Chesapeake Bay Program Partnership

Midpoint Assessment Master Schedule – High and Low Priorities

*Excel spreadsheet, major timeline dates for deliverables (e.g. 2016 for model)

Level of WQGIT Priority	Title & Level of Priority	Lead Partner/ Supporting Partner(s)	Deliverable(s)	Start Date	Completion Date
High	**Revise watershed modeling system structure. Revisit Watershed Model calibration methods, including regional factors. The detailed Phase 6 Watershed Model Workplan can be found in Appendix A (in development).**	**Modeling Workgroup** / CBP Modeling Team, WTWG, Sector WGs, WQGIT	• Make copy of current Phase 5.3.2 Model and convert all AGCHEM modules into PQUAL modules	• December 2012	• Completed
			• Sensitivities of P5.3.2 land use nutrient exports to input nutrient loading will be derived for all land uses in all land-segments	• November 2012	• Completed
			• Key scenarios to be run with prototype Phase 6 model so it matches Phase 5.3.2 model	• October 2013 Task will be initiated after refinements to input-output sensitivities and extension of P6 Prototype to 1991-2000 hydrology.	• November 2013
			• Preparation of documentation of functions describing the sensitivities	• Documentation of Phase 5.3.2 sensitivities complete in BaseCamp and Mod	• Ongoing

				WG presentations. Documentation of SPARROW and SWAT sensitivities underway.	
			• Develop/apply/calibrate data set for Phase 6 simulation period (1985-2011) • Apply/calibrate new calibration stations • Assessment in changes to change in hydrology from previous two deliverables will be quantified and documented • Adjustments to input load/export sensitivities, changes in regional factors, and other changes will be made to examine practicality of providing more rational approach to regional factors. This task is being completed with assistance from ICPRB/MDE.	• Prototype Phase 6 completed for 2002-2011 simulation period • Ongoing • March 2013 • April 2013	• Prototype Completed • Ongoing. Completion date dependant on Phase 6 segmentation decisions. • Completed. New NLDAS hydrology demonstrably improved calibration • January 2015

			• Complete documentation of input load/export sensitivities, changes in regional factors, and other changes	• Ongoing	• January 2015
			• Presentation of refined prototype Phase 6 model for review and approval by Modeling WG and WQGIT	• Review ongoing by Modeling WG and anticipated review of Phase 6 Prototype scheduled for January 2014.	• January 2014
			• Reexamine regional factor estimation methods.	• Initiated Fall 2013	• Complete by December 2014
			• Inclusion of additional calibration data sources from literature and other modeling analyses (e.g. SPARROW).	• Initiated 2013 and ongoing	• Complete by December 2015
			• Use NLDAS rainfall and refined precip. input methods	• Initiated January 2013	• Completed July 2013
			• Improve sediment calibration techniques	• Initiated July 2013	• Completed December 2013
			• Expand simulation period to 3 decades from 1985 to 2015	• Initiated January 2013	• Complete by December 2015 (but expansion to full year 2015 available in late 2016).

High	**Update Airshed Model to new CMAQ Bidirectional Ammonia Model** ***The detailed Airshed Model Workplan can be found in Appendix B (in development).**	**Modeling Workgroup** / CBPO Modeling Team, WTWG, Source Sector Workgroups, WQGIT	• Office of Air Quality Planning and Standards (OAQPS) provides bidirectional Ammonia CMAQ simulation scenarios	• CMAQ scenarios with bidirectional ammonia simulation developed through 2014-2015	• By December 2015 all CMAQ Airshed scenarios are in place
			• Modeling Workgroup is lead and provides technical oversight for CMAQ scenario development, application and tracking in CB TMDL and development of a new library of CMAQ Scenarios, i.e., current conditions, 2025, 2030, maximum feasible.	• CMAQ scenarios with bidirectional ammonia simulation developed through 2014-2015 for application in Phase III WIPS	• By December 2015 all CMAQ Airshed scenarios are in place
			• Independent peer review of development, calibration, application, and findings.	• Occurs at various times for different stages of model development	• Various
			• Update estimated wet deposition loads to 2015	• 2014	• 2015
			• Update 2007 emissions/meteorology base to from current 2002 emissions/meteorology base	• OAQPS Task for 2014	• 2014
			• Expand simulation period to 3	• Begin in 2014	

			decades from 1985 to 2015	when funding is available	• Completed 9 months after initiation but needed before December 2014
High	**Refine and update the Water Quality and Sediment Transport Model (WQSTM) *The detailed WQSTM Workplan can be found in Appendix C.**	**Modeling Workgroup** / CBPO Modeling Team, WTWG, Source Sector Workgroups, WQGIT	• CoE Engineering Research and Development Center (ERDC) develops and applies WQSTM as directed by Mod WG	• Initiated 2013	• WQSTM Development ongoing until December 2015 followed by review and application during 2016-17
			• Extend the simulation period to 2015 Hydrodynamic Model required tasks include: - Assemble data for model forcing functions and for model validation - Create model input decks - Execute an independent wind-driven surface wave model - Estimate bottom shear stress from waves and currents - Validate model and compare to previous results - Create and store hydrodynamic outputs to drive the eutrophication model Water quality modeling required tasks include: - Assemble data for model forcing	• Initiated 2013	• Full update of simulation period to 2015 completed in late 2016.

			functions and for model validation - Estimate shoreline erosion - Create model input decks - Validate model and compare to previous results		
			• Refine the simulation of filter feeders influence on CB water quality with increased aquaculture oyster sanctuaries, and other fisheries conservation measures	• To be initiated in 2014	• To be completed 18 months after initiation
			• Frame the future climate-change scenario. Conditions to be described include land use, rainfall, air temperature, water temperature, sea level rise, ocean boundary conditions and tidal wetland loss from SLR.	• Initiated in 2013	• To be completed December 2016 in time for consideration in the Phase III WIPs
			• Represent shallows and embayments with a finer grid, perhaps with a ribbon model, perhaps with finite volume grid to better represent clarity SAV and open water DO, augmented with multiple shallow water models to improve shallow water calibration.	• Initiated in 2013	• To be completed December 2015
			• Improve simulation of estuarine wetlands through simplified models which will describe salient processes such as tidal wetlands interactions	• Initiated in January 2014	• To be completed December 2014

			with water quality and quantitative computations of local shoreline erosion. In addition, the SAV simulation will be refined to include critical temperature sensitivities (Zostera) and SAV substrate conditions. • Application of new WQSTM to the examination of Phase III WIPs for the 2017 Midpoint Assessment • Develop process to integrate local results from fine scale models (e.g. James River).	• Commences in January 2017 • Initiated in 2013	• Completed by December 2017 • Completed by December 2015
Low, but a required task described in the 2010 TMDL documentation (Chesapeake Bay TMDL, 2010. Section 10.5).	**Examine the influence of climate change (CC) on Chesapeake WQ standards and the 2010 Bay TMDL**	**Modeling Workgroup /** EPA Global Change Research Program, Penn State, UMD, and USGS	• Results from the Robust Decision Making (RDM) Analysis • Results of Penn State analysis of CC • Results of UMD analysis of CC impacts on Patuxent watershed and estuary • Results of USGS analysis of Chesapeake watershed hydrology under future CC conditions • Results of JHU analysis of CC effects on observed trends in CB watershed. • Results of UVA analysis of CC	• January 2012 Ongoing support for 7 separate PIs from EPA, Penn State, UMD, USGS, JHU and UVA. UVA	• December 2017. CBP decisions on the influence of climate change on CB TMDL scheduled for 2017 Midpoint Assessment.
Low, but a required task described in the 2010 TMDL documentation	**Examine the influence of Conowingo infill on Chesapeake Bay WQ standards**	**Modeling Workgroup /** USACE and STAR	• Lower Susquehanna River Watershed Assessment study • STAC workgroup proposal • Land use characterization of small impoundments and associated	• Through 2013 develop a series of CBP model runs in support of LSRWA analysis of	• Lower Susquehanna River Watershed Assessment (LSRWA) report

(Chesapeake Bay TMDL, 2010. Section 10.6).			drainage area	Conowingo infill. • CBP decisions on the influence of Conowingo infill on CB TMDL scheduled for 2017 Midpoint Assessment.	released to public in Summer 2014. • Modeling support for CBP decision on Conowingo infill until December 2017
Low, but a required task described in the 2010 TMDL documentation (Chesapeake Bay TMDL, 2010. Section 10.7).	**Examine the influence of oyster filter feeders on water quality with increased aquaculture and sanctuary development in the Bay**	**Modeling Workgroup**	• Oyster analysis • Mapping of current/projected data on biomass distribution and abundance • Revisions to oyster model	Work will begin on this task in 2014 to estimate water quality benefits of increased oyster biomass due to sanctuaries and expanded aquaculture	The analysis is expected to continue through 2014 and will provide the quantitative foundation for further evaluations of filter feeders influence on water quality, as directed by CBP decision makers, during the 2017 Midpoint Assessment
Low, but a required task described in the 2010 TMDL documentation (Chesapeake Bay TMDL,	**Refinement of shallow water simulation for improved assessment of open water DO and SAV/clarity standards**	**Modeling Workgroup /** STAC	• Comparison of different models applied to shallow-water systems by different teams • Model representation of shallow-water regions in WQSTM	August 2013 Status: Funding has been identified for multiple shallow water modeling and an RFP is being prepared. Work on	Ongoing task of the Modeling Workgroup that will be completed with final delivery of the WQSTM in December 2015

2010. Section 6.5.4).				improved simulation of the shallow water regions has begun with an extension of the WQSTM to 2011 and the first comparison of shallow water monitoring observations and model simulations.	
Low but a required task described in the 2010 TMDL documentation (Chesapeake Bay TMDL, 2010. Section 10.3)	**Review James River chlorophyll criteria and James River TMDL allocations**	**Modeling Workgroup /** VADEQ	The EPA CB Modeling Workgroup will provide ongoing technical support for the VADEQ modeling effort coordinated though regular update reports at Modeling Quarterly Reviews as well as through other meetings and coordination forums as required.	The work was initiated in 2012 and will be an ongoing task.	The James chlorophyll modeling will be completed in December 2015 with TMDL allocations and chlorophyll criteria review conducted during 2016.