

MEMORANDUM FOR RECORD

SUBJECT: Savannah Harbor Expansion Project;
Summary of 7 May SMART Meeting

1. Attendees:
EPA: Jim Greenfield
Steve Whitlock
USGS Paul Conrads
ATM/GPA: Steve Peene & Bo Ellis
Danny Mendelsohn, Henry Rines & Tom Gallagher
LGE/GPA: Larry Keegan
COE: Doug Plachy
Sung-Chan Kim
Bill Bailey
2. A copy of the agenda is attached.
3. I opened the meeting by stating that ATM wanted us to review what they were doing leading to calibration of the D.O. Model, provide them with guidance, and inform the group if anything they are doing may be unacceptable to our agencies.
4. We began by discussing the schedule. The Characterization Report would be used to develop the Base Case. ATM is not waiting for anyone to proceed in their calibration work. We will meet again on June 18 to discuss the interim calibration. The Draft D.O. Calibration Report will be delivered on 1 August. We will meet on 7 August to discuss the report.
5. We briefly discussed the goals of the calibration. That is to meet the meet the +/- 0.2 mg/l dissolved oxygen and D.O. deficit stated in the Expectation Document produced by the SMART in 2001.
6. Henry Rines presented the findings in their **Draft D.O. Characterization Report**. Concerning **Primary Productivity**, it appears that algal production is not a major factor within the estuary. The D.O. data do not demonstrate a marked diurnal cycle. Algae enter the estuary from upriver and the ocean, but the low light penetration appears to limit productivity within the harbor area. ATM will use Chlorophyll as a boundary condition, with inputs at levels observed levels and not model chlorophyll production within the estuary. ATM will expand the Characterization Report to include a historical analysis of chlorophyll data. ATM will perform a sensitivity analysis of the

chlorophyll boundary values. They will examine D.O., BOD distribution, and Nitrogen distribution.

Concerning **BOD**, the data values are close to the detection limits and within the variability of the test at those levels. Therefore, there do not appear to be any marked differences between the values for BOD5, CBOD5, and LTBOD5. The decay rates do not demonstrate a pattern by location (Table 4-1). ATM will look at decay rates from the marshes by Freshwater, Brackish, and Saltwater zones.

Concerning the **marshes**, the marshes appear to consume D.O. and nitrate, and (possibly) export Ammonia, Organic Nitrogen, and BOD. Paul Conrads will send Chapter 5 of the Characterization Report to Ed Eudaly of the USFWS.

Concerning **Longitudinal Profiles**, the data showed what the reviewers expected.

Concerning **SOD**, the highest values were reported in the Kings Island Turning Basin. A 1985 study showed increases in ammonia in the sediment chamber. ATM will include this information in their calibration work. The “Redfield Ratio” of N-P-K in phytoplankton was offered as an initial measure of the carbon ratio for wetland vegetation.

Concerning **Instream D.O.**, both the upstream river and the ocean appeared to be well oxygenated. Lower D.O. values were observed in the middle of the harbor. Tidal variations in D.O. were observed. Stratification varies with the range of tide. The D.O. data shows recurring sharp (short term) drops in D.O. at slack tides. The group agreed that the data appear to be a sampling artifact or probe fouling problem, rather than a natural occurrence. EPA and USGS agreed that these spikes are most likely not real and should be deleted from the dataset.

7. ATM then discussed the **Base Case**. International Paper is by far the largest point source of CBOD. Flows from upstream and the marshes appear to provide the largest net CBOD loads to the estuary. The loadings given to ATM from MACTEC include short-term rainfall events during the period of the summer 1999 calibration. SOD is assumed to be equal across the width of the cross-section. We discussed the proposed ANN SOW. ATM and USGS agreed to review the SOW to separate out (and resubmit their proposal to GPA) any portions that appear to be more important – possibly that dealing with the offshore boundary. ATM in conjunction with USGS and EPA will submit a justification write up for the ANN data analysis.

8. ATM then discussed the availability of the model. Steve Peene stated that the model could be used by EPA, USGS and COE for any simulation within the Savannah River estuary. EPA stated they need full public access to the model if it is part of their Administrative Record for their TMDL. Steve will meet with ASA soon and discuss what EPA needs. ATM also discussed the limitations on the number of machines that USGS, EPA, and COE can presently use the model on. Steve will also address this issue with ASA.

9. ATM then provided an example of the costs for running the H&S and D.O. Models. A \$4,000 per run cost was given as an average value. This was based upon a mid-level complexity run and the costs would be variable depending on the number of runs needed. It was discussed that there will be a considerable economy of scale to be had in reducing costs if the number of runs becomes large.

10. At the beginning of the next day we discussed two items: (1) the schedule for completion of the D.O. Model, and (2) communication. The schedule that was developed is included as Enclosure 2. As part of this discussion, it was agreed that the D.O. Model Calibration Report (draft and final) and the Hydro Model Calibration Report would be distributed to the agencies in both hard copy and CD. A CD would be included with each hard copy report. It was also agreed that the models themselves would be included with the Final Calibration Reports that are delivered to agencies for final agency approvals. The group agreed to enhance communications by including more team members when the discussions were more than technical modeling issues or interagency deliberations.

Enclosures

William Bailey
Environmental Resources Branch

SAVANNAH HARBOR EXPANSION PROJECT

SMART MEETING

MAY 7, 2003

AGENDA

MORNING

D.O. Characterization Report

ATM (2 hours)

AFTERNOON

“Base Case” Conditions for Calibration

ATM lead

- Boundary Conditions
- Loading
- Constants & Coefficients

Acceptability Criteria/Goals

Bill Bailey

Schedule for completion of D.O. Model

ATM

- Interim Checkpoints

Application of the models

ATM

- Time & costs per run (including analysis)
- SH Expansion and other projects

Open Discussion

All (1 hour)

SCHEDULE FOR COMPLETION OF DISSOLVED OXYGEN MODEL

ID	Task Name	Duration	Start Date	End Date
87	Dissolved Oxygen Distribution Evaluation	1855 d	6-Apr-1999	3-May-2004
88	Develop Dissolved Oxygen Model	1720 d	6-Apr-1999	20-Dec-2003
89	Dissolved oxygen & sedimentation field data collection	210 d	6-Apr-1999	1-Nov-1999
90	Vertical & lateral dissolved oxygen profiling	120 d	5-Jun-1999	2-Oct-1999
91	Dissolved Oxygen model calibration	243 d	3-Feb-2003	3-Oct-2003
92	Evaluation of EPA-GAEPD RIV1	60 d	3-Feb-2003	3-Apr-2003
93	WQ model boundary conditions and loading evaluation – draft	94 d	3-Feb-2003	7-May-2003
94	WQ model boundary conditions and loading evaluation - final	42 d	8-May-2003	18-Jun-2003
95	Evaluate marsh boundary influence - draft	136 d	3-Feb-2003	18-Jun-2003
96	Evaluate marsh boundary influence - final	44 d	19-Jun-2003	1-Aug-2003
97	Evaluate rate constants and coefficients - draft	94 d	3-Feb-2003	7-May-2003
98	Evaluate rate constants and coefficients - final	42 d	8-May-2003	18-Jun-2003
99	DO characterization study	89 d	3-Feb-2003	2-May-2003
100	Investigate DO ANN	94 d	3-Feb-2003	7-May-2003
101	BMD output post processor	136 d	3-Feb-2003	18-Jun-2003
102	Implement upstream time series boundary	94 d	3-Feb-2003	7-May-2003
103	Develop segmentation and time averaging tool	136 d	3-Feb-2003	18-Jun-2003
104	Deliver DO model calibration letter report	1 d	11-Jun-2003	11-Jun-2003
105	Preliminary DO model calibration meeting	1 d	18-Jun-2003	18-Jun-2003
106	Scoping level analysis of bio-impacts model	16 d	21-Aug-2003	5-Sep-2003
107	Draft DO Model calibration report	180 d	3-Feb-2003	1-Aug-2003
108	Prepare draft H & S calibration report	35 d	2-Aug-2003	5-Sep-2003
109	DO model draft report meeting	1 d	20-Aug-2003	20-Aug-2003
110	Sensitivity study	79 d	15-May-2003	1-Aug-2003
111	Final DO Model calibration report	44 d	21-Aug-2003	3-Oct-2003
112	Federal agency (SMART) formal calibration evaluation	60 d	3-Oct-2003	2-Dec-2003
113	Dissolved Oxygen model calibration accepted by SMART	1 d	3-Dec-2003	3-Dec-2003
114	Federal agency (SMART) review of H & S calibration	30 d	6-Sep-2003	5-Oct-2003
115	Prepare final report of H&S model calibration	30 d	5-Oct-2003	4-Nov-2003
116	Agency review of DO and H & S model calibration report	45 d	4-Nov-2003	19-Dec-2003
117	Agency DO and H & S model performance acceptance and documentation	1 d	19-Dec-2003	20-Dec-2003