



FINAL PROGRAM

SATURDAY, MARCH 7, 2020

- 9:00 AM – 10:00 AM** Registration/Check-In for Virginia Dam Owner Training Seminar
10:00 AM – 4:00 PM Virginia Dam Owner Training Seminar (2nd Floor Parlor C/D)

SUNDAY, MARCH 8, 2020

- 1:00 – 3:00 PM** Dam Engineer’s Forum (1st Floor Bon Air Suite)
1:30 – 5:00 PM Exhibitors’ Display Set Up (Exhibitors’ Area)
2:00 – 5:00 PM Registration (Conference Reception Desk)
4:00 – 5:00 PM Meeting of VLWA Board of Directors (2nd Floor York Room)
5:30 – 7:00 PM Exhibitor and Early Registrants’ Reception (James River Ballroom, Parlor H)

MONDAY MORNING, MARCH 9, 2020

- 7:00 – 8:00 AM** Registration and Check-In (Conference Reception Desk)
7:30 AM Coffee and Pastries
7:45 – 9:00 AM Welcome to the Conference, Stuart Stein, Conference Chair

Keynote Address – Validating Operational Flood Forecast Models Using Citizen Science, Dr. J. Derek Loftis, Assistant Research Scientist, Center for Coastal Resources Management and the Virginia Commonwealth Center for Recurrent Flooding Resiliency at the Virginia Institute of Marine Science (VIMS)

Track A–Parlor A Track B–Parlor B Track C–Parlor F Track D–Parlor G Track E–Parlor E

9:15 – 10:30 AM First Concurrent Sessions

Session 1A • Stormwater 1 • Moderator – Seth P. Brown, PE, Storm and Stream Solutions, LLC

- (1) Using Shoreline Stabilization for VDOT’s Chesapeake Bay TMDL Requirements**, Andrew Tiefenback, EIT, Stantec; Tracey Harmon, Virginia Department of Transportation; Daniel Proctor, PE, Stantec; Ashley Hall, PE, Stantec
- (2) Evolving Ecosystems Science with Regulation**, Ben Snyder, PE, WPIT, Timmons Group
- (3) Addressing Deficiencies in Virginia Department of Environmental Quality’s Guidance for Evaluating Manufactured Treatment Devices and Proposing Programmatic Improvements**, Jacob Dorman, AICP, Contech® Engineered Solutions, LLC
- (4) The Value and Status of a National Testing Program for Stormwater Products and Practices**, Seth P. Brown, PE, Storm and Stream Solutions, LLC; Corey Simonpietri, ACF Environmental

Session 1B • Lake Management • Moderator – Sen Bai, Ph.D., PE, Tetra Tech, Inc.

- (1) Considerations When Planning a Dredging Project**, Brice Kutch, PE, GKY & Associates, Inc.
- (2) Shallow Stormwater Lakes in Fairfax County, VA**, Samantha Duthe, Fairfax County Watershed Assessment Branch; Jonathan Witt, Fairfax County Watershed Assessment Branch; Christopher Ruck, Fairfax County Watershed Assessment Branch; Joseph Sanchirico, Fairfax County Watershed Assessment Branch
- (3) Achieving Lake Replenishment and Irrigation Needs Through Drainage Improvements in an Urban Setting**, Julie Hicks, PE, HDR, Inc.; Zac Stacey, HDR, Inc.; Frank Brown, III, City of Portsmouth; James Wright, Jr., PE, City of Portsmouth
- (4) A Pilot Feasibility Study of Applying Real Time Control for a Stormwater Wet Pond**, Sen Bai, Ph.D., PE, Tetra Tech, Inc.; Tan Zi, Ph.D., PE, PH, Tetra Tech, Inc.; Diana Tao, Tetra Tech, Inc.; Khizar Mahmood, P.Eng, City of Calgary; Lei Chen, Ph.D., P. Eng, City of Calgary; Stacey Zhao, P.Eng, City of Calgary

Session 1C • Dam Safety 1 • Moderator – Charles T. Wilson, PE, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

- (1) **12 Lessons Learned from 12 Years of Rehabilitating Small Urban Embankment Dams**, Jeff Blass, PE, AECOM
- (2) **Post-Hurricane Repair of Mirror Lake Dam: Planning, Design and Construction to Mitigate Future Failure**, John H. Larch, III, MPA, PE, City of Fayetteville, North Carolina; Maridee Romero-Graves, PE, Schnabel Engineering
- (3) **An Overview of the Fairfax County Flood Warning System: A Critical Tool for Emergency Preparedness and Effective Operation and Maintenance**, Aaron George, PE, CFM, Fairfax County Department of Public Works and Environmental Services, Maintenance and Stormwater Management Division; Alex Shahvari, Ph.D., PE, Fairfax County Department of Public Works and Environmental Services, Maintenance and Stormwater Management Division; Steve Hamrick, Fairfax County Department of Public Works and Environmental Services, Maintenance and Stormwater Management Division
- (4) **Dam Safety Emergency Action Plans of the Future! (GIS and Modeling and Remote Monitoring, Oh My!)**, Charles T. Wilson, PE, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

Session 1D • Resiliency, Modeling, and Flooding 1 • Moderator – Federico Antolini, University of Iowa

- (1) **Managing Climate Change Risk – The Resilient Way**, Uday Khambhammettu, PE, Kimley-Horn and Associates, Inc.; Stephen Thun, PE, Kimley-Horn and Associates, Inc.
- (2) **Empowering Local Officials to Talk Flood Risk**, Mari Radford, FEMA Region 3; Necolle Maccherone, CFM, Resilience Action Partners; Peter Herrick, Jr., Federal Emergency Management Agency
- (3) **Ashville Park Drainage Improvements Phase I**, Bradley (Brad) W. Vanderwarker, PE, City of Virginia Beach; Jim Novak, PE, ENV SP, WSP
- (4) **Location Matters: A Framework to Guide the Siting of Distributed Reservoirs for Flood Mitigation**, Federico Antolini, University of Iowa

Session 1E • Floodplain Management 1 • Moderator – Donald Demetrius, Ph.D., PE, CFM, Atkins

- (1) **Mapping National Water Model (NWM) Forecasts with FEMA HEC-RAS Models – A Pilot Application in the Whitemarsh Run Watershed, Maryland**, Jennifer McGee, PE, CFM, Wood PLC
- (2) **Regional River Severe Storm Model (R²S²) Map-to-Map Flood Prediction Model**, Gamal Hassan, PE, HWR - Water Resource Consultants
- (3) **A Probabilistic Framework for Modeling Flood Risk Using Monte Carlo Simulation and a Novel Convolution Reduction Algorithm**, Shane M Putnam, Ph.D., Dewberry
- (4) **Flood Hazard Mapping Behind Levees – An Overview**, M. Tariq Makhdoom, Ph.D., CFM, Atkins (SNC-Lavalin)

10:30 – 10:45 AM Coffee Break

10:45 AM – 12:00 PM Second Concurrent Sessions

Session 2A • Stormwater 2 • Moderator – Mike Barbachem, PE, Whitman Requardt and Associates

- (1) **What to Expect During an MS4 Audit**, Maxwell Kuker, GKY & Associates, Inc.
- (2) **Designing Bioretention for a 13-Acre Watershed**, Don Rissmeyer, PE, CFM, A. Morton Thomas and Associates, Inc.
- (3) **The Nuances of Implementing an Effective Floatable Waste Reduction Program**, Benjamin A. Lawson, Kimley-Horn; Uday Khambhammettu, PE, Kimley-Horn
- (4) **Street Sweeping Pollutant Removal: Dispelling Myths**, Mike Barbachem, PE, Whitman Requardt and Associates; Casey Magruder, City of Norfolk, Department of Public Works

Session 2B • Reservoir Water Quality • Moderator – Heather L. Wander, Virginia Tech

(1) **Drivers of Dissolved Organic Matter Vary Across Multiple Time Scales in a Drinking Water Reservoir**, Dexter W. Howard, Virginia Tech; Mary E. Lofton, Virginia Tech; Alexandria G. Hounshell, Virginia Tech; Ryan P. McClure, Virginia Tech; Whitney M. Woelmer, Virginia Tech; Cayelan C. Carey, Virginia Tech

(2) **Indirect Potable Reuse Impact on Water Quality at Water Treatment Plant Intakes**, Amelia L. Flanery, Virginia Tech; Adil N. Godrej, Ph.D., PE, OWML, Virginia Tech; Erik J. Rosenfeldt, Ph.D., PE, Hazen and Sawyer

(3) **Translating Forecasts of Algal Blooms into Decision Support Tools for Drinking Water Management**, Whitney M. Woelmer, Virginia Tech; Mary E. Lofton, Virginia Tech; Ryan P. McClure, Virginia Tech; Bethany J. Bookout, Virginia Tech; R. Quinn Thomas, Ph.D., Virginia Tech, Cayelan C. Carey, Ph.D., Virginia Tech

(4) **Zooplankton Migration as a Water Quality Indicator: Examining the Prevalence of Vertical vs. Horizontal Migration in Anoxic Reservoirs**, Heather L. Wander, Virginia Tech; Jonathan P. Doubek, Ph.D., Lake Superior State University; Cayelan C. Carey, Ph.D., Virginia Tech

Session 2C • Dam Safety 2 • Moderator – Thomas I. Roberts, PE, CFM, H2R Engineering Inc.

(1) **WinDAM: Practical Applications of NRCS's Other Dam Modeling Software**, Tony Grubbs, PE, Freese and Nichols, Inc.; Kyle Jacobs, EI, Freese and Nichols, Inc.

(2) **Consulting – From a Dam Inspection to Comprehensive Services**, Chris Kuhn, Stantec Consulting Services, Inc.; Leah O'Neil, Newport News Waterworks

(3) **Rehabilitating a Major Water Supply Dam in a Suburban Setting – The Beaverdam Creek Dam Rehabilitation Project**, Eric E. Fromherz, PE, Gannett Fleming, Inc.; Alton C. Echols, PE, Loudoun Water

(4) **Dam Inspection – Why, How, and What Needs to be Inspected on Dams**, Thomas I. Roberts, PE, CFM, H2R Engineering Inc.

Session 2D • Resiliency, Modeling, and Flooding 2 • Moderator – Arash J. Barsari, PE, PMP, CFM, Leonard Jackson Associates

(1) **Innovative Approaches to Enhance Flood Mitigation and Stormwater Management – Case Study, Roanoke, VA**, David R. Cooper, CFM, City of Roanoke Stormwater Division; Neal Banerjee, PE, CFM, ESP Associates, Inc.; Marcus Aguilar, Ph.D., EIT, City of Roanoke

(2) **Urban Flooding, Resilience, and the Impact on Municipal Stormwater Programming in Virginia**, Douglas H. Moseley, III, AICP CFM, GKY & Associates, Inc.

(3) **Flood Prevention Using Automated Controls for Weir Gate and Pumping**, Jonas Alered, City of Virginia Beach, Public Works Operations, VA; Scott Morrow, PE, Hazen and Sawyer, P.C.

(4) **NFIP Encroachment Review: Modeling Approaches to Evaluate Encroachment Impact on Base Flood Elevations**, Arash J. Barsari, PE, PMP, CFM, Leonard Jackson Associates

Session 2E • Floodplain Management 2 • Moderator – Gamal Hassan, PE, HWR – Water Resource Consultants

(1) **Stormwater Management in Fairfax County – A Brief History and Future Challenges**, Matthew J. Meyers, PE, Fairfax County Department of Public Works; Dipmani Kumar, Ph.D., PE, CFM, Fairfax County Department of Public Works; Donald R. Demetrius, Ph.D., PE, CFM, Atkins

(2) **Complex Adaptive System Approach for Upscaling the Deploying of Smart Water System**, Yosif A. Ibrahim, Ph.D., PE, MASCE, Fairfax County

(3) **Analysis of Short Duration Rainfall Events in Fairfax County**, Donald R. Demetrius, Ph.D., PE, CFM, Atkins; Yosif A. Ibrahim, Ph.D., PE, MASCE, Fairfax County; Camylyn Lewis, PE, CFM, Fairfax County

(4) **Stormwater Improvement Projects to Address Infill Development – Lessons Learned from a Pilot Project and Future Opportunities**, Sajan Pokharel, PE, Fairfax County; Matthew J. Meyers, PE, Fairfax County; Dipmani Kumar, Ph.D., PE, CFM, Fairfax County

12:15 – 1:15 PM Luncheon

Martin J. Firth – Lake Management Award

Shallow Stormwater Lakes in Fairfax County, VA, Samantha Duthe, Fairfax County Watershed Assessment Branch; Jonathan Witt, Fairfax County Watershed Assessment Branch; Christopher Ruck, Fairfax County Watershed Assessment Branch; Joseph Sanchirico, Fairfax County Watershed Assessment Branch

Honorable Mention

The Nuances of Implementing an Effective Floatable Waste Reduction Program, by Benjamin A. Lawson, Kimley-Horn; Uday Khambhammettu, PE, Kimley-Horn

Keynote Address – Coastal Adaptation and Protection in Virginia – Building a Master Plan, RADM US Navy (Ret.) Ann C. Phillips, Special Assistant to the Governor for Coastal Adaptation and Protection, Office of the Governor

MONDAY AFTERNOON, MARCH 9, 2020

1:30 – 2:45 PM Third Concurrent Sessions

Session 3A • Stormwater 3 • Moderator – Neil Breton, Atkins

- (1) **Selecting and Implementing VDOT BMP Retrofits for Chesapeake Bay TMDL Purposes**, Daniel Reese, PE, Stantec; Megan McCollough, PE, Stantec; Joseph Parfitt, Virginia Department of Transportation; Tracey Harmon, Virginia Department of Transportation; Ashley Hall, PE, Stantec
- (2) **Optimizing Performance of Water Quality Structure Retrofits**, Howard Lusk, PE, LEED AP, ENV SP, Jacobs
- (3) **A Ten-Year, Post-Construction, Permittee Responsible Mitigation Site Case Study at the VDOC River North Correctional Facility, Grayson County, VA**, Robert A. S. Wright, PWS, PWD, CNRP, EEE Consulting, Inc.; Meghan Mayfield, Virginia Department of Corrections
- (4) **Tackling Diffuse Pollution Through the Use of Sustainable Drainage Systems**, Neil Breton, Atkins; Zorica Todorovic, Ph.D., Atkins; Jeffrey Wright, PE, PH, Atkins; Presented by Turgay Dabak, Atkins

Session 3B • Water Quality Modeling • Moderator – David Weyant, Old Dominion University

- (1) **Oxygen Demand can be Predicted by Hypolimnetic Oxygenation Rates and Temperature**, Abigail S. L. Lewis, Virginia Tech; Paul C. Hanson, Ph.D., UW Madison Center for Limnology; Cayelan C. Carey, Ph.D., Virginia Tech
- (2) **Phosphorous Removal Efficiencies in Infiltration Trench, Bioretention Basin, Wet Pond, and Jellyfish Filter: A Comparative Study**, Ali Baraki, Old Dominion University; Kirschten Roberts, Old Dominion University; Jaewan Yoon, Ph.D., Old Dominion University
- (3) **Wastewater Treatment Plant Discharge Impacts on Estuarine Water Quality: A Control Volume Modeling Study on the Urbanna Creek, Urbanna, Virginia**, Kester McCullough, Old Dominion University; Matt Poe, Old Dominion University; Kerreen Hart, Old Dominion University; Jaewan Yoon, Ph.D., Old Dominion University
- (4) **Radium Released from Fly-Ash Spill into the Chickahominy River: Water Quality Impact Analysis**, David Weyant, Old Dominion University; Mark Titcomb, Old Dominion University; Jaewan Yoon, Ph.D., Old Dominion University

Session 3C • Dam Safety 3 • Moderator – Kathy Hoverman, PE, KCI Technologies, Inc.

- (1) **Hydraulic Jump Stability of Articulating Concrete Block Systems**, Christopher I. Thornton, Ph.D., PE, Colorado State University; Jim Nadeau, ACF Environmental
- (2) **Greenbrier State Park Dam – Not Your Average Walk in the Park**, G. Michael McIntyre, PE, AECOM; Wesley Hollenbach, PE, CFM, AECOM
- (3) **Reedy Mill BMP Dam Rehabilitation**, Jerry Duffy, Chesterfield County, VA; Jeffery G. Powers, PE, Hazen and Sawyer, P.C.; Glenn Rogers, PE, Hazen and Sawyer, P.C.; John P. Derby, CCM, Hazen and Sawyer, P.C.
- (4) **The Removal of Bloede Dam, Patapsco River, Ellicott City, MD**, Kathy Hoverman, PE, KCI Technologies, Inc.

Session 3D • Resiliency, Modeling, and Flooding 3 • Moderator – Siva Sangameswaran, Ph.D., PE, D.WRE, CFM, Dewberry

- Panel Discussion: An Integrated Response Strategy for Sea Level Rise and Recurrent Flooding in Virginia Beach, VA**, Sue Kriebel, PE, City of Virginia Beach; Jessica Fleck, Dewberry; Johanna Greenspan-Johnston, Dewberry; Toni Utterback, PE, City of Virginia Beach; Brian Batten, Dewberry; Alaurah Moss, Dewberry; Amanda Medley, City of Virginia Beach; Xiaohai Liu, Ph.D., PE, Dewberry; Siva Sangameswaran, Ph.D., PE, D.WRE, CFM, Dewberry; Tarig Omer, PE, City of Virginia Beach
- (1) **Integrated Strategy Framework for Sea Level Rise Adaptation in Virginia Beach, VA**, Sue Kriebel, PE, City of Virginia Beach; Jessica Fleck, Dewberry; Johanna Greenspan-Johnston, Dewberry
 - (2) **Implementation, Lessons-Learned and Next Steps for Sea Level Rise Adaptation in Virginia Beach, VA**, Toni Utterback, PE, City of Virginia Beach; Brian Batten, Dewberry
 - (3) **Engineering with Nature for Flood Risk Reduction in Virginia Beach**, Alaurah Moss, Dewberry; Amanda Medley, City of Virginia Beach; Xiaohai Liu, Ph.D., PE, Dewberry
 - (4) **Modeling Current and Future Flood Risk in the Southern Rivers Watershed of the City of Virginia Beach**, Siva Sangameswaran, Ph.D., PE, D.WRE, CFM, Dewberry; Tarig Omer, PE, City of Virginia Beach

Session 3E • Floodplain Management 3 • Moderator – Dipmani Kumar, Ph.D., PE, CFM, Fairfax County

- (1) **Pulaski, Virginia – Nonstructural Flood Risk Management Assessment – A Virginia Silver Jackets Interagency Project**, Stephen D. O’Leary, AIA, U.S. Army Corps of Engineers, Huntington District; Michelle M. Brown, U.S. Army Corps of Engineers, Huntington District
- (2) **Flood Risk Reduction Funding Opportunities**, Robbie Coates, Virginia Department of Emergency Management; Debbie Messmer, CFM, Virginia Department of Emergency Management
- (3) **National Weather Service (NWS) Role in Dam Emergencies**, Peter Corrigan, NOAA/NWS
- (4) **USACE Programs and Studies**, Michelle L. Hamor, CFM, U.S. Army Corps of Engineers, Norfolk District

2:45 – 3:15 PM Coffee Break

3:15 – 4:30 PM Fourth Concurrent Sessions

Session 4A • Stormwater 4 • Moderator – Nikki M. Comber, PE, AECOM

- (1) **Retrofit Projects in Residential Communities: Channeling the Softer Skills of Stormwater Management**, Chris Stone, PG, CFM, Loudoun County Department of General Services; Michele Seib, PE, Loudoun County Department of General Services
- (2) **Art and Awareness: Bedazzling Stormwater Management**, Amity B. Dewey, PE, WSP; Whitney Thomas, PE, ENV SP, CFM, WSP
- (3) **The Good, Bad, and Say What? Of Stormwater and Erosion & Sediment Control Site Plan Reviews**, David Duncan, PE, Timmons Group
- (4) **Coordinating Efforts to Collect Stormwater Management Facilities Data with New As-Built Charts**, Nikki M. Comber, PE, AECOM

Session 4B • Ecosystem Restoration • Moderator – Travis Crayosky, Stantec Consulting Services Inc.

- (1) **From Plans to Planting: Stream Restoration Design & Construction Considerations**, Alex C. Lucado, PE, CFM, Timmons Group; Jonathan T. Spangler, PE, Timmons Group
- (2) **Don't Go Chasing Outfalls – Navigating the Challenges of Coordinating Outfall and Stream Restoration**, Katie E. Atkinson, EIT, Timmons Group
- (3) **Urban Stream Restoration – Lessons Learned**, Joe Howard, CCM, A. Morton Thomas and Associates, Inc.
- (4) **Watershed-Based Restoration – Water Quality Monitoring Practices and Results**, Travis Crayosky, Stantec Consulting Services Inc.; Barry Moses, PE, James City County

Session 4C • Floodplain Programming • Moderator – Ginny Snead, PE, CFM, A. Morton Thomas and Associates

- (1) **The National Flood Insurance Program Update**, Richard J. Sobota, CPCU, FEMA
- (2) **Risk Rating 2.0: Progress to Date and Next Steps**, Tony Hake, Federal Emergency Management Agency – Federal Insurance Directorate
- (3) **FIMAN-T: NCDOT's Management and Response to Flood Impacts**, Matthew Lauffer, PE, CFM, North Carolina Department of Transportation (NCDOT); Matthew Dudley, PE, CFM, ESP Associates, Inc.
- (4) **Navigating the CRS Entry Process**, Ginny Snead, PE, CFM, A. Morton Thomas and Associates

Session 4D • Resiliency, Modeling, and Flooding 4 • Moderator – John Paine, PE, PH, CFM, GKY & Associates, Inc.

- (1) **Public Meetings, Informal Presentations, and Civic League Meetings in a Tidewater Community: What Do You Want to Get Out of it and What is the Public's Expectation?** Michael W. Mundy, PE, City of Virginia Beach
- (2) **Action Today to Plan for Tomorrow: Revisions to Virginia Beach Public Works Standards to Account for Increased Precipitation and Rising Sea Levels**, Phil Pullen, PE, City of Virginia Beach Public Works; C. Gregory Johnson, PE, City of Virginia Beach Public Works Stormwater Engineering Center; Laurence Benson, PE, Kimley-Horn and Associates, Inc.; Samantha Illes, PE, Kimley-Horn and Associates, Inc.
- (3) **A "Stone Soup" Approach to Stormwater Master Plan Criteria**, C.J. Bodnar, PE, City of Virginia Beach Public Works Stormwater Engineering Center; Stephen Thun, PE, Kimley-Horn and Associates, Inc.; Uday Khambhammettu, PE, Kimley-Horn and Associates, Inc.
- (4) **Rain-On-Grid Modeling and the Insidious Nature of Assumptions**, John Paine, PE, PH, CFM, GKY & Associates, Inc.

Session 4E • Floodplain Management 4 • Moderator – Don Rissmeyer, A. Morton Thomas & Associates, Inc.

- (1) **Limit of Moderate Wave Action (LIMWA) Updates in VA and the Impact to Communities**, Haoyu Zhao, AECOM; Ben Kaiser, AECOM
- (2) **Recurrence Interval Estimation for Coastal Storm Surges in Virginia**, Kaveh Zomorodi, Ph.D., PE, CFM, Dewberry
- (3) **Serverless Interactive Web Maps for Rapid Validation of Probabilistic Flood Risk Assessment Data**, Jason Matney, Ph.D., Dewberry
- (4) **Cloud Computing Impacts on Flood Modeling**, Shane Parson, Ph.D., PE, CFM, AECOM

MONDAY EVENING, MARCH 9, 2020

4:45 – 6:00 PM Reception (James River Ballroom Parlor H)

6:00 – 6:30 PM Virginia Lakes and Watersheds Association Business Meeting, Parlor F

TUESDAY MORNING, MARCH 10, 2020

7:15 – 8:15 AM Virginia Floodplain Management Association Business Meeting, Parlor E

7:30 AM Coffee and Pastries

8:30 – 9:45 AM Fifth Concurrent Sessions

Session 5A • Green Infrastructure • Moderator – J. Douglas Fritz, CPESC, GKY & Associates, Inc.

- (1) **Greening Infrastructure Through Redevelopment**, Melanie Mason, City of Alexandria
- (2) **600 Canal Place: The Roof is the Place to be**, Greg Nelson, PE, LEED AP, Timmons Group; Jereck Boss, FASLA, OJB Landscape Architecture; Jason Tanton, AIA, Kendall/Heaton Associates, Inc.; Donna Kelliher, Dominion Energy, Inc.
- (3) **Observations from Constructing a Green Infrastructure Program**, Laura Bendernagel, PE, ENV SP, RK&K; Patrick DiNicola, REM, RK&K; Seth Charde, PLA, DC Water
- (4) **The History of Phosphorus as the Virginia Stormwater Design Target Pollutant**, J. Douglas Fritz, CPESC, GKY & Associates, Inc.

Session 5B • Regional and Agricultural Issues • Moderator – Ben Chester, PE, ENV SP, DCR Soil and Water Conservation

- (1) **Phase III of the Chesapeake Bay Watershed Implementation Plan – Agricultural Sector Goals and Actions**, Amanda Pennington, PE, Department of Conservation and Recreation
- (2) **Using CAST and GIS to Visualize Local and Regional Nutrient Load Reductions Through 2025**, Stephanie MacDurmon, Brown and Caldwell
- (3) **Re-Engineering a Livestock Watering System Due to Well Failures: A Challenge in Hydraulics to Protect Water Quality**, Raleigh Coleman, Department of Conservation and Recreation-Division of Soil and Water Conservation
- (4) **When Batman's Cave Collapses Where Does the Water Go? How a New Surface Stream is Formed**, Ben Chester, PE, ENV SP, DCR Soil and Water Conservation

Session 5C • Watershed Modeling • Moderator – Deva Borah, Ph.D., PE, City of Chesapeake

- (1) **Using Radar Rainfall Forecast Data with Near Real Time Modeling**, Steve Godfrey, PE, CFM, Woolpert, Inc.
- (2) **Making Rain When Sensors Fail – From Big Data to Your Local Watershed**, Carlos Toro-Escobar, PE, Brown and Caldwell; Matt Davis, Ph.D., PE, Brown and Caldwell
- (3) **Hydrologic Ensemble Forecast Service (HEFS) Products from the National Weather Service Middle Atlantic River Forecast Center**, Tyler J. Madsen, National Weather Service: Middle Atlantic River Forecast Center (NWS MARFC); Seann M. Reed, Ph.D., NWS MARFC; Robert C. Shedd, NWS MARFC
- (4) **Watershed Modeling for Effectively Managing Stormwater in the City of Chesapeake, Virginia**, Deva Borah, Ph.D., PE, City of Chesapeake; Sam Sawan, PE, City of Chesapeake

Session 5D • Resiliency, Modeling, and Flooding 5 • Moderator – Ian Kaliakin, PE, ENV SP, Kimley-Horn & Associates, Inc.

- (1) **As the Tide Turns**, Nicole Dane, PE, Michael Baker International; Michael S. Bumbaco, PE, City of Virginia Beach; R. Dennis Dunham, PE, Michael Baker International
- (2) **It's Different Down South: Challenges from the Southern Watershed in Virginia Beach**, Rachael D. Johnson, WSP; Shelby L. Cameron, WSP
- (3) **Potential Climate Change Impact and Recommendations for Bridges and Culvert Design in Virginia**, Mohamed M. Morsy, Ph.D., Dewberry Engineers Inc.; Yawen Shen, University of Virginia; Jeffrey M. Sadler, Ph.D., USGS; Alexander B. Chen, University of Virginia; Faria T. Zahura, University of Virginia; Jonathan L. Goodall, Ph.D., PE, University of Virginia
- (4) **Weatherproofing Solar Power Infrastructure – Risk Management in the Face of Climate Change**, Ian Kaliakin, PE, ENV SP, Kimley-Horn & Associates, Inc.; Samantha Illes, Kimley-Horn & Associates, Inc.

Session 5E • Floodplain Management 5 • Moderator – Kevin Utt, VFMA President

- (1) **Simplifying FMA Projects by Removing the Locality from the Contracts**, Kim Tempesco, MS, CFM, City of Virginia Beach
- (2) **Commonwealth Center for Recurrent Flooding Resiliency: 2020 Update and Project Highlights**, Emily E. Steinhilber, JD, Old Dominion University; Presented by Mark W. Luckenbach, Virginia Institute of Marine Science, College of William and Mary
- (3) **Addressing Stormwater Runoff, Flooding, and Water Quality in the Chesapeake Bay**, Denise Nelson, PE, CFM, ENV SP, The Berkley Group
- (4) **Rappahannock River Basin Commission**, Eldon James, Rappahannock River Basin Commission

9:45 – 10:15 AM Coffee Break

10:15 – 11:30 AM Sixth Concurrent Sessions

Session 6A • Stormwater Data Collection and Management • Moderator – Zhongyan Xu, PE, PhD, CFM, George Mason University

- (1) **Drone Usage: Flying Skies for Grounded Decisions**, Michael Sabon, EIT, AECOM; Kerstin Guillen Geba, PE, AECOM; Deva Borah, Ph.D., PE, F.ASCE, City of Chesapeake
- (2) **Leveraging ARCGIS Online for Stormwater Inspections, Reporting, and Data Management**, Ingrid Mans, CFM, Montgomery County Department of Planning and GIS; John W. Burke, Montgomery County Department of Environmental Services
- (3) **ESRI Storymap Application used for MS4 Permit Requirements**, Kinsey Browning, Stantec; Ashley Hall, PE, Stantec; Michelle Fults, GISP, Virginia Department of Transportation
- (4) **Strategy to Maximize Campus Resources to Advance Stormwater Program**, Zhongyan Xu, PE, PhD, CFM, George Mason University; Brenda Claudio, CFM, George Mason University; Sarah D'Alexander, George Mason University

Session 6B • Stormwater and Water Quality • Moderator – Dongmei Alvi, Occoquan Watershed Monitoring Laboratory

- (1) **Updating Dry Weather Screening Methods to More Accurately Reflect Natural Conditions**, Hannah Somers, GKY & Associates, Inc.
- (2) **The Elusive Flow: Using a Targeted Approach with Rapid Field Assessments to Identify Unauthorized Flows**, Jim Milliken, PE, City of Virginia Beach; Lauren G. Moeller, City of Virginia Beach; Kyle Logue, PM, Brown and Caldwell; Kristina Kowalski, Brown and Caldwell
- (3) **All Bottled Up: Perceptions of Risk and Salience Influence Drinking Water Source Choice in Western Virginia Homes**, Madeline Grupper, Virginia Tech; Michael Sorice, Ph.D., Virginia Tech
- (4) **QS3D Digital PCR System for Microbial Source Tracking**, Dongmei Alvi, Occoquan Watershed Monitoring Laboratory; Seth Frantz, Occoquan Watershed Monitoring Laboratory; Adil N. Godrej, PhD, PE, Occoquan Watershed Monitoring Laboratory

Session 6C • Hydraulic Modeling • Moderator – Jay Gopal, PE, CDM Smith

- (1) **Not Your Run of the Mill Flood Study: FEMA Compliance Using SWMM in an Ultra Urban Setting**, Sheila S. Reeves, PE, CFM, Timmons Group
- (2) **Data Flooding: How the Integration of Data Visualization Tools can be an Ally in the Stormwater Modeling Process**, Giovana Batista, MS, Arcadis; J. Timothy Hare, PE, Arcadis; Daniel Scrutchfield, Arcadis
- (3) **Utilizing HEC-RAS 2D Unsteady Flow Modeling for Modeling Dam Failure Analyses in Virginia**, Iain Gordon, EIT, Timmons Group
- (4) **1D vs. 2D Analysis: Developing A Robust Modeling Approach for Critical Areas**, Jay Gopal, PE, CDM Smith; Mike Morgan, PE, CDM Smith; Marty Malone, PE, CDM Smith; Mike Bumbaco, PE, City of Virginia Beach

Session 6D • Resiliency, Modeling, and Flooding 6 • Moderator – Mark Sievers, Tetra Tech, Inc.

- (1) **Using SWMM to Inform Urban Drainage Improvement Projects**, Matthew Webb, PE, Timmons Group
- (2) **Mitigating Flooding from Urban Storm Sewer System Surcharges: A Case Study from the City of Alexandria**, Lilantha Tennekoon, PE, Michael Baker International, Inc.; Brian Rahal, PE, CFM, City of Alexandria
- (3) **Implementing a Resilient Structure to Protect Coastal and Historic Resources at Brunswick Town/Fort Anderson**, Phillip C. Todd, Atlantic Reefmaker
- (4) **Urban BMPs and Climate Change: Starting the Dialogue**, Mark Sievers, Tetra Tech, Inc.

Session 6E • Floodplain Management 6 • Moderator – Camylyn Lewis, PE, CFM, Fairfax County

Panel Discussion: Becoming Flood Resilient in Virginia

- (1) Joshua Saks, Commonwealth of Virginia, Office of the Secretary of Natural Resources
- (2) Curtis Brown, Virginia Department of Emergency Management
- (3) Mary-Carson Stiff, Wetlands Watch
- (4) Dipmani Kumar, Ph.D., PE, CFM, Fairfax County

11:45 – 1:00 PM Luncheon

VLWA Dam Safety Committee Announcement

Dave Pearson Watershed Excellence Award

Flood Prevention Using Automated Controls for Weir Gate and Pumping, by Jonas Alered, City of Virginia Beach, Public Works Operations; Scott Morrow, PE, Hazen and Sawyer, P.C.

Honorable Mentions

Regional River Severe Storm Model (R2S2) Map-to-Map Flood Prediction Model, by Gamal Hassan, PE, HWR - Water Resource Consultants

Stormwater Improvement Projects to Address Infill Development - Lessons Learned from a Pilot Project and Future Opportunities, by Sajan Pokharel, PE, Fairfax County; Matthew J. Meyers, PE, Fairfax County; Dipmani Kumar, Ph.D., PE, CFM, Fairfax County

Designing Bioretention for a 13-Acre Watershed, by Don Rissmeyer, PE, CFM, A. Morton Thomas and Associates, Inc.

As the Tide Turns, by Nicole Dane, PE, Michael Baker International; Michael S. Bumbaco, PE, City of Virginia Beach; R. Dennis Dunham, PE, Michael Baker International

Keynote Address – Initiatives to Reduce Flood Risk and Increase Resiliency in the Commonwealth of Virginia, Mr. Joshua Saks, Deputy Secretary of Natural Resources, Commonwealth of Virginia, Office of the Secretary of Natural Resources