and this potential permit, is critical in completing the consideration mandated by this section of the regulations. It is not a foregone conclusion there will be problems with the PCA, as it may adequately address all of Delaware's concerns and requirements.

Further, the Record contains public concerns that all required NEPA documentation is not in place (Exhibits 68, 73, 77, 107, and 112) for the beach nourishment sites. The Corps acknowledges this (Exhibit 120). This issue will be discussed later in this report under 'Other Relevant Issues.'

I find the project as proposed will result in adverse environmental effects at the beneficial use sites, but that this impact may be acceptable provided there is compliance with or concurrence for waiving environmental windows and that appropriate NEPA documentation is achieved.

I find the State of Delaware has legitimate concerns regarding the content and terms of the PCA, and cannot address mandated regulatory considerations without review of and concurrence with the PCA documents. This item may be addressed by permit conditions.

I find all monitoring and remedial action plans must be approved by DNREC to meet the regulatory requirement of avoiding and minimizing impact “... during and following the disposal of fill activities...”. This item can be addressed by permit conditions.

I find the Corps has adequately demonstrated minimization of potential adverse effects resulting from disposal in proposed CDF’s, provided all sites comply with pertinent permit conditions and subsequent PCA requirements. See also discussions and findings in Chapter 60.

Section 3.05(B)(3). Any economic and noneconomic benefits of the project compared to the costs of the project, both direct and secondary.

The topic of project economics and cost/benefit to the State of Delaware generated the most public negative comment after water quality considerations (Exhibits 56 (12 letters), 68, 71, 73, 80, 82-85, 88, 94, 101, 111, 114, 115, 117, and 122). There is also appreciable public comment in support of project economics (Exhibits 55, 74, 81, 86, 92, 97, and 105), primarily relating to jobs and proposed beneficial uses of dredge spoils. An Economic Review of the project was commissioned by DNREC (Exhibit 124), with the express purpose of addressing this section (3.05(B)(3)) of the regulations.

In consideration of the extensive public comment to this point (including the Stearns report in Exhibit 122) and the First Economic Review, it became obvious there were significant problems with the Corps cost/benefit analysis, not the least of which is there was no credible breakdown of project economics as they relate to the State of Delaware. The

regulatory burden of demonstrating economic benefit to the State rests on the applicant, and the Corps did not provided sufficient State-pertinent documentation. The public comments pointed out a myriad of inconsistencies, flawed assumptions, and inaccurate forecasting in the Corps analysis. The extent and variety of information in the Record is encyclopedic, and a detailed review would be redundant. The Stearns report and the First Economic Review are very critical of the Corps economics and the conclusions of the commissioned review (Exhibit 124) are: "... the net benefits of the Delaware River deepening project are overstated, and the costs are understated." ... "... we question whether the project benefits to Delaware are adequate to justify the Delaware cost share." ... "Thus, we also find no compelling evidence that the project as planned is a good investment from the perspective of the State of Delaware."

In June of 2002, the GAO (Exhibit 126) essentially confirmed the public and professional concerns with the Corps economics was well justified, prompting suspension of the permit application review process until an Economic Reanalysis of the project could be completed (Exhibits 127 and 128).

The Economic Reanalysis (Exhibit 129) submitted by the Corps in December of 2002 concluded the project did have a net economic benefit, albeit a smaller ratio than the original economics found. The Corps documents prompted a significant amount of public comment in response to the Second Public Notice (Exhibit 130). There were 43 responses entered into the Record (Exhibit 131). Twelve of the responses did not mention economics, while 12 comments were in support and 19 disagreed with the Corps economics. The support letters were primarily from industry and labor concerns associated with the Delaware River and Bay. Those who questioned various aspects of the Corps submittal included a Congressman, individuals and resource-related groups. Many of those comments which did not pertain to economics were in support of the beach nourishment at Broadkill Beach.

DNREC provided the Corps Economic Reanalysis and all public comments to Drs. Thomas A. Grigalunas and James J. Opaluch of Economic Analysis, Inc, who were contracted to review the documents provided and submit a critique and conclusion as to whether the project would have net benefit to the State of Delaware.

“Potential Benefits and Costs to Delaware from Proposed Delaware River Channel Deepening Project: Review and Critique of USACE Economic ReAnalysis” was submitted to DNREC in October of 2003 (Exhibit 131, hereinafter the Critique). The authors state: “Overall, the updated analyses carried out by USACE were more appropriate to the current situation than the earlier study, more thorough, and much better documented.” The study concludes: “Stated briefly, we find that estimated quantifiable benefits exceed costs to Delaware in all of the cases we considered.”

Although Maritrans, Fleming (Delaware Nature Society), and the Riverkeeper/National Wildlife Federation documents (Exhibit 131) all raise apparently substantive issues, the Critique effectively addresses the primary points having weight in the calculations, and points out even if Maritrans is right and Fleming is right, the benefits still exceed the costs..

There is a noneconomic benefit to the State from the Corps process which has not been recognized, that being the tremendous amount of valuable biological information the project studies have generated. This knowledge base will benefit the State for years to come, help further long-term management goals of the Delaware estuary, and should not be underestimated, including the unforeseen secondary benefits. If the long-term net production of biota from restored and enhanced habitats is a noneconomic benefit, then that benefit as well could be significant, as could the resulting secondary benefits.

I find the Corps has demonstrated the MCD project as proposed will result in net economic benefit to the State, based on the Critique. I also find the scientific benefits to the State resulting from the project may be significant over the long term.

Section 3.05(B)(4). Consistency of the project with regional growth and local land use plans.

The discussion of this item was provided to some extent in the Chapter 66 portion of the report (Section 7.06), which concluded there was little evidence in the Record on this topic. Therefore, the findings are the same as for Chapter 66.

I find the effect of the proposed MCD project relating to consistency with regional growth and local land use plans to be minimal and undefined.

Section 3.05 C. Water Quality on Dredging Projects This section contains concerns for protecting water quality, which the Regulations state shall be specifically considered by the Department in evaluating any application for dredging projects. There are eight (8) items for consideration in the regulatory listing.

The Department did not provide specific findings for the Record in relation to each of the considerations. Many of the eight items have been discussed in the Chapter 60 evaluation and all are appropriate to add as a permit condition. The regulatory wording choice (“shall”) is intentional and therefore considerations are not optional (one cannot ascribe carelessness to word choices in statutory or regulatory construction), and therefore many of these items may not be altered and are not subject to variance considerations.

I find all eight items listed in Section 3.05(C) are mandatory permit conditions, and the relevant aspects should be the basic specifications within any permit issued for dredging.

Section 3.05 D. Prohibited Dredging Project The following types of dredging projects are prohibited (only Item 1 of four items is pertinent to this permit application):

1. Dredging of biologically productive areas, such as nursery areas, shellfish beds, and submerged aquatic vegetation, if such dredging will have a significant or lasting impact on the biological productivity of the area.

This regulation is a clear prohibition on dredging certain specified areas, and it is the burden is on the applicant to demonstrate there will be no significant or lasting impact to those areas specified. However, prior to evaluating the Record, a clarification of this regulation is warranted.

The first question is whether blasting and removal of rock is 'dredging'. I find that such an activity should be considered 'dredging' because the definition in the Regulations includes "...the removal ... of ... other material from subaqueous lands."

The second consideration involves several public comments (typified by Exhibit 111) which assert the Corps has not and cannot meet this prohibition because of the anticipated impacts at the beneficial use sites. I find such comments are not pertinent to this regulation, as they refer to potential impacts from the disposal ('filling') of material, not the removal of materials from subaqueous lands. This interpretation is supported by a reading of the other three items in Section 3.05(D), all of which refer solely to dredging and refer to situations only caused by the act of dredging. Thus, the evaluation of this regulatory consideration is limited to the proposed dredge channel itself, and not the disposal of materials, which is addressed elsewhere in the Regulations (Section 3.05(B)).

The evaluation to this point has found there will be avoidable impacts to blue crabs by dredging in the existing channel and to shortnose sturgeon by blasting. However, the blasting area (rock) does not meet the listed examples or any like consideration as a "biologically productive area", the term not being defined in the Regulations. The sturgeon are at that location because of water chemistry, not because the substrate is biologically

productive habitat. In other words, after the project is completed, the sturgeon are likely to be found in the same location in response to the same water chemistry.

This is in contrast to the situation of the blue crab, which is found directly in the benthic substrate to be dredged. Thus, these areas could be construed to be a nursery area or like habitat. However, the next regulatory question is one of extent and duration of impact. Consider the side walls and bottom of the existing channel are subject to intermittent maintenance dredging impacts (although not within the environmental window), and the crabs still return to the new substrate. By complying with the environmental window, the Corps can proceed with minimal impact to blue crabs (it is the overwintering females which are at risk). By demonstrating, as a result of the current studies, the impact to local (shown to be less than 0.1% of bay total) populations is minimal and short-term, the window waiver will likely be granted by DNREC and NMFS. Regardless, the Record evidence suggests that even with impact to local populations by dredging within the window, the anticipated effect does not rise to the level of significance contemplated by the Regulations. Since the effects will not extend past the initial dredging timeframe, the impact is not lasting, as the Regulations require.

I find the proposed MCD project does not meet the regulatory threshold required to be prohibited by Section 3.05(D), because the areas to be dredged have not been shown to be biologically productive areas.

The above evaluation completes review of the regulatory considerations, with the exception of those parts of Section 3.01(A) and (B) which were held because they were dependent upon later findings in the evaluation sequence. The evaluation of the remaining subsections of Section 3.01(A) and (B) follows:

Section 3.01(A)(3). (The Department shall consider) The potential effect on the public with respect to commerce, navigation, recreation,

aesthetic enjoyment, natural resources, and other uses of subaqueous lands.

The evaluations and findings of potential benefit or detriment has been completed for each of the listed criteria.

I find the potential effect of the MCD project on the public with respect to commerce is beneficial, and likewise with respect to navigation, recreation and aesthetic enjoyment and similar related uses. The potential effect with respect to natural resources is detrimental, as it would be on other uses related to the adversely effected resource.

Section 3.01(A)(6). The extent to which the applicant's primary purpose and objectives can be realized by alternatives, i.e. minimize the scope or extent of an activity or project and its adverse impact.

The findings reveal there are alternatives to components of the currently-proposed MCD project which would minimize adverse impact (see previous findings). The question for any identified alternative is whether it is feasible, prudent, and practicable, while still allowing the Corps to realize the basic project purpose and objectives? For example, the Corps asserts the alternative of complying with established protective environmental windows will either compromise the individual project integrity or is not necessary to protect the species and therefore the related additional costs are not necessary. Some other alternatives remain to be worked out, such as identifying the options for means and methods to effectively protect oyster beds from sediment plumes, should the event occur. Other alternatives, such as beneficial use of blasted rock, have been deemed too costly.

I find the Record confirms the Corps has evaluated alternatives, accepted new approaches, and agreed to provide whatever studies were deemed necessary to identify all viable alternatives. The Corps has chosen those alternatives which best achieve the basic project purpose, while still attempting to address the concerns and

wishes of the public and various agencies since the preparation of the EIS. However, the Record shows the Corps has not followed procedures to eliminate or modify environmental windows and therefore has not demonstrated there are no alternatives and has not demonstrated the adverse impacts are minimized to the extent possible. There are similar findings regarding the protection of shortnose sturgeon and the beneficial use of blasted rock (see below).

Section 3.01(A)(7). Given the inability for avoidance or alternatives, the extent to which the applicant can employ mitigation measures to offset any losses incurred by the public.

Section 3.01(B)(4). The Department shall consider whether any significant impacts or potential harm could be offset or mitigated by appropriate actions or changes to the proposed activity by the applicant. If so, the required mitigating measures may be included as conditions of the permit or lease.

These two sections of the Regulations mirror each other in that they both address the need to consider mitigating any unavoidable loss or impact. Section 3.01(B)(4) is the regulation which enables DNREC to require compensatory mitigation as a condition of a permit. The purpose of compensatory mitigation is to replace or balance unavoidable losses and impacts resulting from the project. There is little impact from the dredging itself and most of the biotic concerns are linked to the beneficial use sites advocated by the State, where ultimate improvement of habitat and recreational values is the goal. The only project-dependent beneficial use, the wetland restoration at Kelly Island, was chosen by the agencies because of its demonstrable net benefits.

The public (Exhibit 77) and DNREC (Exhibits 52, 125) have advocated the use of blasted rock in a beneficial manner, such as placement as a reef. The Corps has responded

(Exhibit 120) the rock is slated to go to a CDF and would be willing to consider beneficial use if the additional cost could be covered. The Record reveals there is likely to be adverse impact from blasting on the shortnose sturgeon, and consideration of mitigating the yet-to-be minimized impact via beneficial use of the resultant rock rubble seems appropriate. *Sabellaria* habitat is rocks and there may be a use for the material at Port Mahon and Broadkill. When considering and comparing the cost of CDF disposal to beneficial uses, is the loss of future usable airspace included and does it grow in value as future disposal is severely limited by available sites? Are there nearby rapidly eroding natural areas at which the rock could be used for reducing the erosion rate?

I find DNREC can and should require compensatory mitigation for potential harm to shortnose sturgeon, as well as in overall consideration of potentially acceptable, but quantifiable harm to blue crabs, winter flounder, fish in general from blasting, incidental takes during dredging (turtles, sturgeon), harm due to widening and creating larger basins and future minor impacts from channel maintenance which would be enabled and assured should the project be permitted. I find utilizing blasted rock for purposes beneficial to aquatic resources is an appropriate option for the compensatory mitigation required by the Regulations.

Section 3.01(A)(8). (The Department shall consider) The extent to which the public at large would benefit from the activity or project and the extent to which it would suffer detriment.

This subsection of the Regulations can be used to address the project as a whole, taking into consideration all the previous findings required by the Regulations. There is a balance to be determined between the project benefits and the reasonably foreseeable detriments. Comparing the benefit to the detriment, the extent of imbalance must be determined, including consideration of any compensatory mitigation.

Section 3.01 specifies three major categories of consideration during a permit application review: Public Interest, Environmental Considerations, and Other Considerations (being water quality and effect on shellfish and fish activity).

The 'Public Interest' review and findings conclude the project will be beneficial or have minimal potential adverse effect for all categories of consideration except the environmental impacts and potentially economics. The Second Economic Review (Exhibit 132) and the findings contained herein reveal there is likely to be a net economic benefit to the people of Delaware at large, although pending considerations (Maritrans, Exhibit 131 and costs to comply with permit conditions) may change this conclusion.

The 'Environmental Considerations' review and findings conclude there will be detrimental effect during dredging, but that this impact may be acceptable provided mitigation is required. The findings regarding disposal of dredged materials conclude the Corps has demonstrated minimal potential adverse effect from the use of CDF's. The review and findings regarding potential effects at beneficial use sites conclude the Corps has not adequately demonstrated detrimental effects have been avoided and minimized to the extent possible and practicable, but that the overall net long-term effect of such uses will be beneficial to the public.

The 'Other Considerations' review and findings conclude (and DNREC and the Corps agree) that State Water Quality Standards will be met in all aspects of the project (with conditions and precautions), that finfish may suffer detrimental effects which remain to be minimized, and that reasonable precautions and monitoring are proposed to protect shellfish beds.

I find overall the Corps has demonstrated the proposed MCD project will have long-term positive effects for the public at beneficial use sites and for project aspects related to aesthetics, commerce, navigation, economics and recreation. However,

the potential short-term adverse effects on natural resources, and therefore the public interest/trust, have not been minimized.

The above findings complete the review of permitting considerations mandated by the Subaqueous Lands Regulations. A brief summary of the findings relating to Chapter 72 is in order so as to view the project as a whole. The findings which demonstrate or support the conclusion the project does meet the regulatory intent of Chapter 72 and are potentially beneficial or permissible include:

- Disruption of public use will be temporary and will ultimately enhance the use restricted
- The project cannot be accomplished by avoiding use or impact to subaqueous lands.
- The basic project purpose is water dependent
- The project will not cause impairment or violation of Water Quality Standards (per conditions).
- There will be minimal and temporary impacts to recreational activities.
- There will be no harm to aquatic or tidal vegetation.
- Hydraulic dredging will cause harm to the benthos, but this impact is minimal and acceptable.
- Other than species of concern, there will be unavoidable harm to the benthos during spoil placement, but this impact is short term and acceptable.
- Other than species of concern, the benthos at Port Mahon will not experience long-term adverse impact.
- There will be unavoidable impact to blue crabs, but this impact may be acceptable.
- There may be impact to sandbar sharks, but this impact may be avoided via construction methodology.
- Proposed procedures to protect oyster beds are adequate, but need refinement.

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- There will be unavoidable impact to winter flounder in the channel, but this impact may be acceptable.
 - There is moderate concern for impacts to horseshoe crabs and shorebirds at Broadkill Beach, but this impact may be acceptable.
 - The potential harm to sea turtles and whales has been minimized and avoided.
 - The potential harm to wading bird colonies at Pea Patch Island have been minimized and avoided.
 - Impacts to fish in general from blasting has been minimized, but a scope of work must be developed.
 - There will be habitat loss, but this loss is planned, intentional, and beneficial.
 - There are no air quality concerns identified with the project.
 - There is a reasonable expectation of minimal salinity impacts.
 - The project will not interfere with public or private lands or waterways.
 - The material from Reach E is suitable for the proposed beneficial uses.
 - The engineering components of the project should function as designed.
 - The project is compatible with surrounding uses of subaqueous lands and uplands.
 - Potential adverse impacts to oyster beds have been minimized, but the plan needs refinement.
 - The project meets the regulatory objectives as specified in Section 3.05.
 - There will be adverse impacts at the point of dredging, but they are minimized by window compliance.
 - All monitoring and remedial action plans must have specific approval of DNREC.
 - There will be minimal adverse effect from the use of existing CDF's.
 - The potential harm to regional and local planning is minimal and undefined.
 - The conditions in Section 3.05(C) are mandatory and must be included in permit specifications.
 - The project does not meet the criteria to be prohibited under Section 3.05(D).

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- The overall net effect on commerce, navigation, recreation, and aesthetics should be beneficial.
 - The Corps has made every reasonable effort to identify and utilize resource positive alternatives.
 - The Corps has demonstrated the project will be economically beneficial to the State.

The findings which demonstrate or support the conclusion the proposed project does not meet the regulatory intent of Chapter 72 and are potentially detrimental include:

- The process to waive or modify the blue crab window has not been completed.
- There is a reasonable expectation of unacceptable harm to shortnose sturgeon, and efforts to minimize this impact remain unresolved.
- There is a reasonable expectation of unacceptable harm to *Sabellaria* colonies. Harm to these colonies will result in unknown secondary biotic impacts to interrelated organisms.
- The process to waive or modify the sandbar shark window has not been completed.
- Required NEPA documentation for various project components has not been completed.
- The potential harm to winter flounder has not been minimized and the process to waive or modify the window has not been completed.
- The potential harm to horseshoe crabs and shorebirds has not been minimized and avoided to the extent possible. The process to waive or modify the window has not been completed. Harm to horseshoe crab populations will have harmful secondary effects to the public interest and trust.
- The project as presently proposed will result in avoidable harm to fauna.
- The Motiva sedimentation concern is credible, but the issue remains unresolved and the Record is inconclusive. As such, there is no resolution possible at this time, and it may be a future civil matter between the two parties.

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- 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.
 - There will be adverse impacts at the beneficial use sites, but these may be resolved.
 - The State has legitimate interest in the PCA, and that review cannot yet be conducted.
 - The overall net effect on natural resources is adverse and detrimental.
 - The overall demonstration of impact minimization is insufficient.
 - Compensatory mitigation for unavoidable impacts has not been proposed, but is required.
 - Potential beneficial use of blasted rock has been prematurely eliminated as an alternative by the Corps, which could be considered as a mitigation option.

Based on all the findings as a whole relating to project permitting under Chapter 72, and in conjunction with the findings for Section 3.01(A)(8), the following overall finding and conclusion is derived:

I find the Corps has failed to provide sufficient documentation and information to meet the regulatory burden necessary to obtain a permit under the authority of Chapter 72. The three primary facts upon which I based this conclusion are:

- 1. The Corps request for relief from, or modification of, environmental windows was not timely. The public and DNREC were afforded little time to effectively review and critique such a major alteration of the permit application. Many of the studies which the Corps may use to justify window modifications have not been completed. Required federal NEPA**

documentation, which would address some of the requested window waivers, has not been initiated. There was insufficient documentation of NMFS or other federal agency concurrence with the requests. In no case did DNREC concur with the window modifications.

- 2. The Corps has failed to adequately demonstrate the potential harm to endangered shortnose sturgeon has been minimized.**
- 3. The Corps failed to recognize and address the presence and potential ecological significance of *Sabellaria* colonies.**

I further find that in order for the State to consider issuance of a permit under Chapter 72, the conditions and specifications outlined below must be satisfied, as well as acknowledged and agreed to by the Corps, prior to initiating any construction which may eventually be authorized. These items are presented as project conditions, which essentially identify the information, agreements, and proofs necessary to meet the purpose and intent of the statute. The Corps should concur with the list of conditions and specifications. The burden is on the Corps to adequately address the identified concerns, and it is anticipated some of these conditions and requirements will be difficult to meet. It is highly unlikely, in my opinion based on the Record, that the Corps will be able and/or willing to comply.

Chapter 72 of Title 7 of the Delaware Code (Subaqueous Lands), which enabled promulgation of The Regulations Governing the Use of Subaqueous Lands, provides authority to DNREC to place conditions on any issued permit which would mitigate and/or minimize any anticipated adverse effect resulting from the project:

Section 7205. Permits Required. (In pertinent part)

No person shall deposit material upon or remove or extract materials from ...
submerged lands or tidelands without first having obtained a permit ... from

the Department. Such permit ... may include reasonable conditions required in the judgement of the Department to protect the interests of the public.

Therefore, prior to considering whether a permit should eventually be issued for the proposed MCD project, the following are recommended conditions and specifications, required to meet the intent of Chapter 72, with which the Corps should comply and concur: It is noted some of the suggested conditions will be modified for prudent considerations.

- A. Standard and typical conditions placed on any similar DNREC subaqueous lands permit.
- B. The established protective environmental windows shall be acknowledged and complied with unless the Corps requests a waiver in accordance with established procedures. Such a request to DNREC must include documentation of other pertinent federal agency and expert concurrence. This condition not only applies to any presently established window, but also to future windows which may be established to protect a species known to be present within the MCD project locations. DNREC shall not grant a window waiver unless the Corps conclusively demonstrates no significant harm or impact will occur to local populations (able to recolonize the disturbed habitat) or to the species as a whole in Delaware waters. (See also conditions under Chapter 66 - Wetlands)
- C. Rock blasting is prohibited until specifically authorized in writing by DNREC. In order to obtain said authorization, it will be necessary to conclusively demonstrate conservation measures to protect both Atlantic and shortnose sturgeon are adequate and all reasonable measures to protect the species are implemented, which may include expanding the established environmental window. The plan shall also address, to DNREC's satisfaction, the protection of fish in general from any blasting.
- D. While preliminarily adequate to protect oyster beds near Kelly Island, the proposed Response, Remediation, and Mitigation Plan must be clarified and expanded to ensure no long-term impact to these oyster beds will occur. The

plan must include specific measures and contingency commitments, including assurance of adequate mitigation should damage occur. The Final Plan must be approved by DNREC prior to initiating the construction authorized at Kelly Island.

- E. The Corps must submit a plan for protecting, and/or restoring, and/or mitigating potential impacts to all *Sabellaria* colonies affected by the project. This plan must be approved in writing by DNREC prior to initiating any construction in these areas.
- F. All NMFS and USFWS regulations and requirements relating to this project are hereby incorporated into, and become conditions of, this permit.
- G. By exercising the authority granted herein, the Corps agrees to warrant the validity of the salinity studies which demonstrate there will be no appreciable impact on the Bay estuary. Should data, at any time during the project, indicate statistically significant variance with reasonable ranges established by the study, the Corps shall immediately assess the situation, modify the modeling, and assess the results in relation to potential adverse harm to the estuary. DNREC shall be notified upon such an occurrence and provided with all data and assessments. Should DNREC determine the potential harm is significant and quantifiable, work authorized by this permit shall halt until DNREC is satisfied the Corps response is adequate, which may include increased mitigation requirements.
- H. Prior to any blasting, the Corps shall investigate and report to DNREC on the concern with old gas storage caverns near the proposed blasting zone and may not proceed until DNREC concurs public health and safety are not at risk.
- I. DNREC must concur that future information and data and conclusions resulting from the pending Maritrans review continues to demonstrate there will be a net economic benefit to the State of Delaware resulting from the MCD project.
- J. Prior to the placement of sand for each beneficial use, the Corps shall obtain DNREC concurrence in writing that the material is suitable for placement;

considering aesthetics, grain size, habitat intent, and existing beach characteristics.

- K. This permit is invalid until such time as the State of Delaware approves the PCA between the Corps and DRPA. This approval is required to ensure mandatory regulatory requirements are met.
- L. All proposed monitoring and remedial action plans must be individually approved by DNREC prior to commencing construction on the project.
- M. All applicable items from Section 3.05(C) of the Regulations.
- N. The Corps shall propose compensatory mitigation for all identified unavoidable and quantifiable adverse effects which may be acceptable considering the project as a whole. Such mitigation shall be approved by DNREC prior to commencing construction of the project. Beneficial use of blasted rock may be considered as a mitigation option.
- O. All items regarding research, reports, and monitoring proposed by the Corps and DNREC in the Record shall be conducted and results provided to DNREC.
- P. All Corps contracts for the MCD work in Delaware waters must be provided to DNREC and approved prior to execution. The purpose of this State review is to assure all conditions and specifications contained herein are covered in the contracts. This is a matter of public health and welfare. The costs of said review shall be borne by the Corps.
- Q. Any other permit condition as may be deemed appropriate by DNREC.

See the following portion of this report, 'Other Relevant Issues Within the Record', for additional recommended conditions and specifications.

The unknown costs to comply with these provisions may have project cost/benefit and State cost-share implications.

VII. OTHER RELEVANT ISSUES WITHIN THE RECORD

There are concerns noted in the Record which do not easily fit into any of the regulatory considerations, but which do have potential consequences to the MCD permit application and this project review. These items will be discussed individually, with any resultant findings and recommended conditions noted.

NEPA Documentation

Several public comments noted the Corps should conduct supplemental NEPA documentation for placing sand on the beaches at Broadkill and Port Mahon (Exhibits 68, 73, 77, 107, and 112). All of these comments contend the Corps is obligated to proceed with appropriate environmental documentation for use of the two beaches for disposal of dredged sand. In addition, several of the comments appended a letter from the USFWS (11/14/01) in which the agency comments on concerns at Broadkill and Port Mahon and states: "The Service assumes that a formal proposal to nourish the subject beaches as part of the Delaware River MCD Project will be addressed in a forthcoming NEPA document." The Corps responded that these two projects are also being pursued as individual projects and NEPA documents have been prepared. The Corps further states: "These NEPA documents will be supplemented or revised..." (Exhibit 120).

Widener University School of Law, Environmental & Natural Resources Law Clinic, in Exhibit 112, contends, supported with citations, that the Corps is required to prepare an SEIS for these two beach nourishment projects. This comment typifies the public comments. The Corps response to all the public comments relating to this topic was: "Appropriate supplemental NEPA documentation associated with the individual beach nourishment projects will be prepared to evaluate placement of main channel sand on selected beaches." (Exhibit 120)

The public takes issue with this response. Widener University School of Law's comment (Exhibit 122) contains the most detailed rebuttal of the Corps response. They raise two legitimate points. First, that the Corps response is too "... vague, undefined, and leaves the Corps vast amounts of discretion to determine later what 'appropriate' documentation will be submitted..." The second point is that the current Corps proposal is a "substantial change" and that there is new information of enough import to require a SEIS be prepared. I agree with the first point and believe the Corps must define how it intends to proceed with this issue; however, this information could be submitted as a condition of a permit and does not necessarily need to be submitted prior to acting on the permit application. I also concur with the second point, in that the proposal to place spoils on these beaches is a major change from the original MCD plan, but more importantly, in my opinion, there is significant new information to be evaluated, typified by the presence (and lack of recognition) of *Sabellaria* at both locations. DNREC and the public would, at least partially, rely on the findings and conclusions resulting from new NEPA documentation, and this process is critical in determining how to address the *Sabellaria* issue and the issue of modifying environmental windows at these locations (which is the current Corps proposal).

I find the Record indicates the Corps must complete a SEIS for proposed sand nourishment at Broadkill Beach and Port Mahon. I find these projects are both a significant change and that there are significant new circumstances and information, neither of which has received appropriate NEPA review. Based on this finding, the following condition is recommended (continuing the list of deficiencies and specifications):

- R. As a preliminary step in addressing the question of additional NEPA documentation, the Corps shall submit to DNREC the exact documentation and review process it intends to provide, along with other federal agency concurrence with the proposed process, prior to commencing the NEPA process. Further, it is mandatory the Corps address: 1. Any items which DNREC requests in responding to the proposed process, 2. The proposed modification of protective environmental windows, and 3. The *Sabellaria*

situation, in this NEPA documentation. This NEPA process must be completed to the satisfaction of DNREC prior to initiating any work which may eventually be authorized.

DRPA as Permittee / Liability

The question of the relationship of the DRPA to this permit application has been raised by both DNREC (Exhibits 52, 119, and 125) and the public (Exhibits 73, 76, 84, and 122). This concern is also related to long term project liability and responsibility (Exhibits 68, 70, 73, 75, 78, 79, 93, 101, and 107).

The basic issue is whether the DRPA, given the unknown responsibility designations and content of the PCA, should be a co-applicant with the Corps. The Corps has maintained throughout the interaction with DNREC that the only appropriate applicant and permittee is the Corps (Exhibit 120).

A review of Chapters 60, 66, and 72 reveal none of the statutes define an 'applicant', although all three define the term 'person'. The statutes refer to 'person' when referring to what activities require permits and what the permit application shall include. The DRPA is a 'person', according to statutory definitions.

There are two aspects to this question. First, would DRPA be the 'person' who contracted or conducted any of the regulated activities; and second, would DRPA be responsible for compliance with any permit condition? The DRPA will not conduct any of the dredging or filling, which are the activities regulated by Chapter 72. The DRPA will not conduct any activity regulated under Chapter 66. Neither statutory purpose refers to dredge spoil disposal.

However, under Chapter 60, dredge spoils are defined as a pollutant and are also a solid waste, an 'activity' includes operation of any facility, and Section 6003 states (emphasis added):

- (A) No person shall, without first having obtained a permit ..., undertake any activity:
 - (2) In a way which may cause or contribute to discharge of a pollutant into any surface or ground water; or
 - (4) In a way which may cause or contribute to the collection, transportation, storage, processing or disposal of solid wastes, ...
- (B) No person shall, without first having obtained a permit ..., construct, install, replace, modify or use any ... device or other article:
 - (5) For disposal of solid waste.

The permit application states the DRPA will be responsible for operating a solid waste storage/disposal facility and discharging a pollutant from conducting the activity. State Water Quality Standards compliance and the project 401 Water Quality Certification are in part dependent upon the actions of the DRPA, as is State Coastal Zone Management approval, all of which considerations will have conditional specifications included in any issued permit.

Based on the above interpretation of Chapter 60, I find there is a statutory basis for requiring the DRPA to be a co-applicant with the Corps.

Therefore, since the responsibility of the DRPA will include many of the permit conditions, and Section 3.05(C) of Chapter 72 contains obligatory/mandatory permit conditions which include considerations for operation of a dredge disposal area, **I find the DRPA will be solely and mutually responsible for compliance with many permit conditions.** Many of the pertinent conditions relate to public health and welfare, thereby being a matter of serious State concern. Therefore it is appropriate to require the DRPA be included in the permit. There are options how this may be accomplished. The DRPA could countersign

the permit application, thereby accepting the liability and responsibility conditions devised by the State. They could be a co-applicant with defined responsibilities and likely the same countersignature requirement. The same liability and responsibility conditions should also be included in the PCA, providing another legitimate basis for State involvement in that document. Similarly, as public health is at risk, the State has an obligation and the regulatory authority to insist on being able to enforce all permit conditions, which is facilitated if the DRPA is a party to the permit. Based on this discussion, I recommend inclusion of the following condition in any potential approval:

- S. The Corps and DRPA are both required to countersign any proffered permit. These signatures will acknowledge and accept all conditions and specifications contained in the permit, including long-term liability and responsibility, for all aspects of the MCD project.

Variations / Permit Modifications

Should a permit be issued, Mr. Fleming (Exhibit 73) raised the concern of how changes or modifications to the project and therefore the permit would be handled. This project has been evolving since its inception, and it is reasonable to conclude there will be changes the Corps wishes to request as the project continues to progress. For example, some permit conditions may need to be modified as new information becomes available and studies are completed. Therefore, it is prudent to establish the procedure for requesting and granting changes to the permit.

- T. It shall be the sole responsibility of the permittee to determine when a permit modification is required, as DNREC shall enforce the activities and conditions as permitted. Any request for a permit modification to any condition or specification, increase in permitted activity, or report / monitoring / reporting deadline, shall be submitted in writing with appropriate documentation. The following procedure shall be used to determine whether the permit modification will be granted:

1. DNREC, at their sole discretion, shall determine whether the information submitted is complete and adequate for review and evaluation, and shall identify and notify the permittee in writing of any deficiencies, providing a set timetable for response.
2. DNREC, at their sole discretion, shall determine whether the requested modification is minor or major in character.
3. A minor change may be authorized by letter approval.
4. A major change shall be Public Noticed, then the statutory procedure will be followed. This review shall be limited to the proposed modification.

Economic Loading

The public (Exhibits 73 and 77) and DNREC (Exhibit 125) have raised the issue of economic loading. At this time the Corps has not proposed, nor has DNREC evaluated the potential to use economic loading in Reach E. Personal communication with DNREC revealed it may be advantageous for the State to allow economic loading when the sand is used for beach nourishment. The Corps has indicated economic loading will save money (Exhibit 120). Therefore, the Corps should be allowed to propose economic loading where it makes environmental and economic sense.

- U. The Corps may propose economic loading in Reach E. Such a request must be accompanied by all relevant information and data in order to provide adequate information for DNREC to evaluate the proposal. Water quality, suspended sediment plume strength and extent, and economics shall all be considered in the review. Any such proposal must be economically beneficial to the State. DNREC may place additional conditions and specifications on any authorization. Due to the public concern evident to date, and considering the extent and volume of material proposed to be handled by economic loading, DNREC shall solicit public comment on any such proposal and consider public responses in the evaluation of the modification request.

Coastal Zone Management (CZM)

CZM consistency certifications were requested (Exhibit 73) and the Corps provided same from all the States involved in the MCD project (Exhibit 120). These approvals all contain some conditions, limitations, or time frames. Therefore, it is necessary to include any such qualifying conditions in consideration of permit issuance. The following condition is recommended to address this regulatory interdependence:

- V. Pursuant to 15CFR 930.44, DNREC reserves the right to object and request remedial action if the MCD project is conducted or results in an effect substantially different than currently proposed. All conditions and specifications contained within the permit are conditions of the CZM consistency approval. Any non-compliance with any permit condition shall result in immediate termination of the CZM approval. All applicable conditions and specifications of the New Jersey and Delaware CZM approvals are hereby incorporated into this permit and both approvals must remain valid to proceed with the project.

Comprehensive Permit / Expiration of Permit

Although not raised as issues in the Record, the State should address the time length of any issued permit and should address integration of the various statutes and their respective approvals. The following recommendations are made:

- W. This permit shall expire three (3) years after date of issuance. The Corps may extend the permit indefinitely in two-year intervals until the MCD project is completed, and must request same in writing prior to the expiration date. DNREC reserves the right to modify the permit and/or conditions and specifications within the permit at the time of any permit extension request based on new data or information which changes the basis or facts upon which DNREC relied upon at the time the permit was originally issued. This condition shall also apply to any Best Management Practices which may be developed or identified during the permit validity periods, and any such BMP's shall be

incorporated into the project to the extent practicable. DNREC shall respond to an extension request within 30 days.

- X. This permit is granted under the authority of Chapters 60, 66, and 72 of Title 7 of Delaware Codes. This permit is a comprehensive compilation of all activities requested under the various State authorities and shall be considered one authorization. Non-compliance with any aspect of the permit relating to any of the regulatory authorities will be deemed violation of all such authorities, as all conditions and specifications are interrelated. The Corps, by exercising the authority granted herein, acknowledges the permit is a comprehensive, interrelated document for the referenced statutory authorities.

The unknown costs to comply with these provisions may have project cost/benefit and State cost-share implications.

VII. SUMMARY OF FINDINGS AND RECOMMENDATIONS

A. Summary of Procedural Findings

DNREC and the Corps have complied with all the procedural requirements of the statutes. The content and volume of the Record is diverse and massive. The Corps, the public, and DNREC have all had ample opportunity to supplement the Record. The Public Hearing was well attended, with many differing opinions articulated. The process to date has identified all relevant issues and concerns, which is a purpose and goal of the regulations. There are no objections in the Record to the procedure established to create the Record. There were, however, lamentations regarding the Spring, 2002, public comment period of 30-days being insufficient to review the lengthy Corps response document. There were no objections in the Record to the process used to review and provide public comment on the Corps Economic Reanalysis, with the exception of a request for Public Hearing, which was not held.

B. Summary of Substantive Statutory Findings

The Corps has not met the regulatory standards and requirements necessary to approve the project as proposed. The application deficiencies are primarily related to the failure to demonstrate adverse effects have been minimized and avoided to the extent possible and practicable. Studies, opinions, and documentation required to corroborate requests to modify protective environmental windows are not part of the Record.

Many of the Record concerns deal with project contingencies and future compliance. Again, what is lacking are reasonable and effective proposals to address these legitimate concerns. Although it is not equitable or reasonable to request the Corps to respond to all "what if" scenarios, there are many instances where this is exactly what is needed in order

for DNREC to fulfill its statutory obligations for minimization of potential impact during and after construction. Because of the potential, however minimized, of adverse water quality implications and of irreparable harm to species or local populations, commitments to react are not enough. The statutes, in my opinion, require firm, consensus plans which outline responsibilities in the event of unanticipated problems (minimization of potential adverse effects during and after construction).

The Corps has proceeded in good faith and has attempted to provide DNREC and the public with responses to every identified issue. The Corps has attempted to address each issue and concern by conducting studies, modifying plans, and examining alternatives. All of the identified permit application deficiencies have the potential to be resolved with future information or modified plans and agreement to comply with all conditions and specifications.

The difficulty with economic benefit demonstration is compounded with the unknown cost to comply with all recommended permit conditions and specifications. Should the permit eventually be issued, there will be additional State costs as well, as DNREC must devote significant staff time to monitor compliance and coordinate various monitoring and reporting requirements. Due to the scope and variety of project components, DNREC may need to devote a full time position to monitor this project and all the requirements.

While much of the public response focused on environmental concerns, a significant number commented on jobs and economic vitality for the region. The Record is clear there is much at stake, from a local job to an endangered species.

C. Recommendation to the Secretary

The Corps has many studies underway and continues to gather data and address public and agency concerns with various aspects of the project. Considering all of this ongoing

effort, the recommendation regarding issuance or denial of the requested permit is based on the following facts and opinions:

1. It is possible the Corps could correct identified permit application deficiencies and adequately address remaining concerns and/or resolve these issues. Regardless, based on the Record, the application has not met the regulatory standards for issuance
2. It is reasonable for the Corps to assume that the permit would be issued provided all statutory requirements are met.
3. The Corps should have reasonable assurance of permit issuance prior to continuing with the project planning, such as obtaining other approvals (NEPA) and preparing the PCA document with the DRPA.
4. In order for the Corps to proceed, and as a result of this permit application, all State of Delaware requirements, which should be agreed upon prior to permit issuance, need to be clearly articulated to the Corps, including all anticipated permit conditions and specifications.

Therefore, I recommended to the Secretary the application for permit be denied, as statutory permitting requirements under Chapters 66 and 72, and their respective promulgated regulations, have not been met by the applicant.

The list of deficiencies and potential permit requirements should be provided to the Corps, including all potential permit conditions and specifications (or similar standards). The Corps should be allowed to modify the current proposal to address permitting deficiencies. For example, should the Corps agree to comply with all environmental windows, agree to the DRPA as co-applicant and resolve the future responsibility issues, provide an adequate NEPA roadmap, and agree to use blasted rock as mitigation, much of the basis for concluding the application is deficient would be resolved. **Should the Corps agree to abide with all conditions, DNREC may reconsider permit issuance.** Barring resolution of the issues through capitulation, **the**

Corps should be allowed to submit a new application which is limited in scope to the statutory deficiencies or new information which could change these findings. The full, statutory review process similar to the process to this point should be used to consider any resubmittal request. With the exception of new information which could alter these findings, I also recommend any such effort be a cohesive whole (not piecemealed) and limited in scope to the current application deficiencies noted.

This approach allows the Corps to make decisions on whether to proceed with the project, whether to fund and continue various studies, and clearly places the burden on the Corps to identify any compliance difficulties with the required submittals and performance criteria contained within the listed deficiencies and recommended permit conditions. This approach also defines the expectations of the State of Delaware, should the Corps decide to proceed with the project permitting effort.

However, as I believe the Record clearly indicates, the Corps will have difficulty complying with the application deficiencies and the permit conditions as proposed, particularly if the environmental window issues cannot be resolved. In light of any changes necessary in the project to comply with permit conditions, there may be significant cost ramifications, thereby potentially changing the cost/benefit of the project. The Corps, and therefore the DRPA, must acknowledge there is a long-term responsibility for any future problems the project may cause, and accept the liability conditions developed and imposed on them by the State.

While the recommended course of action will either end or prolong what has been a long, arduous road to this point, the process has served to define aspects of the project in need of further focus, and should serve to facilitate any potential future Corps permitting effort and subsequent review by DNREC.

Respectfully submitted,

Timothy Bureau, Hearing Officer

December, 2003

APPENDIX A

LIST OF EXHIBITS

(THE APPLICATION FOR PERMIT RECORD)

LIST OF EXHIBITS

U.S. Army Corps Of Engineers / Delaware River Port Authority Main Channel Deepening Project Exhibits Comprising the Formal Record for Decision

PUBLIC HEARING EXHIBITS

- #1 Permit Application
- #2 - #17 Application Supplemental Addenda
- #2 Construction Solicitations and Specifications May 9, 2000
- #3 Port Mahon Environmental Assessment, September, 1997
- #4 Supplemental Environmental Impact Statement, July, 1997
- #5 Broadkill Beach, Environmental Impact Statement, September 1996
- #6 Rehoboth Beach/Dewey Beach, Environmental Impact Statement, June 1996
- #7 Final Interim Feasibility Study and Environmental Impact Statement, February, 1992
- #8 Beneficial Use of Dredged Material, August 1995
- #9 Water Quality Scope of Work
 - 1. Water Quality Monitoring, Reedy Point North and/or South.
 - 2. Reedy Point North and/or South Confined Disposal Facility Chemical Analysis
 - 3. Water Quality Monitoring at the Point of Dredging
 - 4. Water Quality Monitoring, Economic Loading of Hopper Dredges.
- #10 Oyster Monitoring Study in Delaware Bay, SCOPE OF WORK FOR YEAR ONE
- #11 Corps of Engineers Responses to Letters Received on Final Supplemental Environmental Impact Statement

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- #12 Correspondence between DNREC and the Corps since the completion of the SEIS (July, 1997)
 - #13 Wilmington Harbor, Dredged Material Management Plans Initial Phase, May 2, 2000
 - #14 Proposed New and Modified Buoy Locations
 - #15 Engineering Drawings
 1. Maintenance Dredging with Options for Deepening: Delaware River Philadelphia to the Sea, PA, NJ, and DE
 2. Reedy Point Disposal Areas, New Castle County, DE.
 3. Artificial Island Disposal Area, Cumberland County, New Jersey and New Castle County, Delaware
 4. Kilcohook Disposal Area, Salem County, New Jersey and New Castle County, Delaware
 5. Port Mahon Ecosystem Restoration and Protection Project, Kent County, Delaware
 6. Beachfill, Broadkill Beach, Sussex County, Delaware
 7. Dune and Beachfill, Rehoboth and Dewey Beaches, Sussex County, Delaware
 - #16 Results of Berthing Area Vibracore Sampling, February , 1996
 - #17 Photographs
 - #18 Roosevelt Inlet - Lewes Beach, DE, Interim Feasibility Study, May, 1977
 - #19 Evaluation of Ground-water Flow From Dredged Material Disposal Sites in Gloucester and Salem Counties; USGS, May, 1995
 - #20 Field Evaluation of Hopper Dredge Overflow for the Delaware River Prepared by the Waterways Experiment Station, 1999.
 - #21 Corps - DNREC Meeting Minutes; September 27, 2000
 - #22 National Marine Fisheries Service. Biological Opinion for Shortnose Sturgeon, dated January 31, 2001
 - #23 Versar, Inc, Draft Winter Crab Survey; August, 2001
 - #24 Versar, Inc. October 2001, Final Winter Crab Survey, 2000-2001
 - #25 Sediment Profile Camera Reconnaissance of Benthic Habitats in Delaware Bay, Draft, September, 2000

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- #26 Versar, Inc. Draft Winter Crab Survey; April, 2001
 - #27 Draft Oyster and Water Quality Monitoring Study for the Main channel Deepening Project, Delaware Bay, New Jersey and Delaware, Prepared by Versar, Inc. July, 2001
 - #28 Draft Pre-Construction *Sabellaria vulgaris* Monitoring at Broadkill Beach sand Placement Site, Prepared by Douglas Miller, September 2001
 - #29 Draft Pre-Construction Horseshoe Crab Egg Density Monitoring and Habitat Availability at Kelly Island, Port Mahon, and Broadkill Beach Study Areas, Prepared by Richard Weber, September, 2001
 - #30 Corps - DNREC Meeting Minutes; 09/24/01
 - #31 Corps Response to DNREC Letters of 2/11/01 and 6/29/01
 - #32 Kelly Island/Broadkill Beach Shorebird and Invertebrate Studies
 - #33 Near Field Water Quality Modeling of Dredging Operations in Delaware River, Prepared for U.S. Army Corps of Engineers by Versar, Inc. October 2001
 - #34 Corps 09/21/01 Response to DNREC letter of 08/31/01
 - #35 Delaware River Comprehensive Navigation Study - Main Channel Deepening project Biological Effects Based Testing of Channel Sediments, prepared by the Greeley-Polhemus Group, Inc. for the Corps of Engineers, dated August 1995.
 - #36 Reedy Point South Water Quality Modeling Prepared by Versar, Inc. for the Corps of Engineers, dated August 2001
 - #37 Richard G. Weber Draft Horseshoe Crab Density Monitoring; September, 2001
 - #38 Delaware River Philadelphia to the Sea Project High Resolution PCB Analysis of Channel Sediments Study prepared by Versar, Inc. for the Corps of Engineers, dated March 1997
 - #39 Public Workshop Transcript 6/6/01
 - #40 Corps Supplemental Information to Public Workshop

Binder 1

1. Purpose
2. Clarification/Additional Information Public Workshop Transcript
3. Responses to Public Workshop Letters
4. Additional Supporting Documents
5. Public Workshop Attendees

Binder 2

1. Hydrogeologic Conditions Adjacent to the Delaware River, USGS, 1996
2. USGS Letters to Corps, January 23, 1996
3. NMFS Biological Opinion; January , 2001
4. Effects of Rock Blasting on the Shortnose Sturgeon; May, 2000
5. "Movements of the Shortnose Sturgeon in the Delaware River; 1993
6. "Synopsis on the shortnose sturgeon"; 1984
7. Water Quality Monitoring for Salem River Dredging February, 1996
8. Selected Hydrogeologic & chloride - Concentration Data for the Northern & Central Coastal Area of NCC, DE (USGS, 1998)

Binder 3

1. Pedricktown Confined Facility Containment Loading and Water Quality Analysis: October, 2000
2. Kilcohook Confined Disposal Water Quality Analysis; February , 2001

- #41 Corps, 1979, Delaware River Shallows Study
- #42 Corps, 1984. Delaware River Dredging Disposal Study
- #43 Frithsen and, Killam and Young, 1991. An Assessment of the Key Biological Resources in the Delaware River Estuary.
- #44 Smullen, Sharp, Garvine and Haskin, 1983. The Delaware Estuary: research as background for estuarine management and development.
- #45 Corps, 1983. Delaware Estuary Salinity Study.
- #46 Pedricktown Confined Disposal Facility Containment Loading and Water Quality Analysis, Prepared for U.S. Army Corps of Engineers by Versar, Inc. October 2000.
- #47 Finalized oil spill prevention plan for Delaware River and Bay.

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- #48 Dredging Windows
 - #49 DRPA Economic Analysis
 - #50 Economic Analysis and Economic Benefits to Delaware
 - #51 Procedures for Requesting Changes in Environmental Windows
 - #52 Correspondence - 34 letters between Corps of Engineers & DNREC from 9/20/90-7/10/01
 - #53 Scope of Work - Installation of Groundwater Monitoring Wells at Reedy Point North and South Confined Disposal Facilities
 - #54 Public Hearing Notice
 - #55 Correspondence in support of project
 - #56 Correspondence in opposition to project
 - #57 The Delaware Statewide Dredging Policy Framework; February 2001
 - #58 Public Hearing Transcript; May 7, 1998 Proposed Modifications of Sand Stockpiles
 - #59 Appointment of Hearing Officer
 - #60 Written requests to present testimony
 - #61 DRPA letter to Corps of Engineers - PCA acceptable 10/2/01
 - #62 Corps of Engineers response letters to comments received on Final Supplemental Environmental Impact Statement; March, 1998
 - #63 Excerpts from Code of Federal Regulations - Examples of permit required in other states

PUBLIC HEARING – DOCUMENTS INTRODUCED INTO THE RECORD

- #64 Elizabeth Murphy, DRPA
- #65 Robert Conte
- #66 Spiros Mantzavnios, Motiva Enterprises

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- #67 Jane Nogaki, Ner Jersey Environmental Foundation
 - #68 Denise Obert, National Wildlife Foundation
 - #69 Coralie Pryde
 - #70 Jim Steffens, Delaware Chapter of the Sierra Club
 - #71 Russell W. Peterson
 - #72 Lorraine M. Fleming, Delaware Nature Society
 - #73 Richard A. Fleming, Delaware Nature Society
 - #74 Dennis Rochford, Maritime Exchange for the Delaware River & Bay
 - #75 Jim Bryant
 - #76 Eileen M. Butler, Delaware Nature Society
 - #77 Maya K. van Rossum, Delaware Riverkeeper
 - #78 Lawrence J. Delpino, Jr.
 - #79 Marion C. Stewart, Civic League for New Castle County
 - #80 Leah Roedel, Delaware River and Bay Shoreline Council
 - #81 Mike Sprague, Diamond State Port Corporation
 - #82 Bernard Dempsey
 - #83 Jonathan H. Sharp
 - #84 Pat Todd, League of Women Voters of Delaware
 - #85 Jeff Stein, Taxpayers for Common Sense
 - #86 Jack Galloway, Joint Executive Committee for the Improvement & Development of the Philadelphia Port Area
 - #87 E. F. Hutchinson
 - #88 Howard Nygood

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- #89 David R. Keifer
 - #90 Steve Callanen, Delaware Chapter of the Sierra Club
 - #91 Don P. Ainsworth
 - #92 David S. Chapman, University of Delaware Sea Grant, Marine Advisory Service
 - #93 Michael Richardo
 - #94 W. Frederick Lahvis, Medical Consultant, State of Delaware, Department of Health and Social Services
 - #95 Sylvia Lahvis
 - #96 Norman A. Barthleson, President, Cape Shores Homeowners Association
 - #97 Ira Wayne Spencer, International Longshoreman's Association
 - #98 Coastwatch Engineering and Planning of Baltimore Maryland
 - #99 Maya K. van Rossum, Delaware Riverkeeper
 - #100 Jim Steffens, Delaware Chapter of the Sierra Club
 - #101 Leslie G. Savage, Delaware Audubon Society
 - #102 Jim Bryant
 - #103 Andrew Lorenz
 - #104 Robert D. Cunningham, Jr.
 - #105 Ed Hazzouri, Sunoco, Inc.
 - #106 Steve Callanen, Sierra Club
 - #107 Robert D. Bewick, Jr.
 - #108 Peter S. Martin, Delaware Wildlands, Inc.
 - #109 John C. Dragone, Maritrans Operating Company, L.P.

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- #110 William Burton - Versar, Inc.
Two Reports: PCB Mobilization During Dredging Operations and Sequestration by Upland Confined Disposal Facilities; December 2001

Near-Field Water Quality Modeling of Dredging Operation in the Delaware River; December, 2001

#111 James Stuhltrager, Mid-Atlantic Environmental Law Center

#112 James R. May & Michael E. Crowson, Widener University

#113 Beverly V. Baxter, The Committee of 100

#114 Coralie Pryde

#115 David R. Conrad, National Wildlife Federation

#116 Maya K. vanRossum, Riverkeeper

#117 Robert V. Martin

POST-HEARING EXHIBITS

#118 Transcript – December 4th and 5th Public Hearing

#119 12/21/2001 letter to Lt. Colonel Timothy Brown from Hearing Officer Timothy Brown transmitting public hearing correspondence received by DNREC by the 12/20/2001 deadline.

#120 Corps of Engineers 02/07/2002 letter to Hearing Officer Timothy Bureau with responses to questions and comments presented at public hearing (A); responses to questions in DNREC's 12/21/2001 letter(B) and 7 additional "study reports":

█ Pre-Construction *Sabellaria vulgaris* Baseline Monitoring at Broadkill Beach Sand Placement Site, Sussex County, Delaware. (January 2002). Final Report

█ Pre-Construction Oyster, Water Quality, and sediment Monitoring Study For The Delaware River Main Channel Deepening Project (December, 2001). Final Report

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- █ Delaware River Main Channel Deepening Project Delaware Bay Winter Crab Survey – 2000/2001. (October, 2001). Final Report
 - █ Pre-Construction Shorebird Monitoring At Kelly Island Wetland Restoration Site, Port Mahon Environmental Restoration Site And Broadkill Beach Sand Placement Site. (December, 2001) . Draft Report
 - █ Pre-Construction Horseshoe Crab Egg Density Monitoring And Habitat Availability At Kelly Island, Port Mahon, And Broadkill Beach Study Areas. (December 2001). Draft Report
 - █ Delaware River Main Channel Deepening Project, Essential Fish Habitat Evaluation, (November, 2001). Draft Report
 - █ Input/Output for Economic Model, Summary and Backup Data, Delaware River Main Channel Deepening Project. University of Delaware for the U.S. Army Corps of Engineers.
- #121 Memorandum dated 02/13/2002 to commenting parties from Hearing Officer Timothy Bureau requesting public responses to the Corps of Engineers' document by 03/18/2002
- #122 March 22, 2002 Letter to Hearing Officer Timothy Bureau transmitting public responses to Corps of Engineers.
1. Gina Corola, West Jersey Group, New Jersey Chapter of the Sierra Club
David R. Conrad, National Wildlife Federation
Richard A. Fleming, Delaware Nature Society
June D. MacArtor, Green Watch Institute, Inc.
Jim Steffens, Delaware Chapter of the Sierra Club
Maya van Rossum, Delaware Riverkeeper Network
 2. Lorraine M. Fleming, Delaware Nature Society
 3. Jim Steffens, Delaware Chapter of the Sierra Club
 4. Alan J. Muller, Green Delaware
 5. David R. Keifer
 6. James R. May and Michael E. Crowson, Widener University,
Environmental and Natural Resources Law Clinic
 7. C. John Klein, Coastal Watch Engineering and Planning
 8. June D. MacArtor
 9. Steve Callanen
 10. Coralie Pryde
 11. Richard Fleming
 12. James M. Stuhltrager, Mid-Atlantic Environmental Law Center

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- #123 EPA MAIA Project Summary and Delaware Estuary Program pamphlet
- #124 Proposed Delaware River Channel Deepening Project: Review and Critique of Economic Analyses, Thomas A. Grigalunas, Ph.D. and James J. Opaluch, Ph.D. April, 2002.
- #125 Letter dated April 12, 2002 to Mr. Timothy Bureau from The Main Channel Review Committee
- #126 GAO Report to Congress. Delaware River Deepening Project: Comprehensive Reanalysis Needed. June, 2002.
- #127 Corps of Engineers letter to DNREC. Lt. Colonel Timothy Brown to Secretary DePasquale requesting suspension of pending permit application review.
- #128 Interim Correspondence, Corps of Engineers and DNREC. 4 Letters.
1. July 3, 2002. DNREC Secretary DePasquale to Lt. Col. Brown, acknowledging suspension request and setting future procedural sequence.
 2. July 26, 2002. DNREC Secretary DePasquale to new Lt. Col. Chapman, advising of prior communication and requesting acknowledgment.
 3. August 12, 2002. Lt. Col. Chapman to Secretary DePasquale affirming acceptance of terms and procedures outlined by DNREC on July 3.
 4. December 16, 2002. DNREC Secretary John Hughes to Lt. Col. Chapman, establishing a December 31, 2002 deadline for submittal of the economic reanalysis.
- #129 Corps of Engineers Submittal and Reactivation, December 20, 2002.
1. Economic documents.
 2. DNREC acknowledgement, December 20, 2002.
- #130 DNREC Public Notice on Economic Reanalysis. May 14, 2003.
- #131 Responses to Public Notice
1. Jay Birmingham
 2. John Peach
 3. Blackie Nygood
 4. Ovarl P. Lovett
 5. Robert and Jean Harder
 6. Richard Jinsen
 7. William F. Whitaker

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8. Gail V. Gingrigh
 9. John B. Gingrigh
 10. Robert A. Conte, Sr.
 11. Rev. L. C. Deery
 12. Congressman Robert Andrews
 13. Richard A. Fleming, Delaware Nature Society
 14. Dennis Rockford, Maritime Exchange for the Delaware River & Bay
 15. Zjames Bailey
 16. Steve Hundzinski
 17. Conchita Hundzinski
 18. William Fisher
 19. Donna Bailey
 20. Gregory M. and Bonnie N. Miller
 21. Frank and Bonnie Pizzo
 22. Thelma M. Day
 23. James W. Bailey, President, Broadkill Beach Preservation Association
 24. James Stuhltrager, Mid-Atlantic Environmental Law Center
 25. Micheael S. Ciabalconi, Vice President and Legislative Representative, General Teamsters Local Union #326.
 26. Julius Cephas, President, International Longshoreman's Association
 27. Mark E. Murphy, President, Murphy Marine Service, Inc.
 28. Elizabeth A. Murphy, Chief Operating Officer, Delaware River Port Authority
 29. Tyrone Butler, Vice President, International Longshoreman's Assn.
 30. Coralie A. Pryde
 31. Mary A. Thomas, President, Port Contractors, Inc.
 32. Eugene R. Bailey, Executive Director, Tthe Port of Wilmington
 33. William J. McCloskey, President, Delaware Building and Construction Trades Council
 34. Michael S. Ciabattoni
 35. Colleen Mahoney, President, Oceanport Industries, Inc.
 36. Frank Fountain
 37. Joyce Johnson, Sue Soltys, Co-Presidents, League of Women Voters of Delaware
 38. Leslie G. Savage, Vice President, Delaware Audubon Society
 39. Robert V. Martin
 40. Maya K. vanRossum, The Delaware Riverkeeper
 41. David R. Conrad, National Wildlife Federation
 42. Joan T. Delpino
 43. Philip J. Doherty, President, Maritrans Operation Company L.P.
- #132 Potential Benefits and Costs to Delaware from Proposed Delaware River Channel Deepening Project: Review and Critique of USACE Economic ReAnalysis. Grigualunas and Opaluch, October 1, 2003.

APPENDIX B

LIST OF RECOMMENDED CONDITIONS & SPECIFICATIONS

LIST OF RECOMMENDED CONDITIONS

The following listing is compiled from the various chapters of the report. The recommended conditions and specifications are arranged by statutory authority.

The unknown costs to comply with these provisions may have project cost/benefit and State cost-share implications. It is noted some of the suggested conditions will be modified for prudent considerations.

Chapter 60 -Environmental Control

- A. Standard and typical conditions placed on any DNREC water quality permit.
- B. The Corps shall conduct suspended solids source strength measurements in a manner and frequency to be specified by DNREC. The measurement results shall be provided in a timely manner determined by DNREC. The Corps shall also include any additional water quality testing requirements as may be deemed prudent by DNREC. Should these monitoring results demonstrate that the mathematical modeling used for the project does not adequately describe actual conditions, and the resultant changes result in non-compliance with Water Quality Standards or necessitate revision of the project standards contain herein; dredging should cease, new modeling should be developed, and new dredge techniques proposed by the Corps and approved by DNREC, if it is reasonable to conclude compliance will be achieved.

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- C. The Corps shall monitor, at a frequency specified by DNREC, to ensure that TSS concentrations are no greater than 250 mg/l at a distance of 200 feet from the cutter head. All such monitoring results shall be provided to DNREC in a timely manner determined by DNREC.
- D. No mechanical (i.e., bucket dredging) dredging or economic loading shall occur unless specific proposals for same are submitted by the Corps and approved by DNREC. These methods shall not be used in project areas upstream of Reach E.
- E. A ground water monitoring plan shall be formally submitted to DNREC for the Reedy Point South CDF and shall be approved and implemented prior to the facility receiving any spoils from dredging authorized by this permit.
- F. DNREC shall issue specific approval, which may include modifications, deletions, or additions to the effluent monitoring plan for the Reedy Point South CDF, submitted as part of this permit application. This approval shall be issued prior to the facility receiving any spoils from dredging authorized by this permit.
- G. In the event of exceeding State of Delaware Water Quality Standards, either at the point of dredging or dewatering from Reedy Point South CDF, specific and sequential reactive and remedial steps shall be proposed by the Corps and approved by DNREC prior to conducting any dredging authorized by this permit. This plan shall include and specify the allowable reaction time in stopping or modifying the dredging if monitoring reveals standards are being exceeded. The

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- plan shall also include stipulated consequences, potentially including penalties, for each incident of violation.
- H. Because of the potential for human health impacts should Water Quality Standards be exceeded, disregard or continued non-compliance with any permit requirement contained herein should be a valid and conclusive basis for revocation of the permit in accordance with Delaware law.
- I. All water quality monitoring, for each aspect or component of the project, shall be summarized by the Corps and approved by DNREC prior to conducting any dredging authorized by this permit. Said summary shall include each sampling location, methodology employed, parameters to be sampled, frequency and duration of sampling, reporting requirements, and specific sequential and time-specific contingency steps to be taken should water quality standards be exceeded.
- J. Should new information or data be obtained regarding contamination, toxicity, or water quality in Delaware River or Bay which represents, in DNREC's opinion, an identifiable potential adverse effect on health or water quality standards should the project proceed, the State may order new testing and suspension of dredging until it is assured water quality standards will be met and/or health concerns are adequately addressed.
- K. Corps contracted dredging upstream which results in conveyance of sediment to the State of Delaware must meet State Water Quality Standards at the border. Any such dredging, within a distance of the border to be specified by DNREC,

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- must be by hydraulic means, shall be monitored at the border for compliance, and the results provided to DNREC. The monitoring regimen, frequency, and contingencies for exceedance of Standards shall be submitted by the Corps and approved by DNREC prior to initiating any construction authorized by this permit. Any private dredging authorized by the Corps under Section 10 of the River and Harbor Act of 1899 or under Section 404 of the Clean Water Act of 1972 within the DNREC-specified distance of the State line shall contain a permit specification and condition requiring the same testing and monitoring, with results to be provided to DNREC.
- L. The use of CDF's outside the State is acknowledged. However, these site discharges will ultimately reach Delaware waters. Should a cause for concern be identified by DNREC, such as proximity of effluent release to Delaware waters or a variance in State water quality standards allowing effluent to exceed Delaware standards, DNREC may require testing and monitoring to ensure compliance with State Water Quality Standards at the border.
- M. Dredge spoils shall be placed in locations as indicated in the permit application, or as may be modified by written consent and concurrence from DNREC.
- N. Any other conditions which are deemed appropriate by DNREC.

Chapter 66 - Wetlands

- A. Standard and typical conditions placed on any similar DNREC wetland permit.
- B. Prior to contracting this portion of the MCD project, the Corps shall coordinate the request to waive the winter flounder protective window in accordance with

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- submitted procedures, and shall provide documentation to DNREC that all other consulted agency and expert opinions agree the proposed modification can be accomplished without significantly impacting the species. DNREC staff must agree with these findings. The result may include a shortening of the window, careful construction sequencing within the window, or a combination of approaches which do not necessarily result in a one year waiver of the protective window. DNREC shall provide written concurrence and approval to the Corps.
- C. Prior to contracting this portion of the MCD project, the Corps shall coordinate the request to waive the horseshoe crab protective window in accordance with submitted procedures, and shall provide documentation to DNREC that all other consulted agency and expert opinions agree the proposed modification can be accomplished without significantly impacting the species. DNREC staff must agree with these findings. The result may include a shortening of the window, careful construction sequencing within the window, or a combination of approaches which do not necessarily result in a one year waiver of the protective window. DNREC shall provide written concurrence and approval to the Corps.
- D. Due to the enormity of the potential adverse effect should the containment dike breach, the Operation and Maintenance Plan for the Kelly Island wetland restoration project shall be provided to DNREC prior to initiating the work authorized herein. DNREC shall review and concur with the plan, and in particular the dike maintenance and defined emergency response plans, to

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- ensure the potential for breach has been minimized and the reaction should a breach occur is appropriate .
- E. All identified items regarding research, reports, and monitoring proposed by the Corps and DNREC shall be conducted.
 - F. All dike maintenance, excluding emergency repairs, shall be conducted in accordance with established environmental protective windows (i.e., horseshoe crabs, shorebirds, etc.).
 - G. The Corps shall confer with DNREC and reach agreement on the monitoring and response plan to protect oyster beds prior to initiating the work authorized herein. This requirement acknowledges the proposed Corps plan, and is intended to broaden the scope and definition of those proposals., including reporting requirements and timelines for action.
 - H. The proposed Kelly Island wetland restoration plan shall be maintained for the life of the authorized federal project, which is currently 50 years, unless DNREC authorizes a reduction.
 - I. The proposed Mahon River monitoring and maintenance plan shall be conducted for the life of the authorized federal project, which is currently 50 years, unless DNREC authorizes a reduction.
 - J. The Corps and the State of Delaware must agree on how to most effectively assure that any future liability is the responsibility of the Corps, and potentially the project sponsor, the DRPA. Such agreement should include acceptance of legal and financial liability, define the responsible parties, and address long-term

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- responsibility and validity covering potential problems and resulting damages from all aspects of the entire MCD project within the State. This agreement must be functioning prior to initiating any work authorized herein.
- K. Only dredged material from "Reach E" of the MCD project may be used in the Kelly Island wetland restoration project.
- L. Any other permit condition as may be deemed appropriate by DNREC.

Chapter 72 - Subaqueous Lands

- A. Standard and typical conditions placed on any similar DNREC subaqueous lands permit.
- B. The established protective environmental windows shall be acknowledged and complied with unless the Corps requests a waiver in accordance with established procedures. Such a request to DNREC must include documentation of other pertinent federal agency and expert concurrence. This condition not only applies to any presently established window, but also to future windows which may be established to protect a species known to be present within the MCD project locations. DNREC shall not grant a window waiver unless the Corps conclusively demonstrates no significant harm or impact will occur to local populations (able to recolonize the disturbed habitat) or to the species as a whole in Delaware waters. (See also conditions under Chapter 66 - Wetlands)
- C. Rock blasting is prohibited until specifically authorized in writing by DNREC. In order to obtain said authorization, it will be necessary to conclusively demonstrate conservation measures to protect both Atlantic and shortnose

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- sturgeon are adequate and all reasonable measures to protect the species are implemented, which may include expanding the established environmental window. The plan shall also address, to DNREC's satisfaction, the protection of fish in general from any blasting.
- D. While preliminarily adequate to protect oyster beds near Kelly Island, the proposed Response, Remediation, and Mitigation Plan must be clarified and expanded to ensure no long-term impact to these oyster beds will occur. The plan must include specific measures and contingency commitments, including assurance of adequate mitigation should damage occur. The Final Plan must be approved by DNREC prior to initiating the construction authorized at Kelly Island.
- E. The Corps must submit a plan for protecting, and/or restoring, and/or mitigating potential impacts to all *Sabellaria* colonies within the project. This plan must be approved in writing by DNREC prior to initiating any construction in these areas.
- F. All NMFS and USFWS regulations and requirements relating to this project are hereby incorporated into, and become conditions of, this permit.
- G. By exercising the authority granted herein, the Corps agrees to warrant the validity of the salinity studies which demonstrate there will be no appreciable impact on the Bay estuary. Should data, at any time during the project, indicate statistically significant variance with reasonable ranges established by the study, the Corps shall immediately assess the situation, modify the modeling, and assess the results in relation to potential adverse harm to the estuary. DNREC

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- shall be notified upon such an occurrence and provided with all data and assessments. Should DNREC determine the potential harm is significant and quantifiable, work authorized by this permit shall halt until DNREC is satisfied the Corps response is adequate, which may include increased mitigation requirements.
- H. Prior to any blasting, the Corps shall investigate and report to DNREC on the concern with old gas storage caverns near the proposed blasting zone and may not proceed until DNREC concurs the risk is acceptable.
- I. Work authorized herein may not proceed until DNREC concurs that information and data provided by the Corps adequately demonstrates there will be a net economic benefit to the State of Delaware resulting from the MCD project.
- J. Prior to the placement of sand for each beneficial use, the Corps shall obtain DNREC concurrence in writing that the material is suitable for placement; considering aesthetics, grain size, habitat intent, and existing beach characteristics.
- K. This permit is invalid until such time as the State of Delaware approves the PCA between the Corps and DRPA. This approval is required to ensure mandatory regulatory requirements are met.
- L. All proposed monitoring and remedial action plans must be individually approved by DNREC prior to commencing construction on the project.
- M. All applicable items from Section 3.05(C) of the Regulations.

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- N. The Corps shall propose compensatory mitigation for all identified unavoidable and quantifiable adverse effects which may be acceptable considering the project as a whole. Such mitigation shall be approved by DNREC prior to commencing construction of the project. Beneficial use of blasted rock may be considered as a mitigation option.
- O. All items regarding research, reports, and monitoring proposed by the Corps and DNREC in the Record shall be conducted and results provided to DNREC.
- P. All Corps contracts for the MCD work in Delaware waters must be provided to DNREC and approved prior to execution. The purpose of this State review is to assure all conditions and specifications contained herein are covered in the contracts. This is a matter of public health and welfare.
- Q. Any other subaqueous permit condition as may be deemed appropriate by DNREC.

Other Relevant Considerations

- R. As a preliminary step in addressing the question of additional NEPA documentation, the Corps shall submit to DNREC the exact documentation and review process it intends to provide, along with other federal agency concurrence with the proposed process, prior to commencing the NEPA process. Further, it is mandatory the Corps address any items which DNREC requests in responding to the proposed process, the proposed modification of protective environmental windows, and the *Sabellaria* situation in this NEPA documentation. This NEPA

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- process must be completed to the satisfaction of DNREC prior to initiating any work authorized by this permit.
- S. The Corps and DRPA are both required to countersign any proffered permit. These signatures will acknowledge and accept all conditions and specifications contained in the permit, including long-term liability and responsibility, for all aspects of the MCD project.
- T. It shall be the sole responsibility of the permittee to determine when a permit modification is required, as DNREC shall enforce the activities and conditions as permitted. Any request for a permit modification to any condition or specification, increase in permitted activity, or report / monitoring / reporting deadline, shall be submitted in writing with appropriate documentation. The following procedure shall be used to determine whether the permit modification will be granted:
1. DNREC, at their sole discretion, shall determine whether the information submitted is complete and adequate for review and evaluation, and shall identify and notify the permittee in writing of any deficiencies, providing a set timetable for response.
 2. DNREC, at their sole discretion, shall determine whether the requested modification is minor or major in character.
 3. A minor change may be authorized by letter approval.
 4. A major change shall be Public Noticed, then the statutory procedure will be followed.

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- U. The Corps may propose economic loading in Reach E. Such a request must be accompanied by all relevant information and data in order to provide adequate information for DNREC to evaluate the proposal. Water quality, suspended sediment plume strength and extent, and economics shall all be considered in the review. Any such proposal must be economically beneficial to the State. DNREC may place additional conditions and specifications on any authorization. Due to the public concern evident to date, and considering the extent and volume of material proposed to be handled by economic loading, DNREC shall solicit public comment on any such proposal and consider public responses in the evaluation of the request.
- V. Pursuant to 15CFR 930.44, DNREC reserves the right to object and request remedial action if the MCD project is conducted or results in an effect substantially different than currently proposed. All conditions and specifications contained within the permit are conditions of the CZM consistency approval. Any non-compliance with any permit condition shall result in immediate termination of the CZM approval. All applicable conditions and specifications of the New Jersey and Delaware CZM approvals are hereby incorporated into this permit.
- W. This permit shall expire two (2) years after date of issuance. The Corps may extend the permit indefinitely in two-year intervals until the MCD project is completed, and must request same in writing prior to the expiration date. DNREC reserves the right to modify the permit and/or conditions and specifications within the permit at the time of any permit extension request based

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- on new data or information which changes the basis or facts upon which DNREC relied upon at the time the permit was originally issued. This condition shall also apply to any Best Management Practices which may be developed or identified during the permit validity periods, and any such BMP's shall be incorporated into the project to the extent practicable.
- X. This permit is granted under the authority of Chapters 60, 66, and 72 of Title 7 of Delaware Codes. This permit is a comprehensive compilation of all activities requested under the various State authorities and shall be considered one authorization. Non-compliance with any aspect of the permit relating to any of the regulatory authorities will be deemed violation of all such authorities, as all conditions and specifications are interrelated. The Corps, by exercising the authority granted herein, acknowledges the permit is a comprehensive interrelated regulatory document.
- Y. The Corps and DRPA shall indemnify and hold harmless the State of Delaware and its departments, agencies, officials, employers, agents and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representatives of the permittee, undertaken in connection with this permit. This permit shall not be construed as an indemnity by the State of Delaware for the benefit of the permittee or any other person.
- Z. In considering this permit application, DNREC has relied upon the information and data which permittee has provided in connection with the permit application.

If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, DNREC may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.

AA. The permittee shall cause all contractors to acknowledge in writing their receipt, understanding, and acknowledgment of pertinent conditions and specifications contained in this permit. The Corps shall retain such documentation throughout the duration of the project.

BB. The State of Delaware may hold the permittee, any property owner, contractor, and any agent responsible to ensure the project is constructed in accordance with all drawings, specifications, and representations within the permit application.

CC. Any other conditions which are deemed appropriate by DNREC.