SCOTT F. KOROM
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EDUCATION

Ph.D. Civil and Environmental Engineering, Utah State University, Logan, 1992. Dissertation: *Denitrification in the Unconsolidated Deposits of the Heber Valley Aquifer*.

M.S. Civil Engineering, University of Akron, Ohio, 1984.

B.S. Civil Engineering (***cum laude***), University of Akron, Ohio, 1982.

PROFESSIONAL EXPERIENCE

University of North Dakota
Professor of Engineering
Director of Western North Dakota Operations **June 2021-Current**
Western North Dakota operations include student recruitment, collaborative engineering programs in higher education, partnerships with industrial and state organizations, and the development of research opportunities and consortia.

Barr Engineering Company, Bismarck, ND **August, 2014-June 2021**
Senior Environmental Engineer: Project Manager on over 70 projects. Project topics include the design of groundwater monitoring networks, evaluating the geologic storage potential of salt strata, remediation of organic contaminants, advisor on agricultural water quality issues, permitting saltwater disposal wells, expert witness on wetland hydrology, design of groundwater capture trenches, geochemical modeling of surface water injected and stored in aquifers, and the feasibility of a chlor-alkali facilty in the Williston Basin.

New clients and/or Master Service Agreements brought to Barr include the following: seven oil and gas midstream companies, one oil and gas exploration and production company, one industrial facility, one agricultural commodity group, and one institution of higher learning.

North Dakota Geological Society
President **January 2016-December 2016**
Secretary/Treasurer **September 2014-December 2015**

University of North Dakota, Grand Forks
Associate Professor of Geological Engineering: **August, 2000-August, 2014**
Assistant Professor of Geological Engineering: **August, 1994-August, 2000**
Major topics of research interest are groundwater denitrification and groundwater contaminant transport and remediation. Courses taught include Seminar, Hydrogeology, Groundwater Monitoring and Remediation, Soil Mechanics, Groundwater Modeling, Contaminant Hydrogeology, Design Hydrology for Wetlands, Water Sampling and Analysis, Geology, Society and the Environment, Water, Floods and the Environment, Geological Engineering Design, and lectures for Introduction to Engineering. Conducted outreach and recruiting activities with several colleges and universities to attract students into geological engineering, including visits to Bismarck State College, Itasca Community College, and the University of Manitoba.

Director, Underground Coal Gasification, Institute for Energy Studies: **July, 2012-August, 2014**

Senator, University Senate: **August, 2012-May, 2013; August, 1998-May, 1999**

Director, Geological Engineering: **July, 2009-June, 2011**

Director, Graduate Programs in Environmental Engineering: **January, 2005-December, 2007**

Supervisor, Environmental Analytical Research Laboratory (EARL): **July, 2009-August, 2014**
Member, EARL Advisory Board: **September, 2002-June, 2008**
Director, Water Resources Research Laboratory: **August, 1998-August, 2002**
The Water Resources Research Laboratory, now the Environmental Analytical Research Laboratory, was started in 1994 with funding by the National Science Foundation and the University of North Dakota. Its goal was to provide research education and analytical skills to undergraduate and graduate students and to provide analytical services to our clients. Its nalytical equipment included an ion chromatograph, a graphite furnace/flame atomic absorption spectrometer, and total carbon and total sulfur analyzers for both water and solid samples.

Expert Witness: **July, 2001-November, 2001**
Hydraulic analysis of the flooding of North Dakota State University's steam tunnels.

Expert Witness: **July, 1996-September, 1996**
Fossaa v. Amerada Hess, a lawsuit concerning contamination of groundwater and agricultural land.

Savannah River Site, Aiken, South Carolina **June, 1992-July, 1994**
Postdoctoral Research Fellow for The Department of Energy: Worked on new strategies to use field-scale tracer tests to determine physical and chemical properties of contaminated aquifers that require remediation.

Utah State University, Logan **August, 1991-April, 1992**
Research Engineer: Groundwater hydrologist for a research project evaluating the effectiveness of the remediation of a U.S. EPA Superfund site in Libby, Montana. This is the first Superfund site to be granted approval by the EPA to attempt in-situ bioremediation of contaminated groundwater. The aquifer at this site is contaminated with toxic wood-preserving wastes (PCP and PAHs). Research focused on the competition between remediating bacteria and reduced inorganic species for oxygen injected (as H_2O_2) into the aquifer as an electron acceptor.

July, 1989-July, 1991
Research Assistant: Co-authored proposals for research funded by the Utah Division of Water Quality on the transport of nutrients in the groundwater of an agricultural valley. This work included monitoring wells and vadose zone samplers, conducting groundwater tracer tests in the field, modeling nitrogen losses via denitrification in agricultural wastes leaching into an aquifer, and producing the final project report.

October, 1986-June, 1989
Research Assistant: Conducted research funded by the U.S. Geological Survey on salt diffusion from a marine shale underlying an irrigated hillslope. This included field work, groundwater quality modeling with SUTRA (Saturated and Unsaturated TRAnsport, USGS), and writing the quarterly and final technical completion reports. Field work included monitor-well installation, scheduled well sampling, surveying, and taking hydraulic conductivity measurements with a Guelph permeameter. Additionally, substituted for professors unable to present their lectures (Hydrology and Groundwater Quality Modeling).

University of Akron, Akron, Ohio **September, 1985-May, 1986**
Lecturer: Taught Statics and Hydraulics Laboratory courses.

June, 1982-June, 1984

Research Assistant: Conducted a laboratory model study funded by the Ohio Department of Transportation and the Federal Highway Administration on energy dissipators for culverts and assisted in producing the final project report. This analysis resulted in a design procedure that is used by the Ohio Department of Transportation to design "hydraulic jump chambers." A paper summarizing this procedure was voted the Outstanding Practice and Education Paper for 1990 by the Publications Committee for the *Journal of Irrigation and Drainage Engineering*, ASCE. Taught Hydraulics and Hydraulics Laboratory courses. Implemented several new laboratory demonstrations.

October, 1981-May, 1982

Undergraduate Research Assistant: Analyzed surface drainage using an urban runoff model.

Computer Modeling, Inc., Cuyahoga Falls, Ohio **June, 1985-September, 1985**
June, 1986-September, 1986

Consultant: Assisted in the modeling of municipal water distribution systems (AKWA). This included data procurement, data entry into the model, and model calibration with use of field tests. Assisted in producing the final project report.

Firestone Tire and Rubber Company, Akron, Ohio **June, 1979-September-1979**
January, 1980-April, 1980

Co-op Student Engineer: Worked on the design and management of several industrial construction projects.

AWARDS AND HONORS

External Examiner, Ph.D. dissertation on groundwater denitrification for Lincoln University, Christchurch, New Zealand, December 10, 2013, and following.

Keynote Speaker, Workshop on the Role of Groundwater Nitrogen Assimilation in Catchment Water Management – Importance and Uncertainties, November 11, 2013, University of Wakaito, Hamilton, New Zealand.

Keynote Speaker, 58th Annual Midwest Ground Water Conference, September 23-25, 2013, Bismarck, North Dakota.

Best Presentation Award, Hadfield, J., and **S. Korom**, Groundwater denitrification in the Lake Taupo catchment, New Zealand, *International Association of Hydrogeologists 40th International Congress*, September 15-20, 2013, Perth, Australia.

University of North Dakota North Dakota Spirit Faculty Achievement Award, February 24, 2011.

Cited for **Excellence in Refereeing**, letter dated March 2, 2010, by Mary P. Anderson, Editor in Chief, *Ground Water*.

University of North Dakota Faculty Star, letter from President Kupchella, January 4, 2008.

University of North Dakota Summer Graduate Research Professorship, May to July 2006.

Nominated as an **Expert of International Standing**, Australian Research Council College of Experts, 4/2006.

University of North Dakota Faculty Star, letter from President Kupchella, January 9, 2006.

Selected as a **"Short List" candidate** for the *Ad Hoc* Integrated Nitrogen Research Committee of the US EPA Science Advisory Board, fall 2005.

Runner-Up, A. Roger Denison Undergraduate Research Competition for Oral Presentations, Klapperich, R., and **S.F. Korom**, Aquifer denitrification: Correlation of ^{15}N isotopic enrichment and first-order rate constants, *96th Annual Meeting of the North Dakota Academy of Science*, April 29, 2004, Fargo, ND**.**

First place, student Chapter of the American Water Resources Association, Student Paper Competition on Utah Water Issues, April 1991.

Outstanding Practice and Education Paper for 1990 by the Publications Committee of the *Journal of Irrigation and Drainage Engineering*, American Society of Civil Engineers: Korom, S.F., S. Sarikelle, and A.L. Simon, Design of hydraulic jump chambers, *Journal of Irrigation and Drainage Engineering*, ASCE, *116*(2), 143-153, 1990.

PUBLICATIONS IN ARCHIVAL JOURNALS

Summary:

- Most cited publication focused on "aquifer denitrification," 600+ citations (Scopus).
- 11 publications with at least 11 citations (Scopus)
- 3 publications in the #1 journal in water resources (1981-2009) – *Water Resources Research* (http://archive.sciencewatch.com/dr/sci/10/nov21-10_2/).
- 3 publications in the leading journal focused exclusively on groundwater – *Ground Water* (http://www.wiley.com/WileyCDA/WileyTitle/productCd-GWAT.html).

Korom, S.F., Visualizing Groundwater Dispersion: Laboratory Exercise on Dispersivity with Hands-on and Online Students, *International Journal of Engineering Pedagogy, 12*(4), 4-16, 2022.

Pei, P., J. Nasah, J. Solc, **S.F. Korom**, D. Laudal, and K. Barse. Investigation of the feasibility of underground coal gasification in North Dakota, United States, *Energy Conversion and Management, 113*, 95-103, 2016.

Pei, P., **S.F. Korom**, K. Ling, and J. Nasah. Cost comparison of syngas production from natural gas conversion and underground coal gasification, *Mitigation and Adaptation Strategies for Global Change, 21*(4), 629-643, 2016.

Pei, P., **S.F. Korom**, K. Ling, J. He.,and A. Gil. Thermodynamic impact of aquifer permeability on the performance of a compressed air energy storage plant, *Energy Conversion and Management, 97*, 340-350, 2015.

Derby, N.E., **S.F. Korom**, and F.X.M. Casey. Field-scale relationships among soil properties and shallow groundwater quality, *Ground Water*, *51*(3), 373-384, 2013.

Korom, S.F., and J.C. Seaman. When "conservative" anionic tracers aren't, *Ground Water*, *50*(6), 820-824, 2012.

Jabbari, H., Z. Zeng, **S.F. Korom**, and M. Khavanin. Well test analysis in dual-porosity aquifers with stress-dependent conductivity, *Research Journal of Environmental and Earth Sciences*, *4*(11), 962-981, 2012.

Korom, S.F., W.M. Schuh, T. Tesfay, and E.J. Spencer. Aquifer denitrification and in situ mesocosms: Modeling electron donor contributions and measuring rates, *Journal of Hydrology, 432-433*, 112-126, 2012.

Gerla, P.J., M.U. Sharif, and **S.F. Korom**. Geochemical processes controlling the spatial distribution of selenium in soil and water, west central South Dakota, USA, *Environmental Earth Sciences,62*(7), 1551-1560, 2011.

Korom, S.F., Graphical solutions for hillslopes: Discharge, head and velocity diagrams, *Journal of Irrigation and Drainage Engineering*, ASCE, *136*(8), 563-566, 2010.

Korom, S.F., A.J. Schlag, W.M. Schuh, and A.K. Schlag. Erratum for In situ mescocosms: Denitrification in the Elk Valley Aquifer, *Ground Water Monitoring and Remediation*, *30*(4), 142, 2010.

Korom, S.F., and E.J. Dodak. Numerical study of bromide as a tracer for aquifer macrodispersivity tests: Comparing conservative behavior to mildly nonlinear adsorption, *Journal of Hydrologic Engineering*, ASCE, *14*(12), 1383-1389, 2009.

Korom, S.F., A.J. Schlag, W.M. Schuh, and A.K. Schlag, In situ mesocosms: Denitrification in the Elk Valley Aquifer, *Ground Water Monitoring and Remediation*, *25*(1), 79-89, 2005.

Korom, S.F., K.F. Bekker, and O.J. Helweg, Influence of pump intake location on well efficiency, *Journal of Hydrologic Engineering*, ASCE, *8*(4), 197-203, 2003.

James, L.D., and **S.F. Korom**, Lessons from Grand Forks: Planning nonstructural flood control measures, *Natural Hazards Review*, ASCE, *2*(4), 182-192, 2001.

James, L.D., and **S.F. Korom**, Lessons from Grand Forks: Planning structural flood control measures, *Natural Hazards Review*, ASCE, *2*(1), 22-32, 2001.

Korom, S.F., An adsorption isotherm for bromide, *Water Resources Research*, *36*(7), 1969-1974, 2000.

Seaman, J.C., P.M. Bertsch, **S.F. Korom**, and W. P. Miller, Physicochemical controls on non-conservative anion migration in coarse-textured alluvial sediments, *Ground Water*, *34*(5), 778-783, 1996.

Korom, S.F., M.J. McFarland, and R. Sims, Reduced sediments: A factor in the design of subsurface oxidant delivery systems, *Ground Water Monitoring and Remediation*, *16*(1), 100-105, 1996.

Korom, S.F., and R.W. Jeppson, Nutrient leaching from alfalfa irrigated with municipal wastewater, *Journal of Environmental Engineering*, ASCE, *120*(5), 1067-1081, 1994.

Korom, S.F., and R.W. Jeppson, Nitrate contamination from dairy lagoons constructed in coarse alluvial deposits, *Journal of Environmental Quality*, *23*(5), 973-976, 1994.

Korom, S.F., Natural denitrification in the saturated zone: A review, *Water Resources Research*, *28*(6), 1657-1668, 1992.

Korom, S.F., Comment on "Modeling of multicomponent transport with microbial transformation in groundwater: The Fuhrberg case" by E. O. Frind et al., *Water Resources Research*, *27*(12), 3271-3274, 1991.

Korom, S.F., S. Sarikelle, and A.L. Simon, Closure (for Design of hydraulic jump chambers), *Journal of Irrigation and Drainage Engineering*, ASCE, *117*(6), 980-982, 1991.

Korom, S.F., S. Sarikelle, and A.L. Simon, Design of hydraulic jump chambers, *Journal of Irrigation and Drainage Engineering*, ASCE, *116*(2), 143-153, 1990.

Simon, A.L., S. Sarikelle, and **S.F. Korom**, Internal energy dissipators for culverts on steep slopes with inlet control, *Transportation Research Record 1151*, TRB, Washington, D. C., 25-31, 1987.

BOOKS

Korom, S.F., *Nutrients in the Elk Valley Aquifer: A Primer on Denitrification*, LAP Lambert Academic Publishing, Saabrücken, Germany, 2010.

Simon, A.L., and **S.F. Korom**, *Hydraulics*, 5th ed., Simon Publications, Safety Harbor, Florida, 2002.

Simon, A.L., and **S.F. Korom**, Instructor's Manual for *Hydraulics*, 4th ed., Prentice-Hall, Upper Saddle River, New Jersey, 1996.

Simon, A.L., and **S.F. Korom**, *Hydraulics*, 4th ed., Prentice-Hall, Upper Saddle River, New Jersey, 1996.

PROFESSIONAL ABSTRACTS-PRESENTATIONS

Korom, S., Proposed TP Objectives for the Red River at Emerson: Where's the Historical Perspective?, 2022 North Dakota Water Quality Conference, Bismarck, ND, March 22, 2022.

Korom, S.F., Red River Basin geology and its influence on nutrient mobility, 37th Annual Red River Basin Land & Water International Summit Conference, Fargo, January 15, 2020.

Korom, S., Basin geology, Pre-Workshop Webinar for Red River Basin/Cold Climate Agricultural Nutrients BMP Workshop, April 3, 2019.

Korom, S.F., and D.D. Kopecky, Plastics: The next boom in North Dakota? North Dakota Planning Association, Bismarck, September 19, 2019.

Korom, S.F., Geological engineering, presentatation at Williston State College to students in Eng 100 Introduction to Engineering, March 28, 2018.

Korom, S., What can geology tell us about water quality in the Red River Basin?, 2018 North Dakota Water Quality Conference, Bismarck, ND, March 6-8, 2018.

Korom, S.F., and B. Bonifas, Nitrate as an oxidant for in situ recovery, U2017 Global Uranium Symposium & Trade Show, Casper, WY, August 23, 2017.

Korom, S.F., CCR GW monitoring: Why the "total metals" approach "muddies" the water, Energy, Utility & Environmental Conference, San Diego, February 9, 2017.

Korom, S.F., CCR Rule: Groundwater requirements and challenges for compliance in North Dakota and beyond, Energy Generation Conference, Bismarck, January 26, 2017.

Korom, S., L. Gelles, J. Hadfield, and G. Barkle, Geochemical modeling of electron donors involved in denitrification in the Lake Taupō catchment,*Water Infrastructure and The Environment*, p. 92, New Zealand Hydrologic Sociey, Queenstown,NZ, November 28-December 2, 2016.

Korom, S.F., and A. Krieger, North Dakota's extraordinary glacial drift (outwash) aquifers, North Dakota Departments of Agriculture and Health, and North Dakota State Water Commission, Bismarck, October 24, 2016.

Korom, S.F., Groundwater denitrification: Background, perspectives, and possible implications for Minnesota, **invited presentation** to the Minnesota Department of Agriculture, St. Paul, July 14, 2016.

Korom, S.F., Prioritizing aquifer monitoring in North Dakota: A nitrate vulnerability assessment tool, 2016 North Dakota Water Quality Conference, Bismarck, ND, March 2-4, 2016.

Korom, S.F., What's so special about nitrate? Implications for water quality in the Upper Great Plains, 2015 NGWA Conference on the Upper Great Plains, Cheyenne, WY, September 22, 2015.

Flynn, W.A., **S.F. Korom**, H.A. Wronka, and A.S. Haus, Brine contamination: Roadmap to remediation (poster), 23rd Williston Basin Petroleum Conference, Regina, Saskatchewan, April 28-30, 2015.

Korom, S.F., North Dakota's extraordinary outwash (glacial drift) aquifers, **invited presentation** to the North Dakota Geological Society, Bismarck, February 17, 2015.

Gelles, L., and **S. Korom**, Using geochemical modeling to determine electron donor contributions for denitrification near Lake Taupo, poster #68, ND EPSCoR/IDeA 2014 State Conference, page 24, Grand Forks, ND, April 29, 2014.

Korom, S., and W. Schuh, Prioritizing aquifer monitoring in North Dakota: Geochemistry is important, too, 2014 North Dakota Water Quality Conference, Bismarck, ND, March 4-6, 2014.

Korom, S.F., Water Sampling and Analysis: What pe-pH Diagrams Show Us About Sample Preservation of Metals for Analysis, **invited presentation** to Analytical Chemistry (CHEM 333) students at the University of North Dakota, December 4, 2013.

Korom, S.F., Evaluating Groundwater Denitrification Characteristics in the Upper Midwest and the North Island of New Zealand, **invited presentation** to the Department of Civil and Environmental Engineering, North Dakota State University, November 26, 2013.

Korom, S.F., P. Pei, J. Solc, H. Jabbari, S. Benson, Continuation of Underground Coal Gasification Study in Western North Dakota, **invited presentation** to the Lignite Research Council, Bismarck, ND, November 19, 2013.

Korom, S.F., Groundwater Denitrification in the US Midwest and Kiwi Connections, **keynote speaker**, Workshop on the Role of Groundwater Nitrogen Assimilation in Catchment Water Management – Importance and Uncertainties, University of Wakaito, Hamilton, New Zealand, November 11, 2013.

Pei, P., **S. F. Korom**, K. Ling, and J. Nasah, Cost comparison of syngas production from natural gas conversion and underground coal gasification (in western North Dakota), IEA Clean Coal Centre 3rd Workshop Underground Coal Gasification Network, November 7-8, 2013, Brisbane, Australia.

Pei, P., J. Nasah, **S.F. Korom**, Feasibility study of underground coal gasification in western ND (poster), Gasification Technologies Conference 2013, Colorado Spring, CO, October 13-16, 2013.

Korom, S.F., Lake Taupo, New Zealand: Kiwis worry about nitrogen, too, **keynote speaker,** 58th Annual Midwest Ground Water Conference, Bismarck, ND, September 23-25, 2013.

Krieger, A., **S. F. Korom,** and W. Schuh, Electron donor contributions to denitrification in the Elk Valley aquifer, North Dakota, *58th Annual Midwest Ground Water Conference Program with Abstracts*, Bismarck, ND, September 23-25, 2013.

Korom, S., Underground coal gasification: What is it and what role does hydrogeology play? *58th Annual Midwest Ground Water Conference Program with Abstracts*, Bismarck, ND, September 23-25, 2013.

Hadfield, J., and **S. Korom**, Groundwater denitrification in the Lake Taupo catchment, New Zealand, *International Association of Hydrogeologists 40th International Congress*, September 15-20, 2013, Perth, Australia.

Korom, S.F., Evaluating groundwater denitrification potential and characteristics with in situ mesocosms, *International Association of Hydrogeologists 40th International Congress Programs & Abstracts Book,* Abstract 727, page 62, Perth, Australia, 2013.

Korom, S.F., Environmental Engineering (3 hours), **invited presentation** to the Mathematics and Science Partnerships Summer Institute, Mayville State University, June 26, 2013.

Korom, S.F., UND Short Course, Introduction to Petroleum Engineering, Environmental Issues, June 10-11, 2013.

Korom, S.F., Geochemical modeling of denitrification in the Karlsruhe aquifer, ND (and its connection to Lake Taupo, NZ), LEEPS lecture for the University of North Dakota, Geology and Geological Engineering, March 1, 2013.

Hadfield, J.C., and **S.F. Korom**, Mechanisms of groundwater denitrification, Taupo, New Zealand Hydrological Society Conference "Water: know your limits," Nelson, New Zealand, November 27 – 30, 2012.

Korom, S.F., Modeling the electron donor contributions to aquifer denitrification: Karlsruhe, ND, *57th Annual Midwest Ground Water Conference Program with Abstracts*, Minneapolis, MN, October 1 - 3, 2012.

Korom, S.F., and W.M. Schuh, Aquifer denitrification in the upper Midwest: Are there groundwater denitrifying hotspots in your area? National Ground Water Association Focus Conference on Midwestern Groundwater Issues, Columbus, OH, June 26-27, 2012.

Korom, S.F., Geological Engineering (3 hours), **invited presentation** to the Educational Engineering Summer Institute, Mayville State University, June 19, 2012.

Korom, S.F., and J.C. Hadfield, Lake Taupo, New Zealand: Kiwis worry about nitrogen too, *24th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 21, 2012.

Korom, S., and W. Schuh, Natural remediation of nitrate contamination in Groundwater: Measuring in situ denitrification using in situ mesocosms, 2012 North Dakota Water Quality Conference, Bismarck, ND, February 27-29, 2012.

Korom, S., Water resources research: Water-sediment interaction and water quality, Engineering Research Summit, Fargo, ND, April 29, 2011.

Xu, H., R. Ashu, T. Grage, B. Kistner, S. Patwardhan, A. Pesaran, and **S.F. Korom**, An extraction technique for the analysis of Fe(II) in silicate minerals in sediments, poster, *23st Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 23-24, 2011.

Korom, S.F., Are Fe(II) silicates more important to groundwater quality than previously reported?, *23st Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 23-24, 2011.

Korom, S.F., Geologic processes linking electron donors and aquifers: Implications for Minnesota, **invited presentation** to the Minnesota Ground Water Association Fall Conference, St. Paul, MN, November 9, 2010.

Yarbrough, L.D., **S.F. Korom**, and Z. Zeng, Surviving ABET assessment and still having time to grow your engineering program: Keeping the focus on students, 2010 North Midwest Section Conference of the American Society for Engineering Education, Minnesota State University Mankato, October 21-23, 2010.

Christenson, C.J., and **S.F. Korom**, Denitrification at the Oakes Irrigation Test Area, Dickey County, ND, North Dakota EPSCoR 2010 State Conference, Grand Forks, Abstract 166, September 29, 2010.

Korom, S.F., and T. Tesfay, Modeling groundwater-quality data from in-situ mesocosms using PHREEQC to provide insights into the electron donors involved in denitrification in the Karlsruhe Aquifer, ND, *EOS, Transactions, American Geophysical Union*, *90*(52), Fall Meeting Supplement, Abstract H31C-0798, 2009.

Korom, S.F., and R.J.S. Klapperich, Why are the sediments of some regional aquifers more reactive than others?, *21st Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 18-19, 2009. Moderator of sessions on the afternoon of March 19th.

Maharjan, B., and **S.F. Korom**, Correlation of electron donor concentrations in aquifer sediments with sediment properties: USGS ACT site near New Providence, Iowa, *53rd Annual Midwest Ground Water Conference Program with Abstracts*, Dubuque, September 29 - October 2, 2008.

Korom, S.F., and R.J.S. Klapperich, Electron donor concentrations in eastern North Dakota shale formations, Iowa, *53rd Annual Midwest Ground Water Conference Program with Abstracts*, Dubuque, September 29 - October 2, 2008.

Klapperich, R, and **S. Korom**, Electron donor potential of eastern North Dakota shale formations, North Dakota Water Resources Research Institute Graduate-Fellow Presentations, Bismarck, ND, April 15, 2008.

Korom, S., Aquifer denitrification: Results from 10+ years of in situ research and management implications, *20th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 26-27, 2008.

Korom, S.F., Network of in situ mesocosms: Aquifer denitrification, 8th Annual Meeting on Agricultural Contaminants: Sources, Fate, and Transport, USGS, Ames, IA, March 18 – 20, 2008.

Korom, S.F., Aquifer denitrification: Is it a zero-order or first-order reaction? *EOS, Transactions, American Geophysical Union*, 88(52), Fall Meeting Supplement, Abstract H54D-08, 2007.

Klapperich, R.J.S., and **S.F. Korom**, Electron donor potential of eastern North Dakota shale formations. *EOS, Transactions, American Geophysical Union*, 88(52), Fall Meeting Supplement, Abstract H13G-1676, 2007.

Korom, S.F., Source of nitrate in the Karlsruhe aquifer and its denitrification, *Joint meeting of the 2007 Eastern South Dakota Water Conference and the 52nd Annual Midwest Ground Water Conference Program with Abstracts*, p 45, October 29 – 31, 2007.

Justham, T.F., Hartman, J.H., and **Korom, S.F.**, 2007, Using poorly preserved Hell Creek Formation mussels to interpret paleoenvironments, Geological Society of America (Annual Meeting, Oct 28 – 31, 2007), Denver, CO, *Abstracts with Programs*, v. 39, no. 6, p. 400, 2007.

Korom, S.F., Denitrification in the Red River Basin and beyond: How aquifer sediments influence water quality, Third International Water Conference, International Water Institute, March 13-15, 2007, Grand Forks, ND.

Korom, S.F., Denitrification in the Karlsruhe aquifer, **invited presentation** to the Department of Soil Science, North Dakota State University, March 7, 2007.

Klapperich, R.J., and **S.F. Korom**, Analysis of associated bedrock-aquifer system sediments: Origins of electron donor-rich aquifers in eastern North Dakota, University of North Dakota Graduate School Scholarly Forum, March 1, 2007.

Korom, S.F., Aquifer (denitrification) assessment: Whose job is it anyway?, **invited presentation** to the Department of Geosciences, North Dakota State University, November 16, 2006.

Korom, S.F., Assessing aquifer denitrification potential. Presentation to representatives from the Ohio Department of Natural Resources, Ohio EPA, and the USGS in Columbus, OH, July 25, 2006.

Korom, S.F., Assessing aquifer denitrification potential, Geological Society of America North-Central Section (Annual Meeting, April. 20 - 21), Akron, OH*, Abstracts with Programs*, *38*(4), p. 22, 2006.

Tesfay, T., and **S.F. Korom**, Relative role of electron donors in aquifer denitrification reactions: Insights from geochemical modeling, Geological Society of America North-Central Section (Annual Meeting, April. 20 - 21), Akron, OH, *Abstracts with Programs*, *38*(4), p. 22, 2006.

Tesfay, T., and **S.F. Korom**, Relative roles of electron donors in aquifer denitrification reactions: Insights from geochemical modeling, University of North Dakota Graduate School Scholarly Forum, March 1, 2006.

Korom, S.F., Graphical solutions for groundwater flow through a hillslope, **invited presentation** to the University of North Dakota Geology Seminar (Geol 422), November 11, 2005.

Korom, S.F., The use of aquifer models to visualize groundwater flow, **invited presentation** to the North Dakota Education Association, Grand Forks, October 20, 2005.

Decker, A., and **S. Korom**, Fly ash as a soil amendment in the American Red River Valley, University of North Dakota Graduate School Scholarly Forum, February 22, 2005.

Tesfay, T., **S. Korom**, and K. Marasinghe, Mössbauer investigations of iron bearing minerals in North Dakota and Minnesota aquifers, poster, University of North Dakota Graduate School Scholarly Forum, February 22-23, 2005.

Korom, S.F., *In situ* Denitrification in the Elk Valley Aquifer, Larimore, North Dakota, *Proceedings from the First International Conference on Environmental Science and Technology, Volume 2*, January 23-25, 2005, edited by W.G. Lyon, J. Hong, and R.K. Reddy, pp. 32-37, 2005.

Korom, S.F., Using tracer tests in in situ mesocosms: Denitrification in the Elk Valley aquifer, poster, Geological Society of America (Annual Meeting, Nov. 7 - 10, 2004), Denver, CO, *Abstracts with Programs*, *36*(5), p. 575, 2004.

Klapperich, R.J., and **S.F. Korom**, Aquifer denitrification: Correlation of 15N isotopic enrichment and first-order rate constants, poster, Geological Society of America (Annual Meeting, Nov. 7 - 10, 2004), Denver, CO*, Abstracts with Programs*, *36*(5), p. 79, 2004.

Spencer, E., and **S. Korom**, Study of denitrification in the Karlsruhe Aquifer using stable isotopes of ^{15}N and ^{18}O in nitrate, poster, 27th Annual Midwest Environmental Chemistry Workshop, Madison, Wisconsin, October 15-17, 2004.

Klapperich, R., and **S.F. Korom**, Aquifer denitrification: Correlation of ^{15}N isotopic enrichment and first-order rate constants, *96th Annual Meeting of the North Dakota Academy of Science*, April 29, 2004, Fargo, ND. **Runner-Up, A. Roger Denison Undergraduate Research Competition for Oral Presentations.**

Korom, S.F., Network of in-situ mesocosms for monitoring denitrification in selected aquifers of MN and ND, **invited presentation** to the Department of Soil Science, North Dakota State University, March 31, 2004.

Korom, S.F., and T. Tesfay, Regional network of in-situ mesocosms for monitoring denitrification, part 2: Improving aquifer nitrate vulnerability assessments, *16th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 17-18, 2004.

Tesfay, T., and **S.F. Korom**, Aquifer denitrification and the concentration of electron donors in aquifer sediments, poster, *16th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 17-18, 2004.

Warne, J., **and S.F. Korom**, Redesign of an in-situ mesocosm for the Karlsruhe aquifer, poster, *16th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 17-18, 2004.

Spencer, E., J. Warne, **S. Korom**, Aquifer denitrification research: In situ mesocosms and isotope analysis, poster, University of North Dakota Graduate School Scholarly Forum, March 4, 2004.

Sharif, M., P.J. Gerla, and **S.F. Korom**, Effect of geochemical processes and environment on selenium in soil and water at the Hovland Ranch, central South Dakota, *2003 ASA-CSSA-SSSA Annual Meetings*, Denver, CO, November 2-6, 2003.

Korom, S.F., and A.J. Schlag, Network of in-situ mesocosms for monitoring denitrification in selected aquifers of Minnesota and North Dakota, *Two Rivers Conference, Proceedings of the 56th Canadian Geotechnical Conference and the 4th Joint IAH-CNC/CGS Conference*, September 29 - October 1, 2003, Winnipeg, Manitoba, Canada.

Korom, S.F., and A.J. Schlag, Design, installation, and use of in-situ mesocosms for aquifer tracer tests, *Two Rivers Conference, Proceedings of the 56th Canadian Geotechnical Conference and the 4th Joint IAH-CNC/CGS Conference*, September 29 - October 1, 2003, Winnipeg, Manitoba, Canada.

Korom, S.F., and T. Tesfay, Network of in-situ mesocosms for monitoring denitrification in selected aquifers of MN and ND, Annual meeting of the ND Water Resources Research Institute, Bismarck, ND, September 23, 2003.

Korom, S.F., Denitrification in North Dakota aquifers, **invited presentation** for *Water Resources and Management Strategies for Protection Workshops* by North Dakota State University, Devils Lake, March 27, 2003.

Schlag, A.J., and **S.F. Korom**, Design, construction, and installation of in-situ mesocosms for aquifer tracer tests, **invited presentation**, *15th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 18-20, 2003.

Korom, S.F., and A.J. Schlag, Network of in-situ mesocosms for monitoring denitrification in selected aquifers of Minnesota and North Dakota, **invited presentation**, *15th Annual Environmental and Ground Water Quality Conference Program with Abstracts*, Pierre, SD, March 18-20, 2003.

Korom, S.F., Denitrification in North Dakota aquifers, **invited presentation** for *Water Resources and Management Strategies for Protection Workshops* by North Dakota State University, Mandan, March 14, 2003.

Schlag, A.J., and **S.F. Korom**, In-situ mesocosms: Advantages they provide in measuring aquifer denitrification, *47th Annual Midwest Ground Water Conference Program with Abstracts*, Fargo, October 2-4, 2002.

Korom, S.F., and Schlag, A.J., Network of in-situ mesocosms for monitoring denitrification in selected aquifers of Minnesota and North Dakota, *47th Annual Midwest Ground Water Conference Program with Abstracts*, Fargo, October 2-4, 2002.

Durbin, H., T. Tesfay, and **S.F. Korom**, Predicting denitrification capabilities of Karlsruhe aquifer sediments based on data provided from our network of in situ mesocosms, *47th Annual Midwest Ground Water Conference Program with Abstracts*, Fargo, October 2-4, 2002.

Korom, S.F., In-situ measurement of denitrification in selected aquifers of Minnesota and North Dakota: Interim report for section 319 grants, Presentation to representatives from the South Dakota Geological Survey, Vermillion, SD, August 23, 2002.

Korom, S.F., In-situ measurement of denitrification in selected aquifers of Minnesota and North Dakota: Interim report for section 319 grants, **invited presentation** to representatives from Minnesota state agencies, St. Paul, MN, July 8, 2002.

Korom, S.F., and A.J. Schlag, Network of in-situ mesocosms for assessing the denitrification potential in selected aquifers of Minnesota and North Dakota, The 2002 Midwest FOCUS Ground Water Conference of the National Ground Water Association, Chicago, April 12, 2002.

Korom, S.F., and A.J. Schlag, Interim report: Section 319 grants, **invited presentation** to representatives of North Dakota and Minnesota state agencies involved with our US EPA Section 319 grants, Staples, MN, March 13, 2002.

Schlag, A.J., and **S.F. Korom**, In-situ study of denitrification at the IRI and other sites, 2001 Biannual Interdisciplinary Research Initiative Meeting, Walker, MN, September 11-12, 2001.

Tesfay, T., B.A. Bolles, and **S.F. Korom**, Laboratory study of denitrification by recently-formed sulfides, *EOS, Transactions, American Geophysical Union/Supplement, 82*(20), p. S160, May 15, 2001.

Korom, S.F., A.E. Kammer, A.J. Schlag, and P.A. Skubinna, In-situ study of denitrification in the Elk Valley Aquifer, North Dakota, *EOS, Transactions, American Geophysical Union/Supplement, 82*(20), p. S168, May 15, 2001.

Skubinna, P.A., and **S.F. Korom**, In-situ study of denitrification in the Elk Valley Aquifer: Second tracer test, *EOS, Transactions, American Geophysical Union/Supplement, 82*(20), p. S168, May 15, 2001.

Korom, S.F., A.E. Kammer, A.J. Schlag, and P.A. Skubinna, **invited presentation** to the Groundwater quality in Red River Valley aquifers, University of North Dakota Environmental Conservation Organization, April 5, 2001.

Korom, S.F., A.E. Kammer, A.J. Schlag, and P.A. Skubinna, **invited presentation** to the Groundwater quality in Red River Valley aquifers, University of North Dakota Student Chapter of the Wildlife Society, March 20, 2001.

Korom, S., Groundwater quality in Red River Valley aquifers, **invited presentation**, *Land, Water, and People: Partners for a Sustainable Future*, Abstracts and Information Resources for the 18th Annual Red River Basin Land and Water International Summit Conference, 5, January 16-18, 2001.

Korom, S.F., K. Bekker, and O.J. Helweg, Comparison of numerical and physical model results: Velocity distribution on a well screen, *Building Partnerships: Proceedings of the ASCE 2000 Joint Conference on Water Resources Engineering and Water Resources Planning & Management*, July 30-August 2, 2000, edited by R. H. Hotchkiss and M. Glade, 2000.

VonHoff, F., **S. Korom**, and O.J. Helweg, Calibrating the VonHoff/Helweg Model, *Building Partnerships: Proceedings of the ASCE 2000 Joint Conference on Water Resources Engineering and Water Resources Planning & Management*, July 30-August 2, 2000, edited by R. H. Hotchkiss and M. Glade, 2000.

Korom, S.F., A.J. Schlag, A.E. Kammer, and P.A. Skubinna, In-situ tracer tests of denitrification in the Elk Valley Aquifer, Presentation to representatives of North Dakota State agencies involved with water quality, Bismarck, ND, July 17, 2000.

Korom, S.F., A.E. Kammer, A.J. Schlag, and P.A. Skubinna, In-situ study of denitrification in the Elk Valley Aquifer, ND, **invited presentation** to representatives of Minnesota and North Dakota State agencies involved with water quality, Staples, MN, February 22, 2000.

Korom, S.F., A.E. Kammer, A.J. Schlag, and P.A. Skubinna, In-situ study of denitrification in the Elk Valley Aquifer, ND, **invited presentation** to the Department of Earth Sciences, University of Waterloo, Canada, November 19, 1999.

Korom, S.F., Denitrification in the Red River Valley, **invited presentation** to the Department of Geology and Geological Engineering, University of North Dakota, February 12, 1999.

Korom, S.F., and A.J. Schlag, In-situ tracer test of denitrification by sulfide in the Elk Valley aquifer, , **invited presentation** to the Multiscale Interdisciplinary Science and Engineering Research Group, University of North Dakota, December 16, 1998.

Korom, S.F., K. Bekker, and O.J. Helweg, Using physical models in well design and operation: An example with pump intake location, *ASCE's 1999 International Water Resource Engineering Presentation Summaries*, p. 265, August 8-12, 1999.

James, L.D., **S. Korom**, and G. Galloway, Practical lessons learned from the Grand Forks flood, *ASCE's 1999 International Water Resource Engineering Presentation Summaries*, p. 445, August 8-12, 1999.

Bolles, B.A., and **S.F. Korom**, A methodology for studying denitrification by recently formed sulfides, *EOS, Transactions, American Geophysical Union/Supplement, 79*(45), F316, November 10, 1998.

Schlag, A.J., and **S.F. Korom**, In-situ tracer test of denitrification by sulfide in the Elk Valley aquifer, *EOS, Transactions, American Geophysical Union/Supplement, 79*(45), F316, November 10, 1998.

Jones, J.P., P.J. Gerla, and **S.F. Korom**, Stochastic analysis of three-dimensional, heterogeneous capture zones, *Proceedings of the MODFLOW '98 International Conference*, Vol. 2, edited by E. Poeter, C. Zheng, and M. Hill, October 4-8, 751-758, 1998.

James, L.D., **S.F. Korom**, and G. Galloway, Perspectives on the 1997 Flooding: Red River of the North, *Proceedings of the ASCE 1998 International Water Resources Engineering Conference*, Vol. 1, edited by S. R. Abt, J. Young-Pezeshk, and C. C. Watson, August 3-7, 756-761, 1998.

Korom, S.F., and E. Dodak, Comparison of conservative plume transport to plumes undergoing weakly non-linear adsorption, *EOS, Transactions, American Geophysical Union/Supplement*, *79*(17), S110, April 28, 1998.

Korom, S.F., Influence of detrital shale on denitrification in the deltaic aquifers of ancient Lake Agassiz, Joint EPSCoR Conference, Brookings, SD, September 27, 1997.

Schlag, A.J., and **S.F. Korom**, A device for measuring denitrification in the unconsolidated shaly deposits of the Elk Valley aquifer, Joint EPSCoR Conference, Brookings, SD, September 26, 1997.

Korom, S.F., , **invited presentation** to the Chemical Engineering Graduate Seminar on groundwater remediation at the Libby, MT Superfund site, University of North Dakota, September 16, 1997.

Korom, S.F., , **invited presentation** to the Environmental Law Club on remediation strategies, University of North Dakota, April 2, 1997.

Korom, S.F., and E.J. Dodak, The Effects of weakly non-linear bromide adsorption on apparent macrodispersivity, , **invited presentation** to the Multiscale Interdisciplinary Science and Engineering Research Group, University of North Dakota, November 26, 1996.

Dodak, E., and **S.F. Korom**, Numerical evaluation of bromide as a tracer for macrodispersivity experiments in anion-sorbing sediments, *EOS, Transactions, American Geophysical Union/Supplement*, *77*(17), S104, April 23, 1996.

Korom, S.F., C.J. Munson, and G.G. Mayer, Denitrification by pyrite: Comparison of the Elk Valley Aquifer to northern European aquifers, *Proceedings of the Fifth Biennial North Dakota Water Quality Symposium*, Bismarck, March 20-21, 95, 1996.

Korom, S.F., Transport of anionic groundwater tracers through sediments having a positive surface charge, , **invited presentation** to the Department of Chemical Engineering, University of North Dakota, April 4, 1995.

Korom, S.F., In-situ tracer test for the determination of denitrification rates and type of electron donors, *EOS, Transactions, American Geophysical Union/Supplement*, *75*(16), 154, April 19, 1994.

Korom, S.F., Anionic groundwater tracers: Two case studies, **invited presentation**, Department of Civil Engineering, University of Illinois at Chicago, November 1, 1993.

Korom, S.F., Bromide plume behavior in anion-adsorbing aquifer sediments, *EOS, Transactions, American Geophysical Union/Supplement*, *74*(43), 240, October 26, 1993.

Korom, S.F., Subsurface denitrification: The Heber Valley aquifer, Paper, American Water Resources Association, 19th Annual Meeting, Utah Section, Salt Lake City, May 9, 1991.

Korom, S.F., Subsurface denitrification: The Heber Valley aquifer, Paper, Utah State University's Student Chapter of the American Water Resources Association, Student Paper Competition on Utah Water Issues, April 1991; **First Place**.

Simon, A.L., S. Sarikelle, and **S.F. Korom**, Internal energy dissipators for culverts on steep slopes with inlet control, Paper, Transportation Research Board, 66th Annual Meeting, Washington, D. C., January 12-16, 1987.

OTHER SELECTED PUBLICATIONS

Barr Engineering Co (D.D. Kopecky, **Korom, S.F.,** and R.C. Hardegger), Conceptual design for chlor-alkali and valuable materials production from oilfield brine, final report for the North Dakota Oil & Gas Research Program, July 30, 2019.

Korom, S.F., and D.B. Hisz, Potential geochemical effects of storing James River water in the Spiritwood Aquifer: PHREEQC Simulatins of pe-pH, *Water Resources Investigation No. 61*, North Dakota State Water Commission, Bismarck, ND, 2018.

Korom, S.F., Fracking does not put N.D. groundwater at serious risk, *Grand Forks Herald*, op-ed, page C5, July 28, 2013.

Maharjan, B., **S.F. Korom**, and E.A. Smith, Electron donor concentrations in sediments and sediment properties at the agricultural chemicals team research site near New Providence, Iowa, 2006-2007, U.S. Geological Survey Data Series 737, 2013.

Schlag, A.K., **S.F. Korom**, and F.X.M. Casey, Management of agricultural tile drains influences by manganese deposits and insights into other biofilm issues, U.S. Department of the Interior, Bureau of Reclamation, 161 pgs., December, 2009.

Maharjan, B., and **S.F. Korom**, Correlation of electron donor concentrations in sediments with sediment properties: New Providence, Iowa, *Technical Report No. ND09-01*, North Dakota Water Resources Research Institute, North Dakota State University, 2009.

Klapperich, R.J.S., and **S.F. Korom**, Electron donor potential of eastern North Dakota shale formations*, Technical Report No. ND08-09*, North Dakota Water Resources Research Institute, North Dakota State University, 2008.

Spencer, E., and **S. Korom**, Isotopic tracers as evidence of denitrification in the Karlsruhe Aquifer, *Technical Report No. ND08-01*, North Dakota Water Resources Research Institute, North Dakota State University, 2008.

Tesfay, T., and **S. Korom**, Modeling groundwater denitrification by ferrous iron using PHREEQC, *Technical Report No. ND06-3*, North Dakota Water Resources Research Institute, North Dakota State University, 2006.

Schuh, W.M., S. Bottrell, **S. Korom**, J. Gallagher, and J. Patch, Sources and processes affecting the distribution of dissolved sulfate in the Elk Valley Aquifer, *Water Resources Investigation No. 38*, North Dakota State Water Commission, Bismarck, ND, 2006.

Durbin, H., and **S.F. Korom**, Assessment of the Denitrification Capacity of the Sediments of the Karlsruhe Aquifer, in *Preliminary Analysis of Nitrate-N Loads and Causes of Nitrate-N Loading in the Karlsruhe and New Rockford Aquifers Near Karlsruhe, North Dakota in 2001*, North Dakota State Water Commission in cooperation with the North Dakota Department of Health, February 25, 2002.

Korom, S.F., Denitrification in the unconsolidated deposits of the Heber Valley aquifer, Ph.D. dissertation, 176 pp., Utah State University, Logan, 1991.

Duffy, C.J., J.J. Jurinak, **S.F. Korom**, J. McCalpin, and P. Corey, Groundwater investigation of $SO_4^{=}$ diffusion from a Cretaceous shale hillslope: Upper Colorado River Basin, Technical Completion Report to the U.S. Geological Survey, September, 1989.

Korom, S.F., Optimum design of internal energy dissipators for culverts operating under inlet control, M.S. thesis, 71 pp., University of Akron, Ohio, 1984.

GRANTS AND CONTRACTS

Science-based Groundwater Appropriation Approach for Oakes Aquifer: Insight from the Cold Region Hydrologic Model, ND Department of Water Resources, $163,092, 6/22 to 12/25, with T. Mahmood.

An Evaluation of HAB's in Belcourt Lake, ND, ND EPSCoR, $15,000, 10/21 to 8/22, with P. Ranganathan.

Conceptual design for chlor-alkali and value materials production from oilfield brine, ND Industrial Commission ($110,000) plus industrial match by Triple 8 ($75,000 cash; $35,000 in-kind), 5/18 to 7/19.

Continuation of underground coal gasification study in western North Dakota, ND Industrial Commission ($299,958) plus industrial match ($150,00 cash; $270,000 in kind), 4/14 to 1/16, with P. Pei, J. Solc, H. Jabbari, S. Benson.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student A.K., $4,811, 3/13 to 2/14.

Geomechanical study of Harmon Lignite and surrounding rocks for underground coal gasification in western North Dakota, ND Industrial Commission ($242,729) plus industrial match ($242,729 cash), 6/12 to 6/14, with Z. Zeng and S.A. Benson.

Installation of in situ mesocosms to study groundwater denitrification rates around Lake Taupo, New Zealand, selected for funding by Environment Waikato, expenses to be paid in NZ dollars, 1/13 to 12/13, with J. Hadfield.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student C.C., $4,000, and Supplemental Funding (ND State Water Commission), $1,000, 3/09 to 2/10.

Effects of iron bacteria on subsurface tile drains: Influence on hydraulic efficiency and nutrient transport, US Bureau of Reclamation, $206,390 (University of North Dakota portion: $88,500), 10/2007 to 12/2009, with F. Casey (ND State University) and A. Schlag (formally of USBR).

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student R.K., $9,600, and Supplemental Funding (ND State Water Commission), $500, 3/07 to 2/08.

Aquifer assessment in Peru: Fate and transport of nitrate and selenium. Ground Water International, $9,999, 10/06 to 8/07.

Collaborative research on in situ denitrification and glyphosate transformation in ground water: NAWQA Eastern Iowa Basins Study Unit, USGS 104G, $91,988, 8/06 to 7/09, with P. Capel.

Summer Graduate Research Professorship, University of North Dakota Graduate School, $6,000, 5/06 to 7/06.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student R.K., $8,590, and Supplemental Funding (ND State Water Commission), $1,000, 6/06 to 2/07.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student T.T., $3,000, 3/06 to 5/06.

ND Water Resources Research Institute Fellowship (USGS 104B & ND State Water Commission) for graduate student T.T., $16,650, 3/05 to 2/06.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student E.S., $3,000, 5/04 to 8/04.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student T.T., $15,000, 3/04 to 2/05.

University of North Dakota Office of Instructional Development Mini-Project Grant, “Designing a New Class Project for Hydrogeology: The Pleasant Lake Aquifer,” $1,500, 7/2004.

Karlsruhe aquifer denitrification study, ND State Water Commission, $21,513, 5/03 to 6/05.

Karlsruhe aquifer denitrification study, ND Department of Health, $21,513, 5/03 to 6/03.

Proposal to purchase total carbon and total sulfur analyzers for the University of North Dakota Water Resources Research Laboratory, ND EPSCoR, $62,788 with $25,310 matching funds, 4/03 to 6/03, with P.J. Gerla and W. Seames.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student T.T., $14,040, 3/03 to 2/04.

University of North Dakota School of Engineering and Mines Seed Grant for a Research Assistantship, $4,491 from SEM, $499 from Geology & Geological engineering, 1/02 to 5/02.

Analysis of pumping test data for well near Fertile, MN, Lako Drilling, $1,217, 11/02 to 12/02.

Proposal to upgrade the environmental analytical capabilities in the Water Resources Research Laboratory, ND EPSCoR, $47,795 with $50,315 matching funds, 4/02 to 6/02, with A. J. Schlag and W. Seames.

University of North Dakota Office of Research and Program Development grant to complete project initiated for Faculty Research Seed Money Grant, $2,000, 8/01 to 6/02.

Assessment of the denitrification capacities of sediments in the Karlsruhe Aquifer, ND State Water Commission, $3,322, 6/01 to 12/01.

Faculty Instructional Development grant for mortar and pestle sets, $521.58, Spring, 2001.

In situ measurement of denitrification in selected aquifers in Minnesota and North Dakota, US Environmental Protection Agency, MN Department of Agriculture, MN Department of Health, and the MN Pollution Control Agency, $117,273, 10/00 to 9/03.

In-situ quantification and characterization of nitrate reduction in a denitrifying aquifer, University of North Dakota Faculty Research Seed Money Committee, $22,231, 9/00 to 8/01.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student P.S., $9,470, 3/00 to 2/01.

Computer modeling of the geochemistry of denitrification in aquifer sediments, University of North Dakota Senate Scholarly Activities Committee, $1,875, 2/00 to 12/00.

Assessment of denitrification capabilities in North Dakota aquifers, US Environmental Protection Agency and ND Department of Health, $71,905, 10/99 to 9/03.

- Match for Assessment of denitrification capabilities in North Dakota aquifers, ND State Water Commission, $12,000, 9/03 to 6/05.
- Amendment to Assessment of denitrification capabilities in North Dakota aquifers, US Environmental Protection Agency and ND Department of Health, $10,000, 10/03 to 9/05.
- Amendment to Assessment of denitrification capabilities in North Dakota aquifers, US Environmental Protection Agency and ND Department of Health, $30,593, 10/02 to 9/05.
- Match for Assessment of denitrification capabilities in North Dakota aquifers, ND Department of Health, $8,000, 7/01 to 6/02.
- Match for Assessment of denitrification capabilities in North Dakota aquifers, ND Department of Health, $8,000, 7/00 to 6/01.
- Match for Assessment of denitrification capabilities in North Dakota aquifers, ND Department of Health, $8,000, 10/99 to 6/00.
- Match for Assessment of denitrification capabilities in North Dakota aquifers, ND State Water Commission, $13,500, 10/99 to 9/02.

Well model modifications, ND EPSCoR, $2,500, 9/99 to 6/00.

In-situ study of denitrification in the Elk Valley aquifer: Funding for Summer 1999, ND State Water Commission, $4,077, 5/99 to 9/99.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student P.S., $8,080, 3/99 - 2/00.

In-situ study of denitrification in the Elk Valley aquifer, consortium of five agencies including the ND Rural Water Systems Association, the ND Department of Health, and the ND State Water Commission, $30,588, 10/97 to 9/99.

Faculty Instructional Development grant for environmental remediation cost estimation books, $526, Fall, 1997.

Renovation of Harrington Hall annex, NSF Academic Research Infrastructure Program, $138,000, 7/97 to 12/98, with S. Sternberg, J. Newell, M. Hoffman, M. K. Schwalm, W. A. Schwalm, and E. Kozliak.

ND Water Resources Research Institute Fellowship (USGS 104B) for graduate student A.S., $3,000, 5/07 to 9/07.

Influence of detrital shale on denitrification in the deltaic aquifers of ancient Lake Agassiz, ND EPSCoR, $15,000, 6/96 to 5/97.

Coupling of organic carbon and sulfide to denitrification, U.S. Department of Agriculture, $47,810, 9/95 to 12/98, with P. Gerla.

EM conductivity survey: Fossaa Farm, Phase II, $5,129, 7/95 to 9/95, with P. Gerla.

U.S. Department of Energy Traveling Lecture Program, sponsored Dr. B. B. Looney of the Westinghouse Savannah River Company for two lectures at the University of North Dakota, February 17, 1995.

Faculty Instructional Development grant for three additional aquifer flow models, $780, Spring, 1995.

Faculty Instructional Development grant for an aquifer flow model, $260, Fall, 1994.
Numerical evaluation of bromide as a tracer for macrodispersivity experiments in anion-sorbing sediments, ND EPSCoR, $9,000, 1/95 to 10/95.
EM conductivity survey: Fossaa Farm, $4,013, 9/94 to 1/95, with P. Gerla.

GRADUATE STUDENTS

M.S. Environmental Engineering, 5; Geology, 8.
Ph.D. Geology, 1.

PROFESSIONAL SOCIETIES

American Society of Civil Engineers
National Ground Water Association
Tau Beta Pi National Engineering Honor Society

PROFESSIONAL REGISTRATIONS

Professional Engineer, North Dakota, since 1995, South Dakota and Wyoming, both since 2018.

PEER REFEREE

Summary:

- Peer referee for the leading research organizations of four countries: Australia, Canada, The Netherlands, and the U.S.A.
- Peer referee for proposals, projects, papers, reports, or Ph.D. theses from over a dozen countries.

Agriculturae Conspectus Scientificus.
American Academy of Sciences, two papers for the Proceedings from the session on Contaminant Transport in Groundwater.
American Geophysical Union, *Water Resources Research*.
American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, *Journal of Environmental Quality*.
American Society of Civil Engineers, *Journal of Environmental Engineering*.
American Society of Civil Engineers, *Journal of Hydraulic Engineering*.
American Society of Civil Engineers, *Journal of Hydrologic Engineering*.
Australian Research Council.
Elsevier, *Chemical Geology*.
Elsevier, *Journal of Hazardous Materials*.
Elsevier, *Journal of Hydrology*.
Elsevier, *Water Research*.
Elsevier, New book proposal, Groundwater Science, 2nd Edition.
Encyclopedia of Natural Resources.
European Geosciences Union, *Biogeosciences*.
Illinois State Water Survey, Office of Ground-Water Quality.
Lincoln University, Christchurch, New Zealand.
Minnesota Water Resources Research Institute.
National Ground Water Association, *Ground Water*.
National Science Foundation / Environmental Protection Agency Partnership for Environmental Research (review panel).
National Science Foundation, including a review panel.
Natural Science and Engineering Research Council of Canada.
Netherlands Organisation for Scientific Research (NWO).
North Dakota State Water Commission in cooperation with the North Dakota Department of Health.
Springer, *Hydrogeology Journal*.
Springer, *Water, Air & Soil Pollution*, Spain.

University of Wisconsin Sea Grant College Program.
U.S. Department of Agriculture Cooperative Extension Service, NDSU.
U.S. Bureau of Reclamation.
Water Resources Research Institute of the University of North Carolina.
Western Interstate Commission for Higher Education.
Wisconsin Water Resources Institute.