Oyster (*C. virginica*) Cultural Assessment
Final Peer Review Report and Lead Agency Response

Report Content and Charge:
This report describes the peer review process and presents the lead agencies' response to the peer review. Also included are the names of the peer reviewers and their organizational affiliations, a compilation of all the peer review comments on the Cultural Assessment, and the principal investigators responses to the peer review.

The Cultural Assessment was conducted and written as documentation to support the Programmatic Environmental Impact Statement (EIS) for Evaluating Oyster Restoration Alternatives for the Chesapeake Bay, Including the Use of Native and Non-Native Oysters. The process followed for this peer review is consistent with the peer review plan that was developed by the Lead Agencies for the EIS project. This peer review plan was specifically designed inorder to comply with the December 16, 2005 Office of Management and Budget's Peer Review Guidelines and was accepted by the US Army Corps of Engineers for this purpose.

The peer review plan designated the Cultural Assessment Peer Review Group (PRG) as the principal review group for the peer review of the cultural assessment.

Study Objective:
The objective of the cultural assessment was to identify the cultural and socio-economic risks and benefits for each of the oyster restoration alternatives being evaluated in this EIS.

The Lead Agencies Review and Response Process:
The Principal Investigators for the Cultural and Socioeconomic Assessment report, Michael Paolisso, PhD, and Nicole Dery, MAA, Department of Anthropology, University of Maryland, College Park, worked closely with the PRG. The PRG provided comments on multiple draft reports and recommendations to guide the research and analyses.

In July 2006, the PRG was asked to review three draft preliminary cultural assessment reports and a draft manuscript for publication. In a conference call on August 14, 2006, the PRG provided comments on these preliminary reports and provided guidance for planning the principal investigator's second phase of work.

The Principal Investigators discussed the progress on the second phase of work with the PRG on September 25, 2006. The PRG provided comments on a working project database and bibliography, in addition to making bibliographic suggestions. During this second conference call, the PRG and Principal Investigators agreed upon the plan for the third phase of work. The PRG reviewed the draft surveys for the third work phase in January 2007.

In response to the recommendations that were made on the initial assessments work, the Principal Investigators broadened the scope of their work and compiled the findings from their earlier draft reports in the report entitled "Oyster Restoration in the Chesapeake Bay: A Cultural & Socioeconomic Assessment," which has been included as an appendix for the EIS. In addition, the following paper was published in a peer review Journal: Paolisso, M., N. Dery, S.

Herman. (2006). Restoration of the Chesapeake Bay using a Non-Native Oyster: Ecological and Fishery Considerations. Human Organization Vol. 65(3): 253-267.

For the final peer review stage, a draft of "Oyster Restoration in the Chesapeake Bay: A Cultural & Socioeconomic Assessment" was sent to the PRG on May 30, 2007. The PRG and Principal Investigators held a conference call on June 14, 2007. The PRG concurred that the draft was near completion. The PRG recommended extending the work to include classic social impact themes and discussed how the cultural assessment work would be integrated with ecological and economic work being conducted for the EIS.

The Lead Agencies sent the draft final "Oyster Restoration in the Chesapeake Bay: A Cultural & Socioeconomic Assessment" to the PRG in late November 2007 for review. Written comments were received from the PRG on January 12, 2008. In addition, the Lead Agencies sent the Principal Investigators comments from the Baltimore District, Army Corps of Engineers dated December 13, 2007. The lead agencies sent a revised final draft as well as a point-by-point response to comments to the PRG on March 17, 2008.

The PRG provided a final peer review report to the Lead Agencies on April 28, 2008. The Lead Agencies for the EIS reviewed the PRG's final report and requested a final response to comments from the Principal Investigators. On May 4, 2008, the Principal Investigators provided a final response to the peer review, which included a discussion of how comments and recommendations would be addressed in the cultural and socioeconomic section of the EIS and the EIS appendix report.

The Lead Agencies are satisfied that the key concerns raised by the PRG have been addressed.

Deposition of Peer Review:

Dr. Shirley Fiske
Department of Anthropology
University of Maryland,
National Oceanographic and
Atmospheric Administration:
Sea Grant College Program

Dr. Barbara Rose Johnston
Senior Research Fellow
Center for Political Ecology
Santa Cruz, California

Dr. Bonnie J. McCay
Department of Human Ecology
Cook College, Rutgers the State
University

Dr. Thomas R. McGuire
Research Anthropologist
University of Arizona

Dr. Pris Weeks
Social & Policy Analysis
Houston Advanced Research Center

Peer Review Report for the Cultural and Socioeconomic Assessment (January 12, 2008)

Final Report, Peer Review Team
Bonnie J. McCay, Leader
Members: Shirley Fiske, Barbara Johnston, Thomas McGuire, and Priscilla Weeks

Michael Paolisso, the Principal Investigator, interacted with us periodically via email as he moved toward completion of the report and its conclusions. Paolisso sent us the draft report on November 18, 2007, and its conclusions on November 24, 2007. This is our final report as a peer review committee; some individual members also shared specific editing and other suggestions to Dr. Paolisso (see appendix).

Overall, the peer review team, which met on November 28th from 9 a.m. to 12 noon in person and via conference call, felt that the draft report represented a very good response to earlier peer review comments, including general reorganization, rewriting and reduction of the section on cultural models, introduction of socio-demographic and economic data for the region, and reporting impacts by alternatives rather than by stakeholder groups. A major intent behind our suggestions and Paolisso's revisions is for this report—which will be a reference document in the appendix of the EIS—is to be useful for the next phase of the EIS, where Paolisso will work with the economist and with ecologists to integrate information for the actual EIS by alternatives. This report also incorporates the findings of a major survey done in 2007.

We made suggestions to Dr. Paolisso on the final revisions to the report. Some of our comments are quite focused and specific, for example, clarifying that the problem of distance for watermen, which appears in their appraisal of harvest effects of reserves and sanctuary-based restoration, comes about in part because the reserves and sanctuaries are planned for lower salinity areas in the bay, where there are fewer watermen. The introductory section could also make stronger links to elucidate the transition between the cultural consensus model and the material culture/heritage discussion.

The report should refer more explicitly to environmental justice issues, providing whatever data are now available on the extent to which the stakeholder groups and demographic units within the region include historically discriminated against groups such as African-Americans and Native Americans and reflecting on how the inability to study the seafood processing labor force, due to time and budget constraints, restricts the utility of the report in this regard. We realize that the research for this project is completed, but the report would be greatly enhanced if this kind of information, or at least census-defined poverty areas, could be mapped out in relation to existing and projected marine reserves, sanctuaries, and/or aquaculture sites, and public grounds, in order to get a sense of whether marginal and disadvantaged social groups will be disproportionately affected by various alternatives.

Finally, it would be good to make a stronger or more explicit case for the extent to which the recreational sampling technique reflects the larger recreational user group (this should not be a problem) and the ways in which the restaurant study reflects consumer attitudes. These are in the report but could be highlighted more. None of the above is a "deal breaker," though; the report is comprehensive, clear, well organized, and persuasive that it is based on excellent social science.

We strongly recommend a very concise Executive Summary, highlighting major findings in language that can be used by drafters of the final EIS. For example, the finding of remarkable consensus among stakeholders about the three-pronged values of oyster management and restoration is significant and could be used to formulate a decision criterion in choosing among alternatives (i.e., any alternative should protect and enhance not only ecological but also economic and cultural values).

Something might also be said about the somewhat ironic finding that the bay-wide "virtual community" –especially scientists and watermen-- is not only in agreement about the three values, but also seems to have considerable consensus about the importance of watershed-level or even more local action, a variant of the adage, "think globally, act locally". Another way of thinking about it is in terms of how "the commons" is defined, whether bay-wide, as conservation groups tend to hold, or more focused, as in partnerships among scientists, conservationists, watermen, and others. Larger and more diffuse "commons" tend to be more prone to "tragedies of the commons" than are smaller ones, closer to the lived, place-based heritage of those who depend on the resources of the commons as well as those who have come to care for those resources and the places they are found.

The conclusion and executive summary could also be more explicit about the public grounds issue, that is, that the proposed alternatives are by and large against continued or renewed focus on the public oyster beds.

We also recommend more direct assertions concerning what the results of the surveys and other aspects of the study reveal about the different stakeholder groups (viz, heavy reliance on "perceptions" in the draft now; there could be a short statement about the fairly strong, although necessarily qualified, basis for assuming that what people say in the surveys reflects their understandings and opinions). The research methods were ones of triangulation—surveys, supplemented by the information you have gained from informal interviews, participant-observation, texts—and thus the report can state findings more clearly and firmly. The report would also be greatly improved by a chart that maps out the views/ predicted impacts/ alternatives.

The Peer Review committee is willing to continue reviewing the cultural and socio-economic components of the EIS. We are particularly concerned that critical social/economic impact matters are not (yet) being addressed, due to constraints on both the cultural and the economic research efforts. The cultural plan of work did not include, nor was it intended to include, analysis of "social impacts" in the classic sense, including the distributive effects of spatial and temporal changes in resource abundance and access to the resource (i.e. through establishment of marine reserves and/or shifts in focus onto aquaculture and leased bed planting versus public ground harvesting). We are aware that the public grounds fishery is historically, culturally, and economically important, particularly in Maryland. The broad cultural value of the public grounds fishery is implicit in the cultural analysis and yet has not been translated into economic impact analysis, as far as we know. The economic effort, led by Doug Lipton, has focused solely on the aquaculture alternatives. If that focus includes estimates of the economic costs and benefits of investments in an aquaculture-based recovery plan for oysters in the bay, vis-à-vis the traditional waterman/ public ground fishery, then our concerns might be addressed.

We also inquire about the composition of the Oyster Advisory Panel, which is expected to examine the EIS when its review draft is completed; this panel could be a forum for reviewing

the draft with a focus on economic and social impacts of alternatives, but its effectiveness in that regard will depend in part on its composition. Are there any social scientists on the panel now? Can there be in the future? Will the panel be asked to address these questions?

Previous Reports

As reported 9/4/06: We met the goals of the first phase of the peer review process; I was able to put together a team of 5 people, including myself (Johnston, Fiske, Weeks, McGuire); each of us prepared comments on the materials given to us by Paolisso and Dery, the principals of Project No. 19; we then had a 2 hour conference call on August 14th, with Paolisso and Dery. This is the basis of planning for the 2nd phase of work, which Paolisso and Dery will report to us by the middle of September. >

As reported 6/15/07: Sept. 1st 2006 – June 15, 2007, we had a 2nd peer review conference call on September 25th, 2006. I spent 1 hour organizing that call, and 4 hours reviewing the documents sent <Cultural and Socio-economic Assessment Work Plan_Phase 2.doc; Working project database and bibliography.RTF; Oyster EIS Alternatives with model parameters.doc; Oysters Assessment> and preparing review comments as well as bibliographic suggestions. The conference call lasted 2 hours and resulted in a plan for the next phase of the work done by Paolisso and Dery. We received and reviewed the surveys created for this next phase on January 15th, 2007; and on May 30th 2007 we received the Draft Report on EIS Cultural and Socioeconomic Assessment.doc, which was the focus of a conference call held on June 14th. We agreed that the report was close to being completed and that further work needs to be developed around classic social impact themes. The peer review team was asked to be available to comment on the executive summary and on the work that will be done to integrate this work with the work of economists and ecologists.

Principal Investigator Response to the Peer Review Report for the Cultural and Socioeconomic Assessment (March 17, 2008)

March 17, 2008

Re: Addressing Review Comments in Revision to EIS Appendix Report

In revising "Oyster Restoration in the Chesapeake Bay: A Cultural and Socioeconomic Assessment" I have benefited from the comments of the Cultural Assessment Peer Review Group. A number of these comments were described in the January 12, 2008 report Dr. Bonnie McCay, the Peer Review Team Leader. Other comments were provided me during our peer review meeting. Also, I have reviewed comments from the Army Corp of Engineers (ACOE) and a few members of the Project Delivery Team.

I believe that I have addressed the major changes suggested by the peer review group and others. Some of these changes were addressed in the above referenced document, while others I addressed/will address in writing the cultural and socioeconomic section of the EIS (Section 5.4.1), as well as contributing to other sections of the EIS. A first draft of Section 5.4.1 is complete and submitted to VERSAR.

Briefly, the most important changes I have made in the revised report are:

1) I have included an executive summary and edited/revised the conclusions in the appendix report.

2) I have included GIS maps in the EIS Section that show watermen location and salinity zones, which are relevant because of the proposed locations for expanded native oyster restoration and aquaculture. The GIS maps show that most watermen do not live near the proposed sites for restoration or aquaculture. I have also emphasized more in the appendix report and in the EIS section that reserves and sanctuaries provide little harvest for watermen. I've included updated harvest figures that show the percentage of harvest from reserves for the last three years.

3) I did include some reference in the report to how the cultural model/consensus analysis expands the cultural analysis traditionally undertaken in social impact assessments.

4) I will be working with VERSAR on writing the EIS section on Environmental Justice. All relevant information on environmental justice will be included directly in the EIS. If there is any spatial dimension to any environmental impact justice issues, I will request assistance from VERSAR to prepare GIS-based maps, similar to what was completed for the salinity and restoration/aquaculture analysis.

5) I have reviewed the economic analysis of the EIS action and alternatives prepared by Doug Lipton. I have begun to integrate some of his impacts (e.g., number of full time watermen supported by different alternatives and the net income lost to the fishery of a moratorium) with the socioeconomic data for the same alternatives. I will continue my efforts to integrate the

socioeconomic (and cultural) with the economic, as we revise draft sections of Section 5 of the EIS. The peer review group called for greater integration of the two analyses.

6) I have addressed detailed edits and suggestions offered by the ACOE. I did not include sampling confidence limits, since most of the samples are non-probability samples. I did include in the EIS section both percent and sample size for each result.

7) I have updated background information on watermen in Chapter 3 of the appendix report. The information presented in Chapter 3 under "Sample Characteristics Relevant to Oystering" was used to develop the cultural and socioeconomic impacts for Alternative 1 in the EIS.

8) In writing the EIS Section 5.4.1, I followed the peer review committee's suggestion and used more direct assertions concerning the results of the survey, based on the information in the appendix report.

9) I plan to pursue discussions of privatization and common access issues for the Chesapeake Bay oyster fishery in Section 2.2 of the EIS (a summary of the comparison of alternatives with ecological, economic and cultural and socioeconomic factors integrated).

Finally, I made many smaller changes, some editorial and some substantive, in revising the appendix report. My sense is that it is complete and will serve as a good reference document for the EIS.

Sincerely,

Michael Paolisso
Associate Professor

Final Peer Review Comments - Report for the Cultural and Socioeconomic Assessment (April 28, 2008)

I am pleased to report that the Peer Review group for the Cultural assessment for the EIS has completed its work in reviewing Dr. Paolisso's incorporation of earlier suggestions in the final draft of the Cultural Assessment for the EIS. We are generally very pleased with the work, feeling that it represents very high quality social science, focused on the cultural consensus and cognitive modeling approach. The study is unique in employing this approach, even though the approach is very well known within anthropology and has been used for other policy issues.

We have a few concerns that may call for slight revision (see below from committee members for particulars). One concerns the introduction of the notion of an "oyster community" on p. 5 without explaining what that means.
Another calls for some explanation of the sources of generalizations about minority groups as well as of the limitations of data available for depicting different socio-economic groups in various sectors (see Johnston's remarks). We had asked for a chart that showed positions on alternatives very clearly, and we continue to believe that would add to the value of the work by more effectively communicating its results (see Fiske's remarks below). Finally, while I do not believe that it is either necessary or helpful for this group to write a statement explaining the strengths and limitations of the cultural modeling approach taken here in contrast with classic social impact analyses (see Fiske's remarks below), we have talked about this at length with Michael Paolisso in the past, and we continue to feel strongly that he should write such a statement himself, as part of his report. He has written some of this; it may just need highlighting and strengthening.

Overall, we are very pleased with his responses to our earlier suggestions, including the mapping and clear summary explanations of the findings, with more information that could be helpfully communicated to policy-makers. I believe that I speak for all members of the peer review team in applauding Michael for the high quality of this work, and in agreeing to be available should more reviewing be warranted.

Sincerely,

Bonnie

Bonnie J. McCay
Chair, Peer Review Team, Cultural Assessment

Chair, Department of Human Ecology, SEBS
George H. Cook Campus, Rutgers University
mccay@aesop.rutgers.edu

From Tom McGuire, 4/21:

Sorry to be slow to respond to the EIS, but one thing that confuses me is the notion of "oyster community consequences" as applied to each of the alternatives. This seems to be introduced rather abruptly on p. 5 of the draft.

Is this meant to be a community of relatively shared interests among all the stakeholder groups (which is what the cultural model captures) or is it a collection of all the stakeholder groups, each of which has somewhat different views (which is what the discussions of each impacted stakeholder group, under each of the alternatives, is capturing)? Or am I misplacing the emphasis here on "oyster community" instead of "consequences" (that is, the researchers' assessment or interpretation of the alternatives, which goes beyond the questionnaire responses and/or the cultural model findings). Anyway, some clarification might be needed for the reader.
Thanks,
Tom

From Shirley Fiske:

I have the same observation on "the oyster community." It suddenly appeared, and I interpreted it to be the totality of stakeholder groups, but I am not sure that is what is meant. I agree that the concept should be explained before it's introduced. I suspect it was added because of outside comments (outside of our peer group), but its utility is unclear to me.

Shirley

From Barbara Johnston: 4/18/08

Comments on the final draft EIS:

1. "Oyster Restoration ... March 16, 2008": I appreciate the addition of the executive summary - find this to be a strong of summation and a helpful statement of findings.

2. The two maps included in the "Cultural and Socioeconomic Effects" section of the EIS show residential location of watermen and proposed locations for expanded oyster restoration and aquaculture. Is it possible to modify the maps to indicate where watermen typically work (as residence may be very different than preferred Harvest areas)?

3. "Cultural and Socioeconomic Effects" section of the EIS: A great deal of information on values, behavior, and concerns is derived from the various surveys, but I still find myself looking for a succinct statement (or chart) delineating the total affected population. Is it possible to provide a figure and corresponding text in the intro paragraph of the "Cultural and Socioeconomic Effects" section of the EIS to give total population estimates for the various stakeholder groups? (This would give greater meaning to survey response data).

4. Similarly, "Oyster Restoration ... March 16, 2008": Statement

(p.25) That "4500 boats worked the oyster fishery in the 80s", is this commercial or commercial & recreational? Can you strengthen this point with an estimate of how many today? (Is the oyster surcharge/gear license figures for 2004 (p.28) the best reflection of this population?)

5. The Environmental Justice section states "Recent anthropological fieldwork suggests that no low-income or minority populations are currently significantly involved in oystering in the Bay." This statement is the primary basis for no significant effect with regard to the EJ review. What is the source for this statement?

6. EJ section: Is their sufficient data to delineate (table) the number of people involved in the oyster industry by sociocultural and economic status
(e.g., how many Hispanics in the shucking jobs? how many watermen are African American?).

7. EJ section: "no evidence of significant Native American involvement today." Is it possible to add a statement that describes how this conclusion achieved? What is meant by significant? Even if there is no current participation in the commercial industry, are their important cultural aspects to the resource, and are their treaty rights?

Yours truly

Barbara Rose Johnston

From Shirley Fiske: 4/21/08

Hello Bonnie and All -

Comments on the latest sections in the EIS, the Appendix and also Section__ Cultural and Socioeconomic Effects.

General comments:

(1) I really appreciate the drafting of these two sections including the Executive Summary in the Appendix. They all contribute to a much stronger and more traditionally drafted EIS, which I will admit is my model.

The Executive Summary is a real step forward and is much stronger, in the declarative sense, as is the rest of the Appendix. There is only one major change that I would still like to see, as our final report suggested previously: a "chart" that maps out the impacts/views to the alternatives. As it is, the text in the Executive Summary has four bullets summarizing the findings of the major alternatives, which are good as far as they go; but as far as being useful by the rank and file EIS reader, I think it would be better to be more explicit as to how the alternatives map over the findings, as is more systematically done in the Cultural and Socioeconomic Effects section. In addition, the process of drafting a table, which would also be useful in Section 5.4.1, forces the choice and prioritization of concise descriptors of impacts. For example, there are some important findings in the Appendix, which ought to be highlighted, such as the fact that under a

moratorium (Alternative 3), 2/3 of watermen are likely to drop out of oystering after a moratorium of >7 years; 42% if over 2-3 year moratorium.
On Alternative 4, the fact that nearly 60% of watermen would consider native oyster aquaculture if it were expanded was amazing.

I like very much the maps showing the residence areas of watermen communities and salinity zones and potential sanctuary areas. They give a very important geographic referent and raise very important questions.

(2) My other general comment has to do with our final report. I think it would be important to add a paragraph up front that acknowledges our awareness of the distinctiveness of Michael's cultural consensus approach compared with the more traditional environmental impact study design. Not very many SIAs of which I am aware use cultural consensus models to get at impacts. My view is that there is an inherent challenge with cultural consensus models when used to understand impacts and the socioeconomic world. The cultural models use a different approach to understanding the world of the 'others.'

When I have on my EIS hat, I want to ask, "What will happen to the watermen" under each alternative. I want to ask, "Would watermen oppose the introduction of C. Ariakensis? How would the introduction of an exotic oyster affect the consuming public? Heritage and tourism revenues, etc.?"

Instead, with cultural consensus you get stakeholders' views of alternatives; and while vitally important and eloquently described, the purpose of an EIS is to use social scientists' best knowledge and judgment as to what will happen under different alternatives. E.g., 50% of watermen will not return to harvesting oysters under a moratorium (Alternative 3). Oystering will not be a part of watermen's harvesting portfolio; scientists are almost unanimously opposed to introducing a non-native oyster, etc.

So what I am saying is that we don't have to go overboard in explaining the issue, but simply our final report needs to reflect our understanding that this is a very different approach to EIS, that we are cognizant of the non-traditional approach, but that we fully endorse the comprehensiveness of this research on stakeholder groups (the environmental justice folks might not agree with me that it's comprehensive) and agree with the final expression of findings which Dr. Paolisso has worked hard to highlight in the EIS format.

Specific comments and suggestions:

(1) Explain the concept of 'Oyster Community Consequences' before introducing it. (as Tom McGuire also noted)

(2) Figure 5.4.2.2_1 What is the significance of the statement that salinity zones are water quality zones and don't align with ODM salinity zones? Are they so similar that it doesn't matter? Are they wildly dissimilar? Why not use the ODM salinity zones? Please explain the importance of the salinity zone discrepancy so I know what I'm looking at in the map.

Principal Investigator Final Response to the Peer Review Report for the Cultural and Socioeconomic Assessment (May 4, 2008)

Re: Responses to Final Review Comments of Cultural and Socioeconomic Peer Review Group

I have reviewed the peer review group's comments contained in the April 27th letter from Dr. McCay, Chair of the Peer Review Team, Cultural Assessment. As before, I find these comments to be very helpful and relevant. My responses to the comments and questions are provided below, where I also include a discussion of how I plan to address them in the cultural and socioeconomic section of the EIS and the EIS appendix report. For some of the comments, I paraphrase the question (in cases where more than one reviewer provided comments). For some other comments, I have copied the comment directly. I believe I have addressed below all the comments.

Peer Review Questions/Comments:

1. In the cultural section of the EIS, the notion of an "oyster community" is introduced without explanation. Explain what is meant by this term.

Response: After drafting the cultural section of the EIS document (not the appendix report), VERSAR suggested that there should be a summary of the major socioeconomic effects and a statement that links these major effects back to the cultural model for each alternative. The goal was to relate the socioeconomic impacts more closely to the goals of the cultural models. In thinking through how best to do this, it occurred to me to think of the individual stakeholder groups as part of a larger, multi-sited "oyster community." Conceptually, the oyster community is the collection of the stakeholder groups we studied, each of which experiences similar and different socioeconomic effects of the oyster alternatives. For each alternative, some stakeholder groups will experience some significant consequences, while others will not.

What makes these individual oyster stakeholder groups a community? First, the proposed oyster restoration strategies result in socioeconomic consequences for them. Second, they share the underlying cultural model of oyster restoration for multiple needs.
In summary, the notion of an oyster community is an attempt to conceptualize a multi-sited and diverse population of individuals for whom oyster restoration results in socioeconomic changes and for whom they share an implicit, cognized model of oyster restoration.

While responding to editing comments from VERSAR, I added the below short paragraph to the introduction to the 5.6.1:

"Finally, the below cultural and socioeconomic analysis of each EIS oyster restoration strategy concludes with two summary analyzes. "Oyster Community Consequences," the first summary, provides an overview of some of the most important effects of the restoration strategy on one or more of the oyster stakeholder groups in the study. The second, "Cultural Model of Oyster Restoration," discusses the consequences of the identified socioeconomic effects in terms of the cultural model of oyster restoration to accomplish multiple goals."

2. The two maps included in the "Cultural and Socioeconomic Effects" section of the EIS show residential location of watermen and proposed locations for expanded oyster restoration and aquaculture. Is it possible to modify the maps to indicate where watermen typically work (as residence may be very different than preferred Harvest areas)?

Response: I would love to modify the map to show where watermen work but I don't believe it is possible given the data used. We don't have such data for individual watermen that match to their zip code.

I do think, however, that residence zip codes do serve as a useful proxy for where watermen work. First, very, very few watermen tie up their workboats far from their residence. I can't imagine a watermen driving more than a few miles from his home to his boat. Second, during oyster season, most watermen harvest local waters (near their harbor/dock) most of the time.

Some watermen do, for a short period of time, harvest oyster beds farther from home (leaving their boat in another harbor and either staying in a hotel or driving back and forth to home). However, this is a very temporary strategy during the season. Usually, after a week or two, the harvest in those far-away beds declines and it is no longer economically feasible to continue the long commute. Finally, the point I wanted to make is that the monitoring of intensive aquaculture would require travel from home, probably more by truck than by boat.

3. Is it possible to provide a figure and corresponding text in the intro paragraph of the "Cultural and Socioeconomic Effects" section of the EIS to give total population estimates for the various stakeholder groups? (This would give greater meaning to survey response data.)

Response: I will work with VERSAR to explore inserting a table on total population for stakeholders. I have already inserted a few sentences on our two surveys into the introduction to the EIS cultural section. It is easier to estimate population totals for watermen, growers, processors and recreational fishers, since we had a population sampling frame for these groups. Our samples for environmentalists, scientists, seafood consumers, and restaurant owners are purposive, drawn from targeted groups that we felt were representative of a larger population of unknown size. These latter samples were not randomly selected. I think I can put some text and numbers in that describe the relationship of our samples to a broader population (the numbers are already in tables 3.1 and 3.2 of the appendix report).

4. Similarly, "Oyster Restoration ... March 16, 2008": Statement (p.25) that "4500 boats worked the oyster fishery in the 80s", is this commercial or commercial & recreational? Can you strengthen this point with an estimate of how many today? (Is the oyster surcharge/gear license figures for 2004 (p.28) the best reflection of this population?)

Response: The reference to 4500 boats is for commercial only, and it refers to 1890, not the 80s. I do think the best estimate of current effort in the fishery is the surcharge and license data. Many watermen who have Tidal Fishing Licenses do not oyster, or have not oystered in recent years. They crab or fin fish, but could return to the oyster fishery if conditions improved. The use of license data helps us parse out those watermen who have been active in the oyster fishery for the last five years. Also, if you have two license holders aboard the boat, then you can double what you harvest. I think this is a better indicator than number of boats.

5. The Environmental Justice section states "Recent anthropological fieldwork suggests that no low-income or minority populations are currently significantly involved in oystering in the Bay." This statement is the primary basis for no significant effect with regard to the EJ review. What is the source for this statement?

Response: We have visited or undertaken participant observation on watermen boats, in crab shanties, on docks where oysters are off-loaded, in general stores where watermen meet before heading out, and in a host of other community settings where oystering is discussed. We have also countless informal and formal interviews with watermen about oystering and their

profession in general. This is the ethnographic basis for the statement. We found that only a very few African American watermen are still oystering. We do not think the effects of the different oyster restoration strategies will be any different for African American watermen than for Caucasian watermen. To our knowledge, there is no other racial or ethnic group involved in oystering.

6. EJ section: Is their sufficient data to delineate (table) the number of people involved in the oyster industry by sociocultural and economic status (e.g., how many Hispanics in the shucking jobs? how many watermen are African American?).

Response: I do not believe there are sufficient data to delineate such a table, at least not in the socioeconomic analysis. Based on our experiences with past surveys of watermen, we did not ask about income levels, knowing that most watermen will not reliably answer such questions. We also found that processors were reluctant to provide numbers on how many workers and payment. However, I will inquire further with VERSAR and Doug Lipton, who did the economic assessment, to see if they have any general level data. Qualitatively, we know there are only a handful of African Americans working as watermen.

7. EJ section: "no evidence of significant Native American involvement today." Is it possible to add a statement that describes how this conclusion achieved? What is meant by significant? Even if there is no current participation in the commercial industry, are their important cultural aspects to the resource, and are their treaty rights?

Response: We reviewed written sources and websites and attended an Eastern Shore Native American festival and spoke with a number of participants. While oysters are widely recognized as a Native American food source, we found no evidence that changes in current oyster restoration strategies will differentially affect local Native Americans compared to other local populations.

8. In the Executive Summary and possibly in the EIS section, include a chart that maps out the impacts/views to the alternatives.

Response: I will add a chart to the Executive Summary. The difficulty is that there are six restoration alternatives under consideration and we have eight stakeholder groups, which makes a lot of rows and columns. I have pulled out some of the more significant effects by alternatives and presented them to the Project Delivery Team, the ASMFC, and the Scientific and Technical Advisory Committee of the Chesapeake Bay Program. I will pull from that information. Also, VERSAR has created a table of effects based on information in the EIS section on cultural and socioeconomic impacts. It is not at the level of alternatives, but it does draw upon the “oyster community” and “cultural model” sections under each alternative. It is attached as a separate document. This will be in the Executive Summary to the EIS.

9. Strengthen or highlight the strengths and limitations of the cultural modeling approach taken here in contrast with classic social impact analyses.

Response: I continue to push my thinking on what the cultural model approach adds to the EIS, and what we lost by not doing a classic social impact analysis. I do feel that both analyses are becoming more integrated: I have fleshed out more of the socioeconomic impacts by alternatives, and I have tried to relate the socioeconomic to the cultural model. The development of the notion of a broader "oyster community" may be more inline with a classic social impact analysis, and it also elevates the socioeconomic effects to a level similar to the cultural model. I will review what I have written as my justification for using a cultural model in the Executive Summary to the Appendix, the text of that report, and in the introduction to the EIS section, and I will add some additional text about how this differs from a classical social impact assessment.

10. Figure 5.4.2.2_1 What is the significance of the statement that salinity zones are water quality zones and don't align with ODM salinity zones?

Response: For the purpose of plotting watermen residence and possible oyster aquaculture sites, there is no significant difference between the two categorizations of salinity zones. I will ask VERSAR, who inserted this detail, if we can remove the point.