Modeling Quarterly Review Meeting
April 9th – 10th, 2013
http://www.chesapeakebay.net/calendar/event/18874/

NEXT MEETING

- Modeling Quarterly Review July 23rd – 24th, 2013 10AM – 3:30PM Joe Macknis Memorial Conference Room (Fish Shack) CBPO 410 Severn Avenue Annapolis, MD. http://www.chesapeakebay.net/calendar/event/18875/

MINUTES APRIL 9th, 2013 10AM – 2PM

Announcements and Amendments to the Agenda – Dave Montali – Lee Currey

- Water Quality Goal Implementation Team Meeting – The GIT is discussing constant delivery factors versus viable delivery factors. In the past, the discussion was made to use constant delivery factors and this decision is being reevaluated. No decision to change the current method has been made at this time.
    - This item may be brought to the Modeling Workgroup in the future.

Incorporating New Flow Data to Extend the Watershed Model Calibration Period to 2011 – Yactayo
Attachment A

Guido Yactayo described the extension of the Watershed Model to 2011 and the potential for new monitoring stations and associated new model segments in the Phase 6 Model. The criteria for using monitoring stations in the Watershed Model calibration will be reviewed and potential new monitoring stations and segments will be presented.

Discussion and Questions

- **ACTION**: The CBPO requests that the jurisdictions inform the Modeling Team of new monitoring stations in the Chesapeake Bay watershed that should be included in the Phase 6 calibration. This action item is due August 2013.
    - Criteria:
        - Stations with 100 or more long term average CFS
        - At least 3 years of flow data
            - The years do not have to be continuous years, but need to be with the calibration years (1985 – 2011).
        - Located within the watershed boundary
    - Question for the Modeling Workgroup to consider:
        - Do we need more segments if we find new stations?

- **ACTION**: Is Phase 6 extending the river simulation to the southern rivers of VA? The Modeling Team is interested in VA input on this. If there was utility in extending into the entire VA, then it could be done.

- If the stations do not have nutrient monitoring data, but have flow data that meets the criteria, should the jurisdictions send them? YES.

- Consideration: Could weigh the water quality data different or calibrate the hydrology to the longer time period and water quality over a different time period since the BMP and water quality monitoring in recent years is better quality.

- **ACTION**: The Modeling Team will send the latitude and longitude of the current monitoring stations included in the model to the jurisdictions.

Overall Progress and Strategy of Phase 6 Development – Gary Shenk
Attachment B

An overview of Phase 6 development progress and plan was presented.

Discussion and Questions

- The Modeling Team has put together a synthesis of all of the suggestions that have ever been made and the new 2017 suggestions. This is a list of some of the recommendations that are being worked on. These priorities will change over the next few years. It is hard to plan when these things will be finished because there is no dedicated staff work on these issues. The Modeling Team will put together a general timeline for the Phase 6 work plan and bring it to the Modeling Workgroup and WQGIT in July.

Analysis of AGCHEM Sensitivities – Richard Tian
Attachment C

Richard described progress in an analysis of AGCHEM nutrient export sensitivities to input loads. The work will document in detail the input-export response of all land uses in all model land-segments and provide a sound foundation for the development of an all-PQUAL based Phase 6 Watershed Model.

Discussion and Questions

- **ACTION**: Add uptake to the analysis.

- **ACTION**: Examine erosion/erodibilty as a viable.
    - Should use the sediment targets, which were developed using NRI Russell 2 soil loss equations and local soil slope information.

- **ACTION**: Currently, organic phosphorus and organic nitrogen is linked in HSPF. This is not required in PQUAL and should be revisited.

- **NEXT STEPS**: SPARROW is also being investigated, as well as other models and literature. This is part of a larger investigation of sensitivities to be suggested for a Phase 6 PQUAL Model.

- Groups reviewing the final sensitivities:
    - Modeling Workgroup
    - WQGIT
    - STAC
        - STAC Phosphorus Group
    - CMAQ

- There has not been a decision made at the WQGIT to switch to PQUAL, but recommended this investigation. Must also consider the management implications.

Aggregate Air-Water Exchanges – Robin Dennis
Attachment D

A decision for moving the proposed aggregate air-water exchanges forward to the WQGIT based on the proposal's technical merits will be made. In addition, the recently proposed Tier 3 Fuel Rule will cut the amount of sulfur allowed in gasoline by two-thirds to improve the performance of the catalytic converters in engines and will also provide substantial reductions in atmospheric nitrogen deposition in the Chesapeake. Plans to quantify the Tier 3 Fuel Rule with the updated unidirectional and bidirectional ammonia versions of CMAQ were described.

Discussion and Questions

- **ACTION**: Investigate options for including DC. RESPONSE: DC emissions are too small to effectively track. DC will use MD's Potomac transfer functions for air-water exchanges.

- **ACTION**: Include the Bay surface. Currently include, Watershed Aggregate and would like to also include a Bay Aggregate.
    - Currently, land surface only. Therefore this is an additional load. Note: Water within the jurisdictions is not recognized.
    - Tidal Bay

- **ACTION**: Consider state-basin instead of state or basin. This could allow for the policy aspects of who gets credited, but also the effects of that particular load considering the transfer factors.
    - Locked in for entire state emissions, but can discuss how to do where the deposition lands.

- **ACTION**: Before taking this to the WQGIT, need to investigate the implications of crediting.
    - Policy issues: The impact of an action in one jurisdiction, can affect a widespread area outside of the jurisdiction. The credits should be given to the jurisdiction which reduced. This is why this is done on a watershed view.
        - The different jurisdictions will have different transfer functions.
    - Increases of emission should be accounted for as well as decreases.
        - Examples of increases include the new shale gas industry.
    - Include reductions that are not currently accounted for in the model. Must be a reduction above the allocation air scenario.

- **ACTION**: Next steps
    - Need a clear inventory of what is in the allocation air scenario in terms of actions.
    - Work with the jurisdictions to determine practices they have on the ground that are above and beyond the allocation air scenario.
    - Determine how to deal with the transition to the new mobile source model.

- **ACTION**: Robin Dennis will give an update at the July Modeling Quarterly.

James Chlorophyll Study – Arthur Butt

Arthur Butt presented on progress in the multiyear study of chlorophyll in the tidal James River using augmented monitoring and modeling approaches.

Major Goals of the study

(1) Remodel the James River. Revisit the James River TMDL allocations (Appendix O & X, Bay TMDL)
   - Develop a site specific James River water quality model
   - Re-assess attainability of Chl-*a* criteria

(2) Review and confirm/adjust James River Chl-*a* standard (WIP I - Appendix 2)
   - Scientific Advisory Panel to make recommendations
   - Conduct scientific study to review basis for setting chlorophyll standard

Discussion and Questions

- Completed first year of the monitoring program of the 3 year study.
  - Monitoring reports will be available in spring 2013.

- Monitoring and modeling grants are all in place for the 3 year study and can be accessed on the webpage.

- This year the study will focus on:
  - Designated uses
    - Working to assess linkage between algal blooms and designated uses.
  - Revisiting critical conditions
  - Modeling will begin
    - Modeling Deliverable March 2013: Report – assessment of the data, methods used, data review, and update to 2010/2011.

- Will the deliverables include recommendations?
  - Creating a team of investigators to examine how the standards were developed before and assess other approaches. They will be using data from last year and bioassays from this year to examine the criteria and how well they are addressing our designated uses.
  - If a change is proposed, must rerun through the model.

- **ACTION**: Meeting with Lewis Linker and Carl Cerco about boundary conditions.

- **ACTION**: Arthur Butt will update the Modeling Workgroup as the reports are released.

JAWRA Featured Collection, CERF Sessions on Chesapeake Bay, and Proposed STAC Workshops – Lewis Linker
Attachment E

An update on the Journal of Water Resources Association's (JAWRA) Featured Collection of ten articles on the Chesapeake TMDL was presented, several Coast and Estuarine Research Federation sessions on the Chesapeake were described, and an update on three proposed STAC workshops was provided.

MINUTES APRIL 10th, 2013 10AM – 2PM

Eutrophication and Aquaculture – Suzanne Bricker
Attachment F

Suzanne Bricker will examine nutrient removal associated with aquaculture and the influence of oyster filter feeders on water quality through the findings of two ongoing demonstration projects in Long Island Sound.

Discussion and Questions

- **ACTION**: Suzanne Bricker will provide the report and papers to the Modeling WG for additional information. Modeling Workgroup members should also view the website http://farmscale.org/

- Although, point source trading has been established for the industries at Long Island Sound, nonpoint source trading has not been established yet.
    - The Long Island Sound TMDL has aquaculture in it (which is considered nonpoint source), so the trading has not been established.
        - Wrote a proposal to Sea Grant to establish Chesapeake Bay price for aquaculture within the FARM Model, to calculate a realistic trade for the Chesapeake.
    - For trading, must not have variability in the uptake (nutrient remove rate). With oysters there is much variability then other BMPs. Working to determine this rate.

Progress on Lower Susquehanna Dams – Carl Cerco
Attachment G
Attachment H

The affects of Conowingo infill on Chesapeake water quality standards will be examined though a series of different types of scenarios. The scenarios used in the analysis and their findings regarding the influence Conowingo infill has on the Chesapeake water quality standards of DO, chlorophyll, and SAV/clarity will be examined

Discussion and Questions

- Note: Runs with "no dam" are really useful because it shows us the current value of the dam.
    - Suggested that one idea for management to consider in self-induced discharges in less critical periods.

Assessment of 2009 – 2010 DO Stoplight Plots of DO – Lewis Linker
Attachment I

An apparent anomaly in the DO stoplight plots regarding a sudden drop in simulated hypoxia between the 2009 and 2010 Progress Scenarios has been traced to an estimated decrease in nitrogen atmospheric deposition loads brought about through the Clean Air Interstate Rule (CAIR). The DO stoplight plots, the 2009-2010 Progress Scenarios, and the estimated nitrogen loads associated with them will be revisited.

WQSTM Simulation of Wind's Influence on CB Anoxia – Ping Wang
Attachment J

Work demonstrating that the WQSTM is sensitive to wind's influence on Chesapeake hypoxia will be presented. In addition, the successful extension of CH3D to 2011 will be demonstrated through time series of simulated and observed data.

Discussion and Questions

- What are the implications of this study?
    - In the literature, several principle investigators have provided strong evidence that the direction of the wind as an influence on hypoxia and anoxia like estuaries such as the Chesapeake Bay and Long Island Sound. This work was to determine whether or not the CBP modeling system shows that same influence of wind direction. 00:47:00
    - In summary: This study was conducted to eliminate surprises.
        - Check that the TMDL simulation is consistent with the literature.
        - Make sure that we are prepared for changes that we may see in wind direction in the future.
    - Need to understand the impact of climatic change and how that will affect management.

- **ACTION**: What needs to be added to this analysis?
    - For a particular test year and summer conditions, shift all of the wind directions by 45 degrees with the same speeds.
        - With this results, characterize how a shift in predominant effect anoxic/hypoxic volume. Then, compare how the TMDL vs. 2010ProgressRun affect anoxic/hypoxic volume. Then, show how the comparative change in anoxic/hypoxic volume is.
    - More statistical plots, which show generalizations of the Bay instead of particular stations.

- **ACTION**: Conference call with Dr. Malcomy Schully to present and discuss the results of this analysis.

Chesapeake Modeling Lab Action Team Status – Mark Bennett
Attachment K

The progress of the team formed to respond to the NAS recommendation for a Chesapeake Modeling Laboratory will be described and an outline for the final report of the Modeling Lab Action Team (MLAT) will be presented.

Discussion and Questions

- MLAT members have begun writing sections of the Chesapeake Modeling Laboratory report.
- MLAT will meet next in early May to discuss remaining sections of the report and review written sections.
- The draft report should be complete in early June.
- MLAT plans to present the report to the Management Board at their July meeting.
- This timeline is subject to change.

PARTICIPANTS

Last Name	First Name	Email	Affiliation	Day 1	Day 2
LEADERSHIP					
Currey	Lee	lcurrey@mde.state.md.us	MDE/Modeling WG Co-Chair	x	x
Montali	Dave	david.a.montali@wv.gov	WV DEP/Modeling WG Co-Chair	x	x
Linker	Lewis	linker.lewis@epa.gov	EPA/CBPO/Modeling WG Coordinator	x	x
Pruzinsky	Amanda	apruzinsky@chesapeakebay.net	CRC/CBPO/Modeling WG Staffer	x	x
PRESENTERS					
Bennett	Mark	mrbennet@usgs.gov	USGS	x	x
Bricker	Suzanne	suzanne.bricker@noaa.gov	NOAA	x	x
Butt	Arthur	ajbutt@deq.virginia.gov	VA DEQ	x	
Cerco	Carl	Carl.F.Cerco@erdc.usace.army.mil	USACE		x
Dennis	Robin	Dennis.Robin@epamail.epa.gov	EPA/NOAA	x	
Shenk	Gary	gshenk@chesapeakebay.net	EPA/CBPO	x	x
Tian	Richard	rtian@chesapeakebay.net	UMCES/CBPO	x	x
Wang	Ping	pwang@chesapeakebay.net	VIMS/CBPO	x	x
Yactayo	Guido	gyactayo@chesapeakebay.net	UMCES/CBPO	x	x
OTHER PARTICIPANTS					
Berger	Karl	kberger@mwcog.org	MWCOG	x	
Brown	William	willbrown@state.pa.us	PA DEP	x	x
Friedrichs	Marjy	marjy@VIMS.edu	VIMS/STAC	x	
Gladding	Steve	smgladdi@gw.dec.state.ny.us	NYSDEC	x	x
Hunley	Will	whunley@hrsd.com	HRSD	x	x
Karceski	Julie	jkarceski@mwcog.org	MWCOG	x	x
Keeling	William	William.Keeling@dcr.virginia.gov	VADCR	x	x
Koran	Dave	David.Koran@usace.army.mil	USACE	x	x
Mandel	Ross	rmandel@potomac-commission.org	ICPRB	x	x
Onyullo	George	george.onyullo@dc.gov	DDOE	x	x
Quinn	Sheryle	sheryle.quinn@navy.mil	US Dept of Navy	x	x
Rutkowki	Mary Jane	mrutkowski@mde.state.md.us	MDE	x	
Sanford	Larry	lsanford@umces.edu	UMCES	x	x
Stewart	Helen	hstewart@dnr.state.md.us	MDNR	x	
Tesler	Ted	thtesler@pa.gov	PA DEP		x
Wazniak	Cathy	cwazniak@dnr.state.md.us	MDNR	x	
Bhatt	Gopal	gbhatt@chesapeakebay.net	Penn State/CBPO	x	x
Friedrichs	Carl	carl@VIMS.edu	VIMS	x	x
Dalmasy	Dinorah	ddalmasy@mde.state.md.us	MDE	x	
Halka	Jeffery	jhalka@mgs.md.gov	USGS	x	x
White	Jeff	jjwhite@mde.state.md.us	MDE	x	
Buckley	Patricia	pbuckley@state.pa.us	PA DEP		x