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EDUCATION

- Ph.D., University of California, Berkeley, Civil and Environmental Engineering, 2000
- M.S., University of California, Berkeley, Civil and Environmental Engineering, 1994
- B.S., University of California, Los Angeles, *Cum Laude*, Civil Engineering, 1990

EXPERIENCE

- Assistant Professor, Department of Civil and Environmental Engineering, Washington State University, 2004-Present
- Principal Engineer, Water Resources, Brown and Caldwell, Walnut Creek, CA, 2001-2004
- Post-Doctoral Researcher, Kastanienbaum Limnological Institute, Switzerland, 2000-2001
- Graduate Student Researcher, University of California, Berkeley, CA, 1995-2000
- Junior/Assistant Engineer, East Bay Municipal Utility District, Oakland, CA, 1990-1993

RESEARCH ACTIVITIES

Primary research interests include effects of oxygenation enhancement on aquatic ecosystems, biogeochemistry of profundal lake sediments, mercury cycling in lakes, and enhancing pollutant degradation in constructed treatment wetlands.

Funded Research Activities (\$1.2 million as PI; \$1.7 million as co-PI)

Colville Confederated Tribes. FY2010-11. \$200,000. M. Beutel (PI) and B. Moore. *Lake Oxygenation to Improve Trout Habitat and Water Quality in Twin Lakes*. Proposal under review.

Washington State Department of Ecology. 2009-10. \$150,000. M. Barber (PI), M. Beutel, C. Orr, B. Moore. *Lake Osoyoos Drought Study*.

Washington State Omnibus Equipment Allocation. 2009-11 Biennium. \$65,000. *Funds to Acquire Brooks and Rand MERX Automated Methylmercury Analytical System*.

Washington State Centennial Clean Water Program. FY2009-10. \$250,000. R. Hummel (PI), M. Beutel, T. Erwin and J. Ullman. *Clarks Creek Water Quality Science, Restoration and Education Implementation Program*.

NFS 2009 CAREER Grant Program. 2009-13. \$400,200 (#0846446). *CAREER: Fundamental Understanding of Mercury Cycling in Lakes and Use of Reservation-Based Research to Recruit American Indians into Environmental Engineering and Science*.

Colville Confederated Tribes. FY2008-09. \$250,000. M. Beutel (PI) and B. Moore. *Lake Oxygenation Pilot Study to Improve Trout Habitat and Water Quality in Twin Lakes*.

Agouon Institute Fellowship in Microbial Ecology. 2008-12. \$158,000. M. Beutel (PI) and Stephen Dent. *Microbial Ecology of Mercury Cycling in Freshwater Lakes*.

Dow AgroSciences. 2007. \$20,000. *Pro Bono Supply of ¹⁴C-Ring-Labeled Chlorpyrifos for study of enhanced mineralization of pesticides in treatment wetlands*.

Strategic Environmental Research and Development Program. FY 2008. \$150,000. R.J. Watts (PI), A. Teel, J. Rentz and M. Beutel. *Pretreated Starch Suspensions for Low Environmental Impact Aircraft Deicing*.

- NSF Atmospheric Sciences. 2007-10. \$807,000. T. Jobson (PI) and multiple co-PIs. *Acquisition of an Integrated Atmospheric Chemistry Mobile Laboratory.*
- Inland Northwest Research Alliance Research Fellowship. 2007-09. \$60,000. *Fellowship for PhD student S. Gebremariam.*
- Washington State Water Research Center/USGS Section 104(B) Grant. FY2007. \$69,000 (2:1 match). M. Beutel (PI), R. Watts and T. Peters. *Quantifying and Enhancing Nitrogen Removal in Constructed Wetlands.*
- Murdock Charitable Trust 2007 Award Competition. \$350,000. J. Ullman (PI) and multiple co-PIs. *Support of Research in Metal Contaminated Sediments.*
- Washington State Water Research Center/USGS Section 104(B) Grant. FY2006. \$69,000 (2:1 match). M. Beutel (PI). *Effects of Sediment Oxygenation on Methylmercury Bioaccumulation.*
- WSU 2005 Faculty Seed Grant. \$20,000. M. Beutel (PI). *Enhanced Biodegradation of Chlorpyrifos in Constructed Treatment Wetlands Using Wet-Dry Pulsing.*
- WSU College of Engineering and Architecture 2006 Interdisciplinary Research Fellowship. \$24,000. *Fellowship for PhD student S. Gebremariam.*
- Washington State Water Research Center/USGS Section 104(B) Grant. FY2005. \$82,500 (2:1 match). M. Beutel (PI) and B. Moore. *Oxygenation for the Management of Sediment Mercury Release from Aquatic Sediments.*
- Fulbright Postdoctoral Grant. 2000-01. \$30,000. Swiss Federal Institute for Environmental Science and Technology, Kastanienbaum Limnological Institute, Lucerne.

WSU Mercury Laboratory Equipment Acquisition and Training (\$163,500)

- Tekran 2600 Mercury Analysis System (\$30,000; startup funds)
- AirClean Systems Class 100 Horizontal Laminar Flow Work Station (\$4,000; startup funds)
- Clean Hands/Dirty Hands trace metal sampling training (\$1,500; startup funds)
- Teflon Kemmerer Water Sampler (\$1,000; USGS 104(B) FY2006 grant)
- Methylmercury Analytical Method Training for PhD Student, Summer 2007 and 2008 (*pro bono* by Battelle Marine Sciences Trace Metals Laboratory, Sequim, WA)
- Milestone Direct Mercury Analyzer 80 with micro-balance and on-site training (\$30,000; NSF CAREER)
- Methylmercury Manual Analytical System (\$20,000; Agouron and Twin Lakes grants with some equipment lent by Battelle Marine Sciences Trace Metals Laboratory, Sequim, WA)
- Envirco Mac-10 Positive Pressure Work Area (\$2,000; Agouron and Twin Lakes grants)
- MERX Automated Methylmercury Analytical System with comprehensive operational training (\$65,000; Washington State Omnibus Equipment Allocation, purchase pending)

Applied Research/Consulting

- Parsons Engineering, Syracuse, NY. 2006-Present. *Expert review of efforts to develop lake management strategies to impede mercury bioaccumulation in aquatic biota of Onondaga Lake, a heavily polluted urban lake in NY.*
- MER Consulting, Seattle and Washington State Department of Natural Resources. 2007-09. *Evaluation of impacts of historical disposal of saw dust and wood debris on limnology and water and sediment quality in Loon Lake, a popular recreational lake in eastern WA.*
- Water Quality Engineering, Wenatchee and Washington State Department of Ecology. 2007-08. *Feasibility study of lake management strategies including lake alum treatment, alum treatment of tributary inflows, and lake aeration or oxygenation for Jameson Lake, WA.*
- Montgomery Watson and Metropolitan Water District of Southern California. 2006. *Evaluation of proposed lake oxygenation on sediment biogeochemistry in Lake Perris, a eutrophic drinking water reservoir in Southern California.*

Peer Reviewed Journal Articles (17 with 63 citations)

(*Graduate or **undergraduate student advised by Beutel; ***other WSU graduate student)

- Allen, J.G.* , M.W. Beutel, D.R. Call and A.M. Fischer. 2009. Effects of oxygenation on ammonia oxidation potential and microbial diversity in sediment from surface-flow wetland mesocosms. *Bioresource Technology*. Accepted.
- Palmer, H.R.* , M.W. Beutel and S.Y. Gebremariam*. 2009. High rates of ammonia removal in experimental oxygen-activated nitrification wetland mesocosms. *ASCE Journal of Environmental Engineering*. 135: 972-979.
- Al-Houri, Z.M.***, M.E. Barber, D.R. Yonge, J.L. Ullman and M.W. Beutel. 2009. Impacts of frozen soils on the performance of infiltration treatment facilities. *Cold Regions Science and Technology*. DOI: 10.1016/j.coldregions.2009.06.002.
- Beutel, M.W., C.D. Newton*, E.S. Brouillard and R.J. Watts. 2009. Nitrate removal in surface-flow constructed wetlands treating dilute agricultural runoff in the lower Yakima Basin, Washington. *Ecological Engineering*. 35:1538-1546.
- Churchill, J.J.* , M.W. Beutel and P. Burgoon. 2009. Evaluation of the optimal dose and mixing regime for alum treatment of Matthiesen Creek inflow to Jameson Lake, WA. *Lake and Reservoir Management*. 25:102-110.
- Lancaster, C.***, M.W. Beutel and D.R. Yonge. 2009. Evaluation of roadside infiltration to manage stormwater runoff in semi-arid eastern WA. *Environmental Engineering Science*. 26(5):941-946.
- Gebremariam, S.Y.* and M.W. Beutel. 2008. DO levels and nitrate loss in batch wetland mesocosms: Cattail versus bulrush. *Ecological Engineering*. 34:1-6.
- Beutel, M.W., N.R. Burley** and S.R. Dent*. 2008. Nitrate uptake rate in anoxic profundal sediments from a eutrophic reservoir. *Hydrobiologia*. 610(1):297-306.
- Beutel, M.W., T.M. Leonard*, S.R. Dent* and B.C. Moore. 2008. Effects of aerobic and anaerobic conditions on P, N, Fe, Mn and Hg accumulation in waters overlaying profundal sediments of an oligo-mesotrophic lake. *Water Research*. 42:1953-1962.
- Beutel, M.W., A.J. Horne, W.D. Taylor, R.F. Losee and R.D. Whitney. 2008. Effects of oxygen and nitrate on nutrient release from profundal sediments from a large, mesotrophic reservoir, Lake Mathews, California. *Lake and Reservoir Management*. 24(1):18-29.
- Beutel, M.W., I. Hannoun, J. Pasek and K. Bowman Kavanagh. 2007. Hypolimnetic oxygenation pre-design study for a large eutrophic raw water reservoir, San Vicente Reservoir, CA. *ASCE Journal of Environmental Engineering*. 133(2):130-138.
- Beutel, M.W. 2006. Inhibition of ammonia release from anoxic profundal sediments in lakes using hypolimnetic oxygenation. *Ecological Engineering*. 28:271-279.
- Beutel, M.W., N. Burley** and K.M. Culmer**. 2006. Quantifying the effects of water velocity and oxygen concentration on sediment oxygen demand. *Hydrological Sciences & Technology*. 22(4):15-28.
- Beutel, M.W. 2003. Hypolimnetic anoxia and sediment oxygen demand in California drinking water reservoirs. *Lake and Reservoir Management*. 19(3):208-221. *Second Place, Best Paper of the Year, North American Lake Management Society*.
- Beutel, M.W., A.J. Horne, J.C. Roth and N.J. Barratt. 2001. Limnological effects of anthropogenic desiccation in a large, saline lake, Walker Lake, Nevada. *Hydrobiologia*. 466:91-105.
- Beutel, M.W. 2001. Oxygen consumption and ammonia accumulation in the hypolimnion of Walker Lake, Nevada. *Hydrobiologia*. 466:107-117.
- Beutel, M.W. and A.J. Horne. 1999. A review of the effects of hypolimnetic oxygenation on lake and reservoir water quality. *Lake and Reservoir Management*. 15(4):285-297.

Journal Articles in Review (3)

- Gebremariam, S.Y.* and M.W. Beutel. Effects of drain-fill cycling on chlorpyrifos mineralization in wetland sediment-water microcosms. *Bioresource Technology*.
- Gebremariam, S.Y.* , M.W. Beutel, T.F. Hess and D. Christian. Research advances and challenges in the microbiology of enhanced biological phosphorus removal - A review. *Water Research Environment*.
- M.W. Beutel, Dent, S.R.* , G.A .Gill and B.K. Lasorsa. Methylmercury efflux from profundal sediments of an oligo-mesotrophic lake under aerobic versus anaerobic conditions. *Environmental Pollution*.

Conference Proceedings (3)

- Mobley, M., E. Shallenberger, M.W. Beutel, P. Gantzer and B. Sak. 2009. Oxygen Diffusers to Create and Maintain Fish Habitat. Proceedings on the American Fisheries Society Conference, Nashville, TN. In press.
- Beutel, M.W. 2005. Improving quality of salmonid habitat in lakes using hypolimnetic oxygenation. Proceedings of the Universities Council on Water Resources/National Institute for Water Resources Annual Conference, Portland, ME.
- Beutel, M.W. and D. Wilson. 2005. Targeted oxygen addition to Hood Canal: a potential management strategy to ameliorate the impacts of hypoxia. Proceedings of the 2005 Puget Sound Georgia Basin Research Conference, Seattle, WA.

Technical Reports (7)

- Beutel, M.W. 2008. Jameson Lake Technical Memoranda: (1) Preliminary Sizing and Cost of Aeration and Oxygenation System; (2) Sediment Oxygen Demand; (3) Sediment Phosphorus Release; (4) Effects of Alum Addition on pH and Phosphorus in Lake Water and Lake Inflow. Reports to Water Quality Engineering and Washington State Department of Ecology. 40 p.
- Beutel, M.W., H.R. Palmer* and C.D. Newton*. 2008. Quantifying and Enhancing Nitrogen Removal in Constructed Wetlands. Project Completion Report to State of Washington Water Research Center and USGS. Project 2007WA196B. 5 p.
- Dent, S.R.* and M.W. Beutel. 2007. Effects of Sediment Oxygenation on Methylmercury Bioaccumulation in Benthic Biota. Project Completion Report to State of Washington Water Research Center and USGS. Project 2006WA149B. 8 p.
- Beutel, M.W. and B.C. Moore. 2006. Oxygenation for the Management of Sediment Mercury Release from Aquatic Sediments. Project Completion Report to State of Washington Water Research Center and USGS. State of Washington Water Research Report WRR-27. 14 p.
- Beutel, M.W. 2006. Lake Perris Sediment-Water Interface Study. Report to Montgomery Watson Harza Americas, Inc. and the Metropolitan Water District of Southern California. 38 p.
- Wilson, D. and M.W. Beutel. 2005. Review of the Feasibility of Oxygen Addition or Accelerated Upwelling in Hood Canal, Washington. Report to Puget Sound Action Team. 44 p.
- Barber, M.E., M.W. Beutel, D.R. Yonge and R.H. Hotchkiss. 2004. Runoff Treatment BMP Design for Highway Runoff in Cold Climates. WSU Transportation Research Center. 10 p.

National Presentations (18)

- Mobley, M., M.W. Beutel, P. Gantzer, B.C. Moore and E. Shallenberger. 2009. "Oxygenation diffusion for fish habitat enhancement at Colville Confederated Tribe's North Twin Lake". North American Lake Management Society Conference, Hartford, CT.
- Dent, S.R.* and M.W. Beutel. 2009. "Effect of transient oxygenation on methylmercury in the hypolimnetic waters of a eutrophic freshwater lake". American Ecological Engineering Society Conference, Oregon State University, Corvallis, OR. *Awarded Best Student Presentation.*
- Whritenour, V.A.* , M.W. Beutel and J.R. Foltz***. 2009. "Effectiveness of surface flow constructed wetlands receiving agricultural runoff in mitigating pathogens and turbidity, Lower Yakima Basin". American Ecological Engineering Society Conference, Oregon State University, Corvallis, OR.
- Reed, B.** , M.W. Beutel, B.C. Moore and others. 2009. "Comprehensive limnological evaluation of water quality and trout habitat in Twin Lakes, Colville Indian Reservation". Poster. American Ecological Engineering Society Conference, Oregon State University, Corvallis, OR.
- Erlenmeyer, J.J.* and M.W. Beutel. 2009. "Phosphorus removal in constructed treatment wetlands polishing agricultural return flows in the Yakima Valley, Washington". American Ecological Engineering Society Conference, Oregon State University, Corvallis, OR.
- Allen, J.G.* and M.W. Beutel. 2009. "Microbial activity, composition and abundance in bench-scale oxygen-activated nitrification wetlands". American Ecological Engineering Society Conference, Oregon State University, Corvallis, OR.
- Gebremariam, S.Y.* and M.W. Beutel. 2009. "Effects of drain/fill cycling on chlorpyrifos mineralization in constructed treatment wetlands". American Ecological Engineering Society Conference, Oregon State University, Corvallis, OR.
- Beutel, M.W. 2008. "Applications of Oxygenation in Lakes and Wetlands". Invited presentation. University of Florida, Environmental Engineering Sciences Department, Gainesville, FL.
- Beutel, M.W. and H.R. Palmer*. 2008. "Almost beyond wetlands: Enhancing ammonia removal in constructed treatment wetlands using oxygenation." American Ecological Engineering Society Conference, Virginia Technical University, Blacksburg, VA.
- Beutel, M.W. and S.Y. Gebremariam*. 2007. "Environmental properties and biochemical transformations of permethrin in aquatic ecosystems – A role for constructed wetlands?" American Ecological Engineering Society Conference, Kansas State University, Manhattan, KS.
- Beutel, M.W., N. Burley** and K. Culmer**. 2007. "Induced sediment oxygen demand and nitrate demand". American Society of Limnology & Oceanography Conference, Santa Fe, NM.
- Dent, S.R.* and M.W. Beutel. 2007. "The use of oxygenation treatments for reducing methylmercury flux from sediments in controlled incubations." American Society of Limnology and Oceanography Conference, Santa Fe, NM.
- Dent, S.R.* and M.W. Beutel. 2006. "Effects of hypolimnetic oxygenation on the bioaccumulation of mercury in benthic organisms." 8th International Conference on Mercury as a Global Pollutant, Madison, WI.
- Leonard, T.M.* and M.W. Beutel. 2006. "Control of mercury release from lake sediments using oxygenation." American Ecological Engineering Society Conference, Berkeley, CA.
- Dent, S.R.* and M.W. Beutel. 2006. "Methylmercury accumulation in fish tissue as a function of lake trophic status." American Ecological Engineering Society Conference, Berkeley, CA.
- Beutel, M.W. 2005. "Improving quality of salmonid habitat in lakes using hypolimnetic oxygenation." American Ecological Engineering Society Conference, Columbus, OH.
- Beutel, M.W. 2004. "Effects of aeration/oxygenation on nitrogen dynamics at the sediment-water interface of lakes." North American Lake Management Society Conference, Victoria, Canada.
- Barber, M.E., M.W. Beutel, B. Lamb and R.J. Watts. 2004. "Understanding hydrologic processes in semi-arid cold climates." American Geophysical Union Fall Meeting, San Francisco, CA.

Select Regional Presentations (12 of 24)

- Whritenour, V.A.* , M.W. Beutel and J.R. Foltz***. 2009. "Effectiveness of surface flow constructed wetlands receiving agricultural runoff in mitigating pathogens and turbidity, Lower Yakima Basin, WA". Poster, WSU Showcase, Pullman, WA.
- Beutel, M.W, B.C. Moore and others. 2009. "Comprehensive limnological evaluation of water quality and trout habitat in Twin Lakes, Colville Indian Reservation". Poster, WSU Native American Research EXPO, Pullman, WA.
- Dent, S.R.* and M.W. Beutel. 2008. "Reducing the formation of methylmercury in freshwater lakes: From theory to practice." PNWIS Annual Conference. Anchorage, AK.
- Beutel, M.W. and H.R. Palmer*. 2008. "A mesocosm study evaluating effects of pure oxygen addition on ammonia removal in constructed treatment wetlands." Inland Northwest Aquatic, Riparian and Wetland Symposium, Spokane, WA.
- Gebremariam, S.Y.* and M.W. Beutel. 2007. "Enhanced remediation of organic pesticides using reciprocating surface-water constructed wetlands." PNWIS Annual Conference, Boise, ID.
- Palmer, H.R.* and M.W. Beutel. 2007. "Effects of pure oxygen gas on ammonia removal in surface flow treatment wetlands." PNWIS Annual Conference, Boise, ID.
- Churchill, J.J.* and M.W. Beutel. 2007. "Evaluation of alum treatments for Jameson Lake inflows." PNWIS Annual Conference, Boise, ID.
- Dent, S.R.* and M.W. Beutel. 2007. "Reducing the formation of methylmercury at the sediment-water interface in freshwater lakes." PNWIS Annual Conference, Boise, ID. *Awarded Best Student Presentation.*
- Beutel, M.W. 2007. "Enhancing aquaculture water usage, fish production and water quality using oxygenation." University of Idaho/WSU Aquaculture Meeting, Moscow, ID.
- Beutel, M.W. 2006. "Experimental determination and modeling of the effects of mixing and concentration gradient on sediment oxygen demand and sediment nitrate demand in lakes." Pacific Northwest Regional Conference, Oregon Lakes Association/Washington State Lake Protection Association, Portland, OR.
- Beutel, M.W. 2005. Testimony to the Washington State Legislature Select Committee on Hood Canal regarding the use of oxygenation to improve water quality in Hood Canal.
- Beutel, M.W. 2005. "Air is free but oxygen is cheaper - Using pure oxygen to aerate small lakes." Washington State Lake Protection Association Annual Meeting, Spokane, WA.

EDUCATION ACTIVITIES

Chair of Graduate Student Committees (7 MS and 2 PhD)

- Theo Leonard, MS Civil Engineering. *Effects of Oxygenation on Mercury Release from Profound Lake Sediments.* Spring 2006. Staff Engineer, Coughlin Porter Lundeen, Seattle, WA.
- Huckleberry Palmer, MS Civil Engineering. *Enhancement of Ammonia Removal in Surface Flow Treatment Wetland Using Pure Oxygen Gas Addition.* Spring 2008. Staff Engineer, CH2M Hill, Spokane, WA.
- Jillian Churchill, MS Civil Engineering. *Evaluation of Optimal Dose and Mixing Regime to Remove Phosphorus in Tributary Inflow to Jameson Lake, WA.* Spring 2008. Peace Corps, Honduras.
- Crystal Newton, non-thesis MS Environmental Science. *Nitrogen Removal in Surface Flow Constructed Wetlands Treating Agricultural Return Flow in the Yakima Valley, WA.* Spring 2008. Unaffiliated; currently looking for employment in environmental engineering field.

- Jennifer Allen, MS Civil Engineering. *Microbial Diversity and Activity in Experimental Oxygenated Wetland Mesocosms Loaded with Ammonia*. Spring 2009. Unaffiliated; currently looking for employment in environmental engineering field.
- Jonathan Erlenmeyer, non-thesis MS Civil Engineering. *Phosphorus Removal in Constructed Treatment Wetlands*. Expected graduation Fall 2009.
- Seyoum Gebremariam, Civil Engineering PhD. *Fate and Biodegradation of Chlorpyrifos in Constructed Treatment Wetlands*. Expected graduation Spring 2010.
- Victoria Whritenour, MS Environmental Engineering. *Effects of Lake Oxygenation on Mercury Uptake in Aquatic Biota*. Expected graduation Spring 2010.
- Stephen Dent, Civil Engineering PhD. *Mercury and Methylmercury Cycling in the Profundal Zone of Lakes*. Expected graduation Fall 2010.
- Brandon Reed, MS Civil Engineering. *Effects of Oxygen, Nitrate and Alum on Methylmercury Release from Lake Sediments*. Tentative start Spring 2010.

Member of Graduate Student Committees (27)

- Harini Shanmugam, MS CE 2005
- Cory Lancaster, MS CE 2005
- Jeremy Schmidt, MS CE 2006
- Adam Hill, MS CE 2006
- Christopher Frei, MS CE 2006
- Steven Nelson, MS CE 2006
- Lynn Cutler, MS CE 2006
- Anastasia Chetty, non-thesis MS ES 2006
- Zachary Hedgpeth, non-thesis MS CE 2006
- Elizabeth Milburn, MS CE 2007
- Bo Hu, PhD BSE 2007
- David Christensen, PhD NATRS 2007
- Joseph Corbin, PhD ES 2007
- Michael Biggs, MS NATRS 2007
- Kevin Anderson, MS NATRS 2007
- Zain Al-Houri, PhD CE 2008
- Casey Newton, non-thesis MS ES 2008
- Olga Furman, PhD CE 2009
- Simon Smith, PhD BSE 2009
- Craig Frear, PhD BSE 2009
- Jeremiah Trnka, CE MS 2009
- Bridget Deemer, MS EES
- Ellen Preece, MS NATRS
- Emily Wessels, MS NATRS
- Joe Plahuta, MS CE
- Sandra Mead, MS NATRS
- Haley Watson, MS CE

Undergraduate Course Responsibilities (1)

- Fluid Mechanics (CEE 315): Fall 2004 (51 students); Fall 2005 (47 students); Fall 2006 (67 students); Fall 2007 (27 students); Fall 2008 (66 student); Fall 2009 (71 students)
- Water Resources Engineering (CEE 351): planned for Sp 2010

Graduate Course Responsibilities (5)

- Environmental Microbiology (CEE 584): Fall 2005 (14 students); Fall 2006 (9 students)
- Aquatic Ecosystem Restoration & Ecological Engineering (CEE 585): Sp 2005 (15 students); Sp 2006 (6 students); Sp 2008 (8 students); Sp 2009 (9 students)
- Environmental Engineering Graduate Student Seminar (CEE 580/600): Sp 2005 (16 students)
- Mercury and Nitrogen Cycling in Aquatic Ecosystems (CEE 543): Sp 2007 (5 students)
- Natural Treatment Systems (CEE 555): Fall 2008 (9 students); Fall 2009 (11 students)

SERVICE ACTIVITIES

Outreach Activities

NSF CAREER Grant. Working with WSU experts in American Indian outreach and education assessment to implement outreach program to high school students on the Colville Indian Reservation related to reservation-based monitoring of mercury cycling in aquatic ecosystems.

WSU Imagine Tomorrow. Mentoring students from rural Lake Roosevelt High School, WA participating in *Imagine Tomorrow*, a WSU-sponsored annual competition in which over 150 high school teams present design innovations related to energy sustainability.

NSF Graduate Teaching Fellows in K-12 Education. Facilitating involvement of my graduate students with the WSU Culturally Relevant Engineering Application in Mathematics (CREAM) Program, funded by NSF through the WSU Engineering Education Center (Dr. Denny Davis, PI).

American Ecological Engineering Society. As member of AEES Executive Committee, support key aim of the Society including promoting student involvement through discount memberships and travel scholarships to annual AEES conferences.

Research Training for Women and Undergraduates. Promoting inclusion of women and undergraduates in engineering research group. Half of my MS students to date have been women. Over half-a-dozen undergraduates, including a significant number of women, have played meaningful research roles in my lab, including the co-authorship of peer-reviewed papers.

Service to Civil and Environmental Engineering Department

- Graduate Studies Committee, 2005-2008
- Graduate Applicant Coordinator, Water Group, 2005-2008
- Undergraduate Advising, 2006-Present
- Water Resources Search Committee, 2006-2007
- Informal Advisor, Engineers Without Borders, 2005-Present
- Informal Advisor, Multiple CE Senior Project Design Projects, 2005-Present
- Fundamentals in Engineering Review Session, Fluid Mechanics, Fall 2004 and Fall 2006
- Safety Committee, 2005-2006
- Center for Multiphase Environmental Research Cluster Hire Search Committee, 2005-2006
- Environmental Engineering Search Committee (informal member), 2004-2005

Service to Scientific Societies

- 2007-2009, American Ecological Engineering Society, Secretary/Treasurer.
- 2006-2007, American Ecological Engineering Society, Chair of Membership Committee.
- 2007, PINWIS, Session Chair, *Water and Wastewater Management at Dairies, Feedlots and Fish Farms*, PNWIS Annual Conference, Boise, ID.
- 2004, North American Lake Management Society, Session Chair, *Lake Aeration*, NALMS Annual Conference, Victoria, Canada.
- 1999, North American Lake Management Society, Session Chair, *Hypolimnetic Oxygenation*, NALMS Annual Conference, Reno, NV.

Proposal Review (4)

- National Science Foundation CAREER Proposal Review Panel, November 2009 (CBET/ENG)
- National Science Foundation (Hydrological Sciences Program)
- National Institute for Water Resources (104(G) program)
- Connecticut Institute of Water Resources (104(B) program)

Manuscript Review for Journals (15)

- Lake and Reservoir Management
- Environmental Science & Technology
- Water Research
- Ecological Engineering
- Environmental Technology
- ASCE Journal of Environmental Engineering
- Journal of Environmental Engineering and Science
- Pedosphere
- Marine and Freshwater Research (CSIRO, Australian)
- Journal of River Basin Management (IAHR)
- Hydrobiologia
- Journal of Environmental Quality
- New Zealand Journal of Marine and Freshwater Research
- Bioresource Technology
- Archiv für Hydrobiologie

Memberships and Licenses

- Affiliate Faculty, WSU Plateau Center for American Indian Studies
- Professional Civil Engineer, California, C65783
- American Ecological Engineering Society (AEES)
- American Society of Civil Engineers (ASCE)
- North American Lake Management Society (NALMS)
- American Indian Science of Engineering Society (AISES)
- National Institute for Water Resources (NIWR)
- Association of Environmental Engineering and Science Professors (AEESP)
- American Society for Engineering Education (ASEE)