



Mobile Bay National Estuary Program Science Advisory Committee Meeting

10 am – 12:00 pm May 16, 2018

**Killian Room, International Trade Center
250 N. Water Street Mobile, AL 36602**

Agenda

Welcome - review and approval of minutes from previous meeting

Fred Leslie, Alabama Department of Environmental Management

Updates and Presentations

Sub-watershed Hydrologic Modeling

John Curry, Hydro LLC

NFWF GEBF Fowl River Marsh Study Update

Fowl River Marsh Study Team

Making the Case for a Fowl River Hydrodynamic Model

Fowl River Marsh Study Team

MyMobileBay Stations Poll

Dr. Brian Dzwonkowski & Casey Fulford DISL

Other Business

Adjourn



**Mobile Bay National Estuary Program
Science Advisory Committee Meeting
Killian Room, International Trade Center, Mobile AL
May 16, 2018**



The Mobile Bay National Estuary Program Science Advisory Committee was established to bring area experts together to provide advice, guidance, and recommendations to ensure that MBNEP activities will be conducted in a scientifically relevant and rigorous manner.

In attendance:

SAC Voting Members Present: Kevin Calci, Ruth Carmichael, Marlon Cook, Mike Dardeau, Brian Dzwonkowski, Steve Heath, Julien Lartigue, John Lehrter, Fred Leslie, Tim Thibaut, Bret Webb, Byron Webb

Phone-in Voting Members: none

Proxy Voting Members: Dottie Byron for Ken Heck, Casey Fulford for Renee Collini

Other Attendees: Scott Phipps, Eric Sparks, Kari Servold, Alexis Baldera, John Curry, Mark Ornelas, Stephanie Smallegan, Amy Hunter, Shannon Walker

MBENP Staff: Jason Kudulis, Roberta Swann, Tom Herder, Bethany Dickey, and Katy Hines

Takeaways

- Members of the Fowl River Marsh Study updated the SAC and made a case for adding a modeling component (Phase II). The SAC supported exploring a Phase II addition.
- TSS probes are being added to some MyMobileBay sites and the SAC was polled on how best to display those data.
- The State of the Bay outline is complete, MBNEP continues to solicit needed content from partners. SAC members interested in showcasing their work can submit vignettes.

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Mr. Fred Leslie called the meeting to order at 10:00 CDT. Dr. Ruth Carmichael made a motion to approve the minutes from the January 24th meeting. Mr. Tim Thibaut seconded the motion.

Sub-watershed Hydrologic Modeling

Mr. John Curry with Hydro LLC. provided an overview of efforts to construct sub-watershed hydrologic models throughout coastal Alabama. His approach uses a GSSHA (Gridded Surface/Subsurface Hydrologic Analysis) Model. The GSSHA is a distributed, physics-based hydrologic model that simulates a watershed's response to meteorological inputs. This model allows for short-term and long-term simulations, and accounts for soil moisture between precipitation events. Mr. Curry shared his work in the D'Olive Watershed as an example. He installed pressure gauges and weather stations throughout the watershed, both are needed to calibrate and then validate the model. Once calibrated, different inputs can be inserted to simulate changes in land use/development. County and city workers can be trained to use this model as a management tool to consider the effect of detention ponds in newly developed residential/commercial

properties, or other land use changes that could modify hydrologic conditions. Hydrologic models are set to be developed for each watershed undergoing watershed management plan development.

Fowl River Marsh Study

The team provided an update. Dr. Just Cebrian shared a brief overview of the background, goals and design of the study - the study has three components: hydrology, sediment, and vegetation.

Hydrology: Dr. John Lehrter provided the hydrology component update. The hydrology group have completed January through April sampling at 18 stations and will continue to sample each month in 2018. Continuous instruments have also been deployed. CTDs were used to measure salinity, temperature, and oxygen vertically in the water column. There are also eight discrete sampling stations to collect surface and bottom TSS, nutrients, organic matter (C & N isotope), and chlorophyll. High temporal continuous monitoring instruments have been installed at four sites to measure current velocities (horizontally and vertically) and lateral transport in the water column as well as general water quality parameters. Instruments will have a two-month deployment in the spring and fall. Marsh porewater wells with dataloggers were installed at three spits to measure water surface elevation, temperature, salinity, and oxygen. Dr. Bret Webb will begin high frequency wave gage deployment before Memorial Day and continue collecting data at strategic locations along the river throughout the summer.

Sediment: Mr. Marlon Cook shared the sediment team update. Dr. Alex Beebe has collected sediment cores at four locations. Two piston cores per location were collected and transported to the lab freezer for storage. The cores will be sectioned and split for stable isotopes; Pb-210 and Cs-137 (recent sediment rates); sediment analysis and C-14 (depositional history); and visual description and archival. Mr. Cook's part of the study focuses on recent and ongoing sedimentation. His 2015, assessment of the headwaters of Fowl River showed low sediment rates. The team is also collecting vertical profiles of pH, temperature, specific conductance, turbidity, dissolved oxygen, salinity, and total suspended solids at 75' spacing across the channel at three sites (one in each region). Sediment samples taken from the channel in the upper transitional zone of Fowl River show mostly sand, while samples from the lower river show all organic muck.

Vegetation: Dr. Just Cebrian updated everyone on the vegetation component. Transects have been established on priority spits and reference sites. The group are cataloging plant species diversity and abundance; plant community zonation; habitat quality indices (hydrogeomorphic model and floristic quality index); plant morphology and productivity; marsh elevation (will do now and in the fall); sediment erosion/accrual (feldspar markers); and marsh porewater measurements of salinity, oxygen and sulfide in coordination with hydrology group.

Making the Case for a Fowl River Hydrodynamic Model

The marsh study team presented proposed next steps (Phase II) for the ongoing study. As with development of Phase I, SAC members with relevant expertise were invited to participate moving forward. Dr. Lehrter explained that engineering & design has already been tasked in the Fowl River NFWF GEBF award and will require some level of modeling to facilitate the design of the restoration, evaluate unintended consequences, and predict the expected life of the restoration project. Phase I of the marsh study will inform past and present Fowl River conditions, but a modeling component will allow assessment of future watershed conditions. Additionally, a comprehensive modeling component will provide MBNEP with a way to holistically evaluate impacts of any proposed restoration/conservation projects outlined in the Fowl River WMP and will be transferrable to other sub-estuaries. Completing the calibration and

validation process once adds value and reduced effort and cost to generate model outputs in other coastal Alabama sub-estuaries (the SAC marsh study team is already collecting many of the data types needed for validation). There is no single model that can do all the proposed ideas, thus a modeling framework was outlined. The modeling framework could include: a three-dimensional hydrodynamic model (currents, temperature, salinity and sea surface elevation), an ecosystem model (DO, pH, TSS, organic matter, etc.), a marsh & river biotic community model and a sediment transport model. These products will also have synergy with Mr. Curry's hydrologic model.

Dr. Cebrian then explained why having the SAC carry out a Phase II is a logical next step: 1) The SAC already has most of the needed expertise, is already doing the first phase of the project, and are very familiar with the Fowl River system. 2) The models will become MBNEP property, guaranteeing public availability, and in turn, model products could be efficiently transferred to firms in charge of Engineering and Design Phase III). 3) The SAC is not bound to any political or special interest agenda, and thus has complete impartiality to present the study's conclusions as the data warrant it. Discussion then turned to funding Phase II. It was suggested that an amendment to the current Fowl River GEBF award is a plausible source. With SAC approval to explore a Phase II, Dr. Carmichael was tasked with briefing the MBNEP Executive Committee at their next meeting, May 18th. **Note: The Executive Committee voted and agreed to exploring a Phase II at their May 18th meeting.**

MyMobileBay Stations Poll

Dr. Brian Dzwonkowski and Ms. Casey Fulford polled SAC members on TSS and turbidity display preferences for MyMobileBay.com data. Options for display included:

- Dynamic table
- TSS overlaid on turbidity
- Include TSS on the "real-time" list
- How to display discrete data
- To combust or not to combust?

As the meeting reached conclusion Mr. Tom Herder made an announcement.

- State of the Bay update: the outline is complete. We will continue to reach out to parties for content. **He offered that anyone interested in showcasing their work can submit vignettes for the State of the Bay.**

At 12:02 Dr. Bret Webb made the motion to adjourn and Dr. Brian Dzwonkowski seconded it.