

THE 25TH ANNUAL *Maryland Water Monitoring Council* CONFERENCE

December 6, 2019 • Maritime Conference Center • Linthicum



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GOING

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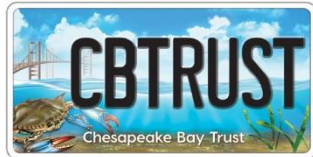
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On the Cover - The Miles River - cover photo by Brooke Landry (MD DNR)

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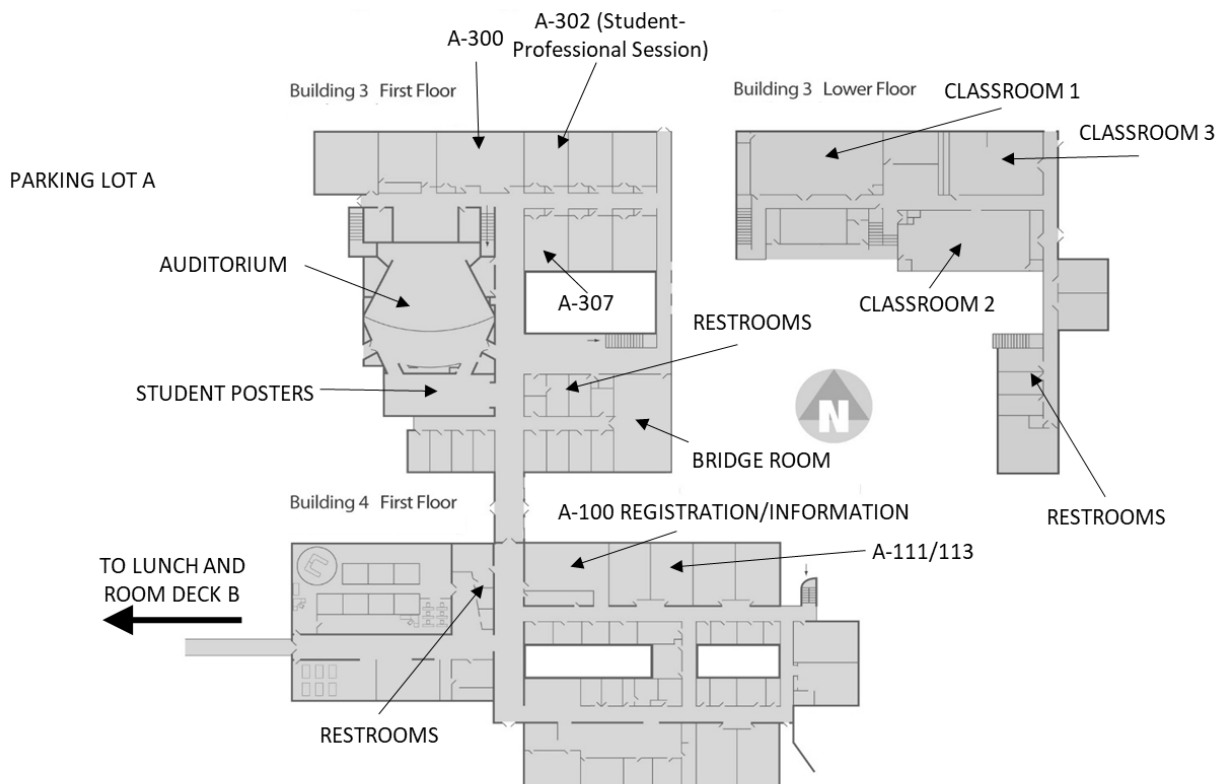


MARYLAND WATER MONITORING COUNCIL
25th Annual Conference - Friday, December 6, 2019

The 25th Annual MWMC Conference – Where We’ve Been, Where We’re Going

- 7:30 Registration/Poster Set-up/Continental Breakfast – Registration in Room A-100
Morning Plenary Session (8:30-10:00) in the Auditorium (simulcast in Classroom 1)
- 8:30 *MWMC Board Chair’s Call to Order* – Sandy Hertz - Maryland Department of Transportation; Chair, MWMC Board of Directors
- 8:45 *Climate Change is Water Change: Monitoring and Managing Both* – Ben Grumbles – Secretary, Maryland Department of the Environment
- 9:15 *Thoughts on a Large Ecosystem Restoration Initiative: The Chesapeake Bay Program* - Nick DiPasquale – Director, Chesapeake Bay Program (retired)
- 9:45 *Carl S. Weber Awards* – Clark Howells; City of Baltimore
- 10:00 Break/Poster Session – Authors Present

2019 MWMC Annual Conference Floorplan



Thanks to the 2019 MWMC Annual Conference Planning Committee – Andy Becker (KCI), Dan Boward (MD DNR), Kevin Brittingham (Balto. Co.), Megan Brosh (Balto. Co.), Drew Budelis (Versar), Tim Fox (MDE), Sandy Hertz (MDOT), Clark Howells (Balto. City), Charlie Poukish (MDE), Mark Southerland (AKRF), and Mark Trice (MD DNR)

Only speakers are listed for oral presentations. The online conference Program contains the full list of authors, co-authors, contact information, and abstracts. The Program can be viewed and downloaded from the MWMC website at www.marylandwatermonitoring.org. Following the conference, this agenda will contain links to presentation files, if available.

The Student-Professional Networking Session will be held in Room A302 from 10:30 until noon with further discussion in Deck B.

Concurrent Sessions - 10:30 – 12:00

AUDITORIUM - STREAM RESTORATION MONITORING I – Moderator, Scott Stranko (MDNR) <ul style="list-style-type: none">• QUANTIFYING THE ECOLOGICAL UPLIFT AND EFFECTIVENESS OF DIFFERING STREAM RESTORATION APPROACHES IN MARYLAND - Robert H. Hilderbrand (UMCES)• IMPLICATIONS OF MEASUREMENT METHODS AND THE BAY TMDL NUTRIENT AND SEDIMENT REDUCTION CREDITS FOR STREAM RESTORATION - Neely L. Law (Center for Watershed Protection)• NEW GUIDANCE ON USING SITE-LEVEL DATA TO IMPROVE THE STREAM RESTORATION PROTOCOLS - David Wood (Chesapeake Stormwater Network)• USE OF PROTOCOL 1 FOR PREVENTED SEDIMENT CREDIT BY MDOT SHA - Steve Morsberger (McCormick Taylor)
ROOM A-300 – FISH DISEASE - LESIONS AND TUMORS AND POPEYE, OH MY! – Moderator, Charlie Poukish (MDE) <ul style="list-style-type: none">• MELANISTIC AND MUCOID SKIN LESIONS OF SMALLMOUTH BASS – Heather Walsh (US Geological Survey)• HISTOPATHOLOGICAL ASSESSMENTS OF SMALLMOUTH BASS FROM LONG-TERM MONITORING SITES ON THE MONOCACY AND POTOMAC RIVERS - Heather Walsh (US Geological Survey)• SEASONAL AND SITE DIFFERENCES IN SMALLMOUTH BASS IMMUNE FUNCTION - Cheyenne Smith (West Virginia University)
ROOM A-111/113 – STORMY WEATHER! WHAT’S NEW WITH STORMWATER MANAGEMENT? – Moderator, Mark Southerland (Tetra Tech) <ul style="list-style-type: none">• UPDATES ON MDE’S MS4 MONITORING AND ANALYSIS EFFORTS: 2019 SUMMARY AND 2020 PROJECTS - Wencheng Katherine Slater (MDE)• REVIEW OF MARYLAND MS4 MONITORING DATA AT THREE PILOT LOCATIONS - Deb Caraco (Center for Watershed Protection)• PASSIVE STORMWATER MANAGEMENT IS A THING OF THE PAST. SMART STORMWATER MANAGEMENT IS THE FUTURE - Bob Bathurst (Century Engineering)• BIOCHAR - OVERVIEW, BENEFITS AND APPLICATIONS FOR BUILDING RESILIENT SYSTEMS - Lori Lilly (Howard EcoWorks) and Paul Sturm (Ridge to Reefs)
ROOM A307 – VITAL SIGNS OF WATERSHED HEALTH – Moderator, Nancy Roth (Tetra Tech) <ul style="list-style-type: none">• TAKING THE PULSE: WHAT IS WATERSHED HEALTH AND HOW DO WE MEASURE IT? - Nancy Roth (Tetra Tech)• USING WATERSHED CHARACTERISTICS TO ASSESS WATERSHED (STREAM) HEALTH IN UNSURVEYED AREAS - Kelly O. Maloney (US Geological Survey)• LANDSCAPE CHANGES AS SIGNALS OF WATERSHED VULNERABILITY AND RESILIENCE - Peter R. Claggett (US Geological Survey)• MANAGEMENT RESPONSE: HOW CAN LOCAL AND STATE GOVERNMENTS RESPOND TO INDICATIONS OF WATERSHED HEALTH DEGRADATION - Renee Thompson (US Geological Survey)
CLASSROOM 1 – HARMFUL ALGAL BLOOMS – Moderator, Clark Howells (Baltimore City) <ul style="list-style-type: none">• INTEGRATED STRATEGIES FOR ADDRESSING ALGAE AND RELATED IMPACTS ON WATER SUPPLIES - Josh Weiss (Hazen and Sawyer)• MONITORING AND MANAGEMENT OF HABS IN THE MID-ATLANTIC REGION OF THE UNITED STATES IN 2019 - Fred S. Lubnow (Princeton Hydro)• HARMFUL ALGAL BLOOM MONITORING AT T. HOWARD DUCKETT AND TRIADELPHIA RESERVOIRS, PATUXENT RIVER, MARYLAND 2015–2019 - Martin Chandler (WSSC Water)
CLASSROOM 2 – FRESHWATER MUSSELS: AN ENVIRONMENTAL INDICATOR'S GROWING INFLUENCE ON ENVIRONMENTAL POLICY – Moderator, Tim Fox (MDE) <ul style="list-style-type: none">• STATUS AND DISTRIBUTION OF FRESHWATER MUSSELS IN MARYLAND - James M. McCann (MD DNR)• TOOLS IN THE FRESHWATER MUSSEL CONSERVATION TOOLBOX: RECENT EXAMPLES IN MARYLAND - Matt Ashton (MD DNR)• A YEAR OF FRESHWATER MUSSEL RESTORATION IN THE ANACOSTIA RIVER - Jorge Montero (Anacostia Watershed Society)• A STATISTICAL MODEL TO DETERMINE THE ABSENCE OF FRESHWATER MUSSEL HABITAT: OPPORTUNITIES FOR WRITING BIOLOGICALLY APPROPRIATE AMMONIA WQBEL - Timothy Fox (MDE)
CLASSROOM 3 – THE BAY’S SUBMERGED AQUATIC VEGETATION – Moderator, Brooke Landry (MD DNR) <ul style="list-style-type: none">• FROM PLANTS TO SEEDS - THE HISTORY OF SAV RESTORATION IN MARYLAND - Mark Lewandowski (MD DNR)• MICROPLASTICS IN COASTAL WATERS: DO SAV BEDS SERVE AS SINKS? - Bob Murphy (Tetra Tech)• REMOTE SENSING OF SUBMERGED AQUATIC VEGETATION TO DETERMINE SUITABILITY OF CITIZEN SCIENCE MONITORING IN THE LOWER SUSQUEHANNA FLATS - Morgan Jones (Havre de Grace Environmental Center)• DEVELOPING A THREE-TIERED HIERARCHICAL MONITORING APPROACH FOR CHESAPEAKE BAY SAV - Brooke Landry (MD DNR)
BRIDGE ROOM – CLIMATE RESILIENCY – Moderator, Sandy Hertz (MDOT) <ul style="list-style-type: none">• MDOT SHA’S TOOL FOR PROACTIVELY MANAGING CRITICAL TRANSPORTATION INFRASTRUCTURE - Elizabeth Habic (MDOT)• FORMING A BALTIMORE URBAN WATERS FLOOD TEAM - Robert J. Shedlock (US Geological Survey)• CASE STUDIES OF CLOUDBURSTS AND PLUVIAL FLOODING IN BALTIMORE: IMPLICATIONS FOR CLIMATE CHANGE RESILIENCE PLANNING - Bernice R. Resenzweig (City University of New York)• HISTORIC ELLICOTT CITY FLOODING: SAFE AND SOUND FLOOD MITIGATION PLAN - Mark S. Richmond (Howard County DPW)

Two Lunch Groups – 12:00 – 1:00 (Orange Name Tag Sticker) - 12:30 – 1:30 (Blue Name Tag Sticker)

12:00 - 12:30 and 1:00 – 1:30 Poster Session – Authors Present

Concurrent Sessions - 1:30 – 3:00

AUDITORIUM - STREAM RESTORATION MONITORING II – Moderator, Jai Cole (Montgomery Parks)
<ul style="list-style-type: none">• EVALUATING THE EFFECTIVENESS AND SUSTAINABILITY OF NOVEL STREAM RESTORATION DESIGNS FOR COASTAL PLAIN STREAMS IN MARYLAND: INTEGRATING EXISTING AND NEW DATA FROM RESTORATION MONITORING – Solange Filoso (UMCES)• QUANTIFYING EFFECTS OF STREAM RESTORATION ON NITRATE LOADS IN AN URBAN WATERSHED USING A HIGH-FREQUENCY SENSOR NETWORK - Claire Welty (UMBC)• STREAM RESTORATION AND LIVING SHORELINE INSTALLATION ON A TRIBUTARY OF THE MAGOTHY RIVER - Sally Hornor (Magothy River Association)• ARE WE THERE YET? EVALUATING THE MONITORING TIME PERIOD REQUIRED TO DEMONSTRATE STREAM RESTORATION EFFECTIVENESS - Colin Hill (KCI Technologies)
ROOM A-300 – NUTRIENTS AND THEIR UNINTENDED CONSEQUENCES – Moderator, Tom Parham (MD DNR)
<ul style="list-style-type: none">• DOWNPOUR DYNAMICS: NITRATE EXPORT DURING STORM EVENTS – Joel Bostic (UMCES)• ILLUSTRATING NUTRIENT INPUTS IN THE CHESAPEAKE BAY WATERSHED OVER TIME - Breck Sullivan (Chesapeake Research Consortium)• METHODLOGY FOR DATA-BASED PRIORITIZATION OF ONSITE SEWAGE DISPOSAL SYSTEM UPGRADES FOR NITROGEN LOAD REDUCTION IN MARYLAND - Jonathan Leiman (MDE)• THE EFFECT OF AERATORS ON WATER QUALITY IN IMPOUNDMENTS IN TWIN LAKES STATE PARK - Irene Frenz (Virginia Dept. of Conservation and Recreation)
ROOM A-111/113 – THE LIFE CYCLE OF BIG ENVIRONMENTAL DATA – Moderator, Tim Fox (MDE)
<ul style="list-style-type: none">• WATER QUALITY MONITORING DATA STORY - Najma Khokhar and Fred Schenerman (MDE)• HOW'S MY WATERWAY: TELLING THE WATER STORY - Kiki Schneider (US EPA)• MULTI-STRESSOR AND MULTI-STATE APPROACH TO CREATING TOLERANCE VALUES FOR BIOLOGICAL CONDITION GRADIENT MODELS - Richard Mitchell (US EPA)• THE IMPORTANCE OF DATA MANAGEMENT TO THE JAMES RIVER CHLOROPHYLL STUDY - Tish Robertson (Virginia DEQ)
ROOM A-307 - CITIZEN SCIENCE AND EDUCATION – Jim Caldwell (Howard Co. Govt. – retired)
<ul style="list-style-type: none">• CITIZEN SCIENCE APPROACH TO WQ COLLECTION - Thomas Guay (Severn River Association)• THE VALUE OF CITIZEN VOLUNTEER DATA - James Beckley (Virginia DEQ)• FROM COLORING BOOKS TO FIELD JOURNALS: THE EVOLUTION OF OUTREACH MATERIALS - Dionna Bucci (Fairfax County, VA)
CLASSROOM 1 - FROM ALEWIFE TO BROOK TROUT: THE IMPORTANCE OF HEALTHY FISH COMMUNITIES – Moderator, Charlie Poukish (MDE)
<ul style="list-style-type: none">• THE EFFECT OF RUNOFF INDUCED TEMPERATURE CHANGE ON THE PHYSIOLOGICAL PERFORMANCES OF URBAN AND RURAL BLACKNOSE DACE (RHINICHTHYS ATRATULUS) - Danielle Gruber (Towson University)• A PROGRESSIVE BROOK TROUT CONSERVATION FRAMEWORK: DEVELOPING A STATEWIDE CONSERVATION STRATEGY TO ENSURE RESTORATION EFFORTS HAVE LONG LASTING EFFECTS TOWARDS MEETING FISHERIES MANAGEMENT PLAN AND CHESAPEAKE BAY AGREEMENT GOALS - Daniel Goetz (MD DNR)• DECLINING STATUS OF ANADROMOUS FISH SPAWNING HABITAT IN PATUXENT RIVER - Jim Uphoff (MD DNR)• FISH ABUNDANCE TRENDS LINKED TO INCREASING SPRING FLOWS IN THE POTOMAC RIVER - Nathaniel (Than) Hitt (US Geological Survey)
CLASSROOM 2 - AQUATIC INVASIVE SPECIES: THEN AND NOW – Moderator, Julie Bortz (MD DNR)
<ul style="list-style-type: none">• A TALE OF TWO FISH: NORTHERN SNAKEHEAD AND BLUE CATFISH - Dr. Joseph Love (MD DNR)• EARLY DETECTION AND ERADICATION PROGRAM NEEDED FOR TRAPA BISPINOSA, A NEW SPECIES OF WATER CHESTNUT IN THE POTOMAC RIVER WATERSHED - Jil Swearingen (In The Weeds)• INVASIVE AQUATIC VEGETATION MANAGEMENT USING A TARGETED HERBICIDE APPROACH - William H. Kirkpatrick Jr. (Aquatic Environment Consultants)• ADVANCES AND APPLICATIONS OF EDNA METHODS - Bane Schill (US Geological Survey)
CLASSROOM 3 – REMOTE SENSING AND THE BAY – Moderator, Mark Trice (MD DNR)
<ul style="list-style-type: none">• FROM SPACE TO SOCIETY: EXPLORING HYPERSPECTRAL REMOTE SENSING TO AID CHESAPEAKE BAY RESOURCE MANAGERS IN THE DETECTION OF POOR WATER QUALITY – Stephanie Uz (NASA)• USGS NEXT GENERATION WATER OBSERVING SYSTEMS - Mary Kay Foley (US Geological Survey)• TOPO/BATHYMETRIC DATA COLLECTION FOR NON-TIDAL POTOMAC RIVER - Roger Barlow (US Geological Survey)• UTILIZING REMOTE SENSING DATA TO ASSESS SEAGRASS HABITAT CRITERIA IN MARYLAND'S COASTAL BAYS - Cathy Wazniak (MD DNR)
BRIDGE ROOM – SALT LIFE: NOT JUST A COASTAL THING! – Moderator, Sandy Hertz (MDOT)
<ul style="list-style-type: none">• WIDESPREAD AND FREQUENT EXCEEDANCES OF CHLORIDE WATER QUALITY CRITERIA IN MID-ATLANTIC AND NEW ENGLAND STREAMS AS REVEALED BY HIGH-FREQUENCY DATA - Joel Moore (Towson University)• NO SALT FOR YOU! - AN INCENTIVISED APPROACH TO CURBING THE OVER-APPLICATION OF WINTER DEICER - Gregorio Sandi (MDE)• STATE OF MARYLAND PLAN TO ADAPT TO SALTWATER INTRUSION AND SALINIZATION - Jason Dubow (MD Department of Planning)

3:00 – 3:30 Break/Poster Session – Authors Present – Announcement of Student Poster Award Winners (Auditorium)

Concurrent Sessions - 3:30 – 4:30

AUDITORIUM - STREAM RESTORATION MONITORING III – Moderator, Chris Victoria (Anne Arundel Co.)
<ul style="list-style-type: none">• 20 YEARS OF WATER QUALITY MONITORING IN FAIRFAX COUNTY (VA) - Chris Ruck (Fairfax County, VA)• EVIDENCE OF NITRATE UPTAKE IN STEP POOL STORMWATER CONVEYANCES IN AN URBAN WATERSHED - Thomas E. Jordan (Smithsonian Environmental Research Center)• EFFECT OF LEGACY SEDIMENT REMOVAL AND FLOODPLAIN RECONNECTION ON RIPARIAN PLANT COMMUNITIES - Vanessa Beauchamp (Towson University)
ROOM A-300 – GROUNDWATER – Moderator, Mat Pajerowski (US Geological Survey)
<ul style="list-style-type: none">• CHANGES IN GROUNDWATER AND SURFACE WATER IN THE MARYLAND PIEDMONT AS A RESULT OF ROAD-DEICING SALT APPLICATION - Tiffany VanDerwerker (Maryland Geological Survey)• WHY DOES MARYLAND NEED A REGIONAL GROUNDWATER MODEL? - Emelia Furlong (Maryland Geological Survey)• HYDROLOGIC STUDY AT FARM CREEK MARSH, DORCHESTER COUNTY, MARYLAND FROM APRIL 2015 TO APRIL 2016 - Christopher Nealen (US Geological Survey)
ROOM A-111/113 – POLLUTION DETECTIVES: BACTERIA MONITORING AND TRACKING – Megan Brosh (Balto. Co.)
<ul style="list-style-type: none">• CHASING COMPLIANCE: BALTIMORE'S USE OF IDDE METHODS FOR BACTERIA TMDL COMPLIANCE – Kim Grove (Baltimore City)• DNA-BASED MICROBIAL SOURCE TRACKING AS A TOOL TO IDENTIFY THE SOURCE OF FECAL CONTAMINATION - Wolf T. Pecher (University of Baltimore)• WHATS IN THE WATER: CITIZEN SCIENCE WATER MONITORING IN DC - Robbie O'Donnell (Anacostia Riverkeeper)
ROOM A-307 – BE PART OF THE SOLUTION: LITTER OUTREACH AND EDUCATION – Drew Budelis (Versar)
<ul style="list-style-type: none">• LITTER REDUCTION IN PRINCE GEORGE'S COUNTY - Tiaa Rutherford (Prince George's County)• ADDRESSING AND PREVENTING LITTER IN MARYLAND - Shane Robinson (Trash Free Maryland)
CLASSROOM 1 – IT'S ALL ABOUT THE MODELS – Brian Smith (MD DNR)
<ul style="list-style-type: none">• USING DATA SCIENCE TECHNIQUES TO MODEL WATER QUALITY PARAMETERS IN THE CHESAPEAKE BAY AND ITS TRIBLETS - Andrew C. Muller (United States Naval Academy)• USE OF LONG-RANGE, LOW-POWER NETWORKING TO ENHANCE WATER-QUALITY AND QUANTITY MONITORING AND MODELING - Joseph Bell (US Geological Survey)• REVISITING CHESAPEAKE BAY RESOURCE LIMITATION: A RE-ANALYSIS OF BIOASSAY AND TIDAL MONITORING DATA AND IMPLICATIONS FOR WATER-QUALITY MANAGEMENT - Qian Zhang (US EPA)
CLASSROOM 2 - AQUATIC INVASIVE SPECIES: THEN AND NOW – Moderator, Julie Bortz (MD DNR)
<ul style="list-style-type: none">• DEEP CREEK LAKE: A CASE STUDY IN AQUATIC INVASIVE SPECIES CONTROL, EDUCATION, PREVENTION AND MONITORING - Julie Bortz and Seth Metheny (MD DNR)• WHAT'S NEXT FOR AIS? PANEL DISCUSSION AND RECOMMENDATIONS MOVING FORWARD TO CONTROL AQUATIC INVASIVES
CLASSROOM 3 – IN PRAISE OF THE HUMBLE OYSTER AND ITS HABITAT – Byron Madigan (Carroll Co.)
<ul style="list-style-type: none">• LINKING ECOLOGICAL AND ECONOMIC MODELS TO ESTIMATE REGIONAL ECONOMIC IMPACTS OF OYSTER REEF RESTORATION – Scott Knoche (Morgan State University)• FOUL PLAY: LONG TERM DATA TRENDS IN THE EPIBENTHIC COMMUNITY OF MARYLAND OYSTER BARS - Margaret McGinty (MD DNR)
BRIDGE ROOM – UNDERSTANDING AND VISUALIZING BIG DATA – Diana Muller (Maritimas)
<ul style="list-style-type: none">• STREAMLINE THE LIFECYCLE OF YOUR DATA - R. John Dawes, Jr. (The Commons)• GEMSTAT: A UNIFIED GLOBAL WATER QUALITY PORTAL - Steve Elgie (KISTERS North America)

4:30 Adjourn

5:00 – 9:00 Social – Checkerspot Brewing Company



Poster Presentations (In Order of Primary Author's Last Name)

(Student Poster) DO DIFFERENT EXPOSURE PATTERNS OF MARCELLUS SHALE PETROLEUM PRODUCTION WATER EXERT STRESS ON A COMMON NORTH AMERICAN AMPHIBIAN (LITHOBATES CLAMITANS) - Carlos Barragan, Frank Green and Christopher J. Salice (Towson University) and Paula F.P. Henry (USGS)

THE TWELFTH ANNUAL MARYLAND STREAMS ROUNDTABLE - Andy Becker (KCI Technologies) and Dan Boward (MD DNR)

URBAN STREAM RESTORATION: CONVEYANCE AND MATERIAL PROCESSING CHANNELS – Maddie Berg (Stantec)

CLIMATE CHANGE: PLANNING FOR COASTAL RESILIENCY IN THE NORTHERN CHESAPEAKE BAY - Sanita Corum, Alyssa Calomeni, Mark Dhruv, Christopher Overcash, and Eric Yan (EA Engineering)

NITROGEN AND PHOSPHORUS CONTENT IN SHELLS AND TISSUE OF A WIDESPREAD FRESHWATER MUSSEL, EASTERN ELLIPTIO - Megan Davis (University of Alabama) and Matthew Ashton (Maryland Department of Natural Resources)

MICROBIAL SOURCE TRACKING IN MONTGOMERY AND PRINCE GEORGE'S COUNTIES - Michael Durbano Kandice Sermon, and Michael W. Powell, (EA Engineering), Martin Chandler (WSSC Water), and Rachel Noble and Matthew Price (UNC)

SAMPLING CYANOBACTERIA AT A D.C. LAKE - Catherine Gaudlip and Nathan Purser (Hood College Center for Coastal and Watershed Studies)

(Student Poster) EFFECTS OF PRODUCED WATER FROM HYDRAULIC FRACTURING ON METABOLIC RATE OF LITHOBATES CLAMITANS - Matt Godbey, Paulo Ribeiro, Carlos Barragan, Frank Green, and Andrew East (Towson University), Paula Henry (USGS), and Christopher J. Salice, (Towson University)

(Student Poster) THE EFFECT OF WHITE-TAILED DEER ON THE GWYNNNS FALLS WATERSHED: IMPLICATIONS FOR WATER QUALITY - Kristen Gossage and Joseph Matanoski (Stevenson University)

USING STREAM INVERTEBRATES TO ASSESS THE MERCURY CONDITION OF MARYLAND STREAMS - Andrew Heyes, Jacob Oster and Laura Lapham (University of Maryland Center for Environmental Science), William Lamp (University of Maryland College Park), and Cynthia Gilmour (Smithsonian Environmental Research Center)

(Student Poster) STRESSED TO DEATH? MULTIPLE STRESSORS AND THE EFFECTS ON DAPHNIA MAGNA SURVIVAL, REPRODUCTION, GROWTH, AND BIOENERGETICS - Amanda M. Isabella, Andrew East, and Christopher J. Salice (Towson University)

RESTORATION MONITORING IN WHEEL CREEK WATERSHED - Thomas Jones, Beth Franks, Ryan Corbin, and Brent Hood (Versar)

STATE LAKES PROTECTION AND RESTORATION FUND - Yishen Li, Mike Naylor, Mark Lewandowski, and Cathy Wazniak, (MD DNR)

(Student Poster) USING HIGH-FREQUENCY DATA AND CONCENTRATION-DISCHARGE RELATIONSHIPS TO DESCRIBE SOLUTE MOBILIZATION AND TRANSPORT IN SUBURBAN AND URBAN WATERSHEDS - Melinda Marsh and Joel Moore (Towson University)

MOLECULAR CHARACTERIZATION OF LANDFILL LEACHATES - Katherine Martin (University of Maryland Center for Environmental Science), Nicole Robey, William Cooper and Timothy Townsend (University of Florida), Philippe Schmitt-Kopplin (Helmholtz Zentrum München) and Michael Gonsior (University of Maryland Center for Environmental Science)

IRON PRESENCE IN STREAM RESTORATION PROJECTS AND POTENTIAL IMPACTS TO THE AQUATIC BIOLOGICAL COMMUNITY - Martha McCauley (EA Engineering), Christopher J. Salice (Towson University), and Jamie Suski (EA Engineering)

EXAMINING CONNECTIONS BETWEEN ROAD SALT APPLICATION AND STREAM HEALTH IN BALTIMORE COUNTY STREAMS - Lauren McDonald and Dillon Mahmoudi (UMBC) and Ginny Rogers (Versar)

EXPORT OF NITROGEN AND SEDIMENT FOLLOWING LEGACY SEDIMENT REMOVAL AND FLOODPLAIN RECONNECTION RESTORATION PROJECTS - Patrick W. McMahon, Vanessa B. Beauchamp, Ryan E. Casey, Christopher J. Salice, and Joel Moore (Towson University)

THE EFFECT OF WETLAND RETROFIT PROJECTS ON PHOSPHATE LEVELS IN THE ESTUARINE AND COASTAL WATERS OF HAMPTON, VIRGINIA - Zachary Messegee (Hampton University)

THE ROLE OF PLACE ATTACHMENT IN VOLUNTEER MONITORING: A TRANSNATIONAL PILOT STUDY OF ENGAGING AND RETAINING VOLUNTEERS - Rachel Pierson (University of Vermont)

(Student Poster) EFFECT OF URBAN SEDIMENTATION ON EASTERN BLACKNOSE DACE ESCAPE PERFORMANCE - Olivia Saliger, Cassidy Hartke, Dr. Jay Nelson, and Dr. Christopher Oufiero (Towson University)

STREAM RESTORATION EFFECT ON WATER QUALITY IN STREAMS OF THE LOWER SUSQUEHANNA SUBBASIN - Rachel Smolinski, Jennifer Sliko, Shirley Clark, Elizabeth Bell, and Alan Strayer, (Penn State University)

COLLABORATIVE DEVELOPMENT OF A VOLUNTEER MONITORING PROGRAM FOR CHESAPEAKE BAY SUBMERGED AQUATIC VEGETATION - Suzi Spitzer (University of Maryland Center for Environmental Science), Brooke Landry (MD DNR), Sky Swanson, Katie May Laumann, and Bill Dennison (University of Maryland Center for Environmental Science)

COPING COMMUNITY RAISES RESILIENCY: THE DEAL ISLAND SHORELINE PROJECT - Rebecca Swerida and Nicole Carlozo (Maryland Department of Natural Resources)

ASSESSING CONDITION AND VULNERABILITY OF HEALTHY WATERSHEDS IN THE CHESAPEAKE BAY REGION - Renee Thompson (USGS - Chesapeake Bay Program) and Nancy Roth (Tetra Tech)

ASSESSING HARMFUL ALGAL BLOOMS IN STATE OWNED LAKES - Cathy Wazniak (MD DNR)

MONITORING SUBMERGED AQUATIC VEGETATION IN THE CHESAPEAKE BAY - Briana Yancy and Brooke Landry (MD DNR)