Overview of Environmental Impact Statement for Evaluating Native and Nonnative Oyster Restoration Alternatives for the Chesapeake Bay

Prepared by MD DNR, Fisheries Service
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Background: Restoring an abundant and self-sustaining oyster population throughout the Chesapeake Bay is a major component to improving the overall health of the Bay. The biggest challenge to native oyster restoration is to overcome the effects of disease (Dermo and MSX), and a strategy to significantly minimize the impacts of disease does not exist. Despite significant restoration efforts and the expenditure of $45 million (State and Federal Funds, Bay-wide) since 1994, the Bay's oyster population has not increased and remains at a historical low level. A 2003 National Resource Council (NRC) report, "Nonnative Oysters in the Chesapeake Bay", concluded that continuing Bay oyster restoration as status quo would result in further declines in Bay water quality, continued or accelerated losses of submerged aquatic vegetation and oyster reefs, with cascading effects on the structure and stability of the Bay's estuarine communities, and continued decline of the oyster fishery and erosion of traditional economies and cultures of Bay watermen.

Field investigations of the "Oregon strain" nonnative Suminoe oyster, *Crassostrea* ariakensis, have been conducted in the Bay since 1996. This oyster was imported to the State of Oregon during the early-1970s and has since been managed in accordance with the International Council for the Exploration of the Seas (ICES) protocol for transferring and introducing marine organisms. Scientific information collected from studies conducted in the Bay suggests that *C. ariakensis* is tolerant to MSX, resistant to Dermo, and is well suited to grow and reproduce in the Chesapeake Bay. The successes of these field investigations have resulted in an increased interest by the oyster industry to introduce *C. ariakensis* into the Bay. However, the 2003 NRC report recommended additional research be obtained to address critical risk questions prior to approving an introduction.

Recognizing the importance of oysters to Bay restoration, the lack of improvements in the Bay's native oyster population, and the increasing interest among industry to utilize *C. ariakensis*, the State of Maryland and Commonwealth of Virginia agreed to prepare a Federal Programmatic Environmental Impact Statement (EIS) as co-lead agencies with the U.S. Army Corps of Engineers, Norfolk District to evaluate the risks and benefits of alternative approaches to increasing oysters in the Chesapeake Bay.

In January 2004, a Notice of Intent to prepare this EIS was issued in the Federal Register. More than 130 meetings with project partners, research community and stakeholders have since been conducted to define the scope of this study, develop and implement a framework for evaluating the risks and benefits associated with the alternative under consideration, and comply with Federal peer review requirements. A draft EIS is scheduled to be available for public review in May/June 2007.

Involved Agencies:

- Lead (Decision-Making) Agencies: State of Maryland, Commonwealth of Virginia and U.S. Army Corps of Engineers (ACOE), Norfolk District.
- Cooperating Federal Agencies: U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), and National Ocean and Atmospheric Administration (NOAA).
- Other Agencies: Potomac River Fisheries Commission and Atlantic States Marine Fisheries Commission (represents States from Maine to Florida).

Oyster Restoration Alternative Under Evaluation: The following oyster restoration alternatives were defined through public scoping, and will be evaluated in this EIS:

- Proposed Action – introduce the Oregon strain of *C. ariakensis* in accordance with International protocols (ICES), and continue *native oyster* restoration.
- Alternative 1 – continue *native oyster* restoration program.
- Alternative 2 – expand *native oyster* restoration program.
- Alternative 3 – implement temporary harvest moratorium on *native oyster* and an oyster industry compensation (buy-out) program in Maryland and Virginia.
- Alternative 4 – establish and/or expand *native oyster* aquaculture program.
- Alternative 5 – establish nonnative aquaculture program.
- Alternative 6 – introduce and propagate an alternative oyster species, or strain of *C. ariakensis* in accordance with International protocols (ICES).
- Alternative 7 – introduce *C. ariakensis* and discontinue native oyster restoration.
- Alternative 8 – combination of alternatives.

Purpose and Need: The purpose of this EIS is to identify a preferred oyster restoration alternative(s) for establishing an oyster population that reaches a level of abundance in Chesapeake Bay comparable to levels observed between 1920–1970. This action is needed to restore the ecological role of oysters in the Bay and the economic benefits of a commercial fishery through native oyster restoration and/or an ecologically compatible non-native oyster species that would restore these lost functions.

Research Framework: A research framework was developed and implemented based upon recommendations from the National Research Council's 2003 report "Nonnative Oysters in the Chesapeake Bay" and the Chesapeake Bay Program's Scientific and Technical Advisory Committee. Some of the more than 40 research studies initiated since the EIS began will still be in progress at the time of the scheduled release of the draft EIS in May/June 2007. The influence those studies may have on evaluating the risk and uncertainty associated with pursuing a particular course of action will be identified at the time of the draft report's release, along with projected timelines for their completion. This research, funded primarily by NOAA, is focused towards further evaluations of the recommendations of the NRC and Chesapeake Bay Program's Scientific and Technical Advisory Committee (CBP STAC).

Modeling Framework: The EIS is supported by a larvae transport, demographic and ecosystem impact model. These models will be useful to scientists and managers beyond the EIS for their use in optimizing restoration strategies and facilitating management decisions.

- Larvae Transport Model: Elizabeth North at the University of Maryland is the lead principal investigator for this model that will project the spatial distribution of larvae settlement for both the native and nonnative oyster restoration alternatives. The model incorporates research findings that indicate differences in larvae behavior characteristics for the native and nonnative oyster. Model runs complete and report being peer reviewed.
- Demographic Model: Jon Volstad at Versar, Inc. is the lead principal investigator for this model that will project the spatial distribution and population change for both the native and nonnative oyster restoration alternatives over a ten-year period. This model takes into account differences in growth, survival and recruitment between the native and nonnative oyster. Model runs for the native oyster restoration alternatives are currently running.
- Ecosystem Impact Model: Carl Cerco with the U.S. Army Corps of Engineers is the principal investigator for this model that has been endorsed by the Chesapeake Bay Program. The purpose of this model is to project the ecological benefits of oyster restoration, including, but not limited to changes in water quality, submerged aquatic vegetation and nitrogen removal. Model runs and report are complete.

Assessment Framework: The risks and benefits for each EIS alternative will be based upon the following risk/benefit assessments:

- Ecological Risk Assessment (ERA): Jon Voldstad at Versar, Inc. is the lead principal investigator and is working closely with ecological risk assessment specialists from the ACOE, EPA, FWS and NOAA to assess the ecological risks and benefits for each EIS alternative in accordance with EPA ecological risk assessment guidelines. The framework for this assessment has been developed and the analysis is currently underway.
- Economic Assessment: Doug Lipton at the University of Maryland is working closely with colleagues from the Virginia Institute of Marine Sciences to assess the economic risks and benefits for each EIS alternative. A background report is available on the MD DNR webpage, and evaluations of the aquaculture alternatives are currently underway.
- Cultural Assessment: Michael Paolisso and Nicole Dery at the University of Maryland are responsible for assessing the cultural beliefs and values that different stakeholders have for the various alternatives. A background report is available on the MD DNR webpage, and current efforts are focused on obtaining additional information to support their analyses.

Peer Review: A comprehensive peer review plan, in accordance with new (2005) federal peer review requirements, was developed and approved in February 2006. Federal peer review is not required of the EIS itself, but rather of the scientific information that supports the EIS. Research projects, considered "influential scientific information", are

subjected to peer review. Modeling and assessment projects, considered "highly influential scientific assessments", are subjected to more stringent peer review. In addition to Federal peer review requirements, an Oyster Advisory Panel was established to review the sufficiency of the Draft EIS prior to public release. The panel is comprised of seven-members representing a broad range of scientific expertise and philosophies about marine resources, including the co-chair and a committee member from 2003 NRC Study "Nonnative Oysters in the Chesapeake Bay". The Panel's review may result in recommendations for additional research, with timelines to better clarify the level of risk and uncertainty associated with each alternative under consideration. The lead agencies are relying upon this Panel's review to address the research requirements as stated in the Congressional Authorization for this project and Senate Bill 405 of Maryland's 2005 General Assembly.

Decision-Making Process: The Executive Committee consisting of the Secretaries of Maryland and Virginia's Department of Natural Resources and Colonel of the U.S. Army Corps of Engineers, Norfolk District are committed to a decision-making process that is guided by science and transparent. The Executive Committee is committed to continued coordination with the cooperating Federal agencies, Potomac River Fisheries Commission and Atlantic States Marine Fisheries Commission. The next decision point is scheduled for May/June 2007 at which time the Executive Committee will determine whether or not to release a draft EIS for public review. This decision will rely heavily upon the Oyster Advisory Panel's review comments of the pre-draft EIS.

Another key decision point will be identifying a preferred oyster restoration alternative(s). The preferred alternative does not have to be identified in the Draft EIS, but must be included in the Final EIS. The Executive Committee has developed a decision-criteria matrix in coordination with the cooperating Federal agencies to facilitate this effort. The matrix includes a list of approximately 30 ecological, economic and cultural decision factors for which the risk or benefit for each alternative will be identified.

"Friction" Areas:

- Sufficiency of Research: The EIS schedule has been and remains the most controversial issue with this project because it precedes the 5-year research timeline recommended by the CBP STAC. While the lead agencies have maintained an aggressive EIS schedule, the schedule has been extended when it has been necessary to obtain additional scientific information. The NRC and CBP STAC research recommendations were essential to focusing research framework for this EIS, the associated timelines were not based upon a comprehensive risk/benefit and uncertainty analyses such as the one that is now available with this EIS. Several years have passed since the EIS began, and a significant amount of research has since become available. The lead agencies believe it is time to organize and analyze the available scientific information and release a Draft EIS in May/June 2007 to inform the public of the risks and benefits, and associated uncertainty with the available information. If critical scientific information is still needed to address recommendations of the Oyster Advisory Panel and/or public

concerns, the draft EIS can be supplemented prior to release of a Final EIS. The cooperating Federal agencies have requested that the Draft EIS schedule be extended to allow for the completion and incorporation of all of the NOAA funded research projects. These projects are scheduled to be completed by mid-2008. Waiting for this information would delay the release of a Draft EIS until 2009. Despite the differences of opinion, the lead and cooperating agencies have agreed to work towards a May/June 2007 target date for releasing a Draft EIS for public review.

The sufficiency of research as it relates to the NRC and CBP STAC research recommendations also has some legal implications. The Congressional Authorization for this EIS requires the EIS to "address" the research gaps identified in the NRC and CBP STAC reports. In addition, Senate Bill 405 of Maryland's 2005 General Assembly requires that the research recommendations set forth in the NRC report be "met" to the extent feasible for the State of Maryland; and those set forth in the CBP STAC be "fully met" prior to an introducing a nonnative oyster into Maryland waters. The Commonwealth of Virginia does not have any legal obligations to the NRC and CBP STAC research recommendations. Instead, the growing impatience in Virginia resulted in legislation that becomes effective July 2007 that gives the Commissioner of the Virginia Marine Resources Commission the authority to approve the introduction of *C. ariakensis* into Virginia waters. Virginia anticipates the oyster industry submitting requests for an introduction in July 2007. Having a Draft EIS available in May/June 2007 will facilitate their ability to address this requests in a scientific manner.

Contact Persons and Project Webpage: If you have any questions and/or need additional information please contact Mr. Tom O'Connell or any of the other project managers listed below. More detailed information is also available at the projects' webpage: http://www.dnr.state.md.us/dnrnews/infocus/oysters.asp

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Attachments:

- EIS Framework
- Peer Review Plan
    - Description of EIS Working Groups
    - List of Research, Modeling and Assessment Projects
- Senate Bill 405 of Maryland's 2005 General Assembly