

# ***CURRICULUM VITAE***

**DATE:** February 2023

**NAME:** Dr. Jonathan E. Nyquist

## **EDUCATION:**

**Ph.D. in Geophysics**, University of Wisconsin, Madison, WI, 1982-1986

**Master's Degree in Physics**, University of Maryland, College Park, MD, 1980-1982.

**Bachelor's Degree, double major in Physics and Philosophy**, Macalester College, St. Paul, MN, 1976-1980.

## **POSITIONS HELD:**

TEMPLE UNIVERSITY, 1997-present

**Professor of Geophysics**

**Weeks Chair in Environmental Geology**

Temple Director of General Education 2018-2023

Chairman of the Department of Earth and Environmental Science 2011-2017

OAK RIDGE NATIONAL LABORATORY, 1986 - 1997

**Research Staff II**, Geology and Geophysics Group, Environmental Sciences Division.  
Conducted research on the development and application of geophysical methods to environmental site characterization and monitoring.

**Adjunct Professor**, Department of Geosciences, University of Tennessee, Knoxville.

## **YEAR APPOINTED AT TEMPLE AND RANK AT APPOINTMENT:**

Appointed Associate Professor, September 1997.

Tenured, 2000.

Promoted to Professor, 2008.

## **AWARDS:**

Dean's Distinguished Teaching Award, 2011

Society of Exploration Geophysicists, Harold Mooney Award, 2011

Provost's Award for Innovative Teaching in General Education, Temple University, 2009.

Environmental and Engineering Geophysical Society, Gold Medal Award, 2007.

Best Paper Award SAGEEP '92.

## **RESEARCH AREA**

Recent research emphasizes geophysical methods applied to stormwater management and electrical methods for monitoring groundwater-surface water exchange in lakes and in the hyporheic zone beneath streams.

## **PROFESSIONAL SERVICE**

Past President of the Environmental and Engineering Geophysical Society

Former Editor-in-chief of the Journal of Environmental and Engineering Geophysics

## PEER-REVIEWED PUBLICATIONS

- Fisher, Beth A., Kyungsoo Yoo, Anthony K. Aufdenkampe, Edward A. Nater, Joshua M. Feinberg, and Jonathan E. Nyquist. 2023. "Mineral Surface Area in Deep Weathering Profiles Reveals the Interrelationship of Iron Oxidation and Silicate Weathering." *Earth Surface Dynamics*, **11**: 51-69.
- Pope, G. G., Nyquist, J. E., & Toran, L. 2023. Time-Lapse Resistivity Monitoring of a Simulated Runoff Test in a Bioswale, Philadelphia. *Journal of Sustainable Water in the Built Environment*, 9(1), 04022018.
- Mahvelati, S., Coe, J.T. & Nyquist, J.E. Characterizing the Effects of Survey Parameters on Experimental Love Wave Multichannel Analysis of Surface Wave (MASW) Data. *Pure Appl. Geophys.* (2021). <https://doi.org/10.1007/s00024-021-02790-3>
- Guo, Li, Henry Lin, Bihang Fan, Jonathan Nyquist, Laura Toran, and Gregory J. Mount. 2019. "Preferential Flow through Shallow Fractured Bedrock and a 3D Fill-and-Spill Model of Hillslope Subsurface Hydrology." *Journal of Hydrology* 576 (September): 430–42.
- Coe, Joseph Thomas, Behnoud Kermani, and Jonathan Nyquist. 2019. "Evaluation of Unknown Bridge Foundations Using Borehole-Based Nondestructive Testing Methods: A Case Study in Urban Settings." *Journal of Environmental & Engineering Geophysics* 24 (2): 299–315.
- Nyquist, J. E., L. Toran, L. Pitman, L. Guo, and H. Lin. 2018. Testing the Fill-and-Spill Model of Subsurface Lateral Flow Using Ground-Penetrating Radar and Dye Tracing. *Vadose Zone J.* 17. doi:10.2136/vzj2017.07.0142
- K. Kopcinski, I. Buynevich, H. Curran, J. Caris and J. Nyquist (2017) Imaging bioturbation in supratidal carbonates: non-invasive techniques enhance neiochnological and zoogeomorphological research, San Salvador, The Bahamas, *Bollettino della Società Paleontologica Italiana*, **56**(2): 289-297.
- N. Economou, F. Benedetto, M. Bano, A.Tzanis, A., J. Nyquist, K. J. Sandmeier, and N. J. Cassidy, "Editorial of SI: Advanced Ground Penetrating Radar Signal Processing Techniques," *Signal Processing*, ISSN 1872-7557, (2016), **132**:197-200.
- Toran, L., Nyquist, J.E., D. O. Rosenberry, M. Gagliano, N. Mitchell, J. Mikochik (2014) Geophysical and hydrologic studies of lake seepage variability. *Groundwater*. doi: 10.1111/gwat.12309
- Toran, L., B. Hughes, J. E. Nyquist, and R. J. Ryan (2013) Freeze core sampling to confirm time-lapse resistivity monitoring of the hyporheic zone, *Ground Water*, **51**(4):635-640.
- Toran, L., J. E. Nyquist, A. C. Fang, R. J. Ryan, and D. O. Rosenberry (2012) Observing heterogeneity in hyporheic flow with electrical resistivity and subsurface well sampling during a stream tracer test. *Hydrologic Processes*, doi: 10.1002/hyp.
- Toran, L, B. Hughes, J. E. Nyquist, R. Ryan (2012) Using hydrogeophysics to monitor change in hyporheic flow around stream restoration structures. *Environmental & Engineering Geoscience*, **18**:83-97.
- Toran, L., M. Johnson, J. E. Nyquist, D. O. Rosenberry (2010) Delineating a road salt plume in lakebed sediments using electrical resistivity, piezometers, and seepage meters at Mirror Lake, NH., *Geophysics*, July-August.
- Rosenberry, D. O., L. Toran, and J. E. Nyquist (2010), Effect of surficial disturbance on exchange between groundwater and surface water in nearshore margins, *Water Resour. Res.*, 46, W06518, doi:10.1029/2009WR008755.
- Nyquist, J. E., M. J. Heaney, and L. Toran (2009) Characterizing lakebed seepage and geologic heterogeneity using underwater resistivity and temperature measurements, *Near Surface Geophysics*, 7(5-6) 487-498. doi: 10.3997/1873-0604.2009022.

- Nyquist, J.E., H. E. Mintz, and M.J.S. Roth (2008) Mise-a-la-Masse and smoke tests for mapping vadose zone karst, *The Leading Edge*, 27:1510. DOI:10.1190/1.3011023. (Nov, 2008)
- Nyquist, J.E., P. A. Freyer, and L. Toran (2008) Stream bottom resistivity tomography to map ground-water discharge, *Ground Water*, 46(4): 561-569. (July-Aug)
- Robinson, D. A., A. Binley, N. Crook, F. Day-Lewis, T. Ferre, V. Grauch, R. Knight, M. Knoll, V. Lakshmi, R. Miller, J. Nyquist, L., Pellerin, K., Singha, L., Slater (2008) A vision for, and review of, electrical and magnetic geophysical instrumentation for advancing process-based watershed hydrological research, *Hydrological Processes*, 22: 3604-3635. (Aug, 2008)
- Xia J., J. E. Nyquist, Y. Xu, M. J. S. Roth and R. D. Miller (2007) Feasibility of detecting voids with Rayleigh-wave diffraction, *Journal of Applied Geophysics*, 244-253.
- Nyquist, J. E., J. Peake, and M. J. S. Roth (2007) Comparison of an optimized resistivity array with dipole-dipole soundings in karst terrain, *Geophysics*, F139-F144.
- Nyquist, J. E. and M. J. S. Roth (2005), Improved 3D pole-dipole resistivity surveys using radial measurement pairs, *Geophy. Res. Lett.*, 32, no. 21, L21504.
- Tennekoon, L., M. C. Boufadel, and J. E. Nyquist, 2005, Multifractal characterization of geophysical data at the Oak Ridge facility, *Stochastic Environmental Research and Risk Assessment*, SERRA, DOI: 10.1007/s00477-004-0227-z.
- Rivers, J. M., Nyquist, J. E., Terry, D. O. Jr., and Doll, W. E. (2004), Investigation into the Origin of Magnetic Soils on the Oak Ridge Reservation, TN. *Soil Science Society of America Journal*, 68:1772-1779.
- Roth, M.J.S., and Nyquist, J.E. (2003), Evaluation of multi-electrode earth resistivity testing in karst, *ASTM Geotechnical Testing Journal*, v26, no 2, 167-178.
- Nyquist, J. E., and Corry, C. E. (2002), Self-Potential: The ugly duckling of environmental geophysics, *The Leading Edge*, 21, 446-451.
- Roth, M. J. S., Mackey, J. R., Mackey, C. ; Nyquist, J. E. (2002), A case study of the reliability of multielectrode earth resistivity testing for geotechnical investigations in karst terrains, Engineering and environmental impacts of karst, *Engineering Geology*, 65, 225-232.
- Doll, W. E., Nyquist, J. E., and Beard, L. P. (2000), Airborne geophysical surveying for hazardous waste site characterization of the Oak Ridge Reservation, Tennessee: A case history. *Geophysics*, 65, no. 5, 1372-1387.
- Nyquist, J. E., Carr, B. J., and Davis, R. K., (1999), DC resistivity monitoring of potassium permanganate injected to oxidize TCE in-situ, *Journal of Environmental & Engineering Geophysics*, 4, p.135-147.
- W. E. Doll, J. E. Nyquist, P. J. Carpenter, R. D. Kaufmann, and B. J. Carr, (1999), Geophysical Surveys of a known karst feature: Oak Ridge Y-12 Plant,, Oak Ridge, Tennessee, *in Geo-Engineering for Underground Facilities*, ASCE Geotechnical Special Publication No. 90, G. Fernandez and R. Bauer, ed., p. 684-694.
- Mackey, J. R., Roth, M. J. S., and Nyquist, J. E., (1999), Case study: site characterization methods in karst, *in Geo-Engineering for Underground Facilities*, ASCE Geotechnical Publication No 90. G. Fernandez and R. Bauer, (eds.), 695-705.
- Beard, L. P., and Nyquist, J. E., (1998), Simultaneous inversion of airborne electromagnetic data for resistivity and magnetic permeability, *Geophysics*, 63, p. 1556-1564.
- Gamey, T. J., Holladay, S. J., Nyquist, J. E., and Doll, W. E. (1998), An airborne multisensor characterization of an active nuclear site *in: Geologic Applications of Gravity and Magnetics: Case Histories*, Gibson, R. I., and Millegan, P. S. (eds), SEG Geophysical Reference Series No. 8, AAPG Studies in Geology, No. 43, p 121-123.
- Nyquist, J. E., Beard, L. P., and Johnson, D., (1996), Ground and Airborne Magnetic and Electromagnetic Surveys at a Hazardous Waste Site, *in: Case Histories of Geophysics Applied to Civil Engineering and Public Policy*, Geotechnical Special Publication No. 62, Michaels, P., and Woods, R. (eds), American Society of Civil Engineers, p. 1-13.

- Nyquist, J. E., Doll, W. E., Davis, R. K. and Hopkins, R. A., (1996), Cokriging surface topography and seismic refraction data for bedrock topography, *Journal of Environmental & Engineering Geophysics*, **1**, 67-74.
- Witten, A. J., Molyneux, J. E. and Nyquist, J. E., (1994), Ground penetrating radar tomography, algorithms and case studies: *IEEE Trans. Geosci.Remote Sensing*, **32**, 461-467.
- Korte, N., S., Wagner, S., and Nyquist, J. E., (1992), Choosing an appropriate soil-gas survey method: *Environ Monitoring and Assessment*, **21**, 27-35.
- Nyquist, J. E. and Blair, M. S., (1991), A geophysical tracking and data logging system: description and case history: *Geophysics*, **56**, 1114-1121.
- Nyquist, J. E., Wilson, D., Norman, L. A., and Gammage, R. B., (1990), Decreased sensitivity of PID total organic vapor detectors in the presence of methane: *Am. Industrial Hygiene Assoc. J.*, **51**, 326-330.
- Hively, L. M., Nyquist, J. E., Bledsoe J. L., and Sjoreen, A. L., (1988), Data base construction for a computerized radiological risk investigation system: *Nuclear Safety*, **29-3**, 318-326.
- Nyquist, J. E., and Wang, H. F., (1988), Flexural modeling of the Midcontinent Rift: *J. of Geophys.Res.*, **93**, 8852-8868.

### **MAGAZINE ARTICLES**

- Featured in Weird Science by G. M. Kramer. TEMPLE magazine, Summer, 2012, 17-21.
- Nyquist, J. E., (1997), Unmanned aerial vehicles that even geoscience departments can afford, *Geotimes*, May, 1997, p 20-23.
- Nyquist, J. E., Albers, B. J., and Purdy, C. B., (1996), Low cost UAVs & environmental management, *Unmanned Systems*, 14, p. 24-27.
- Steeple, D. W. and Nyquist, J. E., (1995), What environmental geophysics can do. *Geotimes*, **40**, 15-17.

### **BOOK CHAPTERS**

- F. J. Bruno, Kunz, F. Steve Schilt, Sidney Kaufman, George H. Long, Ralph A. Dougherty, Ralph A. Stephen, Richard K. Snavely, A. K. M. Sarwar, P. Sadowiak, J. Voss, R. Meissner, Enru Liu, Stuart Crampin, John A. Hudson, Nathalie Favretto-Cristini, Eric de Bazelaire, Gilles Grandjean, Donatienne Leparoux, P. Diviaco, M. Rebesco, A. Camerlenghi, Joachim Place, Charles Naville, Isabelle Moretti, Jianghai Xia, Jonathan E. Nyquist, Yixian Xu, Mary J. S. Roth, Richard D. Miller, "Chapter 4. Diffractions Observed on Seismic Data", *Geophysics Reprints Series: Seismic Diffraction*, Kamill Klem-Musatov, Henning Hoerber, Michael Pelissier, Tijmen Jan Moser, eds., Society of Exploration Geophysics, (2016).

Stanley Nwokebuihe, Abdulrahman Alotaibi, Evgeniy Torgashov, Neil Anderson, Adel Elkrry, Richard Funk, Robert Feldpausch, Brent Johnston, Georgios Tassis, Jan Steiner Rønning, Panagiotis Tsourlos, Torleif Dahlin, Tian Xu, John Dunbar, Carol Lutken, Paul Higley, Michaela Merz, Todd Caldwell, Chuck Abolt, Michael Young, Toti Larson, Eric Petersen, John Holt, Joseph Levy, Stefano Nerozzi, Jeffrey Paine, W Steven Holbrook, Brady Flinchum, James St Clair, Jordan Hayes, Mario Mata, Matthew Provart, Bradley Carr, Jonathan Nyquist, Ryan Armstrong, Clifford S Riebe, Esben Auken, Kevin Befus, M Bayani Cardenas, Philip C Bennett, Peter B Zamora, Raymond S Rodolfo, Hillel B Cabria, Mark R Lopus, Ting-Kuei Chou, Michel Chouteau, Jean-S'ebastien Dub'e, "Hydrogeophysics, CZO, Marine, Polar and Integrated Case Histories",

Symposium on the Application of Geophysics to Engineering and Environmental Problems, Society of Exploration Geophysics, (2015).

**PRESENTATIONS WITH FULL PAPERS IN THE CONFERENCE PROCEEDINGS**

(NOTE: SEG expanded abstracts are peer-reviewed)

- Kermani, B., J. T. Coe, J. E. Nyquist, L. Sybrandy, P. H. Berg, S. E. McInnes (2014) Application of electrical resistivity imaging to evaluate the geometry of unknown bridge foundations, Proceedings of the SAGEEP '14, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 11 pp., published on CDrom.
- Nyquist, J. E., L. Toran, B. Hughes, and R. Ryan (2011), Using hydrogeophysics to map temporal changes in the hyporheic zone, Proceedings of the SAGEEP '11 Symposium for the Application of Geophysics to Environmental and Engineering Problems, abstract published on CDrom.
- Nyquist, J. E., L. Toran, A. C. Fang, R. J. Ryan, and D. O. Rosenberry (2010), Tracking tracer breakthrough in the hyporheic zone using time-lapse DC resistivity, Crabby Creek, Pennsylvania, Proceedings of the SAGEEP '10, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 7 pp., published on CDrom.
- Gagliano, M., J. E. Nyquist, L. Toran, and D. O. Rosenberry (2009) Assessment of electrical resistivity method to map groundwater seepage zones in heterogeneous sediments, Proceedings of the SAGEEP '09, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 815-823, published on CDrom.
- Mitchell, N., J. E. Nyquist, L. E. Toran, D. O. Rosenberry, and J. S. Mikochik (2008) Electrical resistivity as a tool for indentifying geologic heterogeneities which control seepage at Mirror Lake, NH, Proceedings of the SAGEEP '08, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 749-759, published on CDrom.
- Waldner, J. S., A. L. Friedman, J. Uptegrove, M. J. Heaney, D. H. Monteverde, J. E. Nyquist (2008) Seismic reflection and resistivity surveys to map sand resources for New Jersey beach nourishment projects, Proceedings of the SAGEEP '08, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 786-794, published on CDrom.
- Heaney, M., J. E. Nyquist, and L. E. Toran (2007) Marine resistivity as a tool for characterizing seepage zones at Lake Lacawac, PA, Proceedings of the SAGEEP '07, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 1139-1149, published on CDrom.
- Nyquist, J. E., J. Peake, and M. J. S. Roth (2006) Comparison of a Computer-Optimized Array and Dipole-Dipole Resistivity Soundings for Karst Characterization, *in* Geophysical Solutions for Environmental and Engineering, Proceedings of the 2006 International Conference on Environmental and Engineering Geophysics, Wuhan, China, v1, 237-243.
- (INVITED PRESENTATION)**
- Freyer, P. A., J. E. Nyquist, and L. E. Toran (2006) Use of underwater resistivity in the assessment of groundwater-surface water interaction within the Burd Run Watershed, Proceedings of the SAGEEP '06, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 704-711, published on CDrom.
- Xai, J., Y. Xu, R. D. Miller, and J. E. Nyquist (2006) Rayleigh-wave diffractions due to a void in the layered half space, Annual Meeting Expanded Abstracts, Society Of Exploration Geophysicists (SEG), New Orleans, pp. 1406-1410.
- Xia, J., J. E. Nyquist, Y. Xu, and M. J. S. Roth (2006) Feasibility of detecting voids with Rayleigh-wave diffraction, Proceedings of the SAGEEP '06, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 1168-1180, published on CDrom.

- Nyquist, J. E., Roth, M. J. S., Henning S., Manney R., Peake J., (2005) Smoke without mirrors: a new tool for the geophysical characterization of shallow karst cavities, Proceedings of the SAGEEP '05, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 337-343, published on CDrom.
- Manny, R., Roth, M. J. S., and Nyquist J. E., (2005) Understanding directional differences in resistivity results in karst, Proceedings of the SAGEEP '05, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 1117-1124, published on CDrom.
- Tennekoon, L., Boufadel, M. C., Nyquist, J. E. (2004), Results of preliminary investigations into multifractal analysis of airborne geophysical data, Annual Meeting Expanded Abstracts, Society Of Exploration Geophysicists (SEG), published on CDrom.
- Roth, M. J. S., Nyquist, J. E., Faroni, A., Henning, S., Manny, R., and Peake, J, (2004), Measuring cave dimensions remotely using laser pointers and a downhole camera, Proceedings of the SAGEEP '04, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 1307-1314, published on CDrom.
- Nyquist, J. E., and M. J. S. Roth, (2003), Application of a downhole search and rescue camera to karst cavity exploration. Proceedings of the SAGEEP '03, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 841-848.
- Nyquist, J. E., Weikel, M. S., Doll, W. E., and Gamey, T. J., (2002). Corrections for altitude fluctuations in airborne magnetic data collected to detect UXO. Proceedings of the SAGEEP '02, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 10 pp.
- Doll, W. E., Gamey T. J., Beard L. P., Bell D. T., Holladay, J. S., Nyquist, J. E, Llopis, J. (2002), Development and evaluation of a second-generation airborne electromagnetic system for detection of unexploded ordnance. Proceedings of the SAGEEP '02, Symposium for the Application of Geophysics to Environmental and Engineering Problems, 9 pp.
- Rivers, J. M., J. E. Nyquist, D. O. Terry Jr., W. E. Doll (2002), Investigations into the origin of magnetic soils on the Oak Ridge Reservation, Oak Ridge, TN. , Annual Meeting Expanded Abstracts, Society Of Exploration Geophysicists (SEG), published on CDrom, 4 pp.
- Doll, W. E., Gamey, T. J., Nyquist, J. E., Mandell, W., Romaine, G., and Groom, D., (2001) Evaluation of new geophysical tools for investigation of a landfill, Camp Roberts, California. Proceedings of the SAGEEP '01, Symposium for the Application of Geophysics to Environmental and Engineering Problems. 10 pp.
- Maule, J., Nyquist, J.E., and M.J.S. Roth (2000), A comparison of 2-D and 3-D resistivity soundings in shallow karst terrain, Easton, PA, Proceedings of SAGEEP '00, Symposium for the Application of Geophysics to Environmental and Engineering Problems, Eng. Environ. Geophys. Soc., 969-977.
- Roth, M.J.S, Nyquist, J.E., and Guzas, B., 2000, Locating subsurface voids in karst: a comparison of multi-electrode earth resistivity testing and gravity testing, Proceedings of SAGEEP '00, Symposium for the Application of Geophysics to Environmental and Engineering Problems, Eng. Environ. Geophys. Soc., 359-365.
- Nyquist, J., Petruccione, J. and Roth, M., 1999, Characterization of shallow karst terrain using multifrequency electromagnetic induction: Two examples from eastern Pennsylvania: Annual Meeting Expanded Abstracts, Society Of Exploration Geophysicists, 547-550.
- Jenkins, S. A., and Nyquist, J. E., (1999). An investigation into the factors causing sinkhole development at a site in Northhampton County, Pennsylvania, Proceedings of the Seventh Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, 45-49
- Roth, M. J. S., Mackey, J. R., and Nyquist, J. E., (1999), A case study of the reliability of multi-electrode resistivity testing for geotechnical investigations in karst terrains, Proceedings of the

- Seventh Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, 247-252.
- Roth, M. J. S., Mackey, J. R., and Nyquist, J. E., (1999), A case study of the use of multi-electrode resistivity in thinly mantled karst, Proceedings of SAGEEP '99, Symposium for the Application of Geophysics to Environmental and Engineering Problems, Eng. Environ. Geophys. Soc., 293-302.
- Doll, W. E., Hamlett, P., Smyre, J., Bell, D., Nyquist, J. E., Gamey, T. J., and Holladay, J. S., (1999), A field evaluation of airborne techniques for detection of UXO, Proceedings of SAGEEP '99, Symposium for the Application of Geophysics to Environmental and Engineering Problems, Eng. Environ. Geophys. Soc., 773-781.
- Nyquist, J. E., Carr, B. and, Davis, R. K., (1998), DC resistivity monitoring of potassium permanganate injected to oxidize TCE in situ: Proceedings of the 10th Annual Symposium of the Application of Geophysics to Environmental and Engineering Problems, Eng. Environ. Geophys. Soc., 583-591.
- Beard, L. P. and Nyquist, J. E., (1996), Inversion of electromagnetic data for magnetic permeability, 66th Ann. Internat. Mtg. Soc. Expl. Geophys., Expanded Abstracts, 940-943.
- Nyquist, J. E., (1996), Applications of low-cost radio-controlled airplanes to environmental restoration at Oak Ridge National Laboratory. Proceedings of the 23rd Annual Association for Unmanned Vehicle Systems International Symposium and Exhibition, Innovations for the Future, Orlando, Florida, July 15-19, 1996, 817-829.
- Albers, B. J., Nyquist, J. E., and Purdy, C. B., (1996), The Department of Energy's use of airborne remotely piloted vehicles for environmental management. Proceedings of the 23rd Annual Association for Unmanned Vehicle Systems International Symposium and Exhibition, Innovations for the Future, Orlando, Florida, July 15-19, 1996, 839-848.
- Nyquist, J. E., and Beard, L. P., (1996), Clean enough for industry? An airborne geophysical case study. Symposium on the Application of Geophysics to Engineering and Environmental Problems, Eng. Environ. Geophys. Soc., 853-864.
- Traynin, P., Zhdanov, M., Nyquist, J., Beard, L., Doll, W., (1996), A new approach to interpretation of airborne magnetic and electromagnetic data. Symposium on the Application of Geophysics to Engineering and Environmental Problems, Eng. Environ. Geophys. Soc., 677-686.
- Beard, L. P. and Nyquist, J. E., (1994), Detection of karst structures using EM and VLF, 64th Ann. Internat. Mtg. Soc. Expl. Geophys., Expanded Abstracts, 555-558.
- Beard, L. P., Nyquist, J. E., Doll, W. E., Foo, M. C., and Gamey, T. J., (1994), High resolution airborne geophysics at hazardous waste disposal sites: 8th Annual Symposium for the Application of Geophysics to Environmental and Engineering Problems, Eng. Environ. Geophys. Soc., 647-655.
- Nyquist, J. E., (1994), A "model" geophysics program: Symposium on the Application of Geophysics to Engineering and Environmental Problems, Eng. Environ. Geophys. Soc., 817-24.
- Doll, W. E., Nyquist, J. E., Holladay, J. S., Labson V. F., and Pellerin, L., (1993), Preliminary results of a helicopter electromagnetic and magnetic survey of the Oak Ridge Reservation, Tennessee for environmental and geologic site characterization: Symposium on the Application of Geophysics to Engineering and Environmental Problems, Eng. Environ. Geophys. Soc., 281-95.
- Nyquist, J. E. and W. E. Doll, (1993), Comparison of surface and aerial geophysics for characterizing a hazardous waste site, a case study: 63rd Ann. Internat. Mtg. Soc. Expl. Geophys., Expanded Abstracts, 468-471.
- Nyquist, J. E., Doll, W. E., Davis, R. K., and Hopkins, R. A., (1992), Cokriging of surface elevation and seismic refraction data for bedrock topography: Symposium on the Application of Geophysics to Engineering and Environmental Problems, Eng. Environ. Geophys. Soc., 551-564. **(Winner of EEGS Best Paper award.)**

- Flynn, C. R., Blair, M. S., and Nyquist, J. E., (1992), Geophysical investigation and characterization with USRADS: Symposium on the Application of Geophysics to Engineering and Environmental Problems, Eng. Environ. Geophys. Soc., 401-420.
- Emery, M. S., Blair M. S., and Nyquist, J.E., (1990), On-site method for acquisition and analysis of sensor data: Sensors Expo, IEEE Symposium, 6 pp.
- Nyquist, J. E. and Blair, M. S., (1990), An automatic locating and data logging system for radiological walkover surveys: 31st Annual Meeting of the Institute of Nuclear Materials Management, Institute of Nuclear Materials Management, 959-963.
- Nyquist, J. E. and Blair, M. S., (1990), An automated locating and data logging system for geophysical surveys: Fourth Annual Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring and Geophysical Methods, Nat. Wat. Well Assn., 99-113.
- Nyquist, J. E., (1988), A positioning and data logging system for geophysical surveys: First International Symposium: Field Screening Methods for Hazardous Waste Site Investigations, Nat. Wat. Well Assn., 315-318.
- Berven, B. A., Nyquist, J. E., Blair, M. S., Little, C. A., and Gammage, R. B., (1989), Automation of geophysical surveys used in assessments of hazardous waste: 28th Hanford Life Sciences Symposium, 67-74.
- Nyquist, J. E. and Baes III, C. F., (1987), Allowable residual contamination levels of radionuclides in soils from pathway analysis, Proceedings of the Oak Ridge Model Conference, Oak Ridge National Laboratory, 333-350.
- Nyquist, J. E. and Wang, H. F., (1986), Lithospheric flexure and evolution of the Midcontinent Rift, *Geoscience Wisconsin*, **11**, 19-21.

#### **PRESENTATIONS WITH ABSTRACTS ONLY**

- Pope, Gina Ginevra, Jonathan E. Nyquist, Laura Toran, Robert Traver, and Gerald Zaremba. 2021. "Time-Lapse Resistivity Monitoring of a Simulated Runoff Test of a Bioswale in Philadelphia, Pennsylvania." In *Symposium on the Application of Geophysics to Engineering and Environmental Problems 2021*. Society of Exploration Geophysicists and Environment and Engineering Geophysical Society. <https://doi.org/10.4133/sageep.33-176>.
- Pope, Gina Ginevra, Caplan, J. S., Nyquist, J. E., Toran, L., Eisenman, S. W., Spatiotemporal Patterns of Soil Electrical Conductivity in a Highway Stormwater Catchment Implicate Deicing Salts in Impaired Vegetation Performance. *American Geophysical Union Fall Meeting 2021*, New Orleans.
- Pope, Gina Ginevra Nyquist, J. E., Toran, L., (2021). Hysteresis: Implications for Soil Moisture Estimates Based on Electrical Conductivity. In *Virtual Symposium on Application of Proximal and Remote Sensing Technologies for Soil Investigations*, Environmental and Engineering Geophysical Society/Working Group on Proximal Soil Sensing/Society of Exploration Geophysicists
- Keating, Kristina, Gregory J. Mount, Ellen Altermatt, Kristin O'Connell, Jordan Hayes, Susan L. Brantley, Roman A. DiBiase, Alexander E. Gates, Jonathan Nyquist, and Ellen Iverson. 2020. "Examining the Impact of a Two-Week Near Surface Geophysics Field Experience on the Engagement of Students Underrepresented in the Geosciences." In *Joint 69th Annual Southeastern/55th Annual Northeastern Section Meeting-2020*. GSA.
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**(INVITED PRESENTATION)**
- Johnson, M., L. E. Toran, J. E. Nyquist, D. Rosenberry (2008) Mapping road salt discharge from groundwater using electrical resistivity, Mirror Lake, New Hampshire, Geological Society of America Abstracts, Houston, October 2008.
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## **GRANTS WHILE AT TEMPLE UNIVERSITY**

Stormwater control management and monitoring

Agency: PennDOT

Amount: \$3,762,000 (includes \$597,850 subcontract to Villanova)

Toran, L, McKenzie, E., Eisenmann, S., Caplan, J, Ryan, R., and Nyquist, J.

Term: 2/17/2016 to 3/1/2023

Joint and Full Waveform Inversion to Improve Evaluation of Sinkholes and Karst Features (Co-PI)

Agency: PennDOT

Amount \$220,280

Term: 8/02/2019 to 4/01/2022

GP-Extra: A geoscience pathway field experience in near-surface geophysics to promote recruitment and retention of transitional students in quantitative geosciences

Agency: NSF

Amount: \$400,755

Term: 9/1/2017 to 8/31/2019

GP Impact: Career Paths for Urban Geoscientists: Recruitment, Retention, and Apprenticeship.

Agency: NSF

Amount: \$358,773.

Term: 9/1/2016 to 8/31/2019

Characterizing the Impact of Source Type, Offset, and Receiver Spacing on Experimental MASW Data using Love Waves (Co-PI)

Agency: US Geological Survey Hazards Reduction Program

Amount: \$88,915

Term: 1/1/2015 to 12/31/2016

Performance and Effectiveness of Green Infrastructure Stormwater Management Approaches in the Urban Context: A Philadelphia Case Study (Collaborator)

Agency: EPA

Amount: \$999,995

Term: 9/1/2013 to 8/31/17

Application of Non-Destructive Testing to Evaluate Unknown Foundations for Pennsylvania Bridges (Co-Investigator)

Agency: Penn DOT

Amount: \$95,253

Term: 12/14/2012 to 8/13/2013

Geophysical Prediction of Water Migration Along the Soil-Bedrock Interface at the Shale Hills Critical Zone Observatory (CO-PI)

Agency: NSF to Temple as PSU subcontract

Amount: \$10,464

Term: 1/1/2013 to 8/31/2014



Geophysical characterization of groundwater/surface water interaction.  
Shale Hills Critical Zone Observatory (CO-PI)  
Agency: NSF  
Amount: \$36,218  
Term: 11/15/2007 to 9/30/2012

Mapping Spatial and Temporal Heterogeneity of Lake Seepage (CO-PI)  
Agency: NSF  
Amount: \$289,212  
Term: 07/01/2006 to 08/31/2010

Title: Multifractal Characterization of Geologic Noise for Improved UXO Detection and Discrimination (CO-PI)  
Agency: SERDP (DOE/DOE/EPA consortium)  
Amount: \$98,000  
Term: 03/01/06 to 03/01/07, extended to 9/01/08

Geophysical monitoring of groundwater-lake interactions (CO-PI)  
Agency: NSF  
Amount: \$51,090  
Term: 09/01/05 to 08/31/06 (extended to Jan 1, 2007).

Evaluation of Seismic Surface Waves for Cavity Detection (PI)  
Agency: Temple University Summer Research and Grand-in-Aid  
Amount: \$7,500  
Term: 2005/07/01 to 2005/06/30

Evaluation of 2D vs. 3D multielectrode resistivity for the characterization of shallow karst (PI)  
Source: NSF  
Amount: \$104,980  
Term: 2002/06/01 – 2004/05/31 (extended to 05/2005)

Post-process airborne magnetic data collected for UXO mapping, Massachusetts Military Reservation, MA (PI)  
Source: DOE  
Amount: \$5,000  
Term: 2002/09/02 – 2002/09/30

Development of airborne electromagnetic system for detection and mapping of UXO  
Source: DOE (PI)  
Amount: \$26,974  
Term: 2001/03/01 – 2001/08/01

Enhanced processing of airborne magnetic data  
Source: DOE via subcontract with ORNL, managed by UT/Batelle (PI)  
Amount: \$31,644  
Term: 2000/07/18 – 2002/08/31

Geophysical characterization of Landfill Areas, Camp Roberts, CA (PI)  
Source: DOE

Amount: \$13,047  
Term: 2000/05/01 – 2000/09/01

Processing and analysis of airborne geophysical data from Edwards Air Force Base, CA (PI)  
Source: DOE  
Amount: \$57,750  
Term: 1998/01/01 – 1998/12/31

## **CLASSES TAUGHT**

Evil Plots (Non-science majors)  
Catastrophic Geology (Non-science majors)  
Environmental Resources (Non-science majors)  
Disasters: Geology vs. Hollywood (Non-science majors – WINNER Provost's Teaching Award)  
Demystifying Technology: Evil Plots (Non-science majors)  
Demystifying Technology: Program Like a Martian (Non-science majors)  
Environmental Issues (Undergraduate Majors: Writing Intensive)  
Environmental Science Senior Research (Capstone class for Environmental Science Majors)  
Remote Sensing and GIS (Cross-listed Undergraduate & Graduate)  
Environmental Geophysics (Graduate level)

## **SERVICE TO THE PROFESSION:**

Although I am a member of quite a few professional societies, I have been most active in three organizations: the American Geologic Institute (AGI), the Society of Exploration Geophysicists (SEG) and the Environmental and Engineering Geophysical Society (EEGS).

### American Geologic Institute

AGI is an over-arching organization that represents numerous geological societies, keeping its members informed advances in all field of geoscience, developing educational materials, and reporting on budget and legislation activity in congress affecting the sciences. I served for four years on the editorial board of *Geotimes*, the principle publication of the AGI.

### The Society of Exploration Geophysicists

For decades SEG has been the premier international society for geophysicists working in oil and mineral exploration. Its annual convention draws thousands of geophysicists, and SEG has published the well-respected journal *Geophysics* since the 1930's. In 1990's, with the rise in the number of geophysicists practicing environmental geophysicists, SEG created the Near Surface Geophysics (NSG) section of SEG. I have been involved with NSG from its inception. I chaired the Groundwater Committee for a several years, presented papers, chaired sessions, and I have served as secretary, and on the Executive Board as society webmaster. I also served on the board of the SEG organization Geoscientists Without Borders.

### The Environmental and Engineering Geophysical Society

My involvement in EEGS has been even more extensive than SEG. I started the EEGS web site and acted as the EEGS Web master for about five years. I served on the EEGS Research Committee, Education Committee, and chaired several special sessions at the annual SAGEEP meetings. I don't believe that I have missed any of the annual meetings, where I have generally contributing at least one paper to the conference proceedings. I have contributed to the newsletter, and served as Editor-in-Chief of the *Journal of Environmental and Engineering Geophysics (JEEG)* for four years, from 2003-2007. I relinquished my role as JEEG Editor to allow time to

serve as General Meeting Chair for the 2008 Symposium of the Application of Environmental and Engineering Geophysics, held in Philadelphia, in April 2008. I served as President Elect, President and Past President from 2009-2011. I currently chair the committee for the Early Career Award and the Publications Committee.

NOTE: I served on many committees, working groups, review panels during my 11 years at Oak Ridge National Laboratory that are not discussed here. The above list covers only the period since I began working at Temple University in September 1997.

**PROFESSIONAL MEMBERSHIPS:**

- Engineering and Environmental Geophysical Society
- Society of Exploration Geophysicists
- American Geophysical Union
- Geological Society of America
- European Association of Geoscientists & Engineers