Scientific and Technical Advisory Committee
April 22-23, 2014
Workshop Agenda
Location: Sheraton Annapolis Hotel
173 Jennifer Road – Annapolis, MD 21401
Workshop Webpage: http://www.chesapeake.org/stac/workshop.php?activity_id=230

The Peculiarities of Perviousness:
a workshop to define, measure and model the nutrient dynamics
from the mosaic of land cover known as pervious land

Workshop Objective: The objective of this workshop is to characterize the key source areas and pervious cover types that generate nutrients and sediments, and/or reduce runoff in the urban landscape and determine whether it is feasible to utilize them in Phase 6 of the Chesapeake Bay Watershed Model (CBWM), by answering the following questions:

1. Does the source or cover type depart in a meaningful way from the average nutrient loading for generic pervious land?

2. If so, are their existing or future mapping tools that can accurately measure the source or cover type at the scale of a county and the entire Bay watershed?

3. If so, can the pollutant dynamics of the source or cover type be accurately simulated in the context of existing or future versions of the CBWM?

4. If so, would the source or cover type respond in a unique manner to the application of a new or existing urban BMP type?

Based on the answers to the preceding questions, the outcome of the workshop would be to analyze current research and recommend the best process to create a scientifically sound pervious land sub-classification system for the purposes of simulating and managing nutrient loads in the Bay watershed.

AGENDA AT A GLANCE		
Day One: April 22, 2014		
9:00 to 10:00	T-1: Setting the Stage	
10:00 to 12:00	T-2: Review of Urban Wet and Dry Weather Monitoring	
1:00 to 3:00	T-3: Changes in Urban Fertilizer and Atmospheric Inputs	T-4: Nutrient Enrichment of Sediments in Urban Landscape
3:15 to 4:15	Day 1 Synthesis	
Day Two: April 23, 2014		
9:00 to 11:45	T-5: Urban Stream Corridor as a Land Use	T-6: Pervious/Impervious Connections
1:00 to 3:30	T-7: Effect of Tree Canopy on Pervious/Impervious Cover	
3:30 to 5:00	T-8: Synthesis Session/Next Steps	

DETAILED AGENDA
DAY 1

Webinar Website:
https://chesapeakeresearch.webex.com/chesapeakeresearch/j.php?MTID=m9a5af6baefe64cda31728cb10f4d04e5
Password: pervious
Toll-Free Number: 1-877-668-4493
Access Code: 730-750-434

Track 1: Setting the Stage
Track Organizer: Tom Schueler, CSN
Track Recorder: Jeremy Hanson, CRC
Track Length: 1 hour

Objectives and Products to be Developed From the Workshop: Speaker: David Sample, VT (10 minutes)

The CBWM and Pervious Land: How does the current CBWM simulate pervious and impervious land? What are the current categories and how do we differentiate the loading? Speaker: Gary Shenk, EPA-CBPO (20 minutes)

CBP Land Use Modeling: What pervious land uses can we likely differentiate spatially? What is the partnership process for creating the land use data set? Speaker: Peter Claggett, USGS-CBPO (15 minutes)

Lumping and Splitting: What are the Proposals for New Urban Land Use Classifications in CBWM? Review of the land use list and discussion of the four technical criteria.
Speaker: Karl Berger, Co-Chair LUWG/MWCOG (15 minutes)

Track 2: Review of Dry and Wet Weather Urban Water Quality Monitoring Data
Track Organizers: David Sample, VT and Karl Berger, MWCOG
Track Recorder: Emma Giese, CRC
Track Length: 2 hours

Urban Stormwater and Baseflow: What have we learned about pollutant concentrations from mixed urban land over the past three decades, and how does that knowledge inform how we manage pervious and impervious land?

Speakers:

- What We Have Learned About Sediment and Nutrient Dynamics From Urban Source Area Sampling – Dr. Shirley Clark, PSU-Harrisburg
- What We Have Learned About Sediment and Nutrient Dynamics From Urban Stormwater Outfall Monitoring - Tom Schueler, CSN

- Sediment and Nutrient Concentrations and Loads in Small Urban Streams in Fairfax County, Virginia- John Jastram, USGS
- Urban nutrient stream data as a function of land cover/land use at various spatial and temporal scales - Claire Welty, UMBC and Baltimore Ecosystem Study LTER

Track 3. The Impact of Changes in Fertilizer and Atmospheric Deposition Inputs on Urban Lands

Track Organizers: Tom Schueler, CSN and Norm Goulet, NOVA Regional Commission
Track Recorder: Matt Ellis, CRC
Track Length: 2 hours

How many types of turf cover should be simulated? Should turf cover be sub-divided into different types based on nutrient risk, fertilizer application rate or other factors? If so, can these factors be measured at the local or Bay watershed scale?

Speakers (75 minutes):

- Summary of key findings on nutrient dynamics and export from lawns - Tom Schueler, CSN
- Key expert panel recommendations on simulating lawns in the next model - Norm Goulet, NOVA Regional Commission and Karl Berger, MWCOG
- Prospects for estimating fertilizer inputs – Karl Berger, MWCOG

*Construction sites as an urban source area***:** What do we really know about runoff and pollutant generation from the many different stages associated with construction from land clearing to final stabilization? How are sediment and nutrient loads influenced by the use of traditional or enhanced erosion and sediment control practices? Are the disturbed acreages recorded on NDPES permits sufficient for quantifying "construction" acres in the Phase 6 model?

Speakers: (20 minutes)

- Key findings on sediment and nutrient pathways from ESC expert panel - Randy Greer, DEDNREC
- Data availability and quality for quantifying construction activities – Matt Johnston, UMD-CBPO

Past and Future Trends in Air Deposition of Nutrient Inputs for Impervious and Pervious Land: How will trends in wet and dry weather atmospheric deposition rates change the availability for wash-off of nutrient inputs on pervious and impervious land?

Speakers: (50 minutes)

- Trends in Past/Current and Future N Deposition – Lewis Linker, EPA-CBPO
- National Atmospheric Deposition Program – Christopher Lehmann, University of Illinois at Urbana-Champaign

Track 4. Urban Nutrient Enrichment in the Urban Landscape: Is it a Predictive Tool for Loading or Urban BMPs?

Track Organizer: Norm Goulet, NOVA Regional Commission and Cecilia Lane, CSN
Track Recorder: TBD
Track Length: 2 hours

Nutrient Enrichment in the Urban Landscape: Can different levels of nutrient enrichment in urban soils, street solids, BMP sediments, bank sediments, and vegetative detritus be used to define or predict nutrient loading in the urban landscape? or help predict the impact of certain BMPs ?

Speakers (100 minutes):

- Nutrient content of urban soils- Richard Pouyat and Ian Yesilonis, USFS
- Nutrient content and particle size distribution of street solids - Neely Law, CWP
- Magnitude and fate of leaf detritus in the urban landscape - Neely Law, CWP and Tom Schueler, CSN
- Nutrient content of stormwater pond sediments - TBD
- Nutrient content of streambank sediments - Bill Stack, CWP

Facilitated Discussion (20 minutes)

Break (15 minutes)

Joint Discussion- Day 1 Synthesis (60 minutes)

DAY TWO AGENDA

Webinar Website:
https://chesapeakeresearch.webex.com/chesapeakeresearch/j.php?MTID=m9374fb2004f30c16221c059c8a96e3ad
Password: pervious
Toll-Free Number: 1-877-668-4493
Access Code: 731-546-557

Track 5. The Urban Stream Corridor as its Own Land Cover Type
Track Organizer: Bill Stack, CWP, and other CWP Staff
Track Recorder: Reid Christianson, CWP
Track Length: 165 minutes

How does stream bank erosion, sewage transmission losses and other discharges influence nutrient and sediment loading and processing within the stream corridor? How does the stream corridor itself act to process nutrients and sediments delivered from upland and adjacent urban land? How should we define and map the stream corridor as unique entity for processing nutrients and sediments?

Introduction: Why the urban stream corridor should be a separate land cover type. Description of how the model represents streams and how riparian systems fit the criteria for being considered a separate land cover and what the definition of the stream corridor should include (e.g., ditches, storm drains ephemeral streams) - Bill Stack, CWP (15 minutes)

*Sources, sinks and transport of sediment and nutrients in the stream corridor***:** This includes a comparison of nested in-stream vs. upland monitoring studies where loadings originating from streams can be categorized as a separate source of contaminants from the watershed including stream bank erosion, water and sanitary infrastructure and gross stormwater solids from the riparian corridor. This also includes a description of stream sediment fingerprinting studies conducted by the USGS that can apportion loadings by land cover as well as a description of sediment and nutrient sinks and transport phenomena within the stream corridor.

Speakers:

- Sources of sediment and nutrients from the riparian corridor - Lisa Fraley-McNeal, CWP (30 minutes)
- Sediment source analysis using sediment fingerprinting techniques – Mitchell Donovan, UMBC (30 minutes)
- Sediment and nutrient transport and storage along the stream corridor - Greg Noe, USGS (30 minutes)

Processing of nutrient inputs in the stream corridor: This talk describes the role that the stream corridor plays in transforming and processing nutrients from in-stream and upland sources including urban pervious and impervious loadings as well as "point sources" from illicit discharges.

Speaker:

- Assessment and restoration of riparian processes in urban watersheds - Peter Groffman, BES (30 minutes)

Floodplain mapping potential in the Chesapeake Bay Watershed: This talk describes possible scenarios for using GIS to map the stream corridor focusing on a case study of Difficult Run in Fairfax, County Virginia. One of the requirements for consideration of the stream corridor as a land use is the ability to accurately map the source or cover type at the scale of a county and the entire Bay watershed.

Speaker:

- Potential GIS data for mapping floodplain area in Chesapeake Bay watershed – Daniel Jones, USGS (30 minutes)

Track 6: Interconnections Between Pervious and Impervious Areas in Urban Watersheds

Track Organizer: Peter Claggett, USGS
Track Recorder: Matt Ellis, CRC
Track Length: 165 minutes

Pervious and Impervious Interconnections: Are different runoff volumes or nutrient loads produced by impervious areas that are connected to pervious areas as compared to those that are directly connected to stream corridors via proximity or storm drains? How pervious are pervious surfaces?

Introduction: What is meant by impervious/pervious surface connectivity? Why is it being considered for inclusion in the Phase 6 model? How has it been measured? How might it be treated in the Phase 6 model? – Peter Claggett, USGS (30 min)

Speakers (90 minutes):

- Limiting imperviousness to maintain ecological quality: Are threshold-based policies a good idea? - Glenn Moglen, Virginia Tech (30 minutes)
- Nitrogen Along the Watershed Continuum: Riparian Zones to Rivers- Sujay Kaushal, University of Maryland (30 minutes)
- Hydrologic Function of the Pervious Landscape - Stuart Schwartz, University of Maryland, Baltimore County (30 minutes)

Facilitated Discussion (45 minutes)

Track 7. The Effect of Tree Canopy on Urban Land
Track Organizers: Sally Claggett, USFS and David Sample, VT
Track Recorder: Jeremy Hanson, CRC
Track Length: 2.5 hours

How do urban trees/canopy treat stormwater as compared to urban turf? Compared to forest? What is the water budget of urban tree canopy—how much is evaporated? Transpired? Infiltrated? Are there discrete groupings of urban trees that make a substantial difference in water quality (e.g., conifer vs. deciduous or open-grown vs. part of a forest, etc.)? How do urban trees process nutrients and sediments delivered from adjacent urban land? What amount of nutrients is lost and to what degree is deciduous leaf litter an issue?

Speakers: (30 minutes each with 10 minute Q&A)

- Effect of woody vegetation and soils on urban hydrology – Ian Yesilonis and Dave Nowak, USFS
- Impact of canopy cover and impervious surfaces on urban streams – Susan Day, VT
- Chesapeake water quality and urban trees: perspective and needs - Sally Claggett, USFS

Facilitated Discussion (45 minutes) - David Sample, VT

Track 8: Synthesis Session: What Does the Data Tell Us Where to Go
Track Facilitator: Tom Schueler, CSN
Track Recorder: Natalie Gardner, CRC
Track Length: 1.5 hours

Track Report Out: Each of the Track Organizers (or Recorders) for Tracks 2 through 7 would provide a 5 minute summary of key points of synthesis relative to the four technical criteria, with 30 minutes for audience discussion

Next Steps in the Process for Defining Pervious Land in the CBWM: The final interactive session would feature a facilitated discussion to identify critical research needs and define a draft charge for a future expert panel. The goal is to make consensus recommendations on land use categories to CBPO modelers by the end of 2014.