Revised Invitation for Comment on the Short List Candidates for the Ecological Processes and Effects Committee Augmented for Review of Nutrient Criteria Guidance
June 30, 2009

The EPA Science Advisory Board (SAB Staff Office) announced in a *Federal Register* notice (Volume 74, Number 79, pages 19084 – 19085) that it was augmenting the expertise on the SAB Ecological Processes and Effects Committee (EPEC) to review EPA's draft Technical guidance on Empirical Approaches for Numeric Nutrient Criteria Development. To augment the expertise on the EPEC, the SAB Staff Office sought nominations of recognized experts in the fields of ecology, biology, environmental science, risk assessment, and zoology with specialized knowledge in the use of empirically-derived stressor-response relationships as the basis for developing nutrient assessment endpoints and criteria for the protection of aquatic life. Background information on the project and details on the nomination process appeared in the cited notice. The notice is available on the SAB Website at http://www.epa.gov/sab.

Based on qualifications and interest of the nominees, the SAB Staff Office identified candidates to augment the EPEC for this advisory activity. This revised invitation is provided to include one nomination inadvertently omitted from a June 23, 2009 short-list web posting. The biosketches of these candidates are provided below. Biosketches of the members of EPEC are available at: http://yosemite.epa.gov/sab/sabpeople.nsf/WebCommitteesSubcommittees/Ecological%20Processes%20and%20Effects%20Committee. We hereby invite comments from members of the public to provide relevant information or other documentation that the SAB Staff Office should consider in determining who should serve on the Ecological Processes and Effects Committee Augmented for Review of Nutrient Criteria Guidance.

The SAB Staff Office will review all information provided by candidates, any information that the public may provide in response to the posting of information about the candidates on the SAB website, and information gathered by the SAB Staff independently on the background of the candidates. The SAB Staff Office Director makes the final decision about who will serve on the Committee based on all relevant information. For the EPA SAB Staff Office, a balanced committee or panel is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which, among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to adequately address the general charge. Specific criteria to be used in evaluating a candidate include: a) scientific and/or technical expertise, knowledge, and experience; b) availability and willingness to serve; c) absence of financial conflicts of interest; d) absence of appearance of a lack of impartiality; e) skills working in committees, subcommittees, and advisory panels; and, for the panel as a whole, f) diversity of, and balance among, scientific expertise, viewpoints, etc.

Please provide any comments you may have with respect to the candidates, no later than July 14, 2009. Please make your comments to the attention of Dr. Thomas Armitage, Designated Federal Officer. Emailing comments (armitage.thomas@epa.gov) is the preferred mode of receipt.

Candidates to Augment the Ecological Processes and Effects Committee for Review of Nutrient Criteria Guidance

Baker, James

Iowa State University

Dr. James L. Baker currently works part-time with the Iowa Department of Agriculture and Land Stewardship (IDALS) and is a professor emeritus (retiring in July 2004) with the Department of Agricultural and Biosystems Engineering at Iowa State University (ISU) in Ames. His research of over 30 years focused on the quantification and reduction of the movement of nonpoint source water pollutants with surface runoff and subsurface drainage from agricultural lands; i.e. nutrients, pesticides, sediment, and bacteria. He worked with farm management practices and equipment that result in protection of our soil resource against erosion, in efficient use of agricultural chemicals and energy resources, and in improved water quality of agricultural drainage. His work also included the effects on water quality of off-site practices involving permanently vegetated filter/buffer strips and constructed/reconstructed wetlands. He comes from a farm/ranch background from South Dakota, with a Ph.D. in physical chemistry from Iowa State University in 1971, and B.S. degree in chemistry from the South Dakota School of Mines and Technology in 1966. Since retirement, his part-time work with IDALS has been as the technical information coordinator for the Upper Mississippi River Sub-basin Hypoxia Nutrient Committee (UMRSHNC).

Bell, Clifton

Malcolm Pirnie, Inc.

Mr. Clifton F. Bell is an Associate Hydrologist with Malcolm Pirnie, Inc. in Newport News, Virginia. He has expertise in water quality management, modeling, and permitting. Mr. Bell holds an M.S. in Environmental Engineering from the Virginia Polytechnic Institute and State University and a B.S. in Geology from the College of William and Mary. From 1992-1997, he served as a hydrologist with the Virginia District of the U.S. Geological Survey, where he was Project Chief of the Virginia River Input Monitoring Program. Since joining Malcolm Pirnie in 1997 he has been the lead scientist for water quality management projects in eight states. Mr. Bell has national-level expertise in nutrient/eutrophication issues. On behalf of the Virginia and Maryland Associations of Municipal Wastewater Agencies (V/MAMWA), he served on U.S. Environmental Protection Agency-led task groups for the derivation of nutrient-related criteria for the Chesapeake Bay (2000-2003). On behalf of the V/MAMWA, he served on the Virginia Department of Environmental Quality's ad hoc technical advisory and stakeholder committees for freshwater nutrient criteria (2005-present). He is lead consulting scientist to the Arizona Department of Environmental Quality (DEQ) on derivation of nutrient criteria for lakes and reservoirs, and lead scientist for nutrient-related studies of diverse water bodies including Stoneman Lake (Arizona), Cahaba River (Alabama), and the St. Lucie Estuary (Florida). He is a licensed professional engineer, certified professional geologist, and certified nutrient management planner in Virginia. Mr. Bell is active in the Water Environment Federation and is President-Elect of the Virginia Chapter of the Soil and Water Conservation Society.

Belton, Thomas

New Jersey Department of Environmental Protection

Mr. Thomas Belton is a Research Scientist in the Division of Science Research and Technology within the New Jersey Department of Environmental Protection (NJDEP). He has a B.A. in Classical Languages from St. Peter's College, attended both the University of Pennsylvania and City University of New York for graduate work in Biology, and has an M.A. in Biological Oceanography from the City College of New York. Mr. Belton's chief responsibility at NJDEP is to develop water quality and multimedia assessment tools through applied research for NJDEP's water, air, and natural resource programs. In addition, he provides technical support and co-chairs several technical committees associated with several National Estuary Program estuaries in New Jersey including the Toxics Work Groups for both the New York-New Jersey Harbor and the Delaware National Estuary Programs. He is a co-principal investigator on a number of research projects including source trackdown of PCBs thorough wastewater collection systems in both the New York -New Jersey Harbor and the Delaware Estuary (Camden City); fish contamination studies; the development of algae as bioindicators of cultural eutrophication; and investigations into atmospheric contaminant deposition effects on sensitive New Jersey Pine Barren forests. Mr. Belton also teaches as an Adjunct Professor at various colleges in New Jersey. His teaching includes courses in marine biology, estuarine ecology, and environmental science. Results of Mr. Belton's research on contaminants in fish tissue formed the basis for fish consumption advisories and fishing bans that are currently in effect in New Jersey.

Bernhardt, Emily

Duke University

Dr. Emily Bernhardt is an Assistant Professor in the Department of Biology at Duke University. She holds a secondary appointment to the faculty in the Division of Environmental Science and Policy, Nicholas School of the Environment and Earth Sciences, Duke University. Dr. Bernhardt holds a Ph.D. in Ecology and Evolutionary Biology from Cornell University (2001) and a B.S. in Biology from the University of North Carolina, Chapel Hill (1996). Dr. Bernhardt's research interests focus on controls of carbon and nitrogen cycling in streams and soils, and biogeochemistry in a watershed context. From 2003-2007 she was the director of the National River Restoration Science Synthesis (NRRSS), leading a multi-investigator effort to evaluate the state of the practice of river restoration in the United States. Much of her current research focuses on the efficacy of river and wetland restoration in accomplishing water quality improvement objectives. Dr. Bernhardt's awards and fellowships include: Outstanding Postdoctoral Mentor Award, Duke University Postdoctoral Association (2008), National Science Foundation CAREER Award (2005), Hynes Award for New Investigators from the North American Benthological Society (2004), and a National Science Foundation Doctoral Fellowship (1996-2000). Dr. Bernhardt has published numerous peer reviewed papers and served as a member of the executive committee of the North American Benthological Society and the secretary of the Biogeosciences section of the Ecological Society of America.

Bierman, Victor

Limno-Tech, Inc.

Dr. Victor Bierman is currently a Senior Scientist at LimnoTech. He earned an A.B. in Science from Villanova University (1966), and an M.S. in Physics (1971) and Ph.D. in Environmental Engineering (1974) from the University of Notre Dame. Dr. Bierman has 35 years of experience in the development and application of water quality models, deterministic and empirical, leading to his publication of over 100 technical papers and reports. He is a former U.S. EPA National Expert in Environmental Exposure Assessment, and a former Associate Professor in the Department of Civil Engineering at the University of Notre Dame. Dr. Bierman has been actively involved with the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and has conducted numerous data assessment and modeling studies in freshwater systems including Lake Okeechobee, the Florida Everglades, Lake Mead, and the Ohio, Middle Cape Fear, Columbia and Illinois Rivers. He also conducted an independent scientific peer review for the U.S. EPA of a demonstration study of a linked HSPF-AQUATOX modeling system as an alternate approach for development of numeric water quality criteria.

Boyer, Elizabeth

Pennsylvania State University

Dr. Elizabeth W. Boyer is Associate Professor, School of Forest Resources, Pennsylvania State University; Assistant Director, Penn State Institutes of Energy and the Environment; and Director, Pennsylvania Water Resources Research Center. Until recently, Dr. Boyer was Assistant Professor in the Department of Environmental Science, Policy and Management at the University of California, Berkeley. She holds a B.S. degree from Penn State University in the Department of Geography (concentration in remote sensing and geographic information), M.S. and Ph.D. degrees from the University of Virginia in the Department of Environmental Sciences (concentration in hydrology), and has had post-doctoral experience at Cornell University in the Program in Biogeochemistry and Environmental Change. Prior to her current position, she served on the faculty at the State University of New York's College of Environmental Science and Forestry, and has held adjunct positions at Cornell University and at Syracuse University. Dr. Boyer's research program addresses coupled hydrological and ecological processes that affect water quality (particularly nutrients and sediments) and water quantity (streamflow and water yield) issuing from watersheds. She is interested in how human activities such as land use change and urbanization and natural variability such as droughts and floods influence ecosystems and water quality conditions in surface waters. She is the co-chair of the upcoming Gordon Conference on Catchment Science: Interactions of Hydrology, Biology and Geochemistry, and is an active participant in activities of the American Geophysical Union and the Consortium of Universities for the Advancement of Hydrologic Science.

Brezonik, Patrick L.

University of Minnesota

Dr. Patrick Brezonik is a Professor in the Department of Civil Engineering at the University of Minnesota. He was the Director of the Water Resources Center at the University of Minnesota from 1985 to 2003 and during that period founded and directed the interdisciplinary graduate program in Water Resources Science. Dr. Brezonik holds a Ph.D. (1968) and M.S. (1965) in Water Chemistry from the University of Wisconsin in Madison and a B.S. (1963) in Chemistry from Marquette University. From 2004 to 2007 he served as Program Director for Environmental Engineering at the National Science Foundation and Program Manager for the WATERS Network initiative. From 1966-1981, Dr. Brezonik served as Assistant, Associate, and Full Professor in the Department of Environmental Engineering Sciences at the University of Florida. He was a Guest Professor at the Swiss Federal Institute of Technology in Zurich, Switzerland in 1971-72 and in the summer of 1980. Among various awards, he received the Warren Hall Medal from the Universities Council on Water Resources in 2007. Dr. Brezonik has participated on numerous committees of the National Research Council and was a member of its Water Science and Technology Board (1993-96), and the Research Council of the Water Environment Research Foundation from 1992 to 1997. Dr. Brezonik’s research interests are focused on the impacts of human activity on water quality and the biogeochemical cycles of important elements (nitrogen, phosphorus, trace metals) in large natural systems–watersheds and lakes. His research has emphasized field studies, including experimental manipulations in large systems, and modeling approaches. His recent research projects have been in four main areas: (1) mercury biogeochemistry; (2) applications of satellite imagery to evaluate lake quality; (3) coupled biogeochemical cycles of carbon, nitrogen and phosphorus in urban and agricultural systems; and (4) small-scale nutrient cycling processes in soil-sediment-water systems. His mercury research is concerned with chemical transformations of mercury in wetland-lake ecosystems, with emphasis on photochemical processes and interactions between mercury forms and natural organic matter (humic substances) in these water bodies. His work with satellite imagery focuses on regional analyses and long-term trend assessments of trophic state conditions in lakes by use of Landsat and new satellite platforms. His work on coupled biogeochemical cycles of the major elements is interdisciplinary and involves comparative analyses at the regional scale of nutrient budgets for urban, agricultural and natural regions in the Twin Cities and Phoenix (Arizona) metropolitan areas. Quantifying the importance of denitrification as a nitrogen sink in small agricultural streams is an example of a current project in the fourth area. Some of his research has been conducted through large multi-disciplinary projects. For example, the experimental acidification of a whole lake in northern Wisconsin was done in cooperation with limnologists, fisheries biologists, and hydrologists from several institutions and agencies. His research has been conducted in a variety of locations, including Lake Okeechobee, Florida, urban lakes in the Twin Cities and pristine lakes in northern Michigan, Wisconsin, and Minnesota.

Brown, Jeanette

Stamford Water Pollution Control Authority

Ms. Jeanette Brown, Executive Director Stamford Water Pollution Control Authority, has 35 years experience operating wastewater treatment works which include nutrient removal. For the past 7 years, she has also been an Adjunct Professor of Environmental Engineering at Manhattan College teaching BNR (biological nitrogen removal) design. She has lectured at Clemson and University of Texas on BNR. She has served on the Connecticut Nitrogen Trading Advisory Committee since its inception in 2001. Ms. Brown has been the project manager for EPA and State funded research projects on nutrient removal. She has given numerous presentations on biological nutrient removal at conferences sponsored by regulatory agencies, states, and professional organizations. Ms. Brown has a Bachelor of Science from the University of Maryland, a M.S. in Environmental Engineering from Manhattan College, and graduate work in zoology and oceanography at the University of Connecticut. She's a Diplomate (Board Certified Environmental Engineer) of the American Academy of Environmental Engineers and a Registered Professional Engineer in Connecticut. Ms. Brown serves on the Board of the Water Environment Research Foundation. Ms. Brown is a long-standing member of the American Society of Civil Engineers and the Water Environment Federation, serving numerous times as Committee Chair and Elected Officer for both organizations.

Canton, Steven

GEI Consultants, Inc.

Mr. Steven P. Canton is a Vice President with GEI Consultants, Inc., and has over 30 years of professional experience in the design of aquatic evaluation programs, field sampling of aquatic habitats, water quality/biological data analysis, and statistical analysis of stressor effects. Mr. Canton holds an M.S. in Zoology (specialization in stream ecology/limnology) from Colorado State University (1976) and a B.A. in Biology (with Honors) from St. Olaf College (1975). He is a recognized expert in water quality impacts on aquatic life, and frequently provides expert support for regulatory water quality hearings, environmental assessments, and ambient water quality standards development. Mr. Canton also oversees GEI's Aquatic Laboratory where analyses are regularly conducted on aquatic macroinvertebrates, whole effluent toxicity (WET) testing, nutrient analysis, and various U.S.EPA approved water quality and nutrient analyses. He has completed project work in over 30 states. He frequently provides expert witness support and testimony with regard to water quality standards, use-classifications, and stream segmentation for water quality hearings around the United States. He has also participated as an invited expert for a workshop on selenium risk evaluation in aquatic environments for the Society of Environmental Toxicology and Chemistry, has provided peer review for selenium effects issues near coal mining sites in British Columbia (on behalf of the British Columbia Ministry of the Environment) and peer reviewed new molybdenum water quality standards (on behalf of the International Molybdenum Association). His experience includes 1) providing expert witness in support of proposed site-specific ambient selenium standards for portions of the Arkansas River basin in Colorado, 2) providing expertise to address proposed stream classification and standards changes on tributaries to the Colorado River near Grand Junction related to ammonia toxicity issues, flow modification, habitat quality, and water quality (e.g., selenium toxicity), and 3) providing a peer review for the draft U.S. EPA selenium criteria document, including review of data usage, analysis techniques, and preparation of written comments.

Czapar, George

University of Illinois

Dr. George Czapar is an Extension Educator in Integrated Pest Management for the University of Illinois and an Adjunct Associate Professor in the Department of Crop Sciences. He also leads the Strategic Research Initiative in Water Quality for the Illinois Council on Food and Agricultural Research (C-FAR). The goal of this state-wide project is to help develop the scientific basis for water quality standards in Illinois. In 1998, he helped establish the Illinois Council on Best Management Practices (C-BMP), a coalition of agribusinesses, agricultural organizations, and University of Illinois Extension. The mission of C-BMP is to assist and encourage adoption of best management practices to protect and improve water quality in Illinois. Dr. Czapar received his B.S. and M.S. degrees in Agronomy from the University of Illinois, and a Ph.D. in Weed Science from Iowa State University. He serves on several state and regional committees including the Governor's Groundwater Advisory Council, the Illinois EPA Nutrient Criteria Scientific Advisory Committee, and the Illinois Conservation and Climate Initiative Advisory Committee. Dr. Czapar's research has been funded by the Illinois Council on Food and Agricultural Research, Illinois Council on Best Management Practices, Illinois Fertilizer Research and Education Council, U.S. EPA, Illinois Environmental Protection Agency and Illinois Department of Natural Resources. He is a member of the American Society of Agronomy, the Weed Science Society of America, and the Soil and Water Conservation Society.

David, Mark

University of Illinois

Dr. Mark B. David is a Professor in the Department of Natural Resources and Environmental Sciences at the University of Illinois at Urbana-Champaign (UIUC), where he has been on the faculty since 1985. He earned his B.S. from the Pennsylvania State University, M.S. from the University of Maine, and his Ph.D. from the State University of New York, College of Environmental Science and Forestry. Dr. David's research is focused on the biogeochemistry of nutrients in agricultural, forested, and aquatic ecosystems. He has conducted interdisciplinary research to study complex systems from a variety of approaches. His recent and current research program is focused on agricultural and aquatic biogeochemistry of nitrogen and phosphorus, including linkages between agricultural and aquatic systems. He has studied nitrogen transformations and export at agricultural field, watershed, and regional scales; examined the use of wetlands for reducing downstream nutrient losses; and has been evaluating the interactions of nutrients (nitrogen and phosphorus), algal growth, and dissolved oxygen with resulting impacts on biotic integrity in Illinois streams and rivers. He has authored or co-authored more than 115 refereed journal articles, and many oral and poster presentations at national meetings, along with other technical and non-technical publications. Dr. David's research is highly cited: he was named as an ISI Highly Cited Researcher in Ecology and Environment. He has been elected as a Fellow in the Soil Science Society of America, the American Society of Agronomy, and the American Association for the Advancement of Science, and recently won the UIUC College of ACES, Senior Faculty Award for Sustained Excellence in Research as well as the Paul A. Funk Award, the highest award for career impact in his college. Dr. David has served as an associate editor for both the Soil Science Society of America Journal and for the Journal of Environmental Quality; has frequently served as a panel member for review of proposals for funding from the U.S. Department of Agriculture (USDA), National Science Foundation (NSF), and U.S. Environmental Protection Agency (U.S EPA); and has served on review teams to assess departmental and programmatic activities at several other universities. He recently served on the U.S.EPA Science Advisory Board, Hypoxia Advisory Panel that conducted a reassessment of hypoxia in the Gulf of Mexico, including nutrient sources from the Mississippi River basin. National and state competitive grants have supported his recent biogeochemistry research in Illinois and the Midwest. This includes NSF Biocomplexity in the Environment Coupled Human/Natural Cycles, the Illinois Council for Food and Agricultural Research, and new work on bioenergy crops and the environment through the Energy Biosciences Institute.

DePinto, Joseph V.

Limno-Tech, Inc.

Dr. Joseph DePinto is a senior scientist at Limno-Tech, Inc. He has been a part of the Great Lakes research community for 27 years involved with research on such topics as nutrient eutrophication; toxic chemical exposure and bioaccumulation analysis; contaminated sediment analysis and remediation; aquatic ecosystem structure and functioning; and watershed, tributary, and whole-lake modeling. Prior to employment with Limno-Tech he was a Full Professor in the Department of Civil, Structural and Environmental Engineering, and Director of the University-wide Great Lakes Program at the University at Buffalo. Recent relevant projects include: development and application of an integrated exposure model for PCBs in Green Bay, Lake Michigan; investigation of nutrient cycling/food web interactions in Lake Ontario through the development of a model that couples nutrient-phytoplankton relationships with a complex food web bioenergetics model; leading a team of scientists and engineers at the University at Buffalo in the development of a Geographically-based Watershed Analysis and Modeling System (GEO-WAMS), a Modeling Support System that coupled a Geographic Information System (ARC-INFO) with existing and newly developed watershed and water quality models; application of sediment and contaminant mass balance models to evaluate remediation of contaminated sediments in a number of river systems, including the Buffalo River, St. Clair River, Hudson River, Lower Fox River, and Kalamazoo River; and development of methods for spatial and temporal interpolation of atmospheric data collected as part of the EPA-Lake Michigan Mass Balance Study. He participated in the Society of Environmental Toxicology and Chemistry (SETAC) Pellston Conference on "Criteria for Persistence and Long-Range Transport of Chemicals in the Environment," in1998; was a Peer Reviewer for U.S. Environmental Protection Agency Environmental Research Laboratory-Duluth,on the Dioxin Aquatic Risk Assessment Report, (July 1993 - October, 1993), past president and serves on the Board of Directors of the International Association for Great Lakes Research, and is Associate Editor, *Journal of Great Lakes Research*, January, 1984-present. He received his Ph.D. in Environmental Engineering in 1975 from the University of Notre Dame, Notre Dame, Indiana.

Dodds, Walter

Kansas State University

Dr. Walter Dodds is a University Distinguished Professor in Biology at Kansas State University. He received a Ph.D. in Biology from the University of Oregon (1986) and joined the faculty of Kansas State University in 1990 following research at the University of Montana as a National Science Foundation (NSF) Postdoctoral Research Fellow. Dr. Dodds has studied nutrients in aquatic systems with emphasis on nutrient cycling and eutrophication. He has developed nutrient-algal relationships for streams, and been involved with efforts to formalize links between ecosystem integrity and nutrients. Dodds has published over 100 peer-reviewed papers, several of which serve as foundational papers on eutrophication of streams, and is the author of a widely adopted text on freshwater ecology. Dr. Dodds has previously served as an associate editor for *Journal of Phycology*, *Journal of the North American Benthological Society*, and the *Journal of Geophysical Research Biogeosciences*; he is currently on the editorial board of *Freshwater Ecology*.

Ferrara, Raymond

Omni Environmental, LLC

Dr. Raymond Ferrara has thirty years of experience as an educator, scholar and consultant. He holds a doctoral degree from the Massachusetts Institute of Technology and a Master's degree from Manhattan College in environmental engineering. Dr. Ferrara is a former faculty member at both Princeton University and Lafayette College. At Lafayette, he was also Head of the Department of Civil Engineering. Presently, Dr. Ferrara is a founding Principal of Omni Environmental, LLC. located in Princeton, NJ. He has served on the Program Review Panel for the National Science Foundation Small Business Innovative Research Program, the Federal Insecticide, Fungicide, Rodenticide Act Scientific Advisory Panel, and the Program Review Panel for the National Science Foundation Research Initiation Grant Program. While a faculty member at Princeton and Lafayette, Dr. Ferrara taught graduate and undergraduate courses and was actively engaged in research in the areas of water quality modeling, stormwater quality control, and toxic and hazardous chemical fate in ground and surface waters. He is presently the Editor for the American Society of Civil Engineers' (ASCE) *Journal of Environmental Engineering* and has also served on the editorial board for the American Water Resources Association *Water Resources Bulletin*. He has served as Chair of the ASCE Environmental Engineering Division Awards Committee. Dr. Ferrara's consulting activities have included providing services to a wide variety of clients in both the public and private sectors. Dr. Ferrara is well known throughout the United States for his work in complex litigation matters involving contamination of water resource systems and drinking water supplies. He is also widely known for his work in water quality management and National Pollution Discharge Elimination System (NPDES) permit matters.

Helmers, Matthew

Iowa State University

Dr. Matthew Helmers is an Assistant Professor in the Department of Agricultural and Biosystems Engineering at Iowa State University. Dr. Helmers holds a Ph.D. in Agricultural and Biological Systems Engineering from Iowa State University (2003), M.S. in Civil engineering from the Virginia Polytechnic Institute and State University (1997), and B.S. in Civil Engineering from Iowa State University (1995). The goal of Dr. Helmers' research and extension work at Iowa State University is to protect and enhance the quality of water resources by providing other researchers, agency personnel/policy makers, producers, and the general public with up-to-date data and information on water resource issues. The work is focused in the area of subsurface drainage and in the broader areas of water resources and water quality management. His extension program focuses on the areas of water quality and water management as they relate to crop and animal systems. He works closely with field extension engineers and stakeholders; commodity groups; environmental organizations; and state, regional, and national agencies. Dr. Helmers' research interests are in the areas of water management and water quality, specifically non-point source pollution, drainage, in-field performance of vegetative filters, and the impact of crop and animal production systems on Iowa's water resources. In addition, Dr. Helmers has research interests in monitoring and modeling watershed hydrology, including the hydrologic response of watersheds to land-use changes. Much of his present research focuses on subsurface drainage and the impacts of subsurface drainage on hydrology and water quality in agricultural areas. Previous research focused on multi-dimensional overland flow of water in vegetative filters. The study included a comparison of measured and modeled overland flow to evaluate the sediment-trapping efficiency of vegetative filters.

Herz, William

The Fertilizer Institute

Mr. William Herz is the Vice President of Scientific Programs for The Fertilizer Institute (TFI). He holds a bachelor of science from Cornell University and a Master of Public Health from George Washington University in environmental and occupational health. With more than 20 years of professional experience, has a multidisciplinary background in risk management and assessment, toxicology, public health, and environmental science. Mr. Herz works with stakeholders on nutrient criteria development at the state, watershed and federal level. On behalf of the George Washington University Center for Risk Science he helped develop risk assessment protocols for the U.S. Environmental Protection Agency (U.S. EPA) Office of Water. On behalf of the fertilizer industry he led the development of a risk assessment protocol for non-nutritive elements in fertilizers. This evolved into a collaborative effort with the U.S. EPA and the California Department of Food and Agriculture. He also currently serves on the EPA Science Advisory Board panel for integrated nitrogen. Mr. Herz has a background in helping agencies prioritize risk reduction, having worked in this capacity with both the U.S. EPA Office of Water and Office of Solid Waste and Emergency Response. He has published articles on the topic of risk reduction prioritization amongst government agencies including “A Process to Reconcile Priorities Among Agencies Responsible for Environmental Health Risks” and “A Risk Management Perspective on Fertilizer Safety.” Mr. Herz has been involved in the planning and implementation of the International Nitrogen Initiative (INI). TFI remains active with this group, and co-funded a further effort with the Scientific Committee on Problems in the Environment (SCOPE) to produce a book entitled “Agriculture and the Nitrogen Cycle: Assessing the Impacts of Fertilizer Use on Food Production and the Environment.” Mr. Herz has chaired a concurrent session at the 3rd Annual Nitrogen Conference in Nanjing, China, in Oct., 2004 entitled "NOx, N_2O, and NH_3 Emissions at Global and Regional Scales" and presented a paper within this session entitled "Nitrogen Leakage and the Agricultural Component." Recently he chaired a plenary session on nitrogen and phosphate trading at the 2nd Annual Water Quality Trading Conference entitled "Trading with Non-Point Sources." Relevant recent experience includes serving the United States Department of Agriculture as an expert reviewer for the National Research Initiative competitive grants program in agricultural air quality, serving as an invited expert to comment on the Canadian government’s rule on particulate matter, serving as a reviewer on the Central Region Air Planning Association development of models for ammonia emissions, and working with the state of Iowa to develop regulations governing agricultural air quality. He also has developed numerous technical comments on both the feasibility and methodology surrounding nutrient reduction and criteria for the Gulf of Mexico hypoxic area and for the Chesapeake Bay watershed. Mr. Herz has served as an officer of the American Chemistry Society agricultural subdivision, where he organizes symposia on topics related to agricultural and environmental quality. He was critical in enlisting industry support and funding for a number of voluntary regulatory initiatives or research efforts that further the goal of product stewardship or product safety. For example, TFI undertook a voluntary initiative under the U.S. EPA’s high production volume challenge, and spent over $3 million to generate detailed toxicological and ecotoxicological data on nitrogen based fertilizers, among others. In addition, he supported the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) meeting on Agriculture and Air Quality to be held at the Bolger Center in Potomac, Maryland. Mr. Herz led the development of the TFI Product Stewardship program, which focuses on the promotion of nutrient management principles and guidelines. Recently he was a co-author of the peer-reviewed “Know Your Fertilizer Rights” which appeared in the Crops and Soils journal and authored a book chapter entitled “Fertilizers: Agricultural and Horticultural” which appears in the United States Geological Survey 7th Edition of *Industrial Minerals and Rocks*.

Lee, G. Fred

G. Fred Lee & Associates

Dr. G. Fred Lee is President of the environmental consulting firm G. Fred Lee & Associates. Dr. Lee earned his B.A. degree in environmental health science from San Jose State College in San Jose, CA. He earned a Master of Science in Public Health degree from the School of Public Health at the University of North Carolina, Chapel Hill with emphasis on environmental science and environmental chemistry. The focus of his work there was water quality evaluation and management for the protection of public health and environmental quality from chemical constituents and pathogenic organisms. Dr. Lee earned his Ph.D. degree in environmental engineering from Harvard University. A major area of his specialization there was aquatic chemistry, which focused on the transport, fate, transformation, and control of chemical constituents in aquatic (surface and groundwater) and terrestrial systems, as well as in waste management facilities. For 30 years Dr. Lee held graduate-level faculty positions, teaching and conducting research in departments of civil and environmental engineering at several major U.S. universities, including the University of Wisconsin, Madison (Professor of Water Chemistry, Department of Civil and Environmental Engineering; Director, Water Chemistry Program), University of Texas at Dallas (Professor of Environmental Engineering and Sciences; and Director of the Center for Environmental Studies), Colorado State University, and the New Jersey Institute of Technology (Distinguished Professor of Civil and Environmental Engineering; Director Site Assessment and Remedial Action Division of Cooperative Center for Research in Hazardous and Toxic Substances). During that time he conducted more than $5 million in research and published approximately 500 professional papers and reports based on his investigations. In 1989, he relinquished his position as Distinguished Professor of Civil and Environmental Engineering to expand his part-time consulting into a full-time endeavor. Dr. Lee's consulting work has involved the evaluation and management of impacts of chemical contaminants on water quality, aquatic life, and public health. This work has included problems associated with water supply, water quality, water and wastewater treatment, control of water pollution in fresh and marine waters and groundwaters, and solid and hazardous waste impact, evaluation, and management.

McLaughlin, Douglas

National Council for Air and Stream Improvement

Dr. Douglas McLaughlin is a Principal Research Scientist with the National Council for Air and Stream Improvement (NCASI), a non-profit environmental research organization that focuses on environmental topics of interest to the forest products industry. He holds Bachelors and Masters degrees in Biology and Aquatic Biology, respectively, from the University of Wisconsin - Green Bay. He received his Ph.D. from the University of Wisconsin - Madison where he studied the environmental behavior of polychlorinated biphenyls. He has conducted applied water resources research for over 25 years and has extensive experience in the application of statistical methods to the analysis of field and laboratory data to inform water resources management. Recent research involves the use of regression analysis and other statistical methods to characterize relationships among variables relevant to surface water nutrient management, evaluate time trends in exposure to hydrophobic organic contaminants, and to support wastewater treatment plant optimization. This work also explores the effect of data analysis choices, including the treatment of non-detects, on environmental decision making. Other research topics include the characterization of uncertainty in aquatic life water quality criteria, the implementation of thermal water quality standards into NPDES permits, the characterization of watersheds for water quality management using geographic information systems (GIS), incorporating natural background concentrations and temporal variations into water quality criteria, surface water monitoring program design, and others. Dr. McLaughlin has served since 2003 as NCASI's representative on the Advisory Committee on Water Information (ACWI), a multi-organization committee established under the Federal Advisory Committee Act to serve the Executive Branch of the United States. He is currently a member of the National Water Quality Monitoring Council, an ACWI sub-group dedicated to the coordination of consistent and scientifically defensible methods and strategies to improve water quality monitoring, assessment and reporting. In this capacity, he is taking a lead role in a new collaborative effort to develop an internet-accessible catalog of statistical methods, their recommended uses, and available guidance documents for use in addressing water information topics.

Mebane, Christopher

U.S. Geological Survey

Mr. Christopher Mebane holds a B.SC. in Marine Science from the U.S. Coast guard Academy (1982). His professional interests and experience are focused on water pollution ecology in streams, relating human-influences on stream environments to biological effects and estimating risks of adverse effects. Since 2006, his work has primarily been with the U.S. Geological Survey's (USGS) National Water Quality Assessment (NAWQA) study of the effects of nutrient enrichment on stream ecosystems in agricultural settings. The study included chemical, physical, and biological sampling of 30 streams located in the upper Snake River basin of Idaho and Nevada. Topics of particular interest in the study include: 1) seasonal patterns in patterns between nutrients, flows, algae and plants, 2) factors limiting nuisance growth in rooted aquatic plants vs. algae, 3) integrating laboratory and in situ nutrient-limitation testing to field conditions, and 4) factors influencing whether stream metabolism acts to process nutrients or transport nutrients downstream. Field sampling and testing were concluded in late 2008. Data review and analyses are underway and publications are planned for 2010. Preliminary results were presented at the Society of Environmental Toxicology and Chemistry (SETAC) 2008 meeting. Another priority activity has been working with the National Marine Fisheries Service to evaluate water quality and criteria needs for Snake River salmon and steelhead listed under the Endangered Species Act. In addition to nutrients, Mr. Mebane has long been interested in predicting risks and effects of trace metals in freshwater ecosystems, particularly in relation to hard rock mining.

Miller, Theron

Jordan River/Farmington Bay Water Quality Council

Dr. Theron Miller is currently serving as a research scientist for the Jordan River/Farmington Bay Water Quality Council in Utah. He holds a Ph.D. in Environmental Biology and Ecology from the University of Alberta where he studied sediment/water interface chemistry and modeled sources of oxygen depletion and re-aeration in winterkill lakes. Dr. Miller also holds an M.Sc. in Zoology (Aquatic Toxicology) from the University of Alberta (1980), a B.S. in Fishery Biology (qualified) from Utah State University (1976), and a B.S. in Wildlife Science from Utah State University (1975). From 1999 – 2009 Dr. Miller was an environmental scientist in Utah's Division of Water Quality (DEQ). While at DEQ he demonstrated an innovative approach to a broad spectrum of water quality issues. He worked successfully in the nonpoint source program and in performing and reporting Clean Water Act Section 303(d) assessments on lakes and reservoirs for Utah's Integrated Reports to Congress. In recent years he organized the Division's wetland program and was a leader in developing measures and identifying thresholds that can be used in establishing linkages between nutrient concentrations in wetlands and various ecological indicators that reflect beneficial use support. His research, reports, and publications have reflected a superior knowledge of nutrient chemistry and his desire to understand its interaction with multiple levels of aquatic ecosystems. Dr. Miller has served on the planning committee for the U.S. Environmental Protection Agency's (U.S. EPA's) National Wetland Condition Assessment, planned for 2011. He co-chaired a panel of nationally recognized selenium experts and participated in the successful development of a site-specific selenium standard for Great Salt Lake. For several years he has been a member of the U.S. EPA Region 8 Western Wetlands Monitoring and Assessment Workgroup. As a research scientist for the Jordan River/Farmington Bay Water Quality Council, Dr. Miller is directly engaged in the Total Maximum Daily Load (TMDL) development process for the Jordan River. The Jordan River was identified as impaired for low dissolved oxygen in 2004. However, there is considerable evidence that channelization, levee construction, sedimentation and dredging are also impacting the river and non-point sources of sediments and organic material are contributing to the dissolved oxygen deficit. In order to develop a more thorough understanding of the Jordan River ecosystem, Dr. Miller will investigate the potential causes of low dissolved oxygen and habitat impairment. Toward this end, Dr. Miller is actively engaged in the Technical Advisory Committee for the Jordan River where budgets and tasks are being identified, prioritized and shared between the Utah Division of Water Quality and the Jordan River/Farmington Bay Water Quality Council.

Mulholland, Patrick

Oak Ridge National Laboratory

Dr. Patrick. Mulholland is currently a Distinguished Research and Development Staff Scientist in the Environmental Sciences Division, Oak Ridge National Laboratory. He has a Ph.D. (1979) in Environmental Biology from the University of North Carolina at Chapel Hill; and B.S. (1973) and M.S. (1975) degrees in Environmental Engineering from Cornell University. His research interests are the ecology of streams (nutrient cycling, primary production, algal-herbivore interactions, carbon dynamics and energy flow), biogeochemistry and land/water interactions in forested catchments, watershed hydrology, wetland ecology, and climate change effects on freshwater ecosystems. He is the co-author of a book on groundwater and stream interactions, senior author of more than 50 peer-reviewed journal articles (total of more than 130 publications). He is an AGU Fellow and AAAS Fellow. Mulholland has published many papers on the spatial and temporal patterns and control of nutrient cycling in streams and watersheds, including recent papers published in *Nature* and *Limnology and Oceanography* on nitrate uptake and denitrification in streams across different biomes in the U.S.

Panuska, John

University of Wisconsin - Madison

Dr. John Panuska is a Natural Resources Extension Specialist in the Biological Systems Engineering Department, University of Wisconsin. Dr. Panuska teaches courses for the Department and conducts outreach programming and applied research. Dr. Panuska received his B.S. in Civil Engineering from the South Dakota School of Mines & Technology, M.S. in Agricultural Engineering from the University of Minnesota, and Ph.D. in agricultural (Biosystems) engineering from the University of Wisconsin, Madison. He has worked as an engineering consultant (4 years) and as the State Lake Management Program Engineer with the Wisconsin Department of Natural Resources (WDNR)(12 years). His expertise includes: urban storm water and agricultural runoff management, lake and reservoir nutrient modeling, water resources engineering design. His engineering design experience includes the development and application of computer models for hydrology, water quality treatment, and lake water quality response to nutrient loading. More recently his research interests include agricultural nutrient management and modeling particulate phosphorus delivery from agricultural management systems. He has served on several water quality modeling and Total Maximum Daily Load (TMDL) development advisory panels while with WDNR. While employed by University of Wisconsin – Madison, he served as a technical advisor to the Standards Oversight Council for the development of design standards for silage leachate. He is also currently on the Sediment and Nutrient Management advisory team for the Yahara (Madison) Lakes water quality improvement project. In addition, he advises Wisconsin state agency staff on technical questions on an on-going basis.

Parkhurst, Benjamin

HAF, Inc.

Dr. Benjamin Parkhurst is the owner and the principal employee of an environmental consulting company, HAF, Inc., located in Centennial, Wyoming. Dr. Parkhurst holds a Ph.D. in Zoology and Physiology, University of Wyoming (1987), an M.S. in Fishery Biology, Michigan State University (1971), and a B.S. in Fishery Biology, Michigan State University (1969). His work has been in the field of aquatic ecology and environmental consulting, studying the relationships between aquatic organisms and their environment, for over 35 years. He has worked throughout the United States as well as in several foreign countries. He has conducted numerous studies on the effects of a wide variety of environmental impacts on fish, invertebrates, aquatic plants, and aquatic habitat. These studies have included evaluations of the effects of nutrients, toxic chemicals, low dissolved oxygen concentrations, acidity, municipal waste water discharges, hazardous wastes, habitat quality and sedimentation on aquatic life. He has developed and evaluated state-of-the-science protocols for evaluating the ecological risks of nutrients, toxic chemicals, effluents, and physical stressors to aquatic life. He has conducted numerous field studies as well as laboratory toxicity tests and in situ bioassays studies on fish and invertebrates. For the Federal Water Quality Coalition, he was the lead author of the report “Guidance on Developing Nutrient Criteria for Protecting Designated Uses of Water Bodies” that provides guidance for deriving scientifically defensible nutrient criteria based on defined relationships among designated uses of water bodies, response variables, and nutrients. For the Water Environment Research Foundation (WERF), he was a co-author of “Technical Approaches for Setting Site-Specific Nutrient Criteria,” which describes methods for deriving site-specific nutrient criteria for lakes and reservoirs, rivers and streams, and estuaries. Both of these reports complement U.S. EPA’s guidance for developing

eco-regional nutrient criteria. He has worked on nutrient criteria issues for Eastern Municipal Water District, Perris, California, and Pima County Wastewater Management District, Tucson, Arizona. He was a member of the Scientific Advisory Group (SAG) for the Arid West Water Quality Research Project (AWWQRP) from 1999 - 2007. The AWWQRP was a research project funded by U.S. EPA to Pima County Wastewater Management Department, Tucson, Arizona, to study water quality issues unique to the Arid West. For the Water Environment Research Foundation, he was a member of several research advisory committees dealing with whole effluent toxicity issues.

Sharpley, Andrew N.

University of Arkansas

Dr. Andrew Sharpley joined the Department of Crop, Soil and Environmental Sciences, University of Arkansas, Fayetteville in 2006. He is Chair of the Division of Agriculture's Environmental Task Force and Associate Director of the Watershed Research and Education Center. He received degrees from the University of North Wales, United Kingdom in 1973 and Massey University, New Zealand in 1977, and spent 25 years with the U.S. Department of Agriculture – Agricultural Research Service (USDA-ARS) in Oklahoma and then Pennsylvania. His research investigates the cycling of phosphorus in soil-plant-water systems in relation to soil productivity and water quality and includes the management of animal manures, fertilizers, and crop residues. He also evaluates the role of stream and river sediments in modifying phosphorus transport and response of receiving lakes and reservoirs. He developed decision making tools for agricultural field staff to identify sensitive areas of the landscape and to target management alternatives and remedial measures that have reduced the risk of nutrient loss from farms. These tools are now widely accepted by U.S. Environmental Protection Agency (U.S.EPA), National Resources Conservation Service (NRCS), and the Comprehensive Nutrient Management Planning Strategy. He works closely with producers, farmers, and action agencies, stressing the dissemination and application of his research findings. With others in the Univiversity of Arkansas's Division of Agriculture, Farm Bureau, Arkansas Natural Resources Commission, and various commodity and producer groups, is developing an on-farm demonstration, verification, and research program to show the benefits of Best Management Practices that protect water quality and promotes sustainability. He is the Environmental Issues and Perspectives Editor for the Journal of Environmental Quality, Fellow of the American Society of Agronomy and Soil Science Society of America and received their Applied Soil Science and Environmental Quality Research Awards, and recently received USDA's Secretary's Honor and Technology Transfer Award for his contribution to developing simple risk assessment tools for use by farmers and action agencies as part of Comprehensive Nutrient Management Planning strategies. Dr. Sharpley served on National Academy of Science's Committee on "Causes and Management of Coastal Eutrophication;" USDA-CSREES-EPA "National Livestock Curriculum Project;" and U.S. EPA's Scientific Advisory Board "Hypoxia Advisory Panel" and in 2008 was inducted into the USDA- ARS Hall of Fame.

Smithee, Derek

Oklahoma Water Resources Board

Mr. Derek Smithee is currently the Water Quality Programs Division Chief for the Oklahoma Water Resources Board (1995-present). He received his M.S. in Environmental Science from the University of Oklahoma in 1989 where his thesis was "Numerical Water Quality Criteria in the 1988 Oklahoma Water Quality Standards: Their Derivation, Recalculation and National Comparison." He received his B.S.in Zoology Ecology (Business Administration Minor) from Oklahoma State University in 1984. Mr. Smithee has worked throughout his career in water and especially the WQS Program. He currently oversees Oklahoma's Water Quality Standards (WQS) and Standards Implementation rules, lake and reservoir work including diagnostic and feasibility studies, bathymetric mapping and restorations and modeling, and most of Oklahoma's surface and groundwater monitoring programs. Specific widely recognized programs include the Beneficial Use Monitoring Program (BUMP), the Oklahoma Water Watch Volunteer Monitoring Program, and Use Support Assessment Protocol Rules. He has also served as member or chair of the National Nutrients Innovations Task Force, National WQS Workgroup as both a Steering Committee and forum member, the U.S. Department of Agriculture/U.S. Environmental Protection Agency Nutrient Criteria Advisory Committee, Large Rivers Workgroup, Bacteria/Recreation Workgroup, WQS Managers Association, Co-Chair of the Association of State and Interstate Water Pollution Control Administrators' (ASIWPCA) Monitoring, Standards and Assessment Task Force, the WQS Implementation Advisory Council and Water Quality Monitoring Council. In Oklahoma he also serves on the Water Quality Monitoring Council, 303(d)/305(b) Impaired Waters Workgroup, Water Rules Committee, and the CAFO Rules Committee. He was

instrumental in the development of numerous state and federal regulations including WQS Implementation Rules, Anti-degradation requirements, numerical aquatic life and human health criteria, and Use Support Assessment Protocols.

Suplee, Michael

Montana DEQ

Dr. Michael Suplee is currently the Nutrient Coordinator for Montana Department of Environmental Quality (1998-present). He received his Doctoral and Master's degrees from Texas A&M University where he conducted research on the mechanisms regulating lake-sediment phosphate fluxes. He received his B.S. in Biological Conservation from California State University in 1985. Between his undergraduate and graduate programs, he served in the Peace Corps in Africa where he assisted farmers with establishing aquaculture systems. Dr. Suplee has worked extensively in Montana's Water Quality Standards program with a focus on nutrient criteria development since 1998. His work on deriving scientifically sound nutrient criteria for wadeable streams has been instrumental in moving Montana towards adoption of nutrient criteria. Under his leadership, Montana is one of the only states in the country tackling nutrient criteria development for larger rivers such as the Yellowstone. He has regularly published the results of his studies in peer-reviewed journals with articles covering topics such as: "How Green is Too Green? Public Opinion of What Constitutes Undesirable Algae Levels in Streams" (Journal of the American Water Resources Association (JAWRA)); Diatom Biocriteria Development and Water Quality Assessment in Montana (Diatom Research)"; and "Developing Nutrient Criteria for Streams: An Evaluation of the Frequency Distribution Method". In addition to his water quality standards workload, Dr. Suplee led DEQ's process to identify and systematically sample reference sites throughout Montana and is championing the development of periphyton diagnostic tools for making water quality attainment decisions. Currently, he is collaborating with Dr. Walter Dodds to analyze existing water quality data for the Clark Fork River and examine the success of the Voluntary Nutrient Reduction Program (VNRP) targets established for the Clark Fork River -- a project EPA heralds as a success story for voluntary programs.

Uchrin, Christopher

Rutgers University

Dr. Christopher G. Uchrin, is a Professor in the Department of Environmental Sciences, the Department of Environmental Engineering and the Department of Civil Engineering at Rutgers University, New Brunswick, New Jersey. Dr. Uchrin possesses thirty-seven years of experience as an educator, scholar and consultant. He holds a Doctoral degree in Environmental and Water Resources Engineering from the University of Michigan, Ann Arbor, a Master's degree in Environmental Engineering and a Bachelors of Engineering from Mahhattan College, Riverdale, New York. Dr. Uchrin is a Licensed Professional Engineer (1977-present). Dr. Uchrin's initial experience was gained through employment with the U.S Environmental Protection Agency where he was involved in several large hydrologic and water quality studies. Currently, Dr. Uchrin teaches several undergraduate and graduate level courses for the engineering students. Examples of courses that he teaches are: Environmental Systems Analysis for Engineering, Environmental Fate and Transport, Numerical Methods in Environmental Science and Groundwater Pollution. Dr. Uchrin has led many research initiatives over the years he has been with Rutgers University focusing on the fate and effects of contaminants in the air

and water. He has regularly published his work in peer reviewed literature, with approximately seventy-three citations to date. In addition, he has edited the book, Chemistry for the Protection of the Environment 2, published in 1996. He has also contributed to seven book chapters. He serves on the editorial boards of the Journal of Water Resources Planning and Management, ASCE (1984-1992), the Journal of Environmental Engineering, ASCE (2008-present), Journal of Environmental Science and Health (1990-present) and the Archives of Environmental Protection (Polish Academy of Sciences, 2005-present). Dr. Uchrin has served on several committees including the New Jersey Department of Environmental Protection Disinfection Advisory Group (1985-1990), the Whippany River Watershed Project (1994-2000), the Evaluation of New Jersey Ambient Monitoring Program (1994-5) and the New Jersey Total Maximum Daily Load Advisory Panel (2003-present).