

CURRICULUM VITAE

Walton Ross Kelly

January 2019

Current Position

(2013 – present)

Section Head, Groundwater Science Section
Illinois State Water Survey
Prairie Research Institute
University of Illinois
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Other Positions

Adjunct Professor
Department of Geology
Fort Hare University
Alice, South Africa

Adjunct Professor
Department of Geology and Geography
Illinois State University
Normal, IL

Education

Ph.D., 1993

M.S., 1984

B.S., magna cum laude, 1981

Department of Environmental Sciences, University of Virginia

Geological Sciences, Case Western Reserve University

Geology, Duke University

Professional Experience

1992 – present:

Groundwater Geochemist, Groundwater Science Section
Illinois State Water Survey
Champaign, IL

January – May 2011:

Lecturer, Department of Geology and Geography
Illinois State University
Normal, IL

February – April 2006:

Visiting lecturer, Department of Geology
Fort Hare University
Alice, South Africa

May – July 2006:

Visiting lecturer, Department of Geology
University of Western Cape
Cape Town, South Africa

July 4-5, 2006: Lecturer professional short course, “Groundwater Geochemistry”
University of Western Cape
Cape Town, South Africa

1983 – 1987: Geochemist
Division of High-Level Waste Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Honors/Awards

2006 Fulbright Scholar, U.S. State Department
2003 Illinois Council for Food and Agricultural Research Donald A. Holt
Achievement Award (member of the Livestock and Urban Waste
Recycling Research Team)
1987 - 1990 Presidential Fellow, University of Virginia
1990 - 1991 DuPont Fellow, University of Virginia
1988 Pegau Award, University of Virginia
1981-1983 Donnell Fellow, Case Western Reserve University
1981 Thomas Vlaska Award, Duke University

Professional Affiliations American Geophysical Union
Geological Society of America
National Ground Water Association
Sigma Xi
Illinois Groundwater Association (Chair, 2015)

Refereed Publications

Panno, S.V., W.R. Kelly, J. Scott, W. Zheng, R.E. McNeish, N. Holm, T.J. Hoellein, and E.L. Baranski, 2019. Microplastic contamination in karst groundwater Systems. *Groundwater*. 57(2):189-196. doi:10.1111/gwat.12862

Kelly, W.R., S.V. Panno, K.C. Hackley, D.R. Hadley, and D.H. Mannix, 2018. Paleohydrogeology of a Paleozoic sandstone aquifer within an intracratonic basin: Geochemical and structural controls. *Journal of Hydrology*. 565(2018):805–818. DOI: 10.1016/j.jhydrol.2018.09.004.

Panno, S.V., Z. Askari, W.R. Kelly, T.M. Parris and K.C. Hackley, 2018. Recharge and groundwater flow within an intracratonic basin, Midwestern U.S. *Groundwater*. 56(1):32–45. DOI: 10.1111/gwat.12545

Dodgen, L.K., W.R. Kelly, S.V. Panno, S.J. Taylor, D.L. Armstrong, K.N. Wiles, Y. Zhang, and W. Zheng, 2017. Characterizing pharmaceutical, personal care product, and hormone contamination in a karst aquifer of southwestern Illinois, USA, using water quality and stream flow parameter. *Science of the Total Environment*. 578 (2017): 281–289.
<http://www.sciencedirect.com/science/article/pii/S0048969716322859>

Morris, L., S.D. Wilson, and W.R. Kelly, 2016. Methods of conducting effective outreach to private well owners – a literature review. *Journal of Water and Health*. 14(2):167-82. DOI: 10.2166/wh.2015.081.

Kelly, W.R., 2015. Book Review: Groundwater Geochemistry and Isotopes. *Ground Water* 53(6): 832-833. DOI: 10.1111/gwat.12377.

Zhang, Y., W.R. Kelly, S.V. Panno, and W.-T. Liu, 2014. Tracing fecal pollution sources in karst groundwater by *Bacteroidales* genetic biomarkers, bacterial indicators, and environmental variables. *Science of The Total Environment* 490:1082–1090. DOI: 10.1016/j.scitotenv.2014.05.086.
<http://www.sciencedirect.com/science/article/pii/S0048969714007669>

Panno, S.V., K.C. Hackley, R.A. Locke, I.G. Krapac, B. Wimmer, A. Iranmanesh, and W.R. Kelly, 2013. Formation waters from Cambrian-age strata, Illinois Basin, USA: Constraints on their origin and evolution. *Geochimica et Cosmochimica Acta*. 122:184–197. DOI 10.1016/j.gca.2013.08.021.
<http://www.sciencedirect.com/science/article/pii/S0016703713004651>

Panno, S.V., W.R. Kelly, J.C. Angel, and D.E. Luman, 2013. Hydrogeologic and topographic controls on evolution of karst features in Illinois' sinkhole plain. *Carbonates and Evaporites* 28:13-21. DOI 10.1007/s13146-013-0157-2.

Li, X., W. Zheng, and W.R. Kelly, 2013. Occurrence and removal of pharmaceutical and hormone contaminants in rural wastewater treatment lagoons. *Science of the Total Environment* 445–446(2013):22–28.

Kelly, W.R., S.V. Panno, and K.C. Hackley, 2012. Impacts of road salt runoff of the Chicago, Illinois, region. *Environmental and Engineering Geoscience* 18(1):65-81.

Kelly, W.R., S.V. Panno, K.C. Hackley, H.-H. Hwang, A.T. Martinsek, and M. Markus, 2010. Using chloride and other ions to trace sewage and road salt in the Illinois Waterway. *Applied Geochemistry* 25(5):661-673.

Walker, P., W.R. Kelly, K.D. Smiciklas and T. Kelley, 2009. Field Application of processed manure upon water quality and crop productivity. *Journal of Agronomy* 8(2):49-59.

Kelly, W.R., S.V. Panno, K.C. Hackley, A.T. Martinsek, I.G. Krapac, C.P. Weibel, and E.C. Stormont, 2009. Bacteria contamination of groundwater in a mixed land-use karst region. *Water Quality, Exposure and Health*. 1(2):69-78. <https://link.springer.com/article/10.1007/s12403-009-0006-7>

Kelly, W.R., and S.V. Panno, 2008. Some considerations in applying background concentrations to ground water studies. *Ground Water* 46(6):790-792.

Holm, T.R., W.R. Kelly, S.D. Wilson, and J. Talbott, 2008. Arsenic removal in Illinois. *Journal of the American Water Works Association* 100(9):139-150.

Kelly, W.R., 2008. Long-term trends in chloride concentrations in shallow aquifers near Chicago. *Ground Water* 46(5):772-781.

Panno, S.V., W.R. Kelly, K.C. Hackley, H.-H. Hwang, and A.T. Martinsek, 2008. Sources and fate of nitrate in the Illinois River Basin, Illinois. *Journal of Hydrology* 359(1-2):174-188.

Panno, S.V., W.R. Kelly, K.C. Hackley and C.P. Weibel, 2007. Chemical and bacterial quality of aeration-type on-site wastewater-treatment systems. *Ground Water Monitoring & Remediation* 27(2):71-76.

Panno, S.V., W.R. Kelly, A.T. Martinsek, and K.C. Hackley, 2006. Estimating background and threshold nitrate concentrations using probability graphs. *Ground Water* 44(5):697-709.

Panno, S.V., K.C. Hackley, W.R. Kelly, H.-H. Hwang, F.M. Wilhelm, S.J. Taylor, and B.J. Stiff, 2006. Potential effects of recurrent low oxygen conditions on the Illinois Cave Amphipod. *Journal of Cave and Karst Studies* 68(2):55-63.

Panno, S.V., K.C. Hackley, W.R. Kelly, and H.-H. Hwang, 2006. Isotopic evidence of nitrate sources and denitrification in the Mississippi River adjacent to Illinois. *Journal of Environmental Quality* 35(2):495-504. <https://dl.sciencesocieties.org/publications/jeq/articles/35/2/495>

Roadcap, G.S., W.R. Kelly, and C. Bethke, 2005. Geochemistry of extremely alkaline (pH >12) ground water in slag-fill aquifers. *Ground Water* 43(6):806-816.

Kelly, W.R., T.R. Holm, S.D. Wilson, and G.S. Roadcap, 2005. Arsenic in glacial aquifers: sources and geochemical controls. *Ground Water* 43(4):500-510.

Panno, S.V., and W.R. Kelly, 2004. Nitrate and herbicide loading in two groundwater basins of Illinois' Sinkhole Plain. *Journal of Hydrology* 290(3-4):229-242.

Kelly, W.R., H.A. Wehrmann, T.R. Holm, J.L. Talbott, and L.M. Skowron, 2003. Subsurface movement of zinc from contaminated dredge spoils at a periodically flooded site. *Environmental Geology* 45:23-34. <https://link.springer.com/article/10.1007/s00254-003-0855-5>

Panno, S.V., K.C. Hackley, H.H. Hwang, and W.R. Kelly, 2001. Determination of the sources of nitrate contamination in karst springs using isotopic and chemical indicators. *Chemical Geology* 179(2001):113-128. <http://www.sciencedirect.com/science/article/pii/S0009254101003187>

Kelly, W.R., and S.D. Wilson, 2000. Movement of bromide, nitrogen-15, and atrazine through flooded soils. *Journal of Environmental Quality* 29(4):1085-1094.

Ray, C., and W.R. Kelly, 1999. Nitrate dynamics under cyclic irrigation pumpage. *Journal of Irrigation Drainage Engineering*. 125(5):254-263.

Kelly, W.R., 1997. Heterogeneities in ground-water geochemistry in a sand aquifer beneath an irrigated field. *Journal of Hydrology* 198(1/4):154-176.

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Inglis, J.M., G. Matisoff, and W.R. Kelly, 1986. Pollutant transport in a shallow unconfined aquifer in Perry, Ohio. *Environmental, Geology, and Water Science*, 8(4):237-245.

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Reports and Proceedings

Meyer, S.C., B. Dziegielewski, Z. Zhang, D. Abrams, and W.R. Kelly, 2019. Water Demand in the Rock River Water Supply Planning Region, 2010-2060. Illinois State Water Survey, Contract Report 2019-02, Champaign, IL, 242 p. <https://www.ideals.illinois.edu/handle/2142/102368>

Meyer, S.C., B. Dziegielewski, Z. Zhang, D. Abrams, and W.R. Kelly, 2019. Water Demand in the Kankakee Water Supply Planning Region, 2010-2060. Illinois State Water Survey, Contract Report 2019-01, Champaign, IL, 144 p. <https://www.ideals.illinois.edu/handle/2142/102367>

Meyer, S.C., B. Dziegielewski, Z. Zhang, D. Abrams, and W.R. Kelly, 2018. Water Demand in the Middle Illinois Water Supply Planning Region, 2010-2060. Illinois State Water Survey, Contract Report 2018-06, Champaign, IL, 184 p.
<https://www.ideals.illinois.edu/handle/2142/102366>

Kelly, W.R., and S. Kuykendall, 2018. Sensible Salting in the Chicago Region Fact Sheet. Northwest Water Planning Alliance and Illinois State Water Survey, Contract Report 2018-11, Champaign, IL, 2 p. <https://www.ideals.illinois.edu/handle/2142/102061>

Kelly, W.R., D.B. Abrams, H.V. Knapp, Z. Zhang, B. Dziegielewski, D.R. Hadley, G.S. Roadcap, D.H. Mannix, Y. Lian, S.C. Meyer, and J.F. Thomason, 2018. Water Supply Planning: Middle Illinois Assessment of Water Resources for Water Supply: Final Report. Illinois State Water Survey Contract Report 2018-02, Champaign, IL, 116 p. <https://www.ideals.illinois.edu/handle/2142/101848>

Knapp, H.V., J.R. Angel, J.R. Atkins, L. Bard, E. Getahun, K.J. Hlinka, L.L. Keefer, W.R. Kelly, and G.S. Roadcap, 2017. The 2012 Drought in Illinois. Illinois State Water Survey Report of Investigation 123, Champaign, IL, 99 p. <http://www.isws.illinois.edu/pubdoc/RI/ISWSRI-123.pdf>

Mannix, D.H., D.B. Abrams, G.S. Roadcap, D.R. Hadley, and W.R. Kelly, 2017. Groundwater Depletion in Chicago's Southwestern Suburbs. Illinois State Water Survey Miscellaneous Publication 208, Champaign, IL, 2 p. <http://www.isws.illinois.edu/pubdoc/MP/ISWSMP-208.pdf>.

Panno, S.V., P.G. Millhouse, R.W. Nyboer, D. Watson, W.R. Kelly, L.M. Anderson, C.C. Abert, and D.E. Luman. 2016. Guide to the Geology, Hydrogeology, History, Archaeology, and Biotic Ecology of the Driftless Area of Northwestern Illinois, Jo Daviess County. Illinois State Geological Survey Guidebook 42, Champaign, IL. <http://library.isgs.illinois.edu/Pubs/pdfs/guidebooks/guidebook-42.pdf>.

Kelly, W.R., D. Hadley, and D. Mannix, 2016. Shallow Groundwater Sampling in Kane County, 2015. Illinois State Water Survey Contract Report 2016-04, Champaign, IL, 64 p. <http://www.isws.illinois.edu/pubdoc/CR/ISWSCR2016-04.pdf>.

Kelly, W.R., D. Abrams, V. Knapp, S. Meyer, Z. Zhang, B. Dziegielewski, D. Hadley, G. Roadcap, D. Mannix, and Y. Lian, 2016. Water Supply Planning: Middle Illinois Progress Report. Illinois State Water Survey Contract Report CR 2016-02, Champaign, IL, 53 p. <http://www.isws.illinois.edu/pubdoc/CR/ISWSCR2016-02.pdf>.

Mannix, D., D. Abrams, D. Hadley, G. Roadcap, and W. Kelly, 2015. Groundwater availability in Northeastern Illinois from the deep sandstones. *Splash: American Water Works Association, Illinois Section*, Fall 2015:48-51. <http://www.kelmanonline.com/httpdocs/files/ISAWWA/splashfall2015/index.html>.

Panno, S.V. and W.R. Kelly, 2015. Driftless Area karst of northwestern Illinois and its effects on groundwater quality. Proceedings of the 14th Multidisciplinary Conference on Sinkholes and the Engineering & Environmental Impacts of Karst. October 5 – 9, 2016, Rochester, MN, 12 p. http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1094&context=sinkhole_2015.

Kelly, W.R., S.V. Panno, and K.C. Hackley, 2015. Effects of Various Soil Amendments on Subsurface Water Quality at the ISU Farm. Illinois State Water Survey Report of Investigations RI-121, Champaign, IL, 85 p. <http://www.isws.illinois.edu/pubdoc/RI/ISWSRI-121.pdf>.

Taylor, S.J., W.R. Kelly, S.V. Panno, R. Weck, W. Zheng, Y. Zhang, and W.-T. Liu, 2015. Karst groundwater contaminants in western Illinois: comparison of current conditions with historical data. Illinois Natural History Survey Technical Report 2014(22).

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Panno, S.V., P.G. Millhouse, R.W. Nyboer, D. Watson, W.R. Kelly, L.M. Anderson, C.C. Abert, and D.E. Luman. 2014. Guide to the Geology, Hydrogeology, Botany, History, and Archaeology of the Driftless Area of Northwestern Illinois, Jo Daviess County. Illinois State Geological Survey Field Trip Guidebooks 2014A, Champaign, IL.

<http://library.isgs.illinois.edu/Pubs/pdfs/ftgb/ftgb2014A-galena.pdf>.

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Kelly, W.R. S.V. Panno, and K.C. Hackley, 2012. The Sources, Distribution, and Trends of Chloride in the Waters of Illinois. Illinois State Water Survey Bulletin 74, Champaign, IL.

<http://www.isws.illinois.edu/pubdoc/B/ISWSB-74.pdf>.

Panno, S.V., D.E. Luman, and W.R. Kelly, 2012. Drought-Induced "Crop Lines" in the Driftless Area of Northwestern Illinois. Illinois State Geological Survey website:

<http://www.isgs.illinois.edu/sf-archive/crop-lines.shtml>.

Kelly, W.R., and T.R. Holm, 2011. Arsenic in Groundwater in the Tolono Region. Illinois State Water Survey Miscellaneous Publication 196, Champaign, IL.

<http://www.isws.illinois.edu/pubdoc/MP/ISWSMP-196.pdf>.

Panno, S.V., K.C. Hackley, W.R. Kelly, and D.E. Luman, 2011. Illinois' Sinkhole Plain: Classic karst terrain of the Midwestern United States. Illinois State Geological Survey, Guidebook 39.

<https://www.ideals.illinois.edu/bitstream/handle/2142/32557/illinoissinkhole39pela.pdf?sequence=2>.

Panno, S.V., R.C. Berg, and W.R. Kelly, 2011. Pollution of groundwater and surface water. In Geology of Illinois. Kolata, D.R., and C.K. Nimz, eds. Illinois State Geological Survey, University of Illinois at Urbana-Champaign, p. 443-457.

Panno, S.V., W.R. Kelly, J.C. Angel and D.E. Luman. 2011. Hydrogeologic and topographic controls on evolution of karst features in Illinois' Sinkhole Plain. Proceedings of the 12th Multidisciplinary Conference on Sinkholes and the Engineering & Environmental Impacts of Karst. January 10-14, 2011. St. Louis, MO. 14 p.

Panno, S.V., W.R. Kelly, K.C. Hackley and H.H. Hwang. 2009. Database for the chemical and isotopic composition of the Illinois River Basin, Illinois (2003-2005). Illinois State Geological ISGS Survey Open File Series, OFS 2009-3, Champaign, IL.

<http://library.isgs.illinois.edu/Pubs/pdfs/ofs/2009/ofs2009-03.pdf>.

Li, X., J. Wang, J. Economy, and W.R. Kelly, 2008. Development of an Anionic Exchange Glass Fiber Substrate POU Device to Remove Arsenic. Midwest Technology Assistance Center Technical Report 08-07, Champaign, IL.

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Sanford, R., T. Flynn, T.R. Holm, and W.R. Kelly, 2008. Fate of Arsenic in the Mahomet Aquifer; The Influence of Added Sulfate and Nitrate. Midwest Technology Assistance Center Technical Report 08-06, Champaign, IL.

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Wehrmann, H.A., W.R. Kelly, T.R. Holm, and K. Carr, 2007. An Assessment of Metals Distribution and Transport in Groundwater Beneath the Diked Sediment Disposal Area, DePue Wildlife Management Area, Illinois. Illinois Waste Management and Research Center, Research Report 110, Champaign, IL.

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