

## MEMORANDUM FOR RECORD

SUBJECT: Savannah Harbor Expansion Project;  
Summary of 20 August Joint Meeting on Review of Draft D.O. Model  
Calibration Report

1. Attendees:

ATM:	Daniel Mendelsohn, Steve Peene & Bo Ellis
Hydroqual:	Tom Gallagher
LGE:	Larry Keegan
GPA:	Hope Moorer
City of Sav'h:	Bob Scanlon & Larry Neal
GA DNR-EPD:	Roy Burke & Paul Lamarre
SC DHEC	Wade Cantrell & Larry Turner
EPA:	Jim Greenfield
USGS:	Paul Conrads
CE-ERDC:	Sung-Chan Kim
CESAS:	Doug Plachy & Bill Bailey
2. The Agenda is attached.
3. The following is a summary of the discussion and does not include all the information that was presented or all comments made during the discussion.
4. The City provided its comments first. Larry Neal spoke for the City. He led off by stating that the City's main goal is for the model to be an accurate and defensible representation of the point source dischargers' effects on the D.O. Deficit in the harbor. He then provided the following specific comments:
  - Model appears to be sensitive to CBOD decay rates.
  - Would like to see sensitivity of CBOD loading at Clyo and the ocean boundary.
  - ATM should look at the salinity levels in the samples collected at Fort Pulaski.
  - It appears that the model has too much BOD at the upper end (boundary) and too little at the lower end (boundary).
    - GADNR-EPD stated that there are possible additional sources of BOD loads from the saltmarshes in the lower portion of the estuary. In SC, from marshes around Wright River and New River. In GA, from marshes around Wilmington River and South Channel. This is possible justification for adding more BOD in the lower end of the model.

- Concerned about ATM using a single CBOD decay rate for each point source discharge, marshes, etc.
  - GADNR-EPD stated that the following actions could be pursued to obtain an acceptable calibration: (1) adjust the long term decay rates from the few values that were measured, and (2) use spatially variable rates.
- Would like to see a test of the sensitivity of the f-ratio of point sources and marshes.
  - Hydroqual suggested using a unit-response approach to identify the effect of changes in f-ratios.

5. GADNR-EPD provided its comments next. Roy started by questioning the purpose of this review. I stated that this review of the Draft Report was an opportunity to suggest revisions, while the review of the Final Report will be for determining whether the model is Acceptable or Not Acceptable for its proposed use. We would have a Comment/Response round on the Final Report before seeking the agency's position on the model.

Roy said that the time series for D.O. indicate that the model currently doesn't capture the range of highs and lows in the data. He stated that the diurnal highs and lows indicate to him that the D.O. processes are tidally-driven rather than being driven by photosynthesis. It appears that there are equal errors of D.O. on the surface and bottom, indicating to him that there is not a vertical mixing problem. The differences in D.O. between the surface and the bottom appear to be more of a longitudinal effect. He called this area of D.O. sag in the harbor another example of a "coastal big dipper", an effect that can be observed in other larger coastal rivers.

EPA requested that ATM show a comparison of model and data with the 24-hour and 36-hour synoptic sampling that was performed of both salinity and D.O..

6. SCDHEC had no comments at this time.

7. I followed with the comments from CESAS.

- Talked through the written comments that we already provided to ATM.
- Requested that the smaller data reports (such as EPA's SOD Report) referenced in the Calibration Report be included on the CD containing the Calibration Report.
- ATM will at a minimum conduct a sensitivity analysis of the effects of using a dynamic offshore boundary. They will review the results of USGS's ANN work on the offshore boundary if it becomes available in time. ATM will review the USGS ANN work and determine how it could be included in the D.O. Model calibration. They will inform the Corps of their position. The possible extent to which ATM could include that ANN information will be greatly influenced by when the USGS completes that work.

8. The USGS was next. Paul gave the following specific comments in addition to the written ones already provided to ATM:
- The report needed to better describe how and why the modelers made decisions during the model development process.
  - ATM should explain their modeling philosophy (trying to match at GPA17 and Fort Pulaski; adjusted values at the boundaries to match data at those locations, etc.).
  - Should show the sensitivity of reaeration rates.
9. The CE-ERDC was next. Dr. Kim gave the following specific comments in addition to the written ones already provided to ATM:
- The report should describe the range of flows covered by the calibration and verification data.
    - Hydroqual recommended that the report show the range of all important environmental conditions (tidal range, etc.)
  - The vertical mixing issue is critical to resolve before ERDC could recommend use of the model for evaluation of harbor deepening scenarios.
10. EPA was last. In addition to the written comments already provided to ATM, Jim expressed a few general comments. One was that the report needed to include more to make the model defensible. Any changes to the model code should be described, explained and justified. Was the advection term turned off or not? If so, why is that not important to the model? EPA would like faster run times for these models. He questioned whether the coarser grid – with 4-8X faster run time – could be used to conduct some screening of alternatives.
11. We then discussed vertical mixing. The agencies stated that a better explanation was needed of (1) what was done, (2) why those choices were made, and (3) why the procedure is acceptable for application on a proposed harbor deepening project.
12. We discussed the upcoming schedule for production of the Final Calibration Report and agency review. We agreed that the Final Calibration Report for the Hydrodynamic & Salinity Model would be completed at the same time as the one for the D.O. Model. For a schedule, the group agreed to 30 days for the review, 30 days for the comment/response resolution, and then 15-30 days to get a written agency position. EPA indicated that if the reports become available later than scheduled, they would not be as available to review the reports, resulting in a longer review time for them. At the time, the D.O. Model was scheduled for completion on 3 October. ATM agreed to review the comments and inform GPA when they would complete the reports. Their initial reaction was that the comments did not constitute a change in scope from the work they had been contracted to perform. ATM has since notified GPA and the Corps that the reports will be sent out on 24 October. That will likely extend the review time beyond 30 days.

William Bailey  
Environmental Resources Branch

**SAVANNAH HARBOR EXPANSION PROJECT  
AND  
SAVANNAH HARBOR  
ECOSYSTEM RESTORATION PROJECT**

**JOINT REVIEW OF  
DRAFT D.O. MODEL CALIBRATION REPORT**

**AUGUST 20, 2003**

**AGENDA**

<b>OPENING &amp; INTRODUCTIONS</b>	<b>CESAS</b>
<b>REVIEW OF PRELIMINARY COMMENTS</b>	<b>Reviewers</b>
<ul style="list-style-type: none"><li>• City of Savannah</li><li>• GA DNR-EPD</li><li>• SC DHEC</li><li>• CESAS</li><li>• USGS</li><li>• CE-ERDC</li><li>• EPA</li></ul>	
<b>VERTICAL MIXING IN HYDRO MODEL</b>	<b>CESAS</b>
<b>REVIEW OF SCHEDULE AND REQUIREMENTS</b>	<b>CESAS</b>
<b>NEXT STEPS</b>	
<ul style="list-style-type: none"><li>• Incorporation of comments</li></ul>	<b>LGE</b>

**NOTE:** There will be no presentation by ATM on the D.O. Model