Modeling Workgroup Quarterly Review
October 6, 2020

Event webpage:
https://www.chesapeakebay.net/what/event/october_2020_modeling_workgroup_quarterly_review

Join by Webinar: **Meeting Number**: 120 867 4785
Password: MODEL
Webinar*: https://umces.webex.com/umces/j.php?MTID=m50bb802b27f830b4957c096219e5b8da

Or join by phone: **Conference Line**: +1-408-418-9388 **Access code**: 120 867 4785

10:00 Announcements and Amendments to the Agenda – Mark Bennett, USGS and Dave Montali, Tetra Tech

10:05 Optimization of Phase 6 CAST – Kalyanmoy Deb, Pouyan, Nejadhashemi, Gregorio Toscano, and Sebastian, Hernandez-Suarez, Michigan State University (MSU)
Substantial progress over the last wo quarters has been made in the development of an optimization for CAST Phase 6 applications. The work will be presented by the Michigan State University (MSU) Team. In addition, principles and methods of optimization, as applied to the CAST System with the CBP objectives of least cost or greatest nutrient reduction, will be discussed with the Modeling Workgroup.

11:00 Fine-Scale Chesapeake Regional Hydrology Model (CRHM) Development – Gary Shenk (USGS-CBPO), Gopal Bhatt (Penn State), Isabella Bertani, UMCES
A progress update on the development of a fine-scale distributed hydrology model of the Chesapeake Bay watershed at an NHDplus catchment scale will be reviewed.

11:40 Comparison of Modeled and Monitored Nutrient Trends – Gary Shenk, USGS-CBPO; Isabella Bertani, UMCES; and Scott Ator, USGS
Progress on the comparison and analysis of WRTDS and the Phase 6 Dynamic Watershed Model trends will be presented.

12:00 Overview of ORD Project -- Jason Bernagros, Tom Johnson, Tanya Spero, and Anna Jalowska– EPA ORD
An overview of on-going ORD intensity duration frequency (IDF) curve and extreme weather research projects applicable to urban stormwater management will be presented. Applications include updates to the National Stormwater Calculator as well as climate data for EPA's Stormwater Management Model (SWMM).

12:40 Break

The following three presentations are "lightening presentation updates" in anticipation of more in depth discussions at a joint meeting of the Urban Stormwater Workgroup, Modeling Workgroup and the Climate Resiliency Workgroup on December 9, 2020.

12:50 Lightning Update: IDF Curve Development for the Chesapeake Watershed – Arthur DeGaetano, Cornell U.
Art will present progress on IDF development for current and future time periods at the county scale for all Chesapeake watershed counties.

1:00 Lightning Update: CSN on IDF curve Development and Application in the Chesapeake stormwater community– David Wood, Chesapeake Stormwater Network (CSN)
David will provide an update of CSN's activities in organizing the Chesapeake stormwater community in the application of IDFs updated to presents and future conditions in order to maintain resiliency of stormwater and restoration practices under climate change.

1:10 Lightning Update: BMP Design under a Changing Climate- Jon Butcher, Tetra Tech
Jon will provide an update in the development of IDFs based on present and future conditions for Maryland metropolitan regions.

1:20 Sediment dynamics and Implications for CBP Management – Greg Noe, USGS
A synthesis of the current knowledge of sediment dynamics will be presented. Long-term research in the watershed was done with the intent of providing improved information for environmental management in the restoration of the estuary and its watershed. The watershed's sediment sources, transport, delivery, and impacts will be discussed with consideration of the implications for effectively implementing best management practices (BMPs) to mitigate sediment issues.

2:00 Adjourn

Modeling Workgroup Quarterly Review
October 7, 2020

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Join by Webinar: **Meeting Number**: 120 867 4785
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10:00 Announcements and Amendments to the Agenda – Mark Bennett, USGS and Dave Montali, Tetra Tech

10:05 Nitrogen in the Chesapeake Bay Watershed: A Century of Change, 1950 to 2050 – John Clune, Paul Capel, Matt Miller, and Andy Sekellick, USGS
The presentation will provide an overview of an upcoming report that aims to provide an understanding of how human activities and environmental change in the watershed in the past, present, and future influence the export of nitrogen to the Chesapeake Bay. The spatial and temporal aspects of the interconnected and changing physical factors, source inputs, and management actions that control current status and future trends of nitrogen will be discussed.

10:55 STAC Climate Change Technical Synthesis Shallow Tidal Water DO Dynamics – Jeremy Testa, UMCES
An update will be presented on the STAC synthesis of shallow tidal waters that includes a statistical analysis of the shallow water data in concert with numerical model simulations and linkages to local physical conditions and watershed features. The synthesis will generate an improved understanding of how local eutrophication and the effects of future climate will impact oxygen criteria and dynamics in shallow waters.

11:30 Analysis of Tidal Bay Tributary Nutrient Limitation – Qian Zhang and Richard Tian, UMCES
An analysis that presents insights into nutrient limitation in the Chesapeake tidal tributaries will be presented. Changes in Chesapeake nutrient limitation have broad implications to CBP policies such as the development of effective Watershed Implementation Plans (WIPs), as well as to next generation Bay Model calibration and performance.

12:10 BREAK

12:30 SAV Nutrient Dynamics and DO Impacts – Carl Cerco, Attain and Richard Tian, UMCES

An update on the 2017 WQSTM estimated nutrient flux by submerged aquatic vegetation will be presented. Examination of net nutrient flux is anticipated to simulate net import to SAV in the growing season, augmented by simulated enhanced settling of particles in SAV beds. However, after the SAV growing season a nutrient flux out of the SAV beds, mostly as organics, is anticipated.

1:15 Drivers of Patuxent Chlorophyll Trends – Jon Harcum and Diane Allen, Tetra Tech, Inc.

An investigation of potential stressor-response models associated with increasing chlorophyll-a concentrations in the Patuxent River, 1994-2018 will be presented.

1:45 Baytrendsmap: Creation of Concentration and Change Maps Using General Additive Model (GAM) Results from Baytrends – Jon Harcum and Erik Leppo, Tetra Tech, Inc. and Jeni Keisman, USGS

Yearly, state stakeholders analyze and submit long-term trend evaluations of water quality parameters associated with the Chesapeake Bay Program's tidal monitoring network using a Generalized Additive Modeling (GAM) approach. The evaluations include station and parameter-specific development of nonlinear seasonally-varying changes over time, incorporation of hydrologic variability via river flow or salinity, method or laboratory changes, and censored data as developed through the R package Baytrends (https://CRAN.R-project.org/package=baytrends). With the release of Baytrendsmap, these results are now available to program managers, researchers, and the general public via an R Shiny dashboard on the Chesapeake Bay Program website (https://baytrends.chesapeakebay.net/maps).

2:00 ADJOURN