

CHARLES B. BOTT, Ph.D., P.E., BCEE

DIRECTOR OF WATER TECHNOLOGY AND RESEARCH (CHIEF TECHNICAL OFFICER)

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Dr. Charles B. Bott joined HRSD in 2009 and is the Director of Water Technology and Research. He manages technology innovation and research and development for HRSD's sixteen wastewater treatment plants (249 MGD combined capacity). Dr. Bott is also an Adjunct Professor in the Departments of Civil and Environmental Engineering at Virginia Tech and Old Dominion University. He was formerly an Associate Professor in the Department of Civil and Environmental Engineering at the Virginia Military Institute (VMI) and a consulting engineer with Parsons Engineering Science. Dr. Bott has a BS in Civil Engineering from the Virginia Military Institute, a MS in Environmental Engineering from the Johns Hopkins University, and a Ph.D. in Civil and Environmental Engineering from Virginia Tech. He is a fellow of the Water Environment Federation (WEF) and a member of the Science and Technology Advisory Committee to the Chesapeake Bay Program Executive Council. Dr. Bott is a Professional Engineer in Virginia, a Board Certified Environmental Engineer, and a licensed Wastewater Treatment Plant Operator – Virginia Class I. He is a two time winner of the WEF Harrison Prescott Eddy Medal for outstanding contribution to wastewater principles/processes research, he was a previous member of the WEF Board of Trustees, and he is the current co-chair of The Water Research Foundation and WEF Leaders Innovation Forum for Technology (LIFT) program. Charles' technical interests include municipal and industrial wastewater treatment, as well as renewable energy generation. He has specific expertise in the areas of chemical and biological phosphorus removal, denitrification with alternative carbon sources, nitrification kinetics, nutrient recovery, deammonification/anammox, biological treatment process modeling and design, and biogas conditioning. Important areas of focus are mainstream shortcut nitrogen removal and technologies for potable reuse.

EDUCATION

- 1996 B.S. Civil Engineering with Minor in Math – Distinguished Graduate,
Virginia Military Institute, Lexington, Virginia.
- 1997 M.S.E. Environmental Engineering, Johns Hopkins University, Baltimore, Maryland.
- 2001 Ph.D. Civil and Environmental Engineering, Virginia Polytechnic Institute and State
University, Blacksburg, Virginia. Dissertation Title: *Elucidating the Role of Toxin-Induced Microbial Stress
Responses in Biological Wastewater Treatment Process Upset*

PROFESSIONAL EXPERIENCE AND REGISTRATION

- 2015 – present: Director of Water Technology and Research, Hampton Roads Sanitation District, Virginia
- 2009 – 2015: Chief of Special Projects (research & development), Hampton Roads Sanitation District, Virginia.
- 2007 – present: Adjunct Professor, Department of Civil and Environmental Engineering, Virginia Tech.
- 2009 – present: Adjunct Professor, Department of Civil and Environmental Engineering, Old Dominion University.
- 2007 – 2009: Associate Professor, Department of Civil and Environmental Engineering, Virginia Military Institute.
- 2007 – 2013: Principal, Green kW Energy, Inc. (renewable energy company focusing on landfill and digester biogas treatment and small (<4 MW) energy generation projects)
- 2003 – 2009: Independent Environmental Engineering Consultant for various utilities, industries and consulting firms.
- 2003 – 2007: Assistant Professor, Department of Civil and Environmental Engineering, Virginia Military Institute.
- 2001 – 2003: Environmental Engineer, Parsons Corporation, Fairfax, Virginia.
- 2001 – 2003: Adjunct Professor, Department of Civil and Environmental Engineering, Virginia Tech, Northern Virginia Graduate Center.
- 1997 – 2001: Research Assistant, Department of Civil and Environmental Engineering, Virginia Tech.
- 2000: Class Instructor, Department of Civil and Environmental Engineering, Virginia Tech.
- 1996 & 1997: Project Engineer, Combined Technologies, Inc., Richmond, Virginia (geotechnical and geoenvironmental engineering)

Professional Engineer, Virginia (Lic. No. 0402 039023)

Board Certified Environmental Engineer - AAEE (No. 07-10056)

Class I Wastewater Works Operator, Virginia (Lic. No. 1909 002174)

Class V Waterworks Operator, Virginia (Lic. No. 1955 007251)

HONORS AND NOTABLE RECOGNITIONS

- 2018: Academy of Distinguished Alumni, Virginia Tech, Charles E. Via, Jr. Via Department of Civil and Environmental Engineering
- 2016: Virginia Water Environment Association, Enslow-Hedgepeth Award
- 2016: Fellow of the Water Environment Federation
- 2015: Environmental Science and Technology Letters, Best of the Best Paper Award for Delgado Vela et al. 2015.
- 2015: Water Environment Federation Harrison Prescott Eddy Medal for outstanding contribution to wastewater principles/processes research for the publication:
Rieger, L., Jones, R.M., Dold, P.L., and Bott, C.B. 2014. Ammonia-based feedforward and feedback aeration control in activated sludge processes. *Water Environment Research*, 86(1), 63-73.
- 2014: IWA Global Project Innovation Awards, Applied Research Grand Honour Award for: "Unlocking the mysteries of mainstream deammonification – A paradigm shift for the wastewater industry," AECOM, DC Water, HSRD, PUB Singapore, STRASS, ARAConsult
- 2014: National Association of Clean Water Agencies (NACWA), Operations & Environmental Performance National Environmental Achievement Award for "HRSD Nutrient Removal Program: Advancement Through Management of Sidestream Loads Initiative"
- 2014: National Association of Clean Water Agencies (NACWA), Research & Technology National Environmental Achievement Award for the joint initiative with DC Water, "Mainstream Deammonification—A New "Blue Print" for Cost Effective, Sustainable Nutrient Removal"
- 2013: American Academy of Environmental Engineers & Scientists (AAEES) Honor Award in the Environmental Sustainability category for "HRSD York River Treatment Plant Demon Sidestream Deammonification Process Implementation"
- 2013: American Academy of Environmental Engineers & Scientists (AAEES) Grand Prize for Research in partnership with DC Water for "Unlocking the Mysteries of Mainstream Deammonification - A Paradigm Shift in the Wastewater Industry"
- 2010-present: Science and Technology Advisory Committee to the Chesapeake Bay Program Executive Council.
- 2009: Virginia Military Institute Wilbur S. Hinman, Jr. '26 Research Award for the Engineering Division with Mark W. Miller ('09/CE) for excellence in stimulating, encouraging, and conducting research
- 2008: Outstanding Young Water Environment Professional Award, Water Environment
- 2008: Young Professional Award, Virginia Water Environment Association
- 2008-2009: VMI Wachtmeister Faculty Development Leave for the academic year
- 2008: Outstanding Young Alumni Award, Virginia Tech, Charles E. Via, Jr. Department of Civil and Environmental Engineering
- 2007-2010: Appointed by the Governor of Virginia – State Representative on the Science and Technical Advisory Committee to the Chesapeake Bay Program Executive Council
- 2007-2010: Appointed by the Governor of Virginia – Virginia Board for Waterworks and Wastewater Works Operators
- 2007 & 2008: VMI Nominee and Finalist - Virginia Rising Star Outstanding Faculty Award
- 2006: Virginia Military Institute Corps of Cadets Mentor Award
- 2006: American Society for Engineering Education (ASEE) Southeastern Section Outstanding New Professor Award
- 2005: Virginia Military Institute Thomas Jefferson Teaching Award presented to a junior member of the faculty whose character and teaching reflect those qualities which are essential to the positive advancement of mankind
- 2005: Virginia Military Institute Wilbur S. Hinman, Jr. '26 Research Award for the Engineering Division with James O. Shambley ('05/CE) for excellence in stimulating, encouraging, and conducting research
- 2003: Water Environment Federation Harrison Prescott Eddy Medal for outstanding contribution to wastewater principles/processes research for the publication:
Bott, C.B. and Love, N.G. 2002. Investigating a Mechanistic Cause for Activated Sludge Deflocculation in Response to Shock Loads of Toxic Electrophilic Chemicals. *Water Environment Research*, 74(3), 306-315.
- 2002: 29th Annual AEESP (Association of Environmental Engineering and Science Professors) & Parsons Engineering Science, Inc. Doctoral Dissertation Award
- 2001: Parsons Excellence in Action Award, Avtex Fibers Superfund Site
- 2000-2001: Outstanding Graduate Student Award for the College of Engineering, Virginia Tech
- 1997-2001: Charles E. Via, Jr. Civil and Environmental Engineering Fellowship, Virginia Tech – Via Fellowship
- 1997-2001: Virginia Tech Cunningham Fellowship
- 1999: Waste Policy Institute Graduate Fellowship - Virginia Tech
- 1996: Member of Kappa Alpha Order, Beta Commission
- 1995: Member of Phi Kappa Phi
- 1995: Member of Tau Beta Pi

ASSOCIATION MEMBERSHIPS AND ACTIVITIES

- American Society of Civil Engineers
- American Society for Engineering Education
- Association of Environmental Engineering and Science Professors
- American Academy of Environmental Engineers (2007-Present)
 - Board Certified Environmental Engineer, Water Supply and Wastewater Specialty
- International Water Association
 - Secretary – Nutrient Removal and Recovery Specialty Group (2007 - 2010)
 - Associate Editor and Reviewer for *Water Science and Technology* (2008 – present)
- Water Environment Federation (WEF)
 - Water Environment Federation Board of Trustees, 2011-2015
 - Associate Editor, *Water Environment Research*, 2011-present
 - WEFTEC Program Committee Vice-Chair, 2015-present
 - Conference Co/Past Chair, WEF/IWA 2011 Specialty Conference, *Nutrient Recovery and Management*
 - Conference Chair, WEF 2009 Specialty Conference, *Nutrient Removal 2009: Sustainable Treatment Solutions*
 - WEFTEC Program Committee, Research Symposium, 2001- 2009
 - WEFTEC Program Committee, Chair, Research Symposium, 2009 - 2011
- Water Environment Research Foundation (now The Water Research Foundation)
 - WEF/WERF Leaders Innovation Forum for Technology (LIFT) Program, founding co-chair 2012-present, Chair 2014-2017
 - Co-Principal Investigator for the Nutrient Challenge Program to develop and apply statistical methods for reliability analysis of nutrient removal treatment processes for a workshop at WEFTEC 2008 – *Demonstrated Processes for Limit of Technology Nutrient Removal: Achievable Limits and Statistical Reliability* & WEFTEC 2009 – *WEF/WERF Study Quantifying Nutrient Removal Technology Performance*
 - Principal Investigator – 2006 WERF Workshop: *Nutrient Removal – How low can we go & What is stopping us from going lower?*
 - Issue Area Team for Nutrient and Resource Recovery
 - Exploratory Team and Issue Area Team for WERF Research Program on Nutrient Removal and Recovery (WERF Nutrient Challenge)
 - Program Subcommittee for “*Evaluation of Biogas Treatment Efficiency for the Elimination of Siloxanes*”
 - Program Subcommittee for “*Development of Response Protocols for Wastewater Treatment Plants Exposed to CBR Contaminants*”
 - Program Subcommittee for “*Workshop for Planning Implementation of New Upset Early Warning Methods*”
 - Program Subcommittee for “*Targeted Collaborative Research on Upset Early Warning Devices Phase I: Needs Survey of Participating Industries*”
 - Former Chair of the Program Subcommittee for “*Targeted Collaborative Research on Upset Early Warning Devices Phase II: Pilot Plant Testing*”
 - Chair of the Program Subcommittee for “*Identify, Screen, and Treat Contaminants to Ensure Wastewater Security*”
- Virginia Water Environment Association
- American Water Works Association
- Source Water Protection Committee, Maury Service Authority – Lexington & Rockbridge County, Virginia (2006 – 2009)
- Board Member – Rockbridge County Public Service Authority (2006 – 2009)
- Hazwoper 40 Hour Training with annual 8 hour refresher (Hazardous Waste Site Worker Training)

PUBLICATIONS & PATENTS - GOOGLE SCHOLAR RECORD

<https://scholar.google.com/citations?user=8RTDgEIAAAAJ&hl=en>