

R. RYAN DUPONT

Professor
Department of Civil and Environmental Engineering
Division of Environmental Engineering
Utah Water Research Laboratory
Utah State University

Dated: 10/15

Date of Birth October 23, 1955

Education

BS Civil Engineering, University of Kansas, Lawrence, 1977
MS Environmental Health Engineering, University of Kansas, Lawrence, 1979
PhD Environmental Health Engineering, University of Kansas, Lawrence, 1982

Academic/Administrative Experience

1996-2006 Division Head, Division of Environmental Engineering, Department of Civil and Environmental Engineering, Utah State University, Logan
1996 Acting Director of the Utah Water Research Laboratory, College of Engineering, Utah State University, Logan
1995-Present Full Professor, Department of Civil and Environmental Engineering, Utah State University, Logan
1994-1996 Associate Director of the Utah Water Research Laboratory, College of Engineering Utah State University, Logan
1993-1994 Sabbatical Leave
1988-1994 Assistant Director of the Utah Water Research Laboratory, College of Engineering Utah State University, Logan
1988-1995 Associate Professor with tenure, Department of Civil and Environmental Engineering, Utah State University, Logan
1988-1989 Acting Division Head, Division of Environmental Engineering, Department of Civil and Environmental Engineering, Utah State University, Logan
1985-1988 Assistant Professor, Division of Environmental Engineering, Department of Civil and Environmental Engineering, Utah State University, Logan
1982-1985 Research Assistant Professor, Division of Environmental Engineering, Department of Civil and Environmental Engineering, Utah State University, Logan
1981-1982 Assistant Instructor, Department of Civil Engineering, University of Kansas,
1978-1979 Lawrence

Consulting/Work Experience

2013-present RT Sprague Consulting, LLC, Louisville, CO
 2012-present Civil Science, Lehi, Utah
 2007-present WesTech Engineers, Salt Lake City, Utah
 2004-present North Wind, Inc., Idaho Falls, ID
 1998-present Attorney General's Office, State of Utah
 1996-present Division of Environmental Response and Remediation, Utah DEQ
 1994-2004 Canadian Association of Petroleum Producers, Calgary, AB
 1996-2004 Celtic Technologies, Cardiff, Wales
 1989-2000 Dynamac Corporation, Ada, OK
 1988-2000 U.S. EPA, RSKERL (Superfund Technical Assistance Program)
 1987-2000 Eimco Process Equipment Company; Salt Lake City, UT
 1992-1994 Eder Associates, Madison, WI
 1991-1997 IT Corporation, Cincinnati, OH
 1987-1991 Barr Engineering, Minneapolis, MN
 1987-1989 Peer Consultants, Washington, D.C.
 1986-1987 Remediation Technologies, Kent, WA
 1984-1987 Environmental Research and Technology, Fort Collins, CO
 1983-1990 Hyrum City, UT
 1983-1985 Cache Valley Cheese, Amalga, UT
 1978 Sanitary Engineer I, Department of Health & Environment, State of Kansas, Topeka, KS
 1977 Engineer I, US Geological Survey, Lawrence, KS

Major Research and Technology Transfer Projects Awarded (Principal or Co-Principal Investigator)

2015-2018 Assessment of Stormwater Harvesting via Managed Aquifer Recharge to Develop New Water Supplies in the Arid West: the Salt Lake Valley Example (U.S. EPA)
 2015-present Evaluation of Optimal Methods for Measuring Nitrogen Transformation Rates in Utah Streams (Utah DWQ/UDEQ, State of Utah Mineral Lease Funds)
 2013-2014 Quantification of Water Quality Improvements through the 900 S Oxbow Restoration and Stormwater BMP Renovation Project, Salt Lake City, Utah (USGS, State of Utah Mineral Lease Funds)
 2009-present Species and Biomass Production Impacts on Stormwater BMP Efficiency (State of Utah Mineral Lease Funds)
 2009-2012 TMDL Support: Monitoring program to assess phosphorus loads in Logan City Sewer and Wastewater Reuse Systems (Logan City, Utah)
 2008-present Arsenic fate and transport in the vicinity of the Logan Landfill (Logan City, Utah)
 2008-present Preliminary studies on use of duckweed for nutrient removal from wastewater lagoons to meet TMDL requirements in Northern Utah (State of Utah Mineral Lease Funds)
 2008-2010 Enhanced Bioremediation for in situ and ex situ treatment of NDMA, n-nitrodimethylamine, TCE, Freon 11, Freon 113 and Freon 21, White Sands Missile Testing Range (NASA via subcontract w/EASI)
 2007-2010 Natural Attenuation assessment at the Haines Fuel Terminal, Haines, AK (North Wind, Inc.)

Major Research and Technology Transfer Projects Awarded (Principal or Co-Principal Investigator) (continued)

- 2007-2008 Enhanced bioremediation site analytical support; Pemaco Superfund Site, Pt. Mugu Sites 6 & 24, NASA Crow's Landing Flight Facility (TNA Inc./OTIE via subcontract w/North Wind, Inc.)
- 2007-2010 Analytical Support for Site Characterization and Conceptual Site Model Development, Former FE Warren Air Force Base, Atlas "E" Missile Site No. 12, Windsor, Colorado (North Wind, Inc.)
- 2007-2008 Laboratory treatability assessment of optimal carbon donors for enhanced reductive chlorination, Pemaco Superfund Site (subcontract w/North Wind, Inc.)
- 2007-2009 Enhanced bioremediation site analytical support, Edwards AFB (Earth Tech)
- 2007 Anaerobic digester performance analysis, Whiteside and Wade Dairies, Idaho (North Wind, Inc.)
- 2005-2007 Carbon tetrachloride transformation and modeling for aquifer remediation (INRA)
- 2004-2007 Laboratory treatability assessment of carbon donor and microbial amendment for enhanced bioremediation of chlorinated solvent impacted aquifers, various sites (North Wind, Inc.)
- 2004-2006 Development of a data visualization and management tool for evaluating chlorinated solvent release site risks to drinking water supplies in Utah (USU, CURI grant program)
- 2003-2010 Evaluation of carbon donor and microbial amendment for polishing of SEAR treated aquifer material, OU2, Hill, AFB (subcontract, URS, CH2M-Hill SLC, UT)
- 2002-2003 Utilization of Zero Valent Iron for the removal of TCE and DCA in Hill AFB groundwater (Hill Air Force Base, UT)
- 2002-2003 Microbial amendment for the enhancement of TCE dechlorination (U.S. Air Force via subcontract from Michigan Biotechnology Institute, International, Lansing, MI)
- 2001-2002 Evaluation of the effectiveness of insoluble carbon donors for the stimulation of TCE dechlorination (Hill Air Force Base, UT)
- 2001-2003 Development of design criteria for the selection of environmentally friendly coating materials (National Science Foundation via subcontract from Michigan Technological University, Houghton, MI)
- 2000 Development and presentation of Clean Water Act training Materials for Region VIII Native American Tribal Entities (Region VIII, U.S. EPA via subcontract from Portage Engineering, Idaho Falls, ID)
- 2000-2001 Development of design criteria for the treatment of landfill leachate and municipal lagoon effluent via constructed wetland systems (City of Logan, UT)
- 1999-2001 Technical manufacturing assistance for recycling manufacturers in the State of Utah (Region VIII, U.S. EPA via subcontract from Recycling Coalition of Utah)
- 1997-2000 Assessment of natural attenuation and free product recovery options at a UST site in Midvale Utah (Utah DEQ)
- 1996-1998 Evaluation of environmental compliance and pollution prevention needs of small businesses in Utah, Support of Utah Manufacturing Extension Partnership (U.S. Department of Commerce, NIST)
- 1995-1997 Evaluation of field-scale, air injection based remediation of a UST site in Layton, UT (High Plains-Rocky Mountain USEPA HSRC, Kansas State University, Manhattan, KS)
- 1993-1996 Intrinsic remediation of hydrocarbon and chlorinated solvent contaminated groundwater plumes at Eielson AFB, AK (USAF AFCEE, Brooks AFB, TX)

Major Research and Technology Transfer Projects Awarded (Principal or Co-Principal Investigator) (continued)

- 1992-1995 Field Demonstration of Bioventing at a Fire Training Pit, F.E. Warren AFB, Cheyenne, WY (Battelle Columbus)
- 1992-1993 Treatability study for the in situ bioventing and biofilter treatment of off-gas from a JP-4 contaminated fuel site, March AFB, CA (INEL, Idaho Falls, ID)
- 1991-1994 Quantitation of natural "biocontainment" of hydrocarbon contaminated plumes (US EPA, Office of Underground Storage Tanks, Washington, D.C.)
- 1991-1995 Analytical support services for low intensity bioventing, Hill AFB, UT; Fallon NAS, NV; and Eielson AFB, AK (Battelle Columbus)
- 1990-1992 Modeling and field verification of soil vacuum extraction/enhanced bioremediation of hazardous waste contaminated soils (USGS)
- 1988-1990 Technical and analytical support services for in situ soil vacuum extraction at a JP-4 spill site, Hill AFB, UT (Oak Ridge National Laboratory)
- 1989-1990 Technical and analytical support for enhancement of in situ biodegradation at a JP-4 spill site via soil vacuum extraction, Tyndall AFB, FL (Battelle Columbus)
- 1989-1990 Field volatilization emission measurements in support of a land treatment verification study, Koch Refining Company. (Koch Refining Company/Barr Engineering Minneapolis, MN)
- 1989-1991 Environmental contaminant property estimation using QSARs in an expert system (U. S. Air Force Office of Scientific Research)
- 1988-1990 Field and laboratory investigation of the fate of tebuthiuron in rangeland soils in the Intermountain West (Western Region Pesticide Impact Assessment Program)
- 1988-1990 Field sampling and training activities at a wood preserving waste land treatment facility, Wiggins, Mississippi (Dynamac Corporation, U.S. EPA, RSKERL, Ada, OK)
- 1987-1989 Evaluation of measurement and detection methods for subsurface organic vapors for groundwater protection (U.S. Geological Survey)
- 1987 Laboratory scale land treatment demonstration for petroleum refinery waste (Koch Refining Company/Barr Engineering, Minneapolis, MN)
- 1987-1990 Quantitation and modeling of volatile hazardous constituent emissions from a hazardous waste land treatment facility (U.S. EPA, ORD, RSKERL, Ada, OK)
- 1986-1989 Modeling of VOC transport in the unsaturated zone (USGS)
- 1986-1989 Soil phase photodegradation of toxic organics (USGS)
- 1986-1989 The use of structure activity relationships as an aid in modeling the subsurface transport of organic contaminants (USGS)
- 1986-1988 Evaluation of the anaerobic treatability of whey permeate waste (Dairy Research Institute)
- 1986-1988 Land treatment potential for EPA listed hazardous wastes, fate model parameter laboratory determinations and field model validation (U.S. EPA RSKERL, Ada, OK)
- 1985-1987 Health effects of volatile organics in groundwater from leaking underground storage tanks (USGS)
- 1985-1987 Evaluation and modeling of dairy waste treatment lagoon design in arid northern climates (State of UT)
- 1985-1987 Analysis and optimization of aerobic digestion of oxidation ditch sludge for safe residual solids disposal (Utah Community Impact Board, Salt Lake City, UT)
- 1985-1986 USEPA Land Treatment Demonstration Manual of Practice (U.S. EPA OSW, Washington, D.C.)

Major Research and Technology Transfer Projects Awarded (Principal or Co-Principal Investigator) (continued)

- 1983-1986 Evaluation of volatilization of hazardous constituents from hazardous waste land treatment facilities (U.S. EPA RSKERL, Ada, OK)
- 1983 In situ treatment techniques applicable to large quantities of hazardous waste contaminated soils (U.S. EPA ORD, Cincinnati, OH)
- 1982-1985 Sensitized photooxidation for the treatment of refractory organics in oil shale wastewater (State of UT)
- 1982-1984 Nitrogen relationships in anaerobic digestion (Utah State University)

Publications (* indicates authorship)

Refereed Journals, Books and Chapters in Books

- Human health effects assays. 1984. Journal of the Water Pollution Control Federation 56(6):791-800. (R. C. Sims, J. L. Sims and *).
- Human health effects assays. 1985. Journal of the Water Pollution Control Federation 57(6):728-742. (R. C. Sims, J. L. Sims and *).
- Evaluation of air emission release rate model predictions of hazardous organics from land treatment facilities. 1986. Environmental Progress 5(3):197-206. (*).
- Human health effects assays. 1986. Journal of the Water Pollution Control Federation 58(6):703-717.(R. C. Sims, J. L. Sims and *).
- A flux chamber/solid sorbent sampling system for volatile organic air emission monitoring from hazardous waste land treatment systems: field results. 1986. Proceedings of the 1986 EPA/APCA Symposium on Measurement of Toxic Air Pollutants. APCA Publication VIP-7, EPA 600/9-86-013:662-673. (*)
- Measurement of volatile hazardous organic emissions from land treatment facilities. 1987. Journal of the Air Pollution Control Association 37(2):168-176. (*).
- The influence of photoreactivation and water quality on ultraviolet disinfection of secondary municipal wastewater. 1987. Journal of the Water Pollution Control Federation 29(8):781-787. (G. D. Harris, V. D. Adams, D. L. Sorensen and *).
- Guthion® penetration of clothing materials during mixing and spraying in orchards. 1987. Proceedings of the Second International Symposium on Performance of Protective Clothing, ASTM, Philadelphia, Pennsylvania. (V. B. Keeble, *, W. J. Doucette and L. Baal).
- Quantitative evaluation of the expert system DEMOTOX. 1988. Journal of Computing in Civil Engineering 2(4):398. (P. Ludvigsen and *).
- In situ biological treatment of hazardous waste contaminated soils. 1988. In Biotreatment Systems. Volume II. D. L. Wise, Ed. CRC Press, Inc., Boca Raton, Florida. pp. 23-94. (*, R. C. Sims, J. L. Sims and D. L. Sorensen).
- Multiphase and multicomponent measurements of batch equilibrium distribution coefficients of six volatile organic compounds. 1989. Hazardous Waste and Hazardous Materials 6(4):363-383. (D. R. Gan and *).
- Fate of PAH compounds in two soil types: influence of volatilization, abiotic loss and biological activity. 1990. Environmental Toxicology and Chemistry 9:187-195. (K. S. Park, R. C. Sims, *, W. J. Doucette, and J. E. Matthews).
- Evaluation of the use of solar irradiation for the decontamination of soil residues. 1990. Journal of the Air and Waste Management Association 40(9):1257-1265. (*, J. E. McLean, R. M. Hoff, and W. B. Moore).

Refereed Journals, Books and Chapters in Books (continued)

- Transformation of PAHs in soil systems. 1990. *Journal of Environmental Engineering*, ASCE 116(2):632-640. (K. S. Park, R. C. Sims and *).
- Workbook on hazardous waste incineration, thermochemical calculations program and guided instruction problem workbook. 1990. John Wiley and Sons, Inc., New York, New York. (J. Reynolds, *, L. Theodore, editors).
- Enhancing biodegradation of petroleum hydrocarbons through soil venting. 1991. *Journal of Hazardous Materials* 27:315-325. (R. E. Hinchee, D. C. Downey, *, P. Aggarwal, and R. E. Miller).
- Assessment of in situ bioremediation potential and the application of bioventing at a fuel-contaminated site. 1991. In *In Situ Bioreclamation*. R. E. Hinchee & R. F. Olfenbittel (Ed.). Butterworth-Heinemann, Stoneham, MA. pp. 262-282. (*, W. J. Doucette, and R. E. Hinchee).
- Enhanced biodegradation of petroleum hydrocarbons: an air-based in situ process. 1991. In *Innovative Hazardous Waste Treatment Technology Series. Volume 3: Biological Processes*. H. M. Freeman and P. R. Sferra, Eds. Technomic Publishing Co., Inc., Lancaster, PA. pp. 177-183. (R. E. Hinchee, R. N. Miller and *).
- Accident and emergency management. Problems and solutions. 1991. VCH Publishers, Inc, New York, New York. (*, L. Theodore, J. Reynolds, editors).
- Chapter 6. Vapor extraction and bioventing. 1992, In *RCRA Corrective Action Stabilization Technologies. Proceedings*. U.S. EPA, Office of Research and Development, Washington, D.C. Technology Transfer, EPA/625/R-92/014. pp. 53-63. (R. Sims and *).
- Fundamentals of bioventing applied to fuel contaminated sites. 1993. *Environmental Progress* 12(1):45-53. (*).
- Sécurité industrielle de la prévention de accidents à l'organisation des secours. Problèmes résolus études de cas. Translation of "Accident and Emergency Management, Problems and Solutions" by Olaf de Hemmer Gudme. 1993. Polutechnica, Paris, France. 213 pp. (*, L. Theodore, J. Reynolds, editors).
- In situ bioremediation of contaminated unsaturated subsurface soils. 1993. *Engineering Issue*. U.S. EPA, ORD, Superfund Technology Support Center for Ground Water, RSKERL, Ada, OK, EPA/540/S-93/501. (J. L. Sims, R. C. Sims, *, J. E. Matthews, and H. H. Russell).
- Evaluation and management of field soil pile bioventing systems for the remediation of PCP contaminated surface soils. 1994. *Environmental Technology (Letters)* 15:729-739. (D. McGinnis, *, K. Everhart, and G. St. Laurent).
- Pollution prevention. Problems and solutions. 1994. Gordon and Breach Science Publishers, New York, NY. 319 pp. (L. Theodore, *, J Reynolds, editors).
- Air toxics management. Problems and solutions. 1996. Gordon and Breach Science Publishers, New York, NY. (K. Ganesan, L. Theodore, *, editors).
- Natural attenuation of chlorinated solvents. Case study: Eielson AFB, Alaska. 1996. *Symposium on Natural Attenuation of Chlorinated Organics in Ground Water*, Dallas, TX. EPA/540/R-96/509. U.S. EPA ORD, Washington, D.C. pp. 104-109. (*, K. Gorder, D. L. Sorensen, M. W. Kemblowski, and P. Haas).
- In situ bioremediation of contaminated unsaturated subsurface soils. 1996. In J.R. Boulding (Eds.), *EPA Environmental Engineering Sourcebook*, Ann Arbor Press, Chelsea, MI. pp. 165-182. (J. L. Sims, R. C. Sims, *, J. E. Matthews, and H. H. Russell).
- Environmental management: problems and solutions. 1998. Lewis Publishers, New York, NY. (*, T. E. Baxter, and L. Theodore, editors). 327 pp.

Refereed Journals, Books and Chapters in Books (continued)

- Innovative site remediation technology, design and application. Bioremediation. 1998. American Academy of Environmental Engineers, Annapolis, MD. 450 pp. (*, C. J. Bruell, D. C. Downey, S. G. Huling, M. C. Marley, R. D. Norris, B. Pivetz).
- Operating mode impacts on bioventing system performance. 1999. In B. C. Alleman and A. Leeson (Eds.), *In Situ Bioremediation of Petroleum Hydrocarbon and Other Organic Compounds*, 5(3):183-188. Battelle Press, Columbus, OH. (* and T. LakshmiPrasad).
- Pollution prevention: the waste management option for the 21st Century. 2000. CRC Press, Boca Raton, FL. 498 pp. (*, L. Theodore, and K. Ganesan).
- Instrumentation design and installation for monitoring air injection ground water remediation technologies. 2000. *Ground Water Monitoring and Remediation*, Spring 2000:46-54. (B. L. Hall, C.K. Baldwin, T. E. Lachmar, *).
- Field monitoring and performance evaluation of an in situ air sparging system at a gasoline contaminated site. 2000. *Journal of Hazardous Materials* B74(2000):165-186. (B. L. Hall, T. E. Lachmar, *).
- Field monitoring and performance evaluation of a field-scale in-well aeration system at a gasoline contaminated site. 2001. *Journal of Hazardous Materials* B82(2001):197-212. (B. L. Hall, T. E. Lachmar, and *).
- Groundwater and soil remediation: process design and cost estimating of proven technologies. 2001. American Society of Civil Engineers Press, Reston, VA. 517 pp. (M. Hyman and *).
- Abatement of gas-condensate hydrocarbons in a natural wetland. 2002. *J. Environ. Sci. Health, Part A* 37(4):425-438. (Headley, J.V., B.J. Moore, *, and W.J. Doucette).
- Tracer studies for evaluation of in situ air sparging and in-well aeration system performance at a gasoline-contaminated site. 2003. *Journal of Hazardous Materials* B98(2003):127-144. (J.S. Berkey, T.E. Lachmar, W.J. Doucette, and *).
- Monitored Natural Attenuation Forum: A Panel Discussion. 2005. *Remediation Journal*, Spring 15(2):83-95.
- Iron and Arsenic Release from Aquifer Solids During Enhanced Trichloroethylene Degradation. 2006. *J. Env. Qual.* 35:1193-1203. (J.E. McLean, *, and D.L. Sorensen).
- Impact of Vegetable Oil on Distribution of Trichloroethylene in Groundwater During Enhanced Bioremediation. 2008. *Env. Forensics* 9:340-349. (M. Pu, •, and W.J. Doucette).
- Dechlorinating and Iron Reducing Bacteria Distribution in a TCE-Contaminated Aquifer. 2010. *Ground Water Mon. & Rem.* 30(1): 44–55. (C.L. Yupanqui Zaa, J.E. McLean, *, J.M. Norton, and D.L. Sorensen).
- Natural Attenuation. 2012. *In Bioremediation and Sustainability: Research and Applications*, Ed. R. Mohee and A. Mudhoo, Scrivener Publishing LLC, Salem, MA. pp. 43-102 (*).
- Environmental Health and Hazard Risk Assessment, Principles and Calculations. 2012. Taylor and Francis Group, Boca Raton, FL. 612 pp. (L. Theodore, and *).
- Aerobic biotransformation of N-nitrosodimethylamine and N-nitrodimethylamine by benzene-, butane-, methane-, propane- and toluene-fed cultures. 2012. *Bioremediation Journal*. 16(2):74-85. (J. Weidhaas, M. Zigmund, and *).
- Aerobic biodegradation of N-nitrosodimethylamine and N-nitrodimethylamine in methane and benzene amended soil columns. 2013. *J. Contaminant Hydrology* 150(2013):45–53. (J. Weidhaas and *).
- Volatilization of trichloroethylene from trees and soil: measurement and scaling approaches. 2013. *Environmental Science and Technology*. 47:5813–5820. (W.J. Doucette, H. Klein, J. Chard, *, W. Plaehn, B. Bugbee).

Refereed Journals, Books and Chapters in Books (continued)

- Analysis of Water Quality in Three Post Construction Best Management Practice Field Sites; Logan Utah. 2013. Urban Nature, 2011 Conference Proceedings of the Council of Educators in Landscape Architecture (CELA), Los Angeles, CA. (Referred) (M.R. Borecki, *, J.E. McLean, A. Goodwin).
- Emergency Planning, Response, and Recovery. Chapter 5. Case Studies. 2013. Special Publication, Water Environment Federation, Manual of Practice. Water Environment Federation, Alexandria, VA. 312 pp. (* Chapter Editor).
- Case Study: 3.3.2. Natural Disasters, Tornado (Joplin, Missouri), In Emergency Planning, Response, and Recovery. 2013. Special Publication, Water Environment Federation, Manual of Practice. Water Environment Federation, Alexandria, VA. 243-256 (*).
- Case Study: 2.5 Transportation Accidents, In Emergency Planning, Response, and Recovery. 2013. Special Publication, Water Environment Federation, Manual of Practice. Water Environment Federation, Alexandria, VA. 192-197. (M. Davis, *).
- Form-based Variables for Stormwater Quality Performance: Comparing Three Stormwater Best Management Practices in Five States. 2014. Journal of Urban Planning and Design Research, 2(1):14-19. (B. Yang, A. Goodwin, *, M.R. Borecki).
- Arsenic(V) Reduction in Relation to Iron(III) Transformation and Molecular Characterization of the Structural and Functional Microbial Community in Sediments of a Basin-Fill Aquifer in Northern Utah. 2014. Applied and Environmental Microbiology, 80(10):3198-3208. (B.S. Mirza, S. Muruganadam, X. Meng, D.L. Sorensen, *, Joan E. McLean).
- Biostimulation and Bioaugmentation to Enhance Reductive Dechlorination of TCE In a Long-Term Flow Through Column Study. 2015. Groundwater Monitoring and Remediation. **35**(3):76-88. doi: 10.1111/gwmmr.12113. (J.E. McLean, J. Ervin, J. Zhou, D.L. Sorensen, *)
- iSAW: Integrating Structure, Actors, and Water to study socio-hydro-ecological systems. 2015. Earth's Future. 3:110–132. doi:10.1002/2014EF000295. (Hale, R. L., Armstrong, A., Baker, M. A., Bedingfield, S., Betts, D., Buahin, C., Buchert, M., Crowl, T., *, Ehleringer, J. R., Endter-Wada, J., Flint, C., Grant, J., Hinners, S., Horsburgh, J. S., Jackson-Smith, D., Jones, A. S., Licon, C., Null, S. E., Odame, A., Pataki, D. E., Rosenberg, D., Runburg, M., Stoker, P. and Strong, C.).
- Dehalococcoides* abundance and alternate electron acceptor effects on large, flow-through trichloroethene dechlorinating columns. 2015. Applied Microbiology and Biotechnology. doi. 10.1007/s00253-015-7112-1. (B.S. Mirza, D.L. Sorensen, *, J.E. McLean).
- Bioaccumulation of Copper, Lead, and Zinc in Six Macrophyte Species Grown in Simulated Stormwater Bioretention Systems. 2016. Journal of Environmental Management, **166**: 267-275. (M.R. Borecki, J.E. McLean, *).

Peer Reviewed Reports

- Review of In-Place Treatment Techniques for Contaminated Surface Soils. Volumes 1 and 2. 1985. USEPA, Municipal Environmental Research Laboratory, Cincinnati, OH. EPA-540/2-84-3A&B. (R. C. Sims, D. L. Sorensen, J. L. Sims, J. E. McLean, R. Mahmood and *).
- Project Summary: Review of In-Place Treatment Techniques for Contaminated Surface Soils. Volumes 1 and 2. 1985. USEPA, Municipal Environmental Research Laboratory, Cincinnati, OH. EPA-540/S2-84-3A&B. (R. C. Sims, D. L. Sorensen, J. L. Sims, J. E. McLean, R. Mahmood and *).

Peer Reviewed Reports (continued)

- Permit guidance manual for land treatment of hazardous wastes. 1986. U.S. EPA Office of Solid Waste, Washington, D.C. EPA-530/SW86-032. (R. C. Sims, J. L. Sims, *, W. J. Grenney, J. E. McLean and D. L. Sorensen).
- Evaluation of the volatilization of hazardous constituents at hazardous waste land treatment sites. 1986. U.S. EPA Office of Research and Development, RSKERL, Ada, OK. EPA/600/2-86/071. (* and J. A. Reineman).
- Project Summary: Evaluation of the volatilization of hazardous constituents at hazardous waste land treatment sites. 1986. U.S. EPA Office of Research and Development, RSKERL, Ada, OK. EPA/600/S2-86/071. (* and J. A. Reineman).
- Treatment potential for 56 EPA listed hazardous chemicals in soil. 1988. U.S. EPA Office of Research and Development, RSKERL, Ada, OK. EPA/600/6-88/001. (R. C. Sims, W. J. Doucette, J. E. McLean, W. J. Grenney, and *).
- Project Summary: Treatment potential for 56 EPA listed hazardous chemicals in soil. 1988. U.S. EPA Office of Research and Development, RSKERL, Ada, OK. EPA/600/S6-88/001. (R. C. Sims, W. J. Doucette, J. E. McLean, W. J. Grenney, and *).
- Field sampling/training activities at a wood preserving waste land treatment facility, Wiggins, Mississippi. 1990. Final Report submitted to the U.S. EPA, Office of Research and Development, RSKERL, Ada, OK. (*, W. J. Doucette).
- Quantitation and modeling of volatile hazardous constituent emissions from a hazardous waste land treatment facility. 1990. Final Report submitted to the U.S. EPA, Office of Research and Development, RSKERL, Ada, OK. Cooperative Agreement CR-813211-01. (*)
- Intrinsic remediation engineering evaluation/cost analysis for Site 45/57, Eielson Air Force Base, Alaska. 1996. Final Technical Report Submitted to the Air Force Center for Environmental Excellence, Brooks Air Force Base, San Antonio, TX.
- Assessing UST corrective action technologies - diagnostic evaluation of in situ SVE-based system performance. 1996. U.S. EPA Office of Research and Development, National Risk Management Research Lab, Cincinnati, OH. EPA/600/R-96/041. (R. L. Johnson, *, D. A. Graves).
- Intrinsic remediation engineering evaluation/cost analysis for Site 13/26, Eielson Air Force Base, Alaska. 1997. Final Technical Report Submitted to the Air Force Center for Environmental Excellence, Brooks Air Force Base, San Antonio, TX.
- Monitoring and assessment of in situ biocontainment of petroleum contaminated ground-water plumes. 1998. U.S. EPA Office of Research and Development, Washington, D.C. EPA/600/R-98/020. (*, D. L. Sorensen, M. Kemblowski, M. Bertleson, D. McGinnis, I. Kamil, and Y. Ma).

Presentations at Refereed Conferences

- Evaluation of a sampling/analysis train for the monitoring of volatile organic emissions from land treatment facilities. Poster session presented at the First National Specialty Conference on Land Treatment, a Hazardous Waste Management Alternative. University of Texas at Austin. April 16-18, 1985. (*).
- Air emission release rate model predictions of hazardous organics from land treatment facilities. Annual AIChE meeting, Chicago, IL. November 11-14, 1985. (*).

Presentations at Refereed Conferences (continued)

- A flux chamber/solid sorbent sampling system for volatile organic air emission monitoring from hazardous waste land treatment systems. APCA-EPA Symposium on Management of Toxic Air Pollutants, Raleigh, NC. April 28-30, 1986. (*).
- Hazardous organic monitoring from a Mid-West petroleum refinery land treatment facility. 79th Annual Meeting of the Air Pollution Control Association, Minneapolis, MN. June 22-27, 1986. Preprint # 86-20.6. (* and J. A. Reineman).
- Evaluation of a flux chamber/solid sorbent monitoring system for use in hazardous organic emission measurement and modeling from land treatment facilities. 79th Annual Meeting of the Air Pollution Control Association, Minneapolis, MN. June 22-27, 1986. Preprint # 86-27.6. (*).
- Ultraviolet disinfection of secondary municipal wastewater. 59th Annual Conference of the Water Pollution Control Federation. October 5-9, 1986, Los Angeles, CA. (G. D. Harris, V. D. Adams, D. L. Sorensen, and *).
- Evaluating the Uncertainty of Estimates of hazardous air emissions from land treatment systems using the Thibodeaux-Hwang Air Emission Release Rate Model. 81st Annual Meeting of the Air Pollution Control Association, Dallas, TX. June 20-24, 1988. Preprint # 88-116.6 (*, T. B. Hardy, and J. A. Reineman-Coover).
- Evaluation of the use of solar irradiation for the decontamination of soil residues. 81st Annual Meeting of the Air Pollution Control Association, Dallas, TX. June 20-24, 1988. Preprint # 88-6A.6. (R. H. Hoff, *, W. M. Moore, and J. E. McLean).
- Field evaluation of full-scale anaerobic digester mixing efficiency. 61st Annual Conference of the Water Pollution Control Federation, Dallas, TX. October 2-6, 1988. (*, B. A. Curtis and A. L. Jeffrey).
- Problem workbook in accident and emergency management. 83rd Annual Meeting of the Air and Waste Management Association, Pittsburgh, PA. June 24-29, 1990. Preprint # 90-164.9 (J. Reynolds, *, L. Theodore, C. Pratt).
- Assessment of in situ bioremediation potential and the application of bioventing at a fuels-contaminated site. Presented at In Situ and On-Site Bioreclamation: An International Symposium, San Diego, CA. March 19-21, 1991. (*, W. J. Doucette, R. E. Hinchee).
- Application of treatability studies in management of fuels/petroleum waste impacted soils. 84th Annual Meeting of the Air and Waste Management Association, Vancouver, BC. June 16-21, 1991. Preprint # 91-17.5. (*).
- Nitrogen cycling process assessment in contaminated soil treatability studies. 84th Annual Meeting of the Air and Waste Management Association, Vancouver, BC. June 16-21, 1991. Preprint # 91-17.7. (D. L. Sorensen, R. N. Miller, *).
- Application of bioremediation fundamentals to the design and evaluation of in-situ soil bioventing systems. 85th Annual Meeting of the Air and Waste Management Association, Kansas City, MO. June 21-26, 1992. Preprint # 92-30.03. (*).
- Determination of respiration rates in soil piles to evaluate aeration efficiency and biological activity. 85th Annual Meeting of the Air and Waste Management Association, Kansas City, MO. June 21-26, 1992. Preprint # 92-13.05. (D. McGinnis, *, K. Everhart).
- Nitrogen fixation potential in petroleum contaminated soils. 85th Annual Meeting of the Air and Waste Management Association, Kansas City, MO. June 21-26, 1992. Preprint#92-13.06. (D. L. Sorensen, *).

Presentations at Refereed Conferences (continued)

- Assessment of operating mode and nutrient amendment on performance of a pilot scale bioventing system. Sixth International Symposium on Gas, Oil and Environmental Biotechnology, Institute of Gas Technology, Colorado Springs, Colorado, November 29-December 1, 1993. (*, T. Lakshmi Prasad).
- Biofilter treatment of JP-4 vapors in soil and soil/peat biofilters. Poster presented at the Sixth International Symposium on Gas, Oil and Environmental Biotechnology, Institute of Gas Technology, Colorado Springs, Colorado, November 29-December 1, 1993. (*, E. He, J. Keck).
- Microcosm method for determining aerobic biodegradation in soil. Poster presented at the Sixth International Symposium on Gas, Oil and Environmental Biotechnology, Institute of Gas Technology, Colorado Springs, Colorado, November 29-December 1, 1993. (R. A. Miles, W. J. Doucette, B. Bugbee, *, J. E. McLean, and D. L. Sorensen).
- Natural attenuation of chlorinated solvents. Case study: Eielson AFB, Alaska. 1996. Symposium on Natural Attenuation of Chlorinated Organics in Ground Water, Dallas, TX. September 11-13, 1996. Invited Presentation. (*, K. Gorder, M. W. Kemblowski, and P. Haas).
- Effects of a pure O₂ atmosphere on O₂ uptake rates during hydrocarbon biodegradation. 1997. In B. C. Alleman and A. Leeson (Eds.), *In Situ and On-Site Bioremediation: Volume 1. Proceedings of the Fourth International In Situ and On-Site Bioremediation Symposium*. Battelle Press, Columbus, Ohio. p. 395. (B. Adams, * W. Doucette, and D. Sorensen).
- Bioventing and air sparging: a field research study. 1997. In B. C. Alleman and A. Leeson (Eds.), *In Situ and On-Site Bioremediation: Volume 1. Proceedings of the Fourth International In Situ and On-Site Bioremediation Symposium*. Battelle Press, Columbus, Ohio. p. 443. (B. J. Moore, J. E. Armstrong, P. E. Hardisty, and *).
- In-situ field performance monitoring of air injection groundwater remediation technologies. 1997. In B. C. Alleman and A. Leeson (Eds.), *In Situ and On-Site Bioremediation: Volume 2, Proceedings of the Fourth International In Situ and On-Site Bioremediation Symposium 4(2):329-334*. Battelle Press, Columbus, Ohio. (B. L. Hall, C. K. Baldwin, and *).
- Effect of trichloroethylene concentration on oxygen uptake rates during hydrocarbon biodegradation. 1997. In B. C. Alleman and A. Leeson (Eds.), *In Situ and On-Site Bioremediation: Volume 4, Proceedings of the Fourth International In Situ and On-Site Bioremediation Symposium 4(4):9-14*. Battelle Press, Columbus, Ohio. (B. A. Adams, *, W. J. Doucette, and D. L. Sorensen).
- Field evaluation of intrinsic remediation of chlorinated solvents. 1997. In B. C. Alleman and A. Leeson (Eds.), *In Situ and On-Site Bioremediation: Volume 3. Proceedings of the Fourth International In Situ and On-Site Bioremediation Symposium*. Battelle Press, Columbus, Ohio. p. 443. (K. A. Gorder, *, D. L. Sorensen, M. W. Kemblowski, and J. E. McLean).
- Enhancement of trichloroethylene degradation via carbon donor and microbial amendment addition. 2003. Presented at the Seventh International In Situ and On-Site Bioremediation Symposium, June 2-5, 2003, Orlando, FL. (*, D. L. Sorensen, J.E. McLean, W.J. Doucette, and M. Loucks).
- Iron and arsenic release from aquifer solids during enhanced trichloroethylene degradation. 2003. Poster presented at the Seventh International In Situ and On-Site Bioremediation Symposium, June 2-5, 2003, Orlando, FL. (J. E. McLean, D. L. Sorensen, *, W. J. Doucette, T. Bradley, and M. Loucks).

Presentations at Refereed Conferences (continued)

- Carbon Donor and Microbial Inocula Addition for the Polishing of SEAR Treated Source Material. 2005. Proceedings of the Eight International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. (*, C. Holbert, and S. Arens).
- Phylogenetic Analysis of a Dechlorinating Culture and a TCE-Contaminated Aquifer. 2005. Proceedings of the Eight International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. (J. Zhou, *, D.L. Sorensen, J.M. Norton, and J.E. McLean).
- Transformation of Iron Phases and Electron Shuttle Production During Anaerobic Biostimulation for TCE Degradation. 2005. Poster presented to the Eight International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. (H. Mickelson, J.E. McLean, D.L. Sorensen, and *).
- Source Area Application of Enhanced In-Situ Bioremediation at OU 2, Hill AFB. 2006. Proceedings of the Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (T. Mehraban, S. Snelgrove, K. Gorder, and *)
- Molecular Characterization of Dechlorinating Bacteria and Competitive Iron-reducing Bacteria to Enhance Bioaugmentation Strategies. 2006. Paper presented to the Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (J. Zhou, *, J.M. Norton, D.L. Sorensen, J.E. McLean).
- Microbial Diversity and Composition Analysis in TCE Dechlorination and Competitive Electron Accepting Processes During Bioremediation. 2007. Paper presented to the Ninth International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. (J. Zhou, J. Ervin, *, J.M. Norton, D.L. Sorensen, and J.E. McLean).
- ARISA Analysis for Determining Microbial Diversity at Remediation Sites. 2007. Poster presented to the Ninth International In Situ and On-Site Bioremediation Symposium, Baltimore, MD. (J. Ervin, J. Zhou and *).
- In-situ field performance monitoring of air injection groundwater remediation technologies. Implementation and Monitoring of Post-SEAR Bioaugmentation at a TCE Source Area, Hill AFB. 2008. Paper presented to the Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (*, J. Zhou, D. Sorensen, J. Ervin, K. Gorder, C. Holbert, and T. Mehraban).
- Effect of Bioremediation Amendments on Geochemical Parameters Affecting Anaerobic Dechlorination. 2008. Poster presented to the Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (T.W. Macbeth, J. Weidhaas, *, and T. Garvey).
- Contribution of Endophytic Microorganisms to TCE Degradation in Endogenous Trees at HAFB in Ogden, UT. 2008. Poster presented to the 6th International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (J. Ervin, R. Winters, W.J. Doucette, *, and K. Gorder).
- Evaluation of the simultaneous cometabolic oxidation of NDMA, Freons, and chlorinated solvents with multiple substrates. 2009. Paper presented to the 10th International Conference, In Situ and On Site Bioremediation, Baltimore, MD. (J. Weidhaas, T. Macbeth, *, J. Zigmond).
- Evaluation of the Impact of Carbon Donor on the Rate and Extent of TCE Reductive Dechlorination. 2009. Paper presented to the 10th International Conference, In Situ and On Site Bioremediation, Baltimore, MD. (*, D.L. Sorensen, J. Ervin, J.E. McLean and A. Restad).

Presentations at Refereed Conferences (continued)

- Stimulating Cometabolic Oxidation of NDMA, CFCs and Chlorinated Solvents with Benzene, Methane and Propane. 2010. Paper presented to the 7th International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (J. Weidhaas, *, M. Zigmond).
- Collapse: Performance Monitoring Results from Hill AFB Operable Unit 1. 2011. Poster presented to the 11th International Conference, In Situ and On Site Bioremediation, Reno, NV (K. Gorder, B. Hall, S. Snelgrove, *).
- Beyond the Theoretical – Observations Following Source Control and Remediation at a Real DNAPL Site. 2011. Paper presented to the 11th International Conference, In Situ and On Site Bioremediation, Reno, NV (K. Gorder, C. Holbert, *).
- Calculating Hazard Risk Probabilities Using the Weibull Distribution. 2011. Presented at the 104th Annual Air & Waste Management Association Conference, Orlando FL. Preprint # 11-A-125-AWMA. (L. Theodore and *).
- Analysis of Stormwater Quality in three BMP Field Sites; Logan, Utah. 2011. Proceedings of the 2011 Conference of the Council of Educators in Landscape Architecture, Las Angeles, CA, March 30 to April 2, 2011. (M. Rycewicz-Boreck and *).
- An Evaluation of Stormwater Best Management Practice: Relationships between Design and Efficiency. 2012. Proceedings of the 2012 Conference of the Council of Educators in Landscape Architecture, Champaign, IL, March 28 to 31, 2012. (A.A. Goodwin, B. Yang and *).
- Total Phosphorous, Nitrogen and Metal Reduction by Seven Plant Species in a Controlled Greenhouse Experiment. 2012. Proceedings of the 2012 Conference of the Council of Educators in Landscape Architecture, Champaign, IL, March 28 to 31, 2012. (M. Rycewicz-Borecki, *, and J.E. McLean).
- Procedures for Calculating Combined Health Risks and Hazard Risks. 2012. Presented at the 105th Annual Air & Waste Management Association Conference, San Antonio TX. Preprint # 2012-A-23-AWMA. (* and L. Theodore).
- Long-Term Performance Monitoring of Enhanced Anaerobic Bioremediation of a DNAPL Source Zone. 2012. Paper presented to the 8th International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. (C. Holbert, S. Arens, K. Gorder, and *).
- Baghouse failures: applying the Weibull distribution to estimate bag failure emissions as a function of time). 2013. Presented at the 106th Annual Air & Waste Management Association Conference, Chicago, IL. Paper 2012-12-112-AWMA. (*, J.D. McKenna and L. Theodore).
- An improved failure rate model applied to baghouse failures. 2014. Presented at the 107th Annual Air & Waste Management Association Conference, Longbeach, CA. Paper #32932 (*, F. Ricci, and L. Theodore).
- Evaluation of an urban stormwater collection system with enhanced storage and exfiltration. 2014. Presented at WEFTEC 2014, New Orleans, LA, Sept. 29 to Oct. 1. Paper 2, Session 317 Stormwater Research (*, T.N. Reuben, J. Richardson, M. Rycewicz-Borecki, J.E. McLean).
- Replacing the Weibull Distribution Failure Rate Model. 2015. Presented at the 108th Annual Air & Waste Management Association Conference, Raleigh, NC. Paper 2015-118-AWMA. (*, F. Ricci, and L. Theodore).

Presentations at Refereed Conferences (continued)

Differences among Three Plant Species in Citric Acid Induced Phytoextraction of Metals from Stormwater in a Field-Based Experiment. 2015. Presented at WEFTEC 2015, Chicago, IL, Sept. 26 to 30. Paper 1, Session #425 Leading Edge Research on Vegetation in Stormwater Design. (M.R. Borecki, *, J.E. McLean).

Impact of Organic Matter from Stormwater on Water Quality in an Urban River. 2015. Presented at WEFTEC 2015, Chicago, IL, Sept. 26 to 30, 2015. Paper 2 Session 518 TMDL and Nonpoint Sources: It's More than Just the Loads. (J. Richardson, *, J.E. McLean).

Non-Refereed Publications/Conference Proceedings

Data evaluation of a municipal RBC installation, Kirksville, Missouri. M.S. Thesis in Environmental Health Engineering, Department of Civil Engineering, University of Kansas, Lawrence, KS. 1977. 102 p. (*).

Data evaluation of a municipal RBC installation, Kirksville, Missouri. Proceedings of the First National Symposium/Workshop on RBC Technology 1:205-234. 1980. (* and R. E. McKinney).

Fixed-film anaerobic digestion. Ph.D. Dissertation, Kansas University, Lawrence, KS. 1982.

Fixed-film anaerobic digestion. Proceedings of the ASCE Specialty Conference on Environmental Engineering, Boulder, CO. July 6-9, 1983. pp. 264-272. (* and R. E. McKinney).

Glucose metabolism in a fixed-film, completely-mixed anaerobic reactor. Proceedings of the Utah Water Pollution Control Association Annual Meeting, Park City, UT. April 20-21, 1983. pp. 27-31. (*).

Aquifer decontamination and water quality modeling for the Vitro Chemical Company tailings site, Salt Lake City, Utah. Proceedings of the Utah Water Pollution Control Association Annual Meeting, St. George, UT. April 16-18, 1984. pp. 37-41. (J. Doherty and *).

Calcium and magnesium levels in Bear Lake and their variance with location and depth. Proceedings of the Utah Water Pollution Control Association Annual Meeting, St. George, UT. April 16-18, 1984. pp. 46-50. (M. W. Bernart and *).

Planning for a sewer system in Smithfield. Proceedings of the Utah Water Pollution Control Association Annual Meeting, Park City, UT. April 23-24, 1987. pp. 50-70. (J. T. Jacobs, S. M. Bupp, J. P. Gass, and *).

Development of a mathematical model of an anaerobic animal waste lagoon. Proceedings of the Utah Water Pollution Control Association Annual Meeting, Park City, UT. April 23-24, 1987. pp. 128-140. (K. Vigil and *).

Optimization of processes in the destruction of pathogens: storage of sludge. Proceedings of the Utah Water Pollution Control Association Annual Meeting, Park City, UT. April 23-24, 1987. pp. 141-150. (A. U. Ahmed, D. L. Sorensen, and *).

Analysis of multiphase partition coefficients of organic constituents in soil systems. Proceedings of the Utah Water Pollution Control Association Annual Meeting, St. George, UT. April 20-22, 1988. (D. G. Gan, *, and W. J. Doucette).

A sampling system for the detection of specific hazardous constituent emissions from soil systems. Hazardous Waste: Detection, Control, Treatment. R. Abbou, Ed., Elsevier Science Publishers B. V., Amsterdam, The Netherlands. 1988. pp. 581-592. (*).

Non-Refereed Publications/Conference Proceedings (continued)

- Laboratory and field validation of a land treatment air emission model. Hazardous Waste: Detection, Control, Treatment. R. Abbou, Ed., Elsevier Science Publishers B. V., Amsterdam, The Netherlands. 1988. pp. 625-635. (*).
- Modeling and measurement of tebuthiuron (Spike®) mobility in intermountain soils. Proceedings of the National Pesticide Conference on Pesticides in Terrestrial and Aquatic Environments, Virginia Polytechnic Institute and State University, Blacksburg, VA. 1989. (G. D. Summit, *, R. D. R. Parker, and H. M. Deer).
- Remediation of waste sites using in situ treatment. Geology and Hydrology of Hazardous-Waste, Mining-Waste, Waste-Water and Repository Sites in Utah, Symposium and Field Conference, UT Geological Association Publication 17, G. E. Cordy (ed.). Salt Lake City, UT. 1989. (R. C. Sims, J. L. Sims, D. L. Sorensen, and *).
- Enhancing biodegradation of JP-4 jet fuel in the vadose zone through soil venting. Proceedings of the 1989 AWWA Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water, Houston, TX, November 15 to 17, 1989. (R. E. Hinchee, D. C. Downey, M. A. Arthur, and *).
- Vacuum extraction induced biodegradation of petroleum hydrocarbons. Proceedings of the Conference on Subsurface Contamination by Immiscible Fluids, Calgary, Alberta, Canada, April 18 to 20, 1990. (R. E. Hinchee, M. F. Arthur, D. C. Downey, R. N. Miller, and *).
- Conducting field tests for evaluation of soil vacuum extraction application. Proceedings of the 10th National Symposium and Exposition on Aquifer Restoration and Ground Water Monitoring, Las Vegas, NV, May, 1990. (D. C. DiGiulio, J. S. Cho, *, and M. W. Kemblowski).
- Assessment of natural attenuation mechanisms at UST sites. Proceedings of the Environmental Restoration Technology Transfer Symposium, U.S. Air Force Center for Environmental Excellence, San Antonio, TX, January 26-27, 1993. (*).
- Bioventing for soil remediation. Proceedings of the 43rd Environmental Engineering Conference, University of Kansas, Lawrence, KS, February 10, 1993. (*).
- Evaluation of Intrinsic Bioremediation at a UST Site in Northern Utah. Symposium on Intrinsic Bioremediation of Ground Water, U.S. EPA/DOI/AF, Denver, CO. August 30 to September 1, 1994. (*, D. L. Sorensen, M. W. Kemblowski).
- An intrinsic remediation assessment methodology applied at two contaminated groundwater sites at Eielson AFB, Alaska. Proceedings of the First International Intrinsic Remediation Conference, London, England, March 18-19, 1996. (*, D. L. Sorensen, M. W. Kemblowski, K. A. Gorder and G. Ashby).
- Application of a simple groundwater model to assess the potential for intrinsic remediation of contaminated groundwater. Proceedings of the First International Intrinsic Remediation Conference, London, England, March 18-19, 1996. (K. A. Gorder, *, D. L. Sorensen, M. W. Kemblowski, and J. E. McLean).
- Selection of Industrial Coatings Based on Environmental and Societal Impact Characteristics. 2000. Proceedings of 2000 IMECE: ASME 2000 International Mechanical Engineering Congress and Exposition, November, Orlando, Florida. (Gershenson, J.K., *, and R.L. Ratliff).
- Quantitative Natural Attenuation Evaluation for a Chlorinated Solvent Plume, OU1, Hill AFB, Utah. 2006. Paper presented to the Natural Gas Technologies 2006: Energy And The Environment Conference, Orlando, FL. (*).

Non-Refereed Publications/Conference Proceedings (continued)

- Microbial Reduction of Structural Iron in Aquifer Solids: Role of Iron Reducing Microbial Community, Production of Electron Shuttles and Iron Mineralogy. 2006. Abstract to the 2006 ASM General Meeting. (J.E. McLean, H. Mickelson, Y. Xu, D.L. Sorensen, J.M. Norton, and *).
- TCE Contaminated Aquifer Core Characterization and Possible Factors Restricting Dehalorespiration in Biostimulation Microcosms. 2006. Abstract to the 2006 ASM General Meeting. (C. Yupanqui-Zaa, H. Mickelson, Y. Xu, D.L. Sorensen, J.M. Norton, M.F. Roginski, *, and J.E. McLean).
- Spatial Distribution of Dehalorespiring Bacteria, *Geobacter* sp. and *Rhodoferrax ferrireducens*-like Bacteria in a TCE Contaminated Aquifer. 2007. Abstract to the 2007 ASM General Meeting. (C. Yupanqui-Zaa, D.L. Sorensen, J.M. Norton, M.F. Roginske, *, and J.E. McLean).
- Rhodoferrax-like bacteria in biostimulated solids from TCE contaminated aquifers. 2007. Abstract to the 2007 ASM General Meeting. (J.E. McLean*, D.L.Sorensen, Y. Liang, J.M. Norton, J. Zhou and *).
- qPCR for Determining Microbial Populations at a TCE Contaminated Site. 2007. Abstract to the 2007 ASM General Meeting. (J. Ervin, J. Zhou and *).
- Microbial Composition Analysis in TCE Biostimulation and Bioaugmentation. 2007. Abstract to the 2007 ASM General Meeting. (J. Zhou, *, D.L. Sorensen, J.M. Norton, and J. E. McLean).
- Effects of Harvesting on Nutrient Removal. Three Plant Species at a Stormwater Treatment Field Site. 2014. Manuscript of platform presentation at the 2014 StormCon Conference, Portland, OR, August 6, 2014. (M. Rycewicz-Borecki, *, J.E. McLean).
- Effect of Plant Species on Accumulation and Removal Potential of Copper, Zinc and Lead from Stormwater Bioretention Systems. 2015. Manuscript of platform presentation at the 2015 StormCon Conference, Austin, TX, July 28, 2015. (M. Rycewicz-Borecki, *, J.E. McLean).

Technical Reports

- Reverse osmosis in the treatment of drinking water. UT Water Research Laboratory, UWRL/Q-82/05. 1982. (*, T. Eisenberg and E. J. Middlebrooks).
- Evaluation of the hydraulic performance of a wastewater pipeline at the Cache Valley Cheese, Amalga Plant. Submitted to Cache Valley Cheese, Amalga, UT. July, 1984. (*).
- Field monitoring design and sampling protocol for field scale validation of the Thibodeaux-Hwang Air Emission Release Rate Model. Submitted to U.S. EPA, Ada, OK. May 1985. (*).
- Dairy lagoon design calculations for the USU Caine dairy facility. Submitted to Bixton and Christopher, Architects, Salt Lake City, UT, August, 1984. (*).
- Evaluation of the growth of duckweed (*Lemna minor*) in the Tri-Miller wastewater lagoons for use as a wastewater treatment medium. Submitted to Tri-Miller, Inc., Hyrum, UT. September 1985. (*).
- Field Lagoon drainage system simulation in STELLA. Submitted to CV Cheese, Amalga, UT. August 1987. (*).
- evaluation of digester mixing efficiency at the Lower Muddy Creek Wastewater Treatment Plant, Winston-Salem, North Carolina. Submitted to Eimco Process Equipment Company, Salt Lake City, UT. September 1987. (*).

Technical Reports

- Koch Refinery/Barr Engineering land treatment demonstration project: final report. Submitted to Barr Engineering, Minneapolis, MN. December 1987. (*, R. C. Sims, W. J. Doucette, J. E. McLean).
- Field evaluation of digester mixing efficiency at the West Boise Wastewater Treatment Plant, West Boise, Idaho. Submitted to Eimco Process Equipment Company, Salt Lake City, UT. June 1988. (*).
- Soil phase photodegradation of toxic organics at contaminated disposal sites for soil renovation and groundwater quality protection. 1989. Final Report submitted to the U.S. Geological Survey, Reston, VA. Award 14-08-0001-G1304. (W.M. Moore, *, J.E. McLean).
- Evaluation and modeling of volatile organic vapor transport in the unsaturated zone for groundwater quality protection. 1989. Final Report submitted to the U.S. Geological Survey, Reston, VA. Award 14-08-0001-G1279. (*, W. J. Doucette, D. R. Gan, and J. D. Doherty).
- Measurement and modeling of the movement and persistence of tebuthiuron (Spike®) in soil environments. 1990. Final Report submitted to the Western Region Pesticide Impact Assessment Program, Cooperative Extension, U.S. Department of Agriculture, Oakland, CA. (G. D. Summit, *, R. D. Parker, H. M. Deer).
- Field volatilization emission measurements in support of a land treatment verification study, Koch Refining Company. 1990. Final Report submitted to Barr Engineering, Minneapolis, MN. (*, W. J. Doucette)
- Evaluation of the Effectiveness of Carbon Donor and Microbial Inocula Amendment to Stimulate TCE Dechlorination at OU5, Hill AFB. 2003. Final Report submitted to Hill AFB Environmental Directorate, Hill AFB, UT. (*, J.E. McLean, D. L. Sorensen, H. Michelson).
- Microcosm Study to Evaluate OU2 Source Zone Polishing: TCE & MIBK Transformation. 2004. Final Report submitted to URS Corporation, Salt Lake City, Utah. June 10, 2004. (*).

Presentations at Professional Meetings

- Fixed-film anaerobic digestion fundamentals. Annual meeting of the Kansas Water Pollution Control Association, Topeka, KS. 1982. (* and R. E. McKinney).
- Application of Complete-Mix Activated Sludge equations to Oxidation Ditch design and evaluation. Annual meeting of the Utah Water Pollution Control Association, Provo, UT. April 23-24, 1985. (*).
- The effects of hydraulic and organic loading rates on fixed-film anaerobic digestion. Annual meeting of the Utah Water Pollution Control Association, Provo, UT. April 23-24, 1985. (N.-H. Ma and *).
- Laboratory determination of organic vapor emission rates from hazardous wastes applied to soil. Annual meeting of the Utah Water Pollution Control Association, Provo, UT. April 23-24, 1985. (J. A. Reineman and *).
- A sampling/collection system for use in emission monitoring at land treatment facilities. Invited speaker at the American Chemical Society Meeting, Anaheim, CA. September 8-12, 1986. (*).
- Use of duckweed for upgrading wastewater treatment lagoons and evaluation of environmental conditions favorable for duckweed growth. Annual meeting of the Utah Water Pollution Control Association, Salt Lake City, UT. April 21-22, 1986. (T. Richards, K. Vigil, and *).

Presentations at Professional Meetings (continued)

- The use of the simulation package STELLA for modeling anaerobic animal waste treatment lagoons. Annual meeting of the Utah Water Pollution Control Association, Park City, UT. April 23-24, 1987. (*).
- Laboratory and field validation of a land treatment air emission model. World Conference on Hazardous Waste, Budapest, Hungary. October 25-31, 1987. (*).
- A sampling system for the detection of specific hazardous constituent emissions from soil systems. World Conference on Hazardous Waste, Budapest, Hungary. October 25-31, 1987. (*).
- Poster Session: Protocol for volatilization corrected degradation rate measurements in soil systems. World Conference on Hazardous Waste, Budapest, Hungary. October 25-31, 1987. (*).
- Preliminary laboratory evaluation of soil phase photodegradation of toxic organics. Third Conference on Current Concerns on Toxicity, Millbrae, CA. November 16-17, 1987. (*, W. Moore and J. McLean).
- A methodology for the determination of volatilization corrected degradation rates of organic compounds in soil systems. 1989. APCA-EPA Annual Symposium on Measurement of Toxic Air Pollutants, Raleigh, NC. (*).
- Application of thermochemical concepts to waste incineration process design. 1989. Presented at the 1989 AIChE Summer Meeting, Philadelphia, PA. August 20-23, 1989. (*, J. S. Wu).
- In situ treatment of fuels contaminated soil via vacuum extraction. 1989. Presented at the 1989 AIChE Annual Meeting, San Francisco, CA. November 5-10, 1989. (*, D. Depaoli, R. Hinchee, and W. J. Doucette).
- In situ bioventing for soil decontamination. 1990. Presented at the 1990 Utah Academy of Science, Arts and Letters Annual Meeting, Brigham Young University, Provo, UT, May 11, 1990. (*).
- Evaluation of surface downhole vadose zone soil gas sampling techniques for volatile organic compound detection. 1990. Poster session presented at the 90th Annual Meeting of the Air and Waste Management Association, Pittsburgh, PA, May 24 to 29, 1990. (Q. Zhu, *, and W. J. Doucette).
- Enhanced biodegradation of petroleum hydrocarbons in the unsaturated zone. 1990. Presented to the Eleventh Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, D.C., November 11 to 15, 1990. (R. H. Miller, D. L. Sorensen, *, W. J. Doucette, R. C. Sims, and R. E. Hinchee).
- Microcomputer program utilizing quantitative structure-property and property-property relationships for environmental fate modeling. 1990. Poster session presented at the Eleventh Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, D.C., November 11 to 15, 1990. (W. J. Doucette, D. J. Denne, J. D. Frazier, *, and D. K. Stevens).
- In situ biodegradation of a jet fuel contaminated unsaturated zone using soil vacuum extraction. 1990. Poster session presented to the Eleventh Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, D.C., November 11 to 15, 1990. (*, W. J. Doucette, and R. E. Hinchee).
- Fundamentals of bioventing applied to fuel contaminated sites. 1992. Presented at the 1992 Summer National Meeting of the American Institute of Chemical Engineers, Minneapolis, MN, Aug. 9-12, 1992. Advances in Soil Venting Symposium. (*).

Presentations at Professional Meetings (continued)

- Bioremediation of fuels impacted soils via bioventing. 1993. Invited speaker, Fourth Annual Idaho Regional Conference on Hazardous Wastes & Materials, Idaho State University, Pocatello, ID. March 31, 1993. (*).
- Enhanced site assessment techniques for the evaluation of intrinsic bioremediation at UST sites. Poster presented at the Third International Symposium on On-Site and In Situ Bioremediation, San Diego, CA. April 24 to 27, 1995. (*, and D. L. Sorensen).
- Enhanced field site characterization techniques applied at a UST site in northern Utah. Presentation at the Fourth Annual US EPA Research Coordination Conference on Underground Storage Tanks, Las Vegas, NV. September 19-21, 1995. (*).
- Evaluation of intrinsic remediation at a hydrocarbon contaminated site, Eielson AFB, Alaska. Presentation at the International Conference on Intrinsic Bioremediation, Annapolis, Maryland. October 16 to 17, 1995. (*, G. Ashby, K. Gorder, D. L. Sorensen, and M. Kemblowski). Poster and Invited Platform Presentation.
- Evaluation of intrinsic remediation at a chlorinated solvent contaminated site, Eielson AFB, Alaska. Presentation at the International Conference on Biological Dehalogenation, Annapolis, Maryland. October 18 to 19, 1995. (*, K. Gorder, D. L. Sorensen, G. Ashby, and M. Kemblowski). Poster Presentation.
- Distribution of TCE and selected hydrocarbons between "weathered" and "unweathered" NAPLs and groundwater. 1995. Presentation at the 2nd SETAC World Congress, Vancouver, BC, Canada. Platform Presentation. (W. J. Doucette, and *).
- Distribution of trichloroethylene and selected aliphatic and aromatic hydrocarbons between "weathered" and "unweathered" fuel mixtures and groundwater: Equilibrium and kinetic considerations. Presented at the 25th Annual Rocky Mountain Groundwater Conference Jackson, Wyoming. Platform Presentation. (W. J. Doucette, and *).
- An in situ instrumentation bundle for evaluating air injection remediation technologies. Presentation at the Annual Meeting of the Great Plains/Rocky Mountain Hazardous Substances Research Center, Albuquerque, New Mexico. May 21 to 23, 1996. (C. K. Baldwin, B. L. Hall, and *). Platform Presentation.
- Relationship between aerobic biodegradation rates, chemical structure and soil type for selected petroleum hydrocarbons. Presentation at the Annual Meeting of the Great Plains/Rocky Mountain Hazardous Substances Research Center, Albuquerque, New Mexico. May 21 to 23, 1996. Poster Presentation. (W. J. Doucette, J. Yuan, B. Bugbee, A. Ravipaty, and *).
- Laboratory evaluation of oxygen transfer in air injection groundwater remediation systems. Presentation at the Annual Meeting of the Great Plains/Rocky Mountain Hazardous Substances Research Center, Albuquerque, New Mexico. May 21 to 23, 1996. (S. Miller and *). Poster Presentation.
- The use of tracer in evaluating mixing conditions within air injection groundwater remediation systems. Presentation at the Annual Meeting of the Great Plains/Rocky Mountain Hazardous Substances Research Center, Albuquerque, New Mexico. May 21 to 23, 1996. (J. Berkey, W. J. Doucette and *). Poster Presentation.
- Relationship between aerobic biodegradation rates, chemical structure and soil type for selected petroleum hydrocarbons. 1996. Presentation at the 7th International Workshop on Quantitative Structure-Activity Relationship (QSAR) in Environmental Sciences, Elsinore (Helsingor) Denmark.. (W. J. Doucette, J. Yuan, R. Miles, B. Bugbee, *, and K. Harris).

Presentations at Professional Meetings (continued)

- The integration of soil vacuum extraction and bioventing technology at a JP-4 release site. 2000. Proceedings of the Third International Symposium on Integrated Technical Approaches to Site Characterization, Argonne National Laboratory, Argonne, IL. (*).
- Implementation of monitored natural attenuation at a chlorinated solvent site in Alaska. 2000. Proceedings of the Third International Symposium on Integrated Technical Approaches to Site Characterization, Argonne National Laboratory, Argonne, IL. (*).
- Study of natural attenuation processes in a hydrocarbon-impacted wetland. 2001. Presented at the Second International Conference on Wetlands and Remediation, Burlington, VT. September 4-6. (Moore, B.J., *, J.E. Armstrong, W.J. Doucette, and J.V. Headley).
- Biogeochemistry influencing the bioavailability of toxic trace elements in wetland sediments receiving municipal wastewaters. 2001. Presented at the Second International Conference on Wetlands and Remediation, Burlington, VT. September 4-6. (Perry, M., J.E. McLean, *, and A. Anderson).
- Study of natural attenuation processes in a hydrocarbon-impacted wetland. 2001. Presented to the 2nd Joint IAH-CGS Conference, Calgary, Alberta. September 17-19. (Moore, B.J., J.E. Armstrong, W. J. Staudt1, *, and W.D. Doucette).
- Trichloroethylene degradation enhancement via carbon donor addition. 2002. Presented to the General Meeting of the American Society of Microbiology, Salt Lake City, Utah. May 19-23 (Sorensen, D.L., *, W.J. Doucette, and J.E. McLean).
- Estimating the Uptake of Organic Chemicals by Plants. 2004. Presented in a platform session at the 11th International Workshop on Quantitative Structure-Activity Relationships in Human Health and Environmental Sciences, Liverpool, UK. May 9-13. (Doucette, WJ, J. Chard, B. Bugbee, and *).
- Measurement and estimation of the root uptake of organic chemical by plants. 2004. Invited presentation at the 25th Annual Meeting of the Society of Environmental Toxicology and Chemistry, Portland, OR. November 14-18. (Doucette, W., J. Chard, B. Bugbee, and *).
- Microcosm studies and phylogenetic analysis of dechlorinating cultures. 2004. INRA Subsurface Science Symposium. Spokane, WA. September 20-22, (Zhou, J., *, D. L Sorensen, J. M Norton, and J. E. McLean). Poster presentation.
- Realities of Remediation – Source Weathering Considerations. 2005. Invited platform presentation to the 14th Annual State Fund Administrators Conference, Salt Lake City, UT, June 28. (*).
- Electron Shuttle Activity Affects Iron Availability in Non-Dehalogenating TCE Contaminated Sediments. 2005. Poster presented to the American Society of Microbiology Annual Meeting. (H. Mickelson, J.E. McLean, J.M. Norton, *, and D.L. Sorensen).
- Transformation Of Iron Phases and Identification of Known Iron-Reducing Bacteria During Anaerobic Biostimulation for Trichloroethylene Degradation. 2005. Poster presented to The Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Jackson Hole, WY. (H. Mickelson, J. Zhou, J.E. McLean, D.L. Sorensen, J.M. Norton, Y. Xu, and *).
- Analysis of the Microbial Diversity of a Dechlorinating Culture and a TCE-Contaminated Aquifer. 2006. Poster presented to the INRA 2005 Environmental & Subsurface Science Symposium, Big Sky, MT. (J. Zhou, *, J.M. Norton, D.L. Sorensen, and J.E. McLean).
- Microbial Diversity and Composition Analysis in Bioremediation of TCE. 2006. Poster presented to the INRA 2006 Environmental & Subsurface Science Symposium, Big Sky, MT. (J. Zhou, J. Ervin, *, J.M. Norton, D.L. Sorensen, and J.E. McLean).

Presentations at Professional Meetings (continued)

- TCE Contaminated Aquifer Bacteria that Reduce Fe(III) from Goethite, Poorly Crystalline Iron Oxide, and/or Fe(III)NTA. 2007. Poster presented to the 2007 ASM General Meeting. (Y. Liang, D.L. Sorensen, J.E. McLean, J.M. Norton, and *).
- Bacteria in Iron Reducer Enrichments from TCE Contaminated Aquifer Material at Hill Air Force Base. 2007. Invited paper presented to the INRA 2007 Environmental & Subsurface Science Symposium, Logan, UT. (D.L. Sorensen, J.E. McLean, Y. Liang, J.M. Norton, and *).
- Implementation and Monitoring of Post-SEAR Bioaugmentation at a TCE Source Area, OU2, Hill AFB. 2007. Invited paper presented to the INRA 2007 Environmental & Subsurface Science Symposium, Logan, UT. (*, J. Zhou, D. Sorensen, J. Ervin, K. Gorder, C. Holbert, T. Mehraban).
- Molecular Tools For Determining Microbial Community Characterization at TCE Contaminated Sites. 2007. Poster presented to the INRA 2007 Environmental & Subsurface Science Symposium, Logan, UT. (J. Ervin, *, J.M. Norton, D.L. Sorensen, and J.E. McLean).
- Dehalorespiring Bacteria and Iron Reducing Bacteria Distributions in a TCE Contaminated Aquifer. 2007. Poster presented to the INRA 2007 Environmental & Subsurface Science Symposium, Logan, UT. (C. Yupanqui-Zaa, D.L. Sorensen, J.M. Norton, M.F. Roginske, *, and J.E. McLean).
- Use of Molecular Tools to Determine the Contribution of Endophytic Microorganisms to TCE Degradation in Endogenous Trees at Hill Air Force Base in Ogden, UT. 2007. Invited paper presented at The 2nd International Conference on Challenges in Site Remediation: Site Characterization and Performance Monitoring, Niagara Falls, NY. (J. Ervin, R. Winters, K. Gorder, W. J. Doucette, and *).
- Factors Associated with the Spatial Distribution of Genes Indicating Dehalogenation Potential in a TCE Contaminated Aquifer. 2008. Poster presented to the 2008 ASM General Meeting, Boston, MA. (C. Yupanqui-Zaa, D.L. Sorensen, J.E. McLean, M.F. Roginske, J.M. Norton, and *).
- Three Facultative Iron Reducing Bacteria from Trichloroethene Contaminated Aquifers. 2008. Poster presented to the 2008 ASM General Meeting, Boston, MA. (D.L. Sorensen, J.E. McLean, J.M. Norton, and *).
- Evaluation of Duckweed as a Cost-Effective Technology for Management of Phosphorous in Municipal Wastewater Systems. 2008. Paper presented to the Water Environment Association of Utah Mid-Year Conference, Salt Lake City, UT (*, B. Housley, N. Orita, B. Wilkes, and J. Farrell).
- Effect of Biostimulation on Bacterial Communities of TCE Contaminated Aquifers. 2009. Poster presented to the 2009 ASM General Meeting, Philadelphia, PA. (S. Muruganandam, D.L. Sorensen, J.E. McLean, *, and J. Norton).
- Ecological Engineering that Uses Duckweed to Remove Phosphorus and Nitrogen from Wastewater. 2009. Paper presented to the Water Environment Association of Utah Annual Conference, St. George, UT. (J. Farrell, M. Kesaano, and *).
- Understanding Duckweed Systems from Harvest to Disposal. 2009. Poster presented to the Water Environment Association of Utah Mid-Year Conference, Salt Lake City, UT. (M. Kessano, J. Farrell, and *).
- Evaluation of Water Supply and Wastewater Treatment/Reuse Options, Cedar City, UT. 2010. Paper presented to the 2010 Annual Meeting of the Water Environment Association of Utah, St. George, UT, April 14-16. (*).

Presentations at Professional Meetings (continued)

- Analysis of the Environmental Impact of Expanding Salt Lake County's Green Waste Collection Program. 2010. Presented to the SWANA Utah 2010 Technical Symposium, Salt Lake City, UT. (*).
- Evaluation of duckweed as a cost-effective technology for management of phosphorous in municipal wastewater systems. 2010. Sixth International Conference On Sustainable Water Environment, Newark, DE, July 29-31. (*, J. Farrell, M. Kesaano, and J-S Eun).
- Wastewater treatment and reuse options for groundwater protection and water supply extension, Cedar City, Utah. 2010. Sixth International Conference On Sustainable Water Environment, Newark, DE, July 29-31. (*).
- A Theoretical Duckweed System for Removing Phosphorus from Logan City Wastewater and How it Compares with an Algae System. 2010. Water Environment Association of Utah Mid-Year Conference, West Valley City, UT, November 17. (J. Farrell, *).
- Sustainable management of duckweed biomass grown for nutrient control in municipal wastewaters. 2010. Water Environment Association of Utah Mid-Year Conference, West Valley City, UT, November 17. (M. Kesaano, *).
- Some Biogeochemical Characteristics of Large Flow-Through Aquifer Material Columns Treating TCE. 2011. Abstract and poster presented to the 2011 ASM General Meeting, New Orleans, LA. (S. Muruganandam, D. Sorensen, J. McLean, *, J. Norton).
- Microbial Community Characterization in TCE Dechlorinating Flow Through Columns. 2012. Abstract and poster presented to the 2012 ASM General Meeting, San Francisco, CA. (S. Muruganandam, D. Sorensen, J. McLean, *, and J. Norton).
- Jordan River TMDL: Phase 2 Research, Data Collection and Progress: Quality of Stormwater Discharges to the Jordan River. 2013. Salt Lake County Watershed Wide Symposium, West Valley City, UT, October 23, 2013. (J. Richardson, *)
- Tracer Study of an Urban Stormwater Exfiltration Collection System, Green Meadows, Logan, Utah. 2013. Water Environment Association of Utah 2013 Mid-Year Meeting, West Valley City, UT, November 12, 2013. (T. Nyanda, J. Richardson, J. Justensen, M. Rycewicz-Borecki, J.E. McLean, *).
- Total Phosphorous, Nitrogen and Metal Reduction by Plant Species in a Controlled Greenhouse Experiment. 2013. Water Environment Association of Utah 2013 Mid-Year Meeting, West Valley City, UT, November 12, 2013. (M. Rycewicz-Borecki, *, J.E. McLean).
- Harvesting Effects on Pollutant Removal by Various Plant Species in a Stormwater Treatment Field Demonstration Site. 2013. Water Environment Association of Utah 2013 Mid-Year Meeting, West Valley City, UT, November 12, 2013. (M. Rycewicz-Borecki, *, J.E. McLean).
- The Impact of Coarse Particulate Matter Degradation in Storm Drains on Oxygen Consumption in the Jordan River. 2013. Water Environment Association of Utah 2013 Mid-Year Meeting, West Valley City, UT, November 12, 2013. (J. Richardson, T. Nyanda, *).
- Potential Use of Duckweed Based Anaerobic Digester Effluent as a Feed for Heterotrophic Growth of Micro-Algae. 2013. Water Environment Association of Utah 2013 Mid-Year Meeting, West Valley City, UT, November 12, 2013. (L. Ahmadi, *).
- Potential Use of Duckweed Based Anaerobic Digester Effluent as a Feed for Heterotrophic Growth of Micro-Algae. 2013. Poster presented at the 2013 American Geophysical Union Annual Meeting, San Francisco, CA, December 8 to 13, 2013. (L. Ahmadi, *).

Presentations at Professional Meetings (continued)

- Phosphorous, Nitrogen, and Metals Uptake from Synthetic Stormwater. Six Plant Species in a Greenhouse Experiment. 2014. Platform presentation at the 2014 Spring Runoff Conference, Logan, UT, April 2, 2014. (M. Rycewicz-Borecki, *, J.E. McLean).
- Effects of Harvesting on Nutrient Removal. Three Plant Species at a Stormwater Treatment Field Site. 2014. Platform presentation at the 2014 StormCon Conference, Portland, OR, August 6, 2014. (M. Rycewicz-Borecki, *, J.E. McLean).
- Effect of Plant Species on Accumulation and Removal Potential of Copper, Zinc and Lead from Stormwater Bioretention Systems. 2015. Platform presentation at the 2015 StormCon Conference, Austin, TX, July 28, 2015. (M. Rycewicz-Borecki, *, J.E. McLean).

Technical Peer Reviewer Activities

- Thibodeaux, L. J., and H. D. Scott. Air/soil exchange coefficients, In Environmental Exposure from Chemicals. Ed. W. B. Neely and G. E. Blau, CRC Press, Inc., Boca Raton, FL. 1984.
- Water Pollution Control Federation. Hazardous waste site remediation management. A special publication prepared by the Task Force on Hazardous Waste Site Remediation. WPCF, Alexandria, VA. 1990.

Provided Technical Manuscript/Document/Program Review for:

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| Journal of Environmental Quality | U.S. EPA RSKERL, Ada, Oklahoma |
| Journal of Hazardous Materials | U.S. EPA Exposure Assessment Group |
| Water Resources Research | U.S. EPA RREL, Cincinnati, OH |
| CRC Press, Inc., Boca Raton, FL | The Petroleum Research Fund, ACS |
| U.S. Department of Energy | Water Environment Research |
| DOD/AATDF, Rice University | Harper and Row Publishers, New York, NY |
| Bioremediation Journal | Ground Water Monitoring and Remediation |
| Environmental Technology Journal (Letters) | Applied Occupational & Environ. Hygiene |
| Journal Soil & Sediment Contamination | Journal of SETAC |

Provided Technical Manuscript/Document/Program Review for (continued):

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|---|----------------------------------|
| Urban Water Journal | Bioremediation Journal |
| Journal of Hydrologic Engineering | Journal of Contaminant Hydrology |
| Journal of the Air & Waste Management Association | |
| CEE Department Advisory Board, Northern Arizona University, Flagstaff, AZ | |
| Ontario Environment Ministry Research Excellence Program Proposal Review | |
| Wisconsin Department of Natural Resources, Peer Review Team, Wisconsin Closure Protocol Study | |

Member Technical Proposal Review Team, Western Education and Research Center; New Mexico State University; Albuquerque, NM, November, 1992; 1993.

Member Technical Review Panel for "Bench Scale Bioremediation Treatability Methodologies and Standard Protocol Development," Wastewater Technology Center, Burlington, Ontario. January 1, 1993 - December 31, 1994.

Research Competitiveness Program Evaluator, American Association for the Advancement of Science (AAAS); King Abdulaziz City for Science and Technology (KACST), 2011 to present

Strategic Environmental Research and Development Program (SERDP), FY 2013 Solicitation

Technical Peer Reviewer Activities (continued)

Nazarbayev University Commercialization Review, Oak Ridge Institute for Science and Education, 2013 to present.

International Journal of Engineering Research and Innovation, Editor. 2013 to present.

Academic and Professional Organization Technical Program and Committee Service

National Water Pollution Control Federation Bioassay Committee member, 1984-1988.

National Air and Waste Management Association, member Hazardous Waste Treatment, and Land Disposal Committees, 1985 -1996.

Member, U.S. Representative, Technical Working Group, Industrial Site Decommissioning, Environment Canada. 1987.

Session Co-Chairman, 81st Annual Air Pollution Control Association Meeting, Dallas, TX. Session 008 - Hazardous Waste Disposal Options for the 90's, Session 116 - Land Disposal of Petroleum Refinery Wastes. June 20-24, 1988.

Participant in NSF Sponsored Course on Incineration of Hazardous Wastes, program for undergraduate curriculum development, one of 20 participants selected nationwide. Summer 1988. Session Co-Chairman, AIChE Annual Meeting, Session - Incineration of Hazardous Wastes - New Technologies and Environmental Impacts. Summer, 1989.

Member of the Phi Kappa Phi 1992 National Summer Seminar Planning Group, 1989-1992.

Invited participant at the American Society of Engineering Educators Dean's Conference on the Engineering Faculty Pipeline Problem, Washington, D.C., January, 1989.

Participant in NSF Sponsored Course on Emergency Response and Emergency Planning, program for undergraduate curriculum development, one of 20 participants selected nationwide. Summer 1989.

Session Co-Chairman, 84th Annual Air Pollution Control Association Meeting, Vancouver, B.C. Session 076 - Physical, Chemical and Biological Treatability Testing. June 16-21, 1991.

Session Co-Chairman, 85th Annual Air Pollution Control Association Meeting, Kansas City, MO. Session 13 - Physical, Chemical and Biological Treatability Testing, Session 30 - Bioremediation Evaluation. June 21 - 26, 1992.

Participant in NSF Sponsored Course on Pollution Prevention, program for undergraduate curriculum development, one of 20 participants selected nationwide. Summer 1992.

Session Chairman, 86th Annual Air Pollution Control Association Meeting, Denver, CO. Advances in Soil Treatment. June 13-18, 1993.

Session Co-Chairman, Cost-Efficient Acquisition and Utilization of Data in the Management of Hazardous Waste Sites, Herndon, VA. Cost-Efficient Approaches/Methods of Data Acquisition, Management and Remediation. April 23, 1994.

Participant in NSF Sponsored Course on Air Toxics, program for undergraduate curriculum development, one of 15 participants selected nationwide. Summer 1994.

Senior Technical Consultant, Canadian Petroleum Producers Association Subsurface Remediation Research and Demonstration Project, Strachan Field Site, related to bioventing and in situ air sparging research component of the CAPP field program. 1994 to 2010.

Member, ASTM Committee for development of standard for "Remediation of Ground Water by Natural Attenuation at non-Petroleum Release Sites." 1998-1999.

Academic and Professional Organization Technical Program and Committee Service (continued)

- Participant, NSF sponsored "Ethics Across the Curriculum, A Practical Workshop," Presented by the Center for the Study of Ethics in the Professions, Illinois Institute of Technology, July 30 to August 6, 2002.
- Chair, Science and Engineering Recruitment Team Committee, NSF-funded ADVANCE Grant, Utah State University, August 2003 to 2008.
- Participant, "Wastewater as a Resource," Water Environment Federation Working Group for the Development of WERF future funding priorities, 2009 to 2010.
- Workshop Participant, "Engineering Faculty Engagement in Learning Through Service (EFELTS) Workshop," NSF Sponsored Program, Michigan Tech, Houghton, MI, Aug 8 to 11, 2012.
- Water Environment Federation Emergency Planning, Response and Recovery Task Force Member, committee work to produce WEF Special Publication, Emergency Planning, Response, and Recovery, Manual of Practice, Alexandria, VA, April 2012 to December, 2013.
- Invited Participant, "Fundamentals of Environmental Engineering Concept Inventory," NSF Sponsored Project meeting, June 12 to 14, 2012, San Antonio, TX.
- Session Chair, "Big Idea Discussion – PLANET: Handling Big Challenges Beyond the Low-Hanging Fruit," Utah Business Sustainability Conference, Salt Lake City, UT, September 3, 2013. (*).

Professional Training/Technical Assistance Program Involvement

- APTI Course, Site Specific Monitoring for Air Toxics guest lecturer, Denver, Colorado, July 1986.
- Course Instructor, Region V, U.S. EPA, "Soils: Data acquisition, interpretation and remedial actions for uncontrolled hazardous waste sites," August 1986.
- Invited participant, U.S. EPA, Office of Solid Waste, Training film, "Measurement of Emissions from Land Treatment Facilities," Grassy Mountain, UT, September 1987.
- Instructor, "Fundamentals of Waste Degradation and Contaminant Movement in Soils," Short Course given by the Division of Environmental Engineering, Utah State University, September 19-30, 1988.
- Invited participant in U.S. EPA RSKERL Technical Assistance Program, "Wood Preserving Waste Site Remediation," Atlanta, GA. March 21 to 22, 1989. In-situ soil vacuum extraction fundamentals.
- Course organizer and instructor, "Bioremediation of Hazardous Waste Contaminated Soils," Short Course given by the Division of Environmental Engineering, Utah State University, August, 1989, 1990, 1991, 1992.
- Instructor, "Remediation of Contaminated Soils: Application of Soil Process Fundamentals," Short Course for the U.S. EPA, R.S. Kerr Environmental Research Laboratory, Ada, OK, February 21-23, 1990; Atlanta, GA, October 16-18, 1990; Olympia, WA, June 25-27, 1991; San Francisco, CA, July 21-23, 1992; Oklahoma City, OK, September 15-17, 1992.
- Course organizer and instructor, "Hazardous Materials Regulations and OSHA Standards for Managers," Short Course presented to ITT, FELEC Services, Inc., Colorado Springs, CO, April 20, 1990.
- Invited participant, Ground water treatment symposium, Alternatives to pump-and-treat, Kansas City Section of ASCE, Kansas City, Missouri, April 25, 1990.

Professional Training/Technical Assistance Program Involvement (continued)

- Invited participant at the API/EPA Field Monitoring of Bioremediation Workshop, Oklahoma City, OK, September 6, 1990. Speaker on Monitoring Scenarios and Guidelines for Bioremediation Indicators.
- Instructor, "Bioremediation: Basic Principles, Limitations and Practical Applications" Technical Support Program for U.S. EPA Region VIII, Sponsored by the R. S. Kerr Environmental Research Laboratory, Ada, OK; Denver, Colorado, October 29 to 30, 1991; Salt Lake City, UT, October 30 to 31, 1991.
- Instructor, "Subsurface Remediation: Fundamentals, Problems and Practical Applications," Technical Support Program for U.S. EPA Region IX, Sponsored by the R. S. Kerr Environmental Research Laboratory, Ada, OK; San Francisco, CA, January 8 to 10, 1992.
- Instructor, "RCRA Corrective Action Stabilization Technologies," Sponsored by U.S. EPA, CERL, Cincinnati, Ohio; Philadelphia, PA, March 18, 1992; New York, NY, March 19, 1992.
- Instructor, "Transport and Fate of Hazardous Wastes in Soils," Sponsored by SUTI, Rice University, Houston, TX; Philadelphia, PA, May 5-7, 1992; Kansas City, MO, October 12-15, 1992; San Francisco, CA, December 15-17, 1992.
- Invited speaker, U.S. EPA Science Advisory Board, UST Research Subcommittee Program Review, "In situ biocontainment of hydrocarbon contaminated plumes," Arlington, VA, June 29, 1992; for U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, NV.
- Invited speaker, Environmental Restoration Technology Transfer Symposium, "Assessment of Natural Attenuation Mechanisms At UST Sites," Air Force Center for Environmental Excellence, Brooks AFB, TX, January 26-27, 1993.
- Invited speaker, 43rd Environmental Engineering Conference, "Bioventing For Soil Remediation," University of Kansas, Lawrence, Kansas, February 10, 1993.
- Invited speaker, U.S. EPA RREL, Water and Hazardous Waste Treatment Research Division, Advanced Technology Seminar Series, "Assessment of natural attenuation of groundwater plumes at UST sites," Cincinnati, Ohio, March 17, 1993.
- Instructor, Bioventing for Soil Remediation, "SVE, Air Sparging and Bioventing" Training Course presented to the Tanks and Spills Section of the Hazardous Waste Division, MPCA, St. Paul, Minnesota, May 18-20, 1994.
- Instructor, "Bioremediation of Soil Contaminated LUST sites," Training Course presented to UST Sections of U.S. EPA Region VII States (Kansas, Missouri, Iowa, and Nebraska) for U.S. EPA Region VII LUST Section, Summer 1994.
- Invited speaker, "Bioventing System Design Protocol," U.S. EPA Technical Support Project, Engineering Forum and Ground Water Forum, General Meeting, Las Vegas, NV, January 25, 1995.
- Instructor, Strategic Technology Exchange Workshop - Bioremediation, "Bioremediation Basics," presented in Indianapolis, IN, July 24-26, 1995; "Bioremediation Basics" and "Case Study - When In Situ Bioremediation Doesn't Work, A Great Solution to the Absolutely Wrong Problem" presented in Lake Tahoe, NV, September 11-13, 1995.
- Instructor, "Case Study Presentations - Bioremediation of Contaminated LUST sites," Training Course presented to UST Sections of U.S. EPA Region VII States (Kansas, Missouri, Iowa, and Nebraska) for U.S. EPA Region VII LUST Section, Spring to Summer 1995.
- Invited Speaker, "Bioventing Technology Overview" and "Air Emissions Data Collection, Reporting and Analysis," Bioventing DOIT Demonstration Workshop, Sponsored by the Western Governor's Association, Salt Lake City Hilton, Salt Lake City, UT, November 3, 1995.

Professional Training/Technical Assistance Program Involvement (continued)

- Course Organizer and Course Participant, "Soil and Groundwater Remediation System Fundamentals," Course Presented to the State of Utah Department of Environmental Quality, Division of Solid and Hazardous Waste, February, 1996 to May, 1998.
- Instructor, "Mass Balance and Source Control," "Principles of Pump and Treat with Case Studies," "Principles of Soil Vapor Extraction with Case Studies," "Principles of Soil Remediation with Case Studies," "Treatment Train Approach with Case Studies," for the Transport and Fate of Contaminants in the Subsurface short course Sponsored by SUTI, Rice University, Houston, TX; Richmond, VA, June 19-21, 1996.
- Instructor, "SVE and Bioventing," "Land Treatment," "Reaction Barriers," "Phytoremediation," "Treatment Train Approach with Case Studies," for the Bioremediation short course Sponsored by SUTI, Rice University, Houston, TX; Richmond, VA, September 4-6, 1996; Trenton, NJ, November 13-15, 1996; Topeka, KS, May 14-16, 1997; Worcester, MA, May 20-22, 1997.
- Invited Speaker, "Natural Attenuation and Enhanced Bioremediation," State Underground Storage Tank Fund Administrators Conference, Sacramento, California, June 16-18, 1997.
- Invited Speaker, "Using Accelerated Site Characterization for Remediation Decision," U.S. EPA STEW, Free Product Recovery and Site Characterization, Chicago, IL, September 16-18, 1997.
- Invited Speaker, "Fundamentals and Applications of Natural Attenuation at Contaminated Groundwater Sites," State of Montana Consultant's Day, Montana DEQ; November 6, 1997.
- Instructor, "Natural Attenuation Shortcourse," presented for the U.S. EPA R.S. Kerr Environmental Research Center, Ada, OK, at the U.S. EPA Region 6, Dallas, TX, October 27-29, 1997; U.S. EPA Region 4/NCDENR, March 10-12, 1998.
- Instructor, "Natural Attenuation Workshop," presented to the Central New York Association of Professional Geologists, Syracuse, NY, May 15, 1998.
- Organizer and Instructor, "Quantitative Assessment of Natural Attenuation Processes for Site Remediation," Presented at the Annual Great Plains/Rocky Mountain HSRC, May 18, 1998, Snowbird, Utah.
- Invited Speaker, "Natural Attenuation," State Underground Storage Tank Fund Administrators Conference, Austin, TX, June 22-24, 1998.
- Instructor, "The Use of the Rational Method for Stormwater System Design," American Society of Civil Engineers, Northern Utah Branch, Logan, Utah, February 12, 1999.
- Instructor, "Remediation of Ground Water by Natural Attenuation at Petroleum Release Sites," ASTM Technical and Professional Training, ASTM E 1943, Atlanta, Georgia, February 23-24, 1999.
- Invited Speaker, "Overview of Natural Attenuation," Presented to the 11th Annual South Dakota Department of Environment and Natural Resources Ground Water Quality Conference, Pierre, South Dakota, March 9-11, 1999.
- Invited Speaker, "Natural Attenuation Training Session," Presented to the Consultant's Two-Day Conference, Montana DEQ, Anaconda, MT, April 14-15, 1999.
- Organizer and Instructor, "Corrective Action Workshop," Presented to the Idaho Department of Environmental Quality, July 19-22, 1999, Boise, Idaho.
- Invited Speaker, "Application of Natural Attenuation Principles to UST Sites," Presented to the 12th Annual South Dakota Department of Environment and Natural Resources Ground Water Quality Conference, Pierre, South Dakota, March 14-15, 2000.

Professional Training/Technical Assistance Program Involvement (continued)

- Invited Speaker, "Source Remediation Issues Related to Natural Attenuation, Quantitative Evaluation, Estimation and Decisions" State Underground Storage Tank Administrators Conference, Portland, Oregon, March 20-23, 2000.
- Invited Speaker, "The integration of soil vacuum extraction and bioventing technology at a JP-4 release site," Presented at the Third International Symposium on Integrated Technical Approaches to Site Characterization, Argonne National Laboratory, Argonne, IL. September 12-14, 2000.
- Invited Speaker, "Implementation of monitored natural attenuation at a chlorinated solvent site in Alaska," Presented at the Third International Symposium on Integrated Technical Approaches to Site Characterization, Argonne National Laboratory, Argonne, IL. September 12-14, 2000.
- Organizer and Instructor, "Air Based Remediation Technologies," and "Fundamentals of Natural Attenuation Assessment for Groundwater Contamination," Presented to the Idaho DEQ, Pocatello, ID April 17 and 29, 2002, Boise, ID, May 7 and 8, 2002.
- Organizer and Instructor, "Quantitative Assessment of Natural Attenuation of Hydrocarbon and Chlorinated Solvent Contaminated Sites," Presented to Celtic Technologies, Cardiff, Wales, July 10 to 12, 2002.
- Organizer and Instructor, Monitored Natural Attenuation Assessment Short Course, Presented to URS Corporation, Salt Lake City, UT, May 2006.
- Invited Speaker, "Effectiveness of Monitored Natural Attenuation Strategies," Presented to the Assessment and Remediation of Oxygenates and Other Fuel Components short course sponsored by NEIWPC, Portland, OR October, 2007; Atlanta, GA November, 2007.
- Organizer and Instructor, "EMGM-285: Environmental Health Risk and Hazard Risk Calculations," 1-Day Workshop, Presented at the 106th Annual Air & Waste Management Association Conference, Chicago, IL, June 23, 2013; AND Presented at the 107th Annual Air & Waste Management Association Conference, Longbeach, CA, June 22, 2014. (* and L. Theodore).

Student Organization Involvement

- Faculty Advisor for American Society of Civil Engineers Student Chapter, 1986 to 1989.
- Faculty Advisor for the Society of Women Engineers Student Chapter, 1989 to 1996.
- Faculty Advisor for the Society of Environmental Engineering Students, 1996 to 2009.
- Member and Faculty Team Advisor, Engineers without Borders, USU chapter, 2006 to present.
- Faculty Team Advisor, Engineers without Borders-USU Mexico Team, 2007 to present.
- Student Clubs Outreach Coordinator, College of Engineering, Utah State University. August 2014 to present.

Extension/State Committee Activities

- President, Northern Utah Branch, American Society of Civil Engineers, 1987-1988.
- Member and Secretary, Utah Wastewater Operators Certification Board, 1987 to 1991.
- Member, Salt Lake County Solid Waste Management Council, 1989 to present.
- Member, State of Utah DEQ Underground Storage Tank Task Force, 1991 to 1994.
- Member, Cache County Solid Waste Management Advisory Board, 1991 to 1996, 1997 to Present.

Extension/State Committee Activities (continued)

Bioventing and natural attenuation for soil remediation. Presentation made to State of Utah, Department of Environmental Quality, UST Section Consultant's Day, Technology Presentation, Salt Lake City, Utah. April 20, 1995. (*)

Invited Speaker, "Principles of Natural Attenuation," State of Utah Corrective Action Conference, Salt Lake City, UT, August 20-22, 1997.

Invited Speaker, "Quantitative Evaluation of Natural Attenuation, Effective Site Monitoring," Presented to the Utah DEQ 2000 UST Conference, Ogden, Utah, April 13-14, 2000.

Member, State of Idaho, Preston, Idaho, Leaking Underground Storage Tank Task Force, 1995 to 2001.

Member, Organizing Committee, Sustainable Business Workshop, Wellsville, Utah, October 11, 2000, 2000 to 2001.

Member, Cache County Solid Waste Technical Advisory Committee for New Landfill Siting Study, 2000 to 2017.

Member, State of Utah Solid and Hazardous Waste Control Board, 2007 to 2013.

Evaluation of Water Supply and Wastewater Treatment/Reuse Options for Cedar City, Utah – Engineering Evaluation and Presentation of Findings to City of Cedar City, March 2009

Member, Jordan River TMDL Advisory Committee, 2009 to present.

Analysis of Environmental Impact of Proposed Green Waste Collection Program in Salt Lake County – Engineering Evaluation and Presentation of Findings, August 2009 to SL County Mayor's Office, December 2009 to Salt Lake Valley P2 Coordinators, May 2010 to Salt Lake City Sanitation Department.

Invited Speaker, "Young Professionals Panel Discussion," Water Environment Association of Utah Mid-Year Meeting. November 2010. Represented Academic profession in panel discussion of career paths and opportunities in the Environmental Engineering, esp., Wastewater Engineering field.

Member, D. Wynne Thorne Award Review Committee, Utah State University, 2015.

Professional Affiliations

Air and Waste Management Association
American Society of Civil Engineers
American Society of Engineering Educators
Engineers without Borders
Government Refuse Collection and Disposal Association
Solid Waste Association of North America
Water Environment Federation

Honors/Recognition

Richard I. Stessel Waste Management Award, Air and Waste Management Association, 2015
CEE Department Outstanding Undergraduate Advisor of the Year, 2014-2015
College of Engineering, Undergraduate Research Mentor, 2009
Sigma Xi, Scientific Honorary Society, 2003
Summer Research Faculty Associate, Air Force Office of Scientific Research, 1998
ASCE Utah Section Outstanding Professor of the Year, 1998

Honors/Recognition (continued)

Utah State University Old Main Society, 1993

College of Engineering and CEE Departmental Researcher of the Year, 1991-1992 Academic Year

National University Continuing Education Association, Conferences and Institutes Division, Creative Programming Award for Short Course "Remediation of Hazardous Waste Contaminated Soils," 1990

ASEE Outstanding Young Engineering Educator, 1988

Ph.D. Honors, University of Kansas, 1982

J. Lloyd Baron Award for Outstanding Graduate Student in Environmental Engineering, 1980

University of Kansas Graduate School Four-Year Honors Fellowship, 1977-1981

Honors in Engineering, Magna Cum Laude, 1977

Phi Kappa Phi (University Honorary), 1977

Tau Beta Pi (All Engineering Honorary), 1975

Chi Epsilon (Civil Engineering Honorary), 1975