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## CURRICULUM VITAE

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#### Education:

Ph.D.	Hydrology	Stanford University	1970
M.S.C.E.	Hydrology	Drexel University	1967
B.S.C.E.		Drexel University	1965

#### Employment:

2008-present	Distinguished University Professor, Craig E. Philip Professor of Civil and Environmental Engineering, Professor of Earth and Environmental Sciences, Vanderbilt University
1991-2008	Ernest H. Ern Professor of Environmental Sciences University of Virginia
2006-2007	Visiting Professor, University of California at Berkeley
2002-2006	Associate Dean for the Sciences, University of Virginia
1997-1998	Visiting Scientist, Institute for Alpine and Arctic Research, University of Colorado
1990-1991	Visiting Scientist, U.S. Geological Survey and, concurrently, Visiting Professor, Stanford University
1984-1990	Professor of Environmental Sciences, University of Virginia
1984-1985	Honorary Visiting Professor of Environmental Sciences, University of Lancaster, Lancaster, U.K.
1975-1984	Associate Professor (Department Chairman 1979 - 1984) University of Virginia
1977-1978	Visiting Fellow, Centre for Resource and Environmental Studies, The Australian National University
1970-1975	Assistant Professor University of Virginia

#### Current Research Interests

Understanding how hydrological processes affect the transport of dissolved and suspended constituents through catchments and aquifers is one of the main aims of studies of Earth surface processes. Water is “the universal solvent.” Water chemically weathers rocks and soils, carrying dissolved salts from the continents to the seas. It interacts with decaying vegetation and carries organic carbon seaward. Water readily carries chemicals that humans use to the sea, including fertilizers and other agrochemicals. The global water cycle is thus linked to other element cycles, for example, to carbon and nitrogen cycles, and

is inextricably linked with a host of ecosystem functions. Moving water carries suspended solids as well as dissolved salts, so the water cycle is also closely tied to cycles of erosion and sedimentation. Current projects include work on transport of dissolved organic carbon in watersheds, on nitrogen fertilizer use and fate as influenced by individual behavior, on life-cycle analyses for an inland water transport company, and on the water-energy nexus.

### **Society Memberships**

American Geophysical Union  
Geological Society of America  
American Women in Science

### **Editorships**

Associate Editor, *Water Resources Research*, 1982 - 1984  
North American Editor, *J. Hydrological Processes*, 1985-1992  
Editor, *Water Resources Research*, January 1993 - January 1997  
Editor for Hydrology, *Encyclopedia of Inland Waters*, Elsevier, 2006-2009

### **Awards and Honors**

Virginia Chapter of Sigma Xi, President's and Visitors' Prize, 1986.  
Robert E. Horton Award, Hydrology Section, American Geophysical Union, 1993.  
Elected Fellow, American Geophysical Union, 1994.  
Appointed to five-year Visiting Professorship at University of Reading, UK, 1995  
1995 Biennial Medal for Natural Systems, Modelling and Simulation Soc. of Australia  
1995 John Wesley Powell Award for Citizen's Achievement (US Geological Survey)  
Elected Fellow, Association for Women in Science, 1996  
Elected to membership in the National Academy of Engineering, February 1996  
1999 Excellence in Geophysical Education Award, American Geophysical Union  
Bownocker Lecturer, Ohio State University, May 1999  
ISI Highly Cited Researcher, 2000 (<http://authors.isihighlycited.com/>)  
National Associate of the National Academies in recognition of extraordinary service, 2001  
Langbein Lecturer, American Geophysical Union, 2002  
Elected Fellow, Geological Society of America, 2005  
Virginia Outstanding Scientist, 2007  
William Kaula Award, American Geophysical Union, 2010

### **Selected Service on National Committees**

Chair, National Research Council, Committee on Opportunities and Challenges in Hydrology, 2009-present  
Chair, Government Affairs Program Advisory Committee, American Geological Institute, 2011-present  
Member, Advisory Committee for the Geosciences Directorate, NSF, 2011-present  
Chair, Committee of Visitors for the Surface Earth Processes Section, NSF, June 2011  
Chair, National Research Council Committee on Opportunities and Challenges in the Hydrologic Sciences, 2010-2011.  
Member, Advisory Board for the School of Earth Sciences, Stanford, 2004-present  
Member, Nuclear Waste Technical Review Board (Presidential Appointment) 2004-present  
Member, National Research Council, Report Review Committee, 2004-2009

Member, National Research Council, Science Panel, America's Climate Choices, 2009-2010.  
 Chair, National Research Council, Board on Earth Sciences and Resources, 2002-2009.  
 Chair, National Research Council, Committee to Review the NSF "WATERS" Plan, 2007-09  
 President, Hydrology Section, American Geophysical Union, 2006-2008  
 Chair, Science Advisory Committee, Berkeley Water Center, 2006-2008  
 Member, Adaptation for Climate-Sensitive Ecosystems and Resources Advisory Committee (USEPA), 2007-2008.  
 Member, National Research Council, Committee on Hydrologic Sciences, Aug 2000 – 2008  
 Member, Hydrology Section Executive Committee, American Geophysical Union, 1994-2009.  
 Chair, Publications Committee, American Geophys. Union, 2000-04 (member, 1998-2004).  
 Chair, Advisory Committee on Nuclear Waste, Nuclear Regulatory Commission, 2001-2003 (Vice-chairman, 1997-2000; member 1996-2004 )  
 Member, Board of Trustees, Virginia Museum of Natural History, 2000-2005  
 Chair, National Research Council, Committee on the Review of EarthScope Science Objectives and Implementation Planning, 2001.  
 Member, Sandia National Laboratories Geoscience and Environment Center Advisory Board, 1998-2004  
 Member, Idaho National Engineering and Environmental Laboratory, Geosciences Advisory Board, 1998-2004  
 Chair, Water-Cycle Initiative Study Group (Interagency committee appointed to create a science plan for a major federal research initiative on the water cycle), 1999-2001.  
 Chair, National Research Council Commission on Geosciences, Environment, and Resources 1996-2000, (member, 1994-2000)  
 Chair, Board of Journal Editors, American Geophysical Union, 1998-2000.  
 Chair, National Research Council Committee on Water Resources Research (WSTB), 1991-1997 (Member 1990-1997)

Co-convenor AGU Chapman Conference on Hydrochemical Response of Forested Catchments, Bar Harbor, Maine, September 1989  
 Co-convenor Gordon Conference on Hydrological/Geochemical/Biological Interactions in Forested Catchments, Plymouth, NH, 1-5 July 1991

## **Publications, George M. Hornberger**

### 1. Books and book chapters

- Remson, Irwin, G.M. Hornberger and F.J. Molz. 1971. *Numerical Methods in Subsurface Hydrology*. John Wiley and Sons.
- Hornberger, G.M., Raffensperger, J.P., Wiberg, P.L., and K. Eshleman. 1998. *Elements of Physical Hydrology*. Johns Hopkins Press.
- Hornberger, G.M. and P.L. Wiberg 2006. *Numerical Methods in the Hydrological Sciences*, American Geophysical Union, Special Publications Series, Volume 57, 233 pages, e-book, 2006, ISBN 0-87590-725-1, AGU SP057F251
- Hornberger, G.M. and John Stetkar 2008. Abrupt Climate Change. In: Garrick, B. J. *Quantifying and Controlling Catastrophic Risks*, Academic Press.
- Burger, J., Gochfeld, M., Powers, C.W., Kosson, D. and G. Hornberger 2010. Biological Assessment for Radionuclide Levels in Biota and Ecosystems. In: Harris, A.M. (ed.) *Clean Energy: Resources, Production and Developments*, Nova Science Publishers.
- Thabrew, L., Ries, R., and Hornberger, G.M. 2011. Transdisciplinary framework for trans-boundary watershed management. in C. N. Madu and C. Kuei (eds.), *Handbook of Sustainable Management*, Imperial College Press. Forthcoming. (ISBN is 978-981-4354-81-3)

## 2. Refereed Articles

- Remson, Irwin, A.A. Fungaroli and G.M. Hornberger. 1967. Numerical analysis of soil-moisture systems. *Proc. ASCE, J. Irr. and Drainage Div., IR3*: 153-166.
- Hornberger, G.M., Irwin Remson and A.A. Fungaroli. 1969. Numerical studies of a composite soil moisture ground water system. *Water Resources Research* **5**: 797-802.
- Hornberger, G.M., and Irwin Remson. 1970. A moving boundary model of a one-dimensional saturated-unsaturated transient porous flow system. *Water Resources Research* **6**: 898-905.
- Hornberger, G. M., Janet Ebert and Irwin Remson. 1970 Numerical solution of the Boussinesq equation for aquifer-stream interaction. *Water Resources Research* **6**: 601-608.
- Hornberger, G. M., and M. G. Kelly. 1972. The determination of primary production in a stream using an exact solution to the oxygen balance equation. *Water Resources Bulletin* **8**: 795-801.
- Molz, F. J. and G. M. Hornberger. 1973. Water transport through plant tissues in the presence of a diffusible solute. *Soil Sci. Soc. of Am. Proc.* **37**: 833-837.
- Kelly, M. G., G. M. Hornberger and B. J. Cosby. 1974. Continuous automated measurement of rates of photosynthesis and respiration in an undisturbed river community. *Limnol. Oceanogr.* **19**: 305-312.
- Kelly, M. G. , M. R. Church and G. M. Hornberger. 1974. A solution of the inorganic carbon mass balance equation and its relation to algal growth rates. *Water Resources Research* **10**: 493-497.
- Hornberger, G. M. and M. G. Kelly. 1974. A new method for estimating productivity in standing waters using free oxygen measurements. *Water Resources Bulletin* **10**: 265-271.
- Hornberger, G. M. and M. G. Kelly. 1975. Estimation of atmospheric reaeration in a river using productivity analysis. *J. Environ. Eng. Div., ASCE* **101**: 729-739.
- Tett, P. B., M. G. Kelly and G. M. Hornberger. 1975. A method for the spectrophotometric measurement of benthic microalgal chlorophyll-a and pheophytin-a using several extractions with methanol. *Limnol. Oceanogr.* **20**: 887-896.
- Hornberger, G. M., M. G. Kelly and R. M. Eller. 1976. The relationship between light and photosynthesis rate in a river community and implications for water quality modeling. *Wat. Resour. Res.* **12**: 723-730.
- Lederman, T. C., G. M. Hornberger and M. G. Kelly. 1976. The calibration of a phytoplankton growth model using batch culture data. *J. Wat., Air and Soil Pollut.* **5**: 431-442.
- Hornberger, G. M., M. G. Kelly and B. J. Cosby. 1977. Evaluating eutrophication potential from river community productivity. *Water Research* **11**: 723-730.
- Kelly, M. G., G. M. Hornberger and B. J. Cosby. 1977. Automated measurement of river productivity for eutrophication monitoring. *In Biological Monitoring of Water and Effluent Quality*. Cairns, Dickson and Wesetlake (eds.). *ASTM Spec. Tech. Pub.* **607**.
- Gallegos, C. L., G. M. Hornberger and M. G. Kelly. 1977. A model of river benthic algal photosynthesis in response to rapid changes in light. *Limnol. Oceanogr.* **22**: 226-233.
- Tett, P., C. Gallegos, M. G. Kelly, G. M. Hornberger and B. J. Cosby. 1978. Relationships amongst substrate flow and microalgal pigment density, in the Mechums River, Virginia. *Limnol. Oceanogr.* **23**: 785-797.
- Clapp, R. B. and G. M. Hornberger. 1978. Empirical equations for some soil hydraulic properties. *Wat. Resour. Res.* **14**: 601-604.
- Whitehead, P. G., P. C. Young and G. M. Hornberger. 1979. A systems model of the Bedford-Ouse River - streamflow modeling. *Water Research* **13**:1155-1169.
- Whitehead, P. G., G. M. Hornberger and R. E. Black. 1979. Effects of parameter uncertainty in a flood routing model. *Hydrol. Sci. Bull.* **24**:445-464.
- Bolyard, T., G. M. Hornberger, R. Dolan and B. P. Hayden. 1979. Fresh water reserves of Mid-Atlantic coast barrier islands. *Environ. Geol.* **3**: 1-11.

- Hillel, D. and G. M. Hornberger 1979. Physical model of the hydrology of sloping heterogeneous fields. *Soil Sci. Soc. of Am. Proc.* **43**: 434-439.
- Hornberger, G. M. and R. C. Spear. 1980. Eutrophication in Peel Inlet: I. The problem defining behavior and a mathematical model for the phosphorous scenario. *Water Research* **14**: 29-42.
- Spear, R. C. and G. M. Hornberger. 1980. Eutrophication in Peel Inlet: II. Identification of critical uncertainties via generalized sensitivity analysis. *Water Research* **14**: 43-49.
- Hornberger, G. M. 1980. Uncertainty in dissolved oxygen prediction due to variability in algal photosynthesis. *Water Research* **14**: 335-361.
- Ellis, F. W., Ramsey, F. V. and G. M. Hornberger 1980. Converging flow model applied to an urban catchment. *J. Hyd. Div. ASCE* **106**: 1457-1470.
- Gallegos, C. L., G. M. Hornberger and M. G. Kelly 1980. Photosynthesis-light relationships of a mixed culture of phytoplankton in fluctuating light. *Limnol. Oceanogr.* **25**: 1082-1092.
- Hornberger, G. M. and R. C. Spear 1981. An approach to the preliminary analysis of environmental systems. *J. of Environ. Mgmt.* **12**: 7-18.
- Spear, R. C. and G. M. Hornberger 1981. A Technical Note on the SPS Energy Analysis of Herendeen et al. *Space Solar Power Review* **2**: 305-306.
- Beven, K. J. and G. M. Hornberger 1982. Assessing the effect of spatial pattern of precipitation in modeling stream flow hydrographs. *Water Resources Bulletin* **18**(5): 823-829.
- Gallegos, C. L., Church, M. R., M. G. Kelly and G. M. Hornberger 1983. Asynchrony between rates of oxygen production and inorganic carbon uptake in a mixed culture of phytoplankton. *Archiv. fur. Hydrobiol.*, **96**: 164-175.
- Hornberger, G. M. and R. C. Spear 1983. An approach to the analysis of behavior and sensitivity in environmental systems. In: Beck, M. B. and G. van Stratten (eds.), *Uncertainty and Forecasting of Water Quality*, Springer-Verlag, pp 101-116.
- Clapp, R. B., Hornberger, G. M. and B. J. Cosby 1983. Estimating spatial variability in soil moisture with a simplified dynamic model. *Wat. Resour. Res.* **19**: 739-745.
- Spear, R. C. and G. M. Hornberger 1983. Control of the DO level in a river under uncertainty. *Water Resour. Res.* **19**:1266-1270.
- Humphries, R. B., G. M. Hornberger, R. C. Spear, and A. J. McComb 1984. Eutrophication in Peel Inlet: III. A retrospective look at the preliminary analysis. *Water Research* **18**: 389-395.
- Whitehead, P. G. and G. M. Hornberger 1984. Modelling algal behavior in the River Thames. *Water Research.* **18**: 945-953.
- Cosby, B. J. and G. M. Hornberger 1984. Identification of light-photosynthesis models for aquatic systems. I. Theory and Simulations. *Ecol. Modelling.* **23**:1-24.
- Cosby, B. J., Hornberger, G. M. and M. G. Kelly 1984. Identification of light-photosynthesis models for aquatic systems. II. Application to a macrophyte dominated stream. *Ecol. Modelling* **23**:25-51.
- Cosby, B. J., Hornberger, G. M., Clapp, R. B. and T. R. Ginn. 1984. A statistical analysis of the relationships of soil moisture characteristics to the physical properties of soils. *Wat. Resour. Res.* **20**:682-690.
- Cosby, B. J., Hornberger, G. M., Galloway, J. N. and R. F. Wright 1985. Modelling the effects of acid deposition: Assessment of a lumped-parameter model of soil water and streamwater chemistry. *Wat. Resour. Res.* **21**:51-63.
- Cosby, B. J., Wright, R. F., Hornberger, G. M. and J. N. Galloway 1985. Modeling the effects of acid deposition: estimation of long-term water quality responses in a small forested catchment. *Wat. Resour. Res.*, **21**:1591-1601.
- Hornberger, G. M., Beven, K. J., Cosby, B. J. and D. E. Sappington 1985. Shenandoah Watershed Study: Calibration of a topography-based, variable contributing area model to a small forested catchment. *Wat. Resour. Res.*, **21**:1841-1850.
- Hornberger, G. M. and B. J. Cosby 1985. Selection of parameter values in environmental models using sparse data: a case study. *Applied Math. and Comp.*, **17**:335-355.

- Cosby, B. J., Hornberger, G. M., Galloway, J. N. and R. F. Wright 1985. Freshwater acidification from atmospheric deposition of sulfuric acid: a quantitative model. *Env. Sci. and Tech.*, **19**:1145-1149.
- Cosby, B. J., Hornberger, G. M., Wright, R. F., and J. N. Galloway 1986. Modeling the effects of acid deposition: control of long-term sulfate dynamics by soil sulfate adsorption. *Water Resour. Res.*, **22**: 1283-1291.
- Hornberger, G. M., Cosby, B. J. and J. N. Galloway 1986. Modeling the effects of acid deposition: uncertainty and spatial variability in estimation of long-term responses of regions to atmospheric deposition of sulfate. *Water Resour. Res.*, **22**:1293-1302.
- Whitehead, P. G., Williams, R. J. and G. M. Hornberger 1986. On the identification of pollutant or tracer sources using dispersion theory. *J. Hydrol.*, **84**: 273-286.
- Wright, R. F., Cosby B. J., Hornberger, G. M. and J. N. Galloway 1986. Interpretation of paleolimnological reconstructions using the MAGIC model of soil and water acidification. *Water, Air and Soil Pollut.* **30**:367-380.
- Cosby, B. J., Hornberger, G. M., Wright, R. F., Rastetter, E. B. and J. N. Galloway 1986. Estimating catchment water quality response to acid deposition using mathematical models of soil ion exchange processes. *Geoderma*, **38**:77-95.
- Herlihy, A. T., Mills, A. M., Hornberger, G. M. and A. E. Bruckner 1987. The importance of sediment sulfate reduction to the sulfate budget of an impoundment receiving acid mine drainage. *Water Resour. Res.*, **23**:287:292.
- McIntire, P.E., Mills, A.L. and G.M. Hornberger 1988. Interactions between groundwater seepage and sediment porewater sulfate concentration profiles in Lake Anna, Virginia. *Hydrol. Proc.*, **2**:207-217.
- Cosby, B.J., Hornberger, G.M. and R.F. Wright 1989. A regional model of surface water acidification in southern Norway: calibration and validation using survey data. In: Kämäri, J. (ed.) *Environmental Impact Models to Assess Regional Acidification* Reidel.
- Hornberger, G.M., Cosby, B.J. and R.F. Wright 1989. A regional model of surface water acidification in southern Norway: uncertainty in long-term hindcasts and forecasts. In: Kämäri, J. (ed.) *Environmental Impact Models to Assess Regional Acidification* Reidel.
- Wolock, D.M., Hornberger, G.M., Beven, K.J. and W.G. Campbell 1989. The relationship of catchment topography and soil hydraulic characteristics to lake alkalinity in the Northeastern United States. *Water Resources Research* **25**:829-837.
- Webb, J.R., Cosby, B.J., Galloway, J.N. and G.M. Hornberger 1989. Acidification of native brook trout streams in Virginia. *Water Resour. Res.* **25**:1367-1377.
- Bruckner, A.M., Hornberger, G.M. and A.L. Mills 1989. Field measurement and associated controlling factors for groundwater seepage in a Piedmont impoundment. *Hydrological Processes* **3**:223-235.
- Ryan, P.F., Hornberger, G.M., Cosby, B.J., Galloway, J.N., Webb, J.R. and E.B. Rastetter 1989. Seasonal and interannual variation in the chemical composition of streamwater in two catchments impacted by acidic deposition. *Water Resour. Res.* **25**:2091-2099.
- Hornberger, G.M., Cosby, B.J. and R.F. Wright 1989. Historical reconstructions and future forecasts of regional surface water acidification in southernmost Norway. *Water Resour. Res.* **25**:2009-2018.
- Hornberger, G.M. 1989. Modelling complex natural processes with small observation sets: the case of acidification of surface waters in North America and Europe. *Mathematics and Computers in Simulation* **32**: 39-47.
- Wolock, D.M., Hornberger G.M. and T. Musgrove 1990. Topographic controls on episodic streamwater acidification in Wales. *J. Hydrology* **115**:243-259.
- Hornberger, G.M., Beven, K.J. and P.F. Germann 1990. Inferences about solute transport in macroporous forest soils from time series models. *Geoderma* **46**:249-262.
- Scholl, M.A., Mills, A.L., Herman, J.S., and G.M. Hornberger 1990. The influence of mineralogy and solution chemistry on the attachment of bacteria to representative aquifer materials. *J. Contaminant Hydrol.* **6**:321-326.

- Wolock, D.M. and G.M.Hornberger 1991. Direct and indirect effects of atmospheric CO<sub>2</sub> levels on catchment hydrological response. *J. of Forecasting* **10**:105-116.
- Hornberger, G.M., Germann, P.G., and K.J. Beven 1991. Throughflow and solute transport in an isolated sloping soil block in a forested catchment. *J. Hydrology* **124**:81-99.
- Castro, N.M. and G.M. Hornberger 1991. Surface-subsurface water interactions in an alluviated mountain stream channel. *Water Resour. Res.* **27**:1613-1621.
- Fontes, D., Mills, A.L., Hornberger, G.M., and J.S. Herman 1991. Biological, chemical, and hydrological factors influencing microbial transport through porous media. *Appl. Environ. Tech.* **57**:2473-2481.
- Wright, R.F., Cosby, B.J. and G.M. Hornberger 1991. A regional model of lake acidification in southernmost Norway. *AMBIO* **20**:222-225.
- Hornberger, G.M., Mills, A.L., and J.S. Herman 1992. Bacterial transport in porous media: evaluation of a model using laboratory observations. *Water Resour. Res.* **28**:915-938.
- Jakeman, A.J., Hornberger, G.M., Littlewood, I.G., Whitehead, P.G., Harvey, J.W., and K.E. Bencala 1992. A systematic approach to modelling the dynamic linkage of climate, physical catchment descriptors and hydrologic response components. *Mathematics and Computers in Simulation* **33**:359-366.
- Rastetter, E.M., King, A.W., Cosby, B.J., Hornberger, G.M., O'Neill, R.V., and J.E. Hobbie 1991. Aggregating fine-scale ecological knowledge to model coarser-scale attributes of ecosystems. *Ecological Applications* **2**:55-70.
- Jakeman, A.J. and G.M. Hornberger 1993. How much complexity is needed in a rainfall-runoff model? *Water Resources Research* **29**:2637-2649.
- Jakeman, A.J., Chen, T.H., Post, D.A., Hornberger, G.M., Littlewood, I.G., and P.G. Whitehead 1993. Assessing uncertainties in hydrological response to climate at large scale. *IAHS Pub.* **214**: 37-47.
- Saiers, J.E., J.F. McCarthy, P.M. Jardine, L. Liang, and G.M. Hornberger. 1993. Transport of amorphous TiO<sub>2</sub> through homogeneous and structurally heterogeneous porous media. (In) J.F. McCarthy and F.J. Wobber (eds.) Concepts for manipulating groundwater colloids for environmental restoration, Chelsea MI: Lewis Publishers Inc. pp. 309-313.
- Saiers, J. E., Hornberger, G. M., and Liyuan Liang, 1994. First- and second-order approaches for modeling the transport of colloidal particles in porous media. *Water Resour. Res.* **30**:2499-2506.
- Hornberger, G.M., Bencala, K.E. and D.M. McKnight 1994. Hydrological controls on the temporal variation of dissolved organic carbon in the Snake River near Montezuma, Colorado. *Biogeochemistry* **25**:147-165.
- Saiers, J. E., Hornberger, G.M., and C. Harvey 1994. Colloidal silica transport through homogeneous and structured, heterogeneous porous media. *J. Hydrol.* **163**:271-288.
- Mills, A.L., DeJesus, T., Herman, J.S., and G.M. Hornberger 1994. Adsorption of bacteria on clean and on iron-coated sand. *Appl. Environ. Microbiol.* **60**:3300-3306.
- Chen TH, Hornberger GM, Jakeman AJ, Swank WT 1995. The performance of different loss models in the simulation of streamflow. *Environmetrics* **6**: 479-484
- Weiss, T. H., Mills, A. L., Herman, J. S., and Hornberger, G. M. 1995. Effect of cell size, hydrophobic character and growth habit on transport of bacteria in porous media. *Environ. Sci. Tech* **29**:1737-1740.
- Hornberger, G.M. and E.W. Boyer. 1995. Recent advances in watershed modelling. *U.S. National Report to IUGG, 1990-1993, Reviews of Geophysics, Suppl:* 949-957
- Yeakley, J.A., Hornberger, G.M., and W.T. Swank 1995. Planform effects on simulated hillslope soil moisture in an upland forested watershed. In: Singh, R.B. and M.J. Haigh (eds.) *Sustainable Reconstruction of Highland Headwater Regions* Oxford & IBH Publishing Co., New Dehli, pp 307-316.
- Boyer, E.B., Hornberger, G.M., Bencala, K.E., and D.M. McKnight. 1996. Overview of a simple modelling approach to describe the temporal variation of DOC in an upland catchment. *Ecological Modelling* **86**:183-188

- Boyer, E.W., Hornberger, G.M., Bencala, K.E., and D.M. McKnight. 1996. Variation of DOC during snowmelt in soil and streamwaters of two headwater catchments, Summit County, Colorado. *Biogeochemistry of Seasonally Snow-covered Catchments, IAHS Publication 228*:303-312.
- Hollenbeck, K.J., Schmutge, T.J., Hornberger, G.M., and J.R. Wang. 1996. Identifying soil hydraulic heterogeneity by detection of relative change in passive microwave remote sensing observations. *Water Resources Research* 32:139-148.
- Saiers, J.E. and G.M. Hornberger. 1996. Kaolinite-facilitated transport of cesium through water-saturated porous media. *Water Resources Research* 32:33-41.
- Saiers, J.E. and G.M. Hornberger. 1996. Modeling bacterial-facilitated transport of DDT. *Water Resources Research* 32:1455-1459
- Kelly, W.R., Hornberger, G.M., Herman, J.S., and A.L. Mills 1996. Kinetics of BTX biodegradation and mineralization in batch and column systems. *J. Contaminant Hydrol.* 23:113-132.
- Saiers, J.E. and G.M. Hornberger. 1996. Migration of <sup>137</sup>Cs through aquifer materials: experimental results and modeling approaches. *Journal of Contaminant Hydrol.* 22:255-270
- Mulholland, P.J., Best, G.R., Coutant, C.C., Hornberger, G.M., Meyer, J.L., Robinson, P.J., Stenberg, J.R., Turner, E., Vera-Herrera, F., and R.G. Wetzel. 1997. Effects of climate change on freshwaters of region 5: Southeastern United States and Gulf coast of Mexico. *Hydrological Processes* 11:949-970.
- Boyer, E.B., Hornberger, G.M., Bencala, K.E., and D.M. McKnight. 1997. Response characteristics of DOC flushing into an alpine catchment stream. *Hydrological Processes* 11(12):1635-1647.
- Brooks, S.C., Mills, A.L., Herman, J.S., and G.M. Hornberger 1997. Kinetic evaluation of the effects of bioavailability of organic ligands on biodegradation in the presence of common sesquioxide coatings. *Environmental Chemistry and Toxicology* 16:862-870.
- Knapp, E.P., Herman, J.S., Mills, A.L., and G.M. Hornberger. 1998. The effect of iron-oxyhydroxide grain coatings on the transport of bacterial cells: implications for chemically heterogeneous porous media. *Environ. Geol. Water Sci.* 33:243-248.
- Yeakley, J.A., Swank, W.T., Swift, L.W., Hornberger, G.M., and H.H. Shugart 1998. Soil moisture gradients and controls on a Southern Appalachian hillslope from drought through recharge. *Hydrology & Earth System Sci.* 2:41-49.
- Bolster, C.H., Hornberger, G.M., A.L. Mills, and J. Wilson. 1998. A method for calculating bacterial deposition coefficients using fraction of bacteria recovered from laboratory columns. *Environmental Science & Technology* 32:1329-1332.
- Morley, L. M., Hornberger, G.M., Mills, A.L., and J. S. Herman 1998. Effects of Transverse Mixing on Transport of Bacteria Through Heterogeneous Porous Media. *Water Resources Research* 34:1901-1908.
- Brooks, S.C., J.S. Herman, G.M. Hornberger, and A.L. Mills. 1998. Biodegradation of Cobalt-Citrate Complexes: Implications for cobalt mobility in ground water. *J. Contam. Hydrol.* 32:99-115.
- Kauffman, S., C.H. Bolster, G.M. Hornberger, J.S. Herman, and A.L. Mills 1998. The influence of chemical and physical nonequilibrium processes on the transport of pesticides. *Environ. Sci. Technol.* 32: 3137-3141.
- Rice, K. and G.M. Hornberger 1998. Comparison of hydrochemical tracers to estimate source contributions to peak flow in a small, forested headwater catchment. *Water Resour. Res.* 34:1755-1766.
- Bolster, C.H., Mills, A.L., Hornberger, G.M., and J.S. Herman. 1999. The spatial distribution of deposited bacteria following miscible displacement experiments in intact cores. *Water Resources Research* 35: 1797-1807.
- Saiers, J.E. and G.M. Hornberger. 1999. The Influence of Pore Water Chemistry on the Facilitated transport of Cesium by Inorganic Colloids. *Water Resources Research* 35: 1713-1727.
- Johnson, S.E., Herman, J.S., Mills, A.L., and G.M. Hornberger. 1999. Bioavailability and desorption characteristics of aged, nonextractable atrazine in soil. *Environmental Toxicology and Chemistry* 18:1757-1774.

- Bolster, C.H., Mills, A.L., Hornberger, G.M., and J.S. Herman. 2000. The effect of intra-population variability on the long-distance transport of bacteria. *Groundwater* **38**: 370-375.
- Scanlon, T.M., Raffensperger, J.P., Hornberger, G.M., and R.B. Clapp. 2000. Shallow subsurface stormflow in a forested headwater catchment: observations and modeling using a modified TOPMODEL. *Water Resources Research* **36**: 2575-2586.
- Sprague, L.A., J.S. Herman, G.M. Hornberger, and A.L. Mills. 2000. Atrazine adsorption and colloid-facilitated transport through the unsaturated zone. *J. Env. Qual.***29**:1632-1641.
- El-Farhan, Y.H., DeNovio, N.M., Herman, J.S., and G.M. Hornberger. 2000. Mobilization and transport of soil particles during infiltration experiments in an agricultural field, Shenandoah Valley, Virginia. *Env. Sci. & Tech.***34**: 3555-3559.
- Yeakley, J.A., Hornberger, G.M., Swank, W.T., Bolstad, P.V., and J.M. Vose. 2000. Soil moisture modeling in humid mountainous landscapes. In: Wilson, J.P. and J.C. Gallant (eds.) *Terrain Analysis: Principles and Applications*, Chapter 8, pp 205-224, John Wiley and Sons, New York.
- Boyer, E.W., Hornberger, G.M., Bencala, K.E., and D.M. McKnight. 2000. Effects of asynchronous snowmelt on flushing of dissolved organic carbon: a mixing model approach. *Hydrol. Processes* **14**:3291-3308.
- Scanlon, T.M., Raffensperger, J.P., and G.M. Hornberger. 2001. Modeling transport of dissolved silica in a forested headwater catchment: implications for defining the hydrochemical response of observed flow pathways. *Water Resources Research* **37**:1071-1082.
- Hornberger, G.M., Scanlon, T.M., and J.P. Raffensperger, 2001. Modelling Transport of Dissolved Silica in a Forested Headwater Catchment: The Effect of Hydrological and Chemical Time Scales on Hysteresis in the Concentration-Discharge Relationship. *Hydrol. Processes* **15**:2029-2038.
- Bolster, C.H., Mills, A.L., Hornberger, G.M., and J. S. Herman 2001. Effect of Surface Coatings, Grain Size, and Ionic Strength on the Maximum Attainable Fractional Surface Coverage of Bacteria on Sand Surfaces, *J. Contaminant Hydrol.* **50**: 287-305.
- Wade, A. J., Hornberger, G. M., Whitehead, P.G., Jarvie, H. P. and N. Flynn, 2001. On modelling the mechanisms that control instream phosphorus and macrophyte dynamics: an assessment of a new model using General Sensitivity Analysis. *Water Resources Res.* **37**:2777-2792.
- Hyer, K.E., Hornberger, G.M., and Herman, J.S. 2001. Processes controlling the episodic streamwater transport of atrazine in an agricultural watershed. *J. Hydrology* **254**: 47-66.
- McKnight, D.M., Hornberger, G.M., Bencala, K.E., and E.W. Boyer 2002. In-stream influences on dissolved organic carbon concentrations and composition in an acidic and metal-rich stream: A stream, reach-scale, reactive transport experiment. *Water Resources Res.* **38**(1): 10.1029/2001WR000269
- Knapp EP, Herman JS, Mills, AL, and GM Hornberger 2002. Changes in the sorption capacity of Coastal Plain sediments due to redox alteration of mineral surfaces. *Applied Geochemistry* **17**: 387-398
- Hornberger, G.M. 2002. Forecasting the Impact of Atmospheric Acidic Deposition on the Chemical Composition of Stream Water and Soil Water. In: Beck, M.B. (ed.) *Environmental Foresight and Models: A Manifesto*, Chapter 8, pp 131-145. Elsevier Science.
- Wade AJ, Whitehead PG, Hornberger GM, Snook DL. 2002. On modelling the flow controls on macrophyte and epiphyte dynamics in a lowland UK catchment: River Kennet, southern England. *Sci Total Environ* **282**: 375-393
- Wade AJ, Whitehead PG, Hornberger GM, Jarvie HP, Flynn N. 2002. On modelling the impacts of phosphorus stripping at sewage works on in-stream phosphorus and macrophyte/epiphyte dynamics: a case study for the River Kennet. *Sci Total Environ.* **282**: 395-415
- Chanat, J.G., Rice, K.C., and G.M. Hornberger, 2002. Consistency of patterns in concentration-discharge plots, *Water Resources Res.* **38**: 10.1029/2001WR000971.
- Katul, G., Wiberg, P., Albertson, J. and G. Hornberger, 2002. A mixing layer theory for flow resistance in shallow streams. *Water Resources Res.* **38**, NO. 11, 1250, doi:10.1029/2001WR000817

- Rice, K.C., Conko, K. M., and G. M. Hornberger 2002. Anthropogenic Sources of Arsenic and Copper to Sediments of a Recreational Suburban Lake in Northern Virginia. *Environmental Sci. & Tech.* **36**:4962-4967.
- Chanat, J. G., and G. M. Hornberger, 2003. Modeling catchment-scale mixing in the near-stream zone— Implications for chemical and isotopic hydrograph separation, *Geophys. Res. Lett.*, **30**(2), 1091, doi:10.1029/2002GL016265.
- Mills, A.L., Herman, J.S., Ford, R.M. and G.M. Hornberger 2003. Functional redundancy promotes functional stability in diverse microbial bioreactor communities. *SAE Technical Paper Series* No. 2003-01-2509.
- Saiers, J.E., Hornberger, G.M., Gower, D.B., and J.S. Herman 2003. The role of moving air-water interfaces in colloid mobilization within the vadose zone. *Geophys. Res. Lett.*, **30**(21), Art. No. 2083.
- Rice, K.C., Chanat, J.G., Hornberger, G.M. and J. R. Webb 2004. Interpretation of Concentration-Discharge Patterns in Acid-Neutralizing Capacity During Stormflow in Three Small, Forested Catchments in Shenandoah National Park, Virginia. *Water Resources Res.*, **40**(5), Art. No. W05301
- Welsch, D.L. and G.M. Hornberger 2004. Spatial and temporal simulation of soil CO<sub>2</sub> concentrations in a small forested catchment in Virginia. *Biogeochemistry* **71**: 413-434.
- Lee, T. R., and G. M. Hornberger 2006. Inferred bimodality in the distribution of soil moisture at Big Meadows, Shenandoah National Park, Virginia, *Geophys. Res. Lett.*, **33**, L06407, doi:10.1029/2005GL025536.
- Levin, JM, Herman, JS, Hornberger, GM, and JE Saiers, 2006. Colloid Mobilization from a Variably Saturated, Intact Soil Core, *Vadose Zone Journal* **5**:564-569. DOI: 10.2136/vzj2005.0102
- Welsch, D. L. Cosby, B. J. and G. M. Hornberger 2006. Simulation of Stream Water Alkalinity Concentrations using Coupled Models of Soil air CO<sub>2</sub> and Stream Water Chemistry. *Biogeochemistry* **79**: 339 - 360, DOI 10.1007/s10533-005-5480-9.
- Welsch, D.L., Cosby, B.J. and G. M. Hornberger 2006. Simulation of future stream alkalinity under changing deposition and climate scenarios. *Science of The Total Environment* **367**:800-810, doi:10.1016/j.scitotenv.2006.01.019
- Deviney, F. A., Jr., K. C. Rice, and G. M. Hornberger 2006. Time series and recurrence interval models to predict the vulnerability of streams to episodic acidification in Shenandoah National Park, Virginia. *Water Resour. Res.* **42**: W09405, doi:10.1029/2005WR004740.
- Bolster, C.H. and G.M. Hornberger 2007. On the Use of Linearized Langmuir Equations. *Soil Sci. Soc. Am.*, **71**:1796-1806, doi:10.2136/sssaj2006.0304.
- Gu, C., Hornberger, G.M., Mills, A.L., Herman, J.S., and S. A. Flewelling. 2007. Nitrate Reduction in Streambed Sediments: Effects of Flow and Biogeochemical Kinetics, *Water Resour. Res.*, **43**: W12413, doi:10.1029/2007WR006027.
- Lawrence, J.E. and G.M. Hornberger. 2007. Soil-moisture variability across climate zones. *Geophys. Res. Lett.*, **34**: L20402, doi:10.1029/2007GL031382.
- Gu, C., Hornberger, G.M., Mills, A.L., and J.S. Herman 2008. The Effect of Freshets on the Flux of Groundwater Nitrate Through Streambed Sediments, *Water Resour. Res.*, **44**: W05415, doi:10.1029/2007WR006488.
- Maggi F., Gu, C., Riley, W.J., Hornberger, G.M., Venterea, R.T., Xu, T., Spycher, N., Steefel, C., Miller, N.L., Rubin, Y. and C.M. Oldenburg 2008. Mechanistic modeling of biogeochemical nitrogen cycling: model development and application in an agricultural system., *JGR-Biogeosciences*, **113**: G02016, doi:10.1029/2007JG000578.
- Ajami, N.K., Hornberger, G.M., and D. L. Sunding. 2008. Sustainable water resource management under hydrological uncertainty, *Water Resour. Res.* **44**: W11406, doi:10.1029/2007WR006736.
- Gu, C., Hornberger, G.M., Mills, A.L., and J.S. Herman 2008. Influence of stream-aquifer interactions in the riparian zone on NO<sub>3</sub><sup>-</sup> flux to a low-relief coastal stream, *Water Resour. Res.* **44**: W11432, doi:10.1029/2007WR006739.

- Gu, C., Maggi F., Venterea, R.T., Riley, W.J., Hornberger, G.M., Xu, T., Spycher, N., Steefel, C., Miller, N.L., and C.M. Oldenburg 2009. Aqueous and gaseous nitrogen losses induced by fertilizer application. *JGR-Biogeosciences* **114**: G01006, doi:10.1029/2008JG000788.
- Hornberger, G.M. 2009. Hydrologic context for modelling nutrient cycles. **In** Anderssen, R.S., R.D. Braddock and L.T.H. Newham (eds) 18th World IMACS Congress and MODSIM09 International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand and International Association for Mathematics and Computers in Simulation, July 2009, pp. 37-43. ISBN: 978-0-9758400-7-8.
- Perrone, D., Murphy, J. and G.M. Hornberger 2011. Gaining perspective on the water-energy nexus at the community scale. *Environ. Sci. & Tech.*, DOI: 10.1021/es103230n.
- Ewing, A., Thabrew, L., Perrone, D., Abkowitz, A. and G.M. Hornberger 2011. Is LCA a credible tool for corporate environmental footprinting? A case study of an inland marine freight transportation company. *J. Industrial Ecology*, In press.
- Flewelling S.A., Herman, J.S., Hornberger, G.M., and A. L. Mills. 2011. Travel Time Controls the Magnitude of Nitrate Discharge in Groundwater Bypassing the Riparian Zone to an Agriculture Stream on Virginia's Coastal Plain. *Hydrol. Proc.*, In press.
- Mei Y, Hornberger GM, Kaplan LA, Newbold JD, and A Aufdenkampe 2011. Estimation of Dissolved Organic Carbon Contribution from Riparian Zone to a Headwater Stream. *Wat. Resour. Res.*, In review.
- Ajami, N.K., Hornberger, G.M. and D. L. Sunding 2011. Effect of Water Resource Management on Characteristics of Hydrological Uncertainties. *Wat. Resour. Res.*, In review.
- Murphy, J. and G.M. Hornberger. 2011. Surface mining impacts on concentration-discharge relationships: Identifying spatial and temporal changes in the New River, Tennessee. *Hydrol. Proc.*, In review.
- Tsang Y-P, Kaplan LA, Newbold JD, Aufdenkampe, A, and GM Hornberger GM, 2011. Spatial distribution of groundwater evapotranspiration: impacts on modeling stream flow. *Hydrol. Proc.*, In prep.
- Flewelling S.A., Herman, J.S., Hornberger, G.M., and A. L. Mills. 2011. Evapotranspiration Causes Diel Patterns in Stream Nitrate Concentrations. *Hydrol. Proc.*, In prep.

### 3. Other publications

- Molz, F.J. and G. M. Hornberger. 1969. Discussion of "Soil-water diffusivity values based upon time dependent soil-water content distributions." *Soil Sci. Soc. of Am. Proc.* **33**: p. 981.
- Hornberger, G. M. and Irwin Remson. 1972. Discussion of "Unsteady free surface ground water seepage." *ASCE, J. Hyd. Div.* **98(HY3)**: 579-580.
- Kelly, M. G. and G. M. Hornberger. 1973. Discussion of "Phytoplankton algae: Nutrient concentration and growth.: *Science* **180** p, 1298.
- Hornberger, G.M. 1974. Review of Underground Waste Management and Environmental Implications. *Wat. Resour. Bull.* **10**.
- Molz, F. J. and G. M. Hornberger 1974. Digital simulation of regional land subsidence due to aquifer system pumpage. Adv. In Rock Mechanics, Vol. II, Tome B, pp. 1090-1095.
- Hornberger, GM, Kelly, MG, and TC Lederman. 1975. Evaluating a mathematical model for predicting lake eutrophication Virginia Water Resources Research Center, Virginia Polytechnic Institute and State University, Blacksburg, Va., 102 p.
- Zieman, J. C., G. M. Hornberger, T. C. Ledermen, J. S. Fisher, J. T. Morris, H. G. Goodell, W. C. Keene, and W. E. Odum. 1975. *A Simulation Modeling Approach to the Study of Development Alternatives*, The Conservation Foundation, Washington, D.C.
- Young, P. C., G. M. Hornberger and R. C. Spear. Modeling badly defined systems: some further thoughts. Proc. SIMSIG Simulation Conf., Australian National University, Canberra, Australia, September 1978, pp 24-32.

- Davidson, J., G. M. Hornberger and F. J. Molz. 1978. The U. S. Educational Effort in Unsaturated Zone Hydrology. *EOS* **59** (4): 190-192.
- Bruckner, A. E., G. M. Hornberger and A. L. Mills. Ground Water Seepage in a Piedmont Impoundment. Proceedings, Conf. on Practical Applications of Ground Water Models, Columbus, Ohio, Aug. 1984, Nat. Wat. Well Assn., pp 570-583.
- Hornberger, G. M. and B. J. Cosby. 1985. Evaluation of a model describing the long-term dynamic response of catchments to deposition of atmospheric sulfate. Proc. 7th IFAC Symposium on Identification and System Parameter Estimation, Pergamon Press, pp 229-234.
- Hornberger, G. M., Cosby, B. J. and E. B. Rastetter 1986. Regionalization of predictions of effects of atmospheric acidic deposition on surface waters. Proc. Internat. Conf. on Water Quality Modelling in the Inland Natural Environ., Bournemouth, England, June 1986, pp 535-550.
- Herman, J. S. and G. M. Hornberger. 1986. The compleat hydrogeologist. *Groundwater*, **24**:548-549.
- Church, M. R., G. Hornberger, C. Driscoll, M. Sklash, and H. Hemond 1990. Hydrogeochemical Responses of Forested Catchments. *Eos Trans. AGU*, **30**:997-998.
- Herman, J.S., Mills, A.L., and G.M. Hornberger 1990. Particle transport and geochemical impact. Meeting report. *EOS* **71**:1084.
- Hornberger, G.M. 1991. Environmental tracers. *EOS* **72**:90.
- Church MR, Hornberger GM, Sorooshian S 1991. Catchment Hydrogeochemistry. *Water Resources Research* **26** (12): 2947-2947.
- Church, M. R., G. Hornberger, C. Driscoll, M. Sklash, and H. Hemond (1990), Hydrogeochemical responses of forested catchments, *Eos Trans. AGU*, **71**(30), 997.
- Hornberger GM 1994 Timely Publication - A Plea To Authors And Reviewers *Water Resources Research* **30** (8): 2361-2362
- Hornberger GM 1994. A New-Type Of Article For *Water Resources Research*. *Water Resources Research* **30** (12): 3241-3242
- Hornberger, G. M. 1995. New manuscript guidelines for the reporting of stable hydrogen, carbon, and oxygen isotope ratio data. *Water Resources Research* **31** (12): 2895.
- Hornberger GM and Anderson MP 1995. Dreiss memorial special section - Introduction *Water Resources Research* **31** (12): 3119-3120.
- Hornberger, G. M. (1999), Isotope tracers in catchment hydrology, *Eos Trans. AGU*, **80**(23), 260.
- Menzel, L., Richter, O., Caraco, N., Hornberger, G.M., Jackson, R.B., Johnston, C.A., Lang, H., Wood, E.F., , 2000: How is ecosystem function affected by hydrological lateral flows in complex landscapes?. *Integrating Hydrology, Ecosystem Dynamics, and Biochemistry in Complex Landscapes*, Dahlem Workshop Series, John Wiley & Sons Ltd., 255-272 .
- Hornberger, G. M. (2001), Study group assists in global water cycle program, *Eos Trans. AGU*, **81**(10), 102.
- Hornberger, G. (2001), AGU's transition to electronic publishing, *Eos Trans. AGU*, **82**(21), 233.
- Hornberger, G.M., J.D. Aber, J. Bahr, R.C. Bales, K. Beven, E. Foufoula-Georgiou, G. Katul, J.L. Kinter III, R.D. Koster, D. P. Lettenmaier, D. McKnight, K. Miller, K. Mitchell, J.O. Roads, B.R. Scanlon, and E. Smith, 2001: *A Plan for a New Science Initiative on the Global Water Cycle*. U.S. Global Change Research Program, Washington, D.C. 118 pages.
- Hornberger, G. ., and J. C. . Holoviak (2002), Slowdown in journal production, *Eos Trans. AGU*, **83**(20), 219.
- Hornberger, G. M. (2002), What--No sequential page numbers? And what's this DOI?, *Eos Trans. AGU*, **83**(35), 383.
- Hornberger, G. (2004), Dessler Receives First William Kaula Award, *Eos Trans. AGU*, **85**(15), 150.
- Hornberger, G., J. Bougeret, S. Bowring, C. Collins, J. Costa, R. Jackson, R. Jaumann, R. Stein, K. Suyehiro, and X. Zeng (2004), A Virtual Publications Forum, *Eos Trans. AGU*, **85**(12), 118.
- Lanzerotti L. and G. Hornberger 2004. Publishing in the electronic world. *Space Weather-The International Journal of Research and Applications* **2**: doi:10.1029/2004SW000080

- Hornberger, GM 2005. Are large watersheds more complex than small watersheds? In: Smyth, RL and JM Gephart (eds.), *Water: Challenges at the Intersection of Human and Natural Systems*, Pacific Northwest National Laboratory, Technical Report PNWD-3597, p 37-38.
- Hornberger GM 2005. Guest editorial - A water cycle initiative *Ground Water* 43 (6):771
- Rice, KR, Deviney, FA Jr., Hornberger, GM and James R. Webb, 2006. Predicting the Vulnerability of Streams to Episodic Acidification and Potential Effects on Aquatic Biota in Shenandoah National Park, Virginia. *USGS Scientific Investigations Report 2005-5259* (<http://pubs.usgs.gov/sir/2005/5259/>)
- Hubbard, S., and G. Hornberger 2006. Introduction to special section on Hydrologic Synthesis, *Water Resour. Res.*, 42: W03S01, doi:10.1029/2005WR004815
- Hinze W. J. and G. M. Hornberger 2006. Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste (Book review). *Eos Trans. AGU* 87(47), 529.
- Hornberger, G. M., and J. E. Lawrence. 2007. Hydrology of Big Meadows, Shenandoah National Park, Virginia: Assessment of a Sensitive Wetland System in the Blue Ridge Mountains. Technical Report NPS/NER/NRTR—2007/093. National Park Service. Philadelphia, PA.
- Mills, A.L., Hornberger, G.M., and J.S. Herman 2008. Sediments in Low Relief Coastal Streams as Effective Filters of Agricultural Nitrate. *Proceedings 2008 Summer Specialty Conference: Riparian Ecosystems and Buffers - Working at the Water's Edge*, American Wat. Resources Assn., 6pp. ([http://www.awra.org/proceedings/0806pro\\_toc.html](http://www.awra.org/proceedings/0806pro_toc.html))