

MINUTES

Interagency Meeting between the Georgia Ports Authority (GPA) & Federal Agencies
Savannah River Hydrodynamic Numerical Model
Savannah Harbor Expansion (SHE) Project
Georgia and South Carolina

1. At the request of the Georgia Ports Authority (GPA), the Savannah District called an interagency meeting of the Federal Agencies associated with the SHE project and the GPA, their agents, and their contractors to discuss the Federal Agency views in regard to the subject model. The meeting was held on Thursday, 28 June 2001 at the Environmental Protection Agency (EPA), Region IV, EPA Conference Center (Savannah Room), 61 Forsyth Street, Atlanta, Georgia.

Douglas H. Plachy	U.S. Army Corps of Engineers (CESAS-PM-CN)
William G. Bailey	U.S. Army Corps of Engineers (CESAS-PD-E)
Susan E. Durden	U.S. Army Corps of Engineers (CESAS-PD-PF)
Ed Eudaly	U.S. Fish & Wildlife Service
Wiley Kitchens	University of Florida (USGS Wetlands Research)
Paul Conrads	U.S. Geological Survey
Jim Greenfield	U.S. Environmental Protection Agency
Danny Mendelsohn	Applied Science Associates
Jack "Bo" Ellis	Applied Technology & Management
Tom Schanze	Applied Technology & Management
L.T. Keegan	Lockwood Greene Engineers (Agent of GPA)
Hope Moorner	Georgia Ports Authority
Morgan Rees	Rees Engineering and Environmental Services

2. The agenda for the meeting with background information (enclosure 1) was provided to the participants on Tuesday, 26 June 2001 via e-mail (enclosure 2).

3. Agenda Item No. 1: The meeting was facilitated by the undersigned in light of lead Federal agency responsibilities associated with the project (the GPA had requested that a USACE representative facilitate the meeting due to their insight into the intent, purpose, and conclusions of the 22 May 01 meeting). A brief overview of the background, purpose, goals, and agenda for the meeting was provided by the undersigned. Emphasis was placed upon how the meeting will be conducted and it was reiterated that the morning session was primarily a listening session for GPA representatives while the Federal Agencies each were to present their views. The afternoon session is structured as a question/answer dialogue format whereby GPA representatives may inquire and/or seek an understanding of the information covered during the morning's listening session.

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4. Agenda Item No. 2: After the opening remarks were given, each participant introduced himself or herself. (It should be noted that two participants (Messrs. Rees and Schanze) arrived later and therefore were not present during these self-introductions, opening statements, etc.)

5. Agenda Item No. 3: Mr. Keegan provided brief opening remarks; restating the goals and objectives of the GPA added that they desired open and frank discussion and that all issues were on the table. He then thanked the participants for coming to the meeting.

6. Agenda Item No. 4:

a. Mr. Conrads provided the views of the USGS. He began his discussion explaining that back during the time of the project's Technical Advisory Group (TAG) it was understood that the modeling of the Savannah Harbor was going to be very difficult and be very different from regulatory modeling where relative predictions often are adequate. He stated that the bar had indeed been set very high since there is a need for absolute/near absolute predictions to assess impacts on biological resources. He further indicated that it was known from the start the challenges that were involved. In the last few months, indications are that the model development is essentially done. It seemed that the calibration effort report read more like an exit strategy rather than a first step in an effort to finalizing the calibration of the model. However, the simulated extremes in water levels (surface elevations) and extremes in salinity have not been accurate. The model just has not been able to simulate the 90% percentile. The discussion of a "statement of acceptance" by ATM at the April 2001 MTRG meeting was premature.

b. Mr. Greenfield interjected that if only hydrodynamics and water quality were involved, then there would be some latitude/leeway. However, for tidal freshwater marsh, the accuracy of predicting water levels and salinity are very important. Therefore, since the dissolved oxygen and chloride models build upon the hydrodynamic model accuracy is critical.

c. Mr. Conrads finished by stating that discussions in the MTRG have touched on how the model could/would be pushed to look at absolute predictions and that nothing he has stated this morning was "new information" to the MTRG. He indicated that the agencies had prepared a criteria document and that it is in draft, but that it will be provided later in the meeting.

d. Mr. Kitchens provided views from the USGS Wetlands Research. He began by stating that Paul did a good job and he didn't have too much to add. He stated that at a meeting with Mr. Griffen, the Corps' WES model was highly criticized (in regards to the

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previous 42-foot deepening of the navigation project) as not being capable of predicting the effects on biological resources. The WES model just couldn't get the extremes needed. He indicated that "huge" investment is at stake relative to this project and that in the field; the relationship between hydro periodicity and salinity is essential on the flora and fauna. It was further stated that he does not believe what is being asked for is unreasonable. In particular, to evaluate impacts, salinity needs to be measured in hundreds of parts per thousand, water levels to fractions of a centimeter, etc. He stressed that this was not an academic exercise and does not care what has been done on other rivers and estuaries. In this project there are major ecological resources at stake. He closed by stating that all should be committed to making this model the best that it can be. He stated that they're all on the same team and he's willing to work with the team and as a team player, but needs more reliable output in the areas of principle concern.

e. Mr. Greenfield stated the views from EPA. Not being able to have a "hands on" with the model has been a big impediment. It is hard to provide guidance, etc., and he had hoped that this had been resolved over a year ago. He also stated that he needs the data sets electronically to validate the calibration, etc. He finished by saying that the '99 data set was great and thanked GPA for putting forth the time, effort, and expense to achieve such an abundance of great data.

f. Mr. Eudaly then expounded the views of the U.S. Fish & Wildlife Service. He indicated that his primary role in the project is to prepare the CAR (Fish & Wildlife Coordination Act Report). He hopes that he will have a good tool (the hydrodynamic model) that provides accurate linkage of cause and effects. He further acknowledged the GPA's efforts on the '99 data collection and biological studies. He stressed the importance of accuracy in water levels, as it is an essential link to evaluating the impacts on freshwater marsh, which is very sensitive to water levels. He further stated that high tide level is of most importance because it controls the frequency, duration and depth of marsh flooding. The marsh is very sensitive to small changes in salinity even down to 1 ppt or less. Changes in the marsh vegetative community would cause changes in the quantity and quality of wildlife habitat. He reiterated that this model is showing some of the same problems, as the prior deepening's WES model, i.e., it predicts the salinity means fairly well but is not getting the range. He stated that this information is critical since resources such as the striped bass are very sensitive to changes in salinity to the extent that it make a difference in whether the striped bass spawn or not. Accurate prediction of current velocity is also important because it determines whether striped bass eggs will remain suspended in the water and develop successfully. He closed by saying that the model must have close tolerances and absolute limits.

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g. Mr. Bailey finished up the agency views by providing those of USACE. He began by stating that working these issues via the MTRG has been like walking a tight rope, i.e., representing an agency vs. not speaking officially for that agency. He gave some specific examples of his concerns on the model that had been expressed previously at MTRG meetings, i.e., the root mean-square error of 60% in water surface elevations in the upper estuary, the root mean-square error of 55% on the volume flow rate in the back river which is an important striped bass area, and the model not as responsive to daily fluctuations as the data. He finished by stating that if the model could not respond as well on the high tide then he's not sure if impacts could be understood, e.g., reference Table 8-5 in the calibration report.

h. Mr. Conrads stated that at the 22 May 01 meeting, the Federal agencies agreed to put together a document of what the agency expectations are for the model. Messrs. Conrads, Eudaly, Kitchens, Greenfield, Bailey, and James Martin from WES assembled this document. [Mr. Keegan inquired as to the participation of National Marine Fisheries Service (NMFS) in the document. Although EPA and USFWS felt that NMFS had deferred to them, it was agreed that Mr. Eudaly would contact Prescott Brownell at NMFS to coordinate.] Mr. Conrads then proceeded to walk through the document titled "Savannah Harbor Data Analysis and Modeling, Federal Agencies [sic] Expectations" marked "DRAFT – Model calibration and validation criteria – DRAFT 6/28/2001" (enclosure 3). [The document is broken down by type of model and the expected accuracy of selective parameters (in the areas of water levels, salinity, currents and flows, and temperature) and by Resources (short nose sturgeon, striped bass, and tidal wetlands). It also includes a section on model defensibility, which reference convergence testing, sensitivity analysis, and data description and analysis. The two models specifically detailed are the Hydrodynamic, Transport, and Temperature Model and the Water Quality (Dissolved Oxygen) Model.] There was limited dialogue regarding the items in the document since the GPA representatives had not had an opportunity to review and assimilate the information. It was stated that the items in italics were still under discussion among the agencies, but the document accurately represents the important issues and criteria to be met.

7. Agenda Item No. 7: At the request of the undersigned the group agreed to continue onto discussing the '99 dataset since we were slightly ahead of schedule.

a. Mr. Keegan began by asking, what does data set access imply? Mr. Greenfield stated that in order to adequately evaluate the model performance he needed the data in a usable format. He suggested that the data be put in the Water Resources Database (WRDB). He stated that the WRDB is a general-purpose instrument for addressing a

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variety of everyday data management problems typically faced by environmental practitioners. The following were cited as the benefits to using this format/system:

- Database structures that allow a thorough description of collected environmental data.
- Public domain.
- Databases use the industry-standard Paradox file format.
- WRDB's administrative functions used to control access.
- The user interface was developed using the Paradox Application Language (PAL), which takes full advantage of the Microsoft Windows graphical user interface.
- Databases can be imported and exported to a wide variety of alternative spreadsheet, database, and text file formats.
- All associated databases can be created, edited, and printed using spreadsheet-type on-screen data forms.
- Data entry and validation are done in batches, thus maintaining strict quality control and increasing efficiency (reducing upload time).
- Report-quality tables, graphs, and pictures can be generated for instantaneous review and analysis.
- Data security is enhanced by password-protection.
- An on-line help system provides context-sensitive information to the user, supplementing the User's Manual.
- EPA Region IV uses the WRDB as it's main database source and provides technical support for the database with upgrades as needed.

b. Mr. Greenfield added that both the '99 and the '97 datasets are needed. Mr. Conrads interjected that there has been discussions at prior MTRG meetings about WRDB and that they have been planning to get a demonstration of the database on the

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agenda for the MTRG for some time. After some discussion on the data set, it was understood that what is needed is the quality controlled processed data. It was also understood that this would contain data that ASA and/or ATM may or may not have used or plan to use on the project.

c. Mr. Keegan stated that he is concerned about access by others to the data. Access needs to be provided to others than just the Federal agencies. He then inquired as to whether the database was publicly available, did it contain everything needed to utilize the data, did specific software and/or licenses have to be purchased, etc? His other concern was that the agencies need to stay focused on using this data for the SHE project. Messrs. Greenfield, Conrads, and Kitchens all echoed that this was most definitely their intent. Mr. Greenfield added that the Federal Agencies' expectations are all focused on the SHE project and fulfilling their responsibilities in regards to it.

d. Mr. Keegan inquired as to the possibility of providing the data on CD in order to be able to have a record of who has a copy of the data. Although this was acceptable to the agencies, porting to the WRDB was the preferred option since it had built-in data analysis tools.

e. The undersigned inquired as to when GPA could make the data available using the WRDB. Mr. Keegan responded that he would have to get time and cost estimates from ATM and obtain approval from GPA before he could provide a date for delivery.

f. With discussions on the data sets complete, it was decided to start into the discussions on access to the model. Mr. Keegan stated that essentially there seemed to be two options for access. One was Plan A, which would allow the recipient to change the underlying algorithms and code. The other was Plan B, which would be essentially a "hard wired" runtime version that would allow changes in the inputs and the ability to obtain the outputs (but would not be allowed to be modified for use at other locations other than the Savannah River estuary. Although he believed that the agencies wanted "Plan B," he sought confirmation on this. Messrs. Greenfield and Conrads both stated that Plan B is what they want. Mr. Greenfield added that he has no intention of doing any programming since it is ASA that has that expertise.

8. Agenda Item No. 5: Mr. Keegan asked that GPA be provided the opportunity during lunch to "caucus" in order to pull their thoughts together for the afternoon session. It was agreed to take a 1-hour break for lunch and go down to the first floor cafeteria. It was understood that GPA would come back upstairs to use the conference room while the representatives from the Federal agencies would likely remain in the cafeteria.

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9. Agenda Item No. 6: The group reconvened as the undersigned briefly provided a recap of the morning session and asked several questions for clarification. One being asked of Messrs. Conrads, Greenfield, and Kitchens as to whether, what had been discussed in the morning session regarding, the agency expectations are achievable to be modeled and/or if other models currently exist that meet these standards of tolerance for water surface levels, etc. Mr. Kitchens again stated what is being asked for is achievable and not unreasonable. Messrs. Conrads and Greenfield were less certain that the results might be achievable.

10. Agenda Item No. 8: Mr. Keegan started off with statements on the following:

a. GPA sees a real change in how the Hydrodynamic/Salinity/DO Models will happen in light of the morning's discussion. The marsh salinity model development should be tied-in better to what is now happening in regard to the hydrodynamic model.

b. GPA sees a change from how the MTRG was trying to do things (review and comment) to what now is being proposed (collaboration). How does this change affect the MTRG and by extension the SEG? GPA is willing to work with the agencies but is concerned about how to get these discussions back into the framework of the MTRG. GPA wants to keep the process open; however, how does that occur and also contain costs?

c. How does the collaboration work? How do we communicate? There are always details to be worked out when it comes to communication.

d. We would all be remiss if the formalized relationship that is being developed between USACE and GPA is not brought up. Mr. Keegan stated that it currently is not clear who has what role to make decisions regarding what may/will/be provided. He added that while we shouldn't wait to proceed on the modeling related actions, it would be wise to not get too far in front of the formalization of agency relationships after execution of an MOU between GPA and the DA.

e. Not time to get into a discussion on the Federal Agency Expectations document. However it is important to start collaborating on this information. At first blush it's understood that these proposed draft criteria should be addressed in a collaborative approach. It was stated that the GPA representatives were not prepared or willing to comment on the appropriateness or reasonableness of these criteria at this time.

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11. Agenda Item No. 9: Mr. Keegan then initiated discussion around the lessons learned from this experience, an evaluation of the MTRG process, and communications amongst and between the agencies and GPA.

a. The group then started to develop a list of things that GPA and the Federal agencies will need to work on and/or resolve:

1) Use of the delivered model (coordination & calibration efforts).

a) How does EPA and USGS plan to use, provide feedback, etc? Is it a case of delivering the finished model, or a pre-release “not ready for prime time” version?

b) What other agencies (Georgia and/or South Carolina) would want and/or need.

c) For collaboration on calibration GPA will provide for limited access licensing of the hydrodynamic model for EPA, USFWS, USGS, and USACE. Included in this was instruction in the model adaptation to be conducted in one session for all agency participants, date and time un-determined. Each agency indicated that they might have at most two attendees at the training.

d) ATM needs to provide time and cost estimates to GPA for the licensing and training. GPA will provide a limited licensing agreement for agency signature defining the limitations upon usage of the model version provided.

e) GPA (ATM/ASA), EPA, USGA, USFWS will develop a collaboration and coordination methodology for calibration to include:

f) Version control of the model code with periodic revision and reissue.

g) A protocol for proposal and coordination of potential revisions to model code to improve performance

h) (3) Protocol(s) for communication amongst the calibration group records of decisions or conclusions.

i) USFWS (Ed Eudaly) would collaborate with NMFS and arrange for either their participation in the model calibration process or formal deferral to another agency.

2) Role of the MTRG and the Federal Agencies

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a) Mr. Conrads stated that the agencies originally got together on the 22nd of May so that GPA would have a cohesive coordinated view of the model expectations. The other agencies strongly supported this statement. The Federal Agencies have a legislated responsibility to review and approve the project.

b) EPA had pulled the TMDL's out of the MTRG and maybe the Federal agencies' calibration collaboration needs to be pulled out also.

c) National Marine Fisheries Service has not approved/reviewed the Federal Agencies Expectations document. Mr. Eudaly has the action to obtain their input.

d) Coordination of the State and Federal Agencies. It was unknown as to whether or not the State agencies will defer to the Federal agencies on calibration or whether they will prefer to take part in the collaboration.

e) The Federal Agencies are above and beyond the MTRG and are not subjected to either the MTRG and/or the SEG.

f) It was suggested that USGS (Paul Conrads) report back to the MTRG what the Federal Agencies have determined.

g) There is no intent to make a "group" within the "MTRG" group.

h) Federal role may be to ensure that there is coordination between the various numeric models that are planned for use on the SHE project.

i) USGS, USACE, EPA, and USFWS will consider substitution for Bo Ellis as MTRG chair. Possible replacements will be forwarded to Mr. Ellis.

j) USFWS (Ed Eudaly) would collaborate with NMFS and arrange for either their participation in the model calibration process or formal deferral to another agency.

k) Mr. Greenfield stated that if/when he approves the model, it will be the "official approval" by the EPA. Mr. Eudaly stated that this would also be the case with the USFWS.

3) Of the three key deliverables discussed at the meeting, it was stated and agreed that:

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a) The first key action is for GPA to deliver the data to the agencies. GPA will deliver the quality control screened 1997 and 1999 field data in WRDB format to USGS, USFWS, EPA, and USACE.

b) The second key action is for the agency criteria to be finalized (with input/collaboration from GPA and other MTRG participants). Mr. Keegan requested that the Federal agencies begin coordination on further refinement of the draft criteria document with GPA. Mr. Conrads agreed to present the draft criteria and explain the agency coordination at the next MTRG meeting and solicit input from the Non-Federal members of the MTRG.

c) The third key action is for GPA to provide the model for calibration evaluation purposes.

i) Mr. Ellis stated that there might be personnel/resource constraints that will affect model delivery.

ii) Mr. Mendelsohn stated that he would like 2 to 3 days to work with whoever will receive a copy of the runtime model.

d) It was understood that these actions did not need to be in sequence as Mr. Keegan stated that ATM will be working the delivery of the data in the WRDB format and ASA will be working the model delivery (and training).

4) Need to schedule an MTRG meeting:

a) Mr. Ellis suggested waiting until early September.

b) Messrs. Greenfield and Conrads suggested that the meeting be the last week of July or the first week of August so that the criteria could be presented to and discussed with the other MTRG members.

c) The undersigned added that what is being discussed today should not stop any ongoing modeling activities, i.e., there's no need to stop work on refining the model.

d) USGS and EPA will introduce the federal agency participation in the calibration process and the finalized standards at the next MTRG meeting. Mr. Conrads stated that the Federal agencies would discuss the documents with the other MTRG members and seek input at that time.

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e) Bo Ellis, as chair of the MTRG, will attempt to schedule the next MTRG meeting for the first week of August.

5) Dates for deliverables.

a) Mr. Keegan stated that GPA would not be able to give feedback to the agencies until at least 21 July 2001 as to when they could provide either the data or the model. This is due to the fact that this meeting provided clarification as to what had to be done by ATM and ASA. These efforts will have to be quantified in terms of cost and time. In addition, budget revisions have to be approved by GPA before the work can commence.

b) Ms. Durden stated that she's concerned that GPA could not make a hard commitment in light of the fact that this request, essentially unchanged, has been on the table for several months. Also, in mid June, GPA had sent a letter to the Savannah District stating that the model would be available to Mr. Greenfield by the end of June 2001, i.e., the following Tuesday.

c) Mr. Keegan reiterated that there are several unknowns that remain such as the number of copies of the model needed, the number of personnel to be trained, the training location, etc. This all will factor into a firm date for training and delivery of the model.

12. Agenda Item No. 10: The undersigned thanked everyone for their participation and then indicated the minutes would be provided to all attendees in draft form for comment prior to being issued. The meeting ended at 1425.

13. Requests for corrections or additions and/or alternate views of the proceedings should be transmitted to the undersigned.

/original signed 30 July 2001/

DOUGLAS H. PLACHY
Senior Project Manager
USAED, Savannah