Michael L Rucker, PE

Senior Associate Geotechnical Engineer

Professional Summary

Michaels' primary responsibilities include land subsidence and earth fissure characterization, analysis and monitoring, and engineering geophysics for geotechnical site characterization. In 1994, he developed procedures to locate and trace earth fissure hazards caused by groundwater extraction-induced land subsidence using seismic refraction methods. That has led to him contributing, with increasing scope and responsibilities, to multiple projects where land subsidence (and sometimes earth fissuring) are or may become a significant hazard to infrastructure. He has designed, maintained and serves as resident expert on multiple subsidence and earth fissure monitoring programs, several of which have been ongoing for more than a decade, and one which was initiated in 1995. He has applied non-linear Percolation Theory physics to practical problems such as modeling and predicting land subsidence magnitudes. As a member of Wood's Interferometry by Synthetic Aperture Radar (InSAR) team, he provides ground truth analyses and interpretations for remote sensing information from earth-imaging satellite radar data. InSAR is a critical tool for assessing land subsidence; Mr. Rucker has been actively using this tool since 2002. He has been a primary resource for seismic refraction support of local offices in the US southwest since 1981, and for refraction microtremor (ReMi) surface wave investigations since 2002. Primary focus of applied geophysics, including geo-hazard characterization, has been highways in mountainous terrain (1990's - 2000's), dams and flood control structures (2000's - 2010's), and potential sinkholes and land subsidence impacts on high speed rail (2010's). Michael's recent and current ongoing projects include assessment of subsidence and earth fissuring potential along the High-Speed Rail corridor through the San Joaquin Valley in central California, and ongoing monitoring, analysis and remediation of a brine cavern in danger of collapse into a massive sinkhole in Carlsbad, New Mexico.

Qualifications

Education

- MS, Civil Engineering, Massachusetts Institute of Technology, 1980
- BS, Civil Engineering, Massachusetts Institute of Technology, 1976

Registrations / Certifications / Licenses

- PE – Civil, AZ, #18682

Years of Experience
41

Office of Employment
Washington Street, Phoenix, AZ

Languages
- English

Professional Associations
- American Society of Civil Engineers
- Member Engineering Geophysics Committee of ASCE Geo-Institute
- Past Member Exploration and Classification of Earth materials Committee (AFP20, A2L01), Subcommittee on Geophysics (A2L01(1) Transportation Research Board

Areas of Expertise
- Land Subsidence/Earth Fissuring
- Engineering Geophysics
- Geotechnical Characterization

Wood Experience

Major Land Subsidence and Earth Fissure Investigations

Instrumentation Manager

Carlsbad Brine Well Remediation, Carlsbad, New Mexico, (April 2018 – 2023?) Project 1851700022; previously Feasibility Study (Mitigation), Monitoring of Abandoned Brine Cavity Potential Collapse Sinkhole, State of New Mexico, Carlsbad, NM, (2012 – 2018) Project 1251700076

Monitoring and assessment of geo-hazard collapse potential of an abandoned brine cavern (where about six million cubic feet of halite was solution mined) into a large sinkhole, development of mitigation strategies to prevent collapse, and permanent stabilization of the cavity, in Carlsbad, NM. The cavity extends under a federal highway and threatens other infrastructure and the groundwater aquifer in the area. Wood leads a project team that is currently remediating the site by injection of slurried sand into the large void which is filled with pressurized brine; brine pressure control is a critical operational constraint. Michael manages real-time instrumentation monitoring, including an array of pressure sensors and ultra-sensitive borehole tiltmeters, a micro-seismicity system including sensor arrays deployed in nine boreholes to depths of 400 ft to 700 ft, and assessment and interpretation of resulting data and information. His contributions earlier in the project included interpreting and synthesizing information for cavern geometry from multiple geophysical surveys, interpretations and re-interpretation of geophysical survey results, focused surface seismic surveys to contribute to characterization, and evaluating instrumentation monitoring results on an ongoing daily basis from real-time and near real-time monitoring.

Associate Geotechnical Engineer/Geophysics

Subsidence and Earth Fissuring Hazard Assessment and Characterization, California High Speed Rail (HSR) Project, CA (July 2015 – April 2018) Project 8715180680

Development of geo-hazard risk assessment and mitigation strategies for HSR alignment corridor through a region subject to significant land subsidence. Michael's contributions include providing overall expertise and experience on land subsidence and earth fissuring characterization, synthesis of historic data and literature, available geologic and geophysical data (including historic petroleum well logs) and remote sensing information (including InSAR) into an understanding of current and potential future impact of subsidence and potential earth fissuring hazards to operation of the HSR. He is a significant contributing author to the final report.

Senior/Associate Geotechnical Engineer

Earth Fissure and Subsidence Evaluations, Mitigations and Monitoring at Apache Generating Station Combustion Waste Disposal Ponds, Arizona Electric Power Cooperative, Cochise, Arizona, (April 1993 to present); including Investigations and Reporting for compliance of Coal Combustion Residuals (CCR) Regulations (April 2015 – October 2018) Project 1720154019

Mr Rucker's current work involving evaluations and reporting requirements for Coal Cumbustion Residuals (CCR) regulations for the coal-fired Apache Generating Station operated by the Arizona Electric Power Cooperative (AEPCO) is the culmination of 25 years of subsidence- and earth fissure-related experience at the facility. He initially participated in investigating earth fissuring, designed defensive mitigation and a subsidence / earth fissure monitoring system, and annually monitors subsidence and ground strains at the CWDF pond facility constructed over an active earth fissure. The initial investigation assessed the significance of an earth fissure to the design of a proposed ash-storage pond system in support of an Aquifer Protection Permit (E93-107 in 1993). Michael's tasks included review and analysis of existing data

to characterize the site geologic and hydrologic conditions, analysis of historical survey and water level data related to subsidence, interpretation of electric and sonic geophysical logs of deep water wells in the site vicinity, analysis of ground movements and strains and prediction of future ground movement. He developed a surface geophysical procedure at the initial earth fissure to trace the presence and location of an earth fissure utilizing attenuation of seismic refraction signals to indicate the fissure across the facility (E94-125 in 1994) prior to construction of the lined ponds. That surface geophysical procedure has become a standard investigation tool for earth fissure hazard assessment at numerous flood control structures in Arizona.

He performs and prepares reporting for annual monitoring includes performance of extensive tape extensometer measurements across parts of the facility, visual inspection of the facility perimeter, and when necessary, geophysical testing of suspicious surficial features. Currently, the subsidence history based on annual monitoring covers the period of 1996 to 2017; subsidence of about 2 to 4 feet across the facility has been documented in that time. Annual analysis and reporting includes synthesizing extensive GPS and level survey data and horizontal tape extensometer measurements into ground strains and comparison of movements and strains with stress-strain model results. Recently, InSAR information has been incorporated into the annual monitoring process.

Senior Geotechnical Engineer/Geophysics

Final Design-Level Geohazard Study for Powerline Dam-Vineyard Road-Rittenhouse Flood Retention Structures (FRS), Maricopa County, AZ, (September 2013 – December 2014) Project 1720134045

Mr Rucker is a key investigator in extensive evaluations of land subsidence and earth fissuring impacts on these FRSs (normally dry homogeneous earthen dam structures) since 2005. He was a major contributor to the Final Design-Level Geohazard Study, including performing analysis and modelling of historic and predicted future land subsidence across the FRSs. He is a significant contributor to the Annual Monitoring Reports. His earlier contributions have included geophysical and other characterization and analysis phases of multiple investigations addressing subsidence and earth fissuring at these facilities, including the following. Powerline, Vineyard Rd, Rittenhouse Planning Study (Project 5117001043 Feb 2005 – Feb 2007) included evaluation of regional land subsidence and earth fissure risks associated with Powerline FRS, Vineyard Rd FRS, Rittenhouse FRS and associated structures. Geologic hazard assessment tools utilized include conventional low-sun angle aerial photography, InSAR satellite imagery, geologic mapping, geophysical surveys, test trenching and land subsidence modeling. Having established that subsidence and possible earth fissuring was a potential hazard, work commenced on the Powerline and Vineyard FRS Fissure Risk Zone Investigation (Project 7117001027 Feb 2007 – June 2007). This geologic investigation's intent was to delineate the earth fissure risk zones for the two flood retarding structures. Investigation included extensive geophysical surveys, analysis of multiple remote sensing (including aerial photography and InSAR), trenching, geologic mapping, development of risk zones, and recommendations. A subsurface earth fissure adjacent to the Powerline FRS was discovered, and the Powerline Flood Retarding Structure Supplemental Earth Fissure/Ground Subsidence Investigation (Project 7117001082 Sept 2007 – June 2008) commenced. Investigation to further evaluate the extent of a newly discovered earth fissure included extensive geophysical surveys, analysis of multiple remote sensing (including aerial photography and InSAR), test trenching, geologic mapping, as well as a Failure Modes and Effects Analysis. A mitigation study, Powerline FRS Interim Dam Safety Measure (Project 0911701033 June 2009 – June 2010) included assessment of the potential impacts of ground subsidence and earth fissuring for design of interim dam safety measure to defend against an earth fissure at Powerline FRS. Investigation included extensive geophysical surveys, analysis of multiple remote sensing (including aerial

photography and InSAR), geologic mapping, re-assessment of risk zones, and recommendations. Finally, he contributed to the Powerline, Vineyard Road, and Rittenhouse FRS Rehabilitation or Replacement Planning Study (Project 0911701047 Oct 2009 – Aug 2010) included assessment of the potential impacts of ground subsidence and earth fissuring on the process of alternative selection, conceptual design, other planning aspects for rehabilitation or replacement of the Powerline, Vineyard Road and Rittenhouse FRS and associated infrastructure. Investigation included extensive geophysical surveys, analysis of multiple remote sensing (including aerial photography and InSAR), geologic mapping, development of risk zones, land subsidence modeling, and recommendations.

Senior Geotechnical Engineer/Geophysics

Final Design-Level Geohazard Study for McMicken Dam Flood Retention Structure, Flood Control District, Phoenix, AZ, (September 2011 – February 2013) Project 1720114052
Mr Rucker is a key investigator in extensive evaluations of land subsidence and earth fissuring impacts on this since 2002. He was a major contributor to the Final Design-Level Geohazard Study, including performing analysis and modelling of historic and predicted future land subsidence across the FRS. He is a significant contributor to the Annual Monitoring Reports. His earlier contributions have included geophysical and other characterization and analysis phases of multiple investigations addressing subsidence and earth fissuring at McMicken Dam, including the following.

Upon discovering earth fissures threatening McMicken Dam using seismic refraction in Feb 2002, Mr Rucker was deeply involved in the resulting Earth Fissure Investigation (**Project 0-117-001122, Feb 2002 – April 2003**) performing geophysical characterization and analysis to assess the threat, and then the Fissure Risk Zone Remediation Study (**Project 2-117-001066, Oct 2002 – Oct 2004**) where his seismic geophysics was an essential part of the site investigation, and his experience at AEPCO (see above) guided an initial Instrumentation and Monitoring Plan, for an intermediate dam safety mitigation that was designed, and subsequently constructed. Following mitigation of the immediate fissure geohazard, Mr Rucker had significant involvement in further characterization of the remaining portions of the FRS for the Wittmann Area Drainage Master Plan (**Project 6-117-001025, Mar 2006 – Nov 2008**), and was integral in the revisions to design of the Instrumentation and Monitoring Plan (**Project 6-117-001077, Aug 2006 - June 2007**), continues to contribute and provide oversight to the Annual Instrumentation and Monitoring Reports. The Wittmann Master Plan also included an initial Dam Subsidence and Earth Fissure Risk Zoning Report. After completion of thr Final Design-Level Geohazard Study Report in 2013, Michael has continued to support additional seismic studies (example **Project 1720164026 Jun 2016 – Nov 2016**) to support geotechnical design for the rehabilitation of the FRS.

Other Experience

Senior Geotechnical Engineer/Geophysics on these example projects:

Sinkhole and Karst Evaluations, Highways US62-180, NM128, and US285, Southeastern NM (2004 and 2016)
Seismic refraction, ReMi in support of geo-hazard evaluations for highway improvement investigations in gypsum / evaporite karst environments.

Landslide Evaluation on SR-14, Utah Department of Transportation, Cedar City, UT (2011)
Performed ReMi to assist characterization of very large landslide (approximately 1,700 wide, 1,000 feet long, up to about 100 feet thick) that destroyed a section of highway SR-14. Estimates of depth (thickness) of slide were interpreted based on changes in s-wave velocities in subsurface profile. Work was performed in very difficult terrain in winter conditions.

Six Rivers National Forest, Trinity County Bridges, CFLHD (2009)
Seismic refraction, ReMi and estimation of geotechnical rock parameters for subsurface characterization for replacement bridge foundations and approaches for five forest road bridges.

Tonto National Forest, Apache Trail Retaining Walls, CFLHD (2006 and 2010)
Seismic refraction and ReMi for subsurface characterization for the investigation of three dry stack rockery retaining walls (2010) and dry stack retaining walls at Fish Creek Hill (2006).

Mather Point East Overlook, Grand Canyon National Park, CFLHD (subconsultant to HDR) (2009)
Seismic refraction and ReMi for subsurface characterization, and estimation of geotechnical rock strength parameters, for improvements to provide disabled access (ADA accessible route) at an overlook on the South Rim. Provided services as a subconsultant to HDR, Inc. for the project.

SR 260 Little Green Valley, ADOT, Tonto National Forest, AZ (1997 – 2011)
Seismic refraction, ReMi (after 2002), downhole seismic and estimation of geotechnical rock parameters and excavatability conditions for multiple large rock cuts, sensitive environmental and archeological resource areas, and a rock slope failure along the highway project alignment. Work ranged from preliminary evaluation work prior to geotechnical investigation (1997), geotechnical investigation (2000), and investigations for design of possible retaining walls as part of post-design services (2002), to a rock slope failure investigation during construction (2011).

US 93, Hoover Dam to Milepost 17, ADOT, AZ (2007)
Seismic refraction, ReMi, downhole seismic and estimation of geotechnical rock parameters and excavatability conditions for multiple large rock cuts and bridge foundations along the highway project alignment.

Airport People Mover at Sky Harbor International Airport, Phoenix, AZ (2003)
Using the refraction microtremor (ReMi) method, Michael completed a continuous subsurface shear wave velocity profile extending for about 6000 feet through the airport area encompassing Terminals 3 and 4. Ambient noise from traffic was used as the seismic energy source for the ReMi work, and arrays were set up along the loading and unloading curbs at the terminals. Results from this work assisted in characterizing the subsurface as stable or unstable ground to assess tunnelling alternatives.

Hoover Dam Bypass Project, AZ and NV (2001 – 2002)
Michael performed downhole seismic measurements in boreholes to assist in characterizing foundation conditions for a major arch bridge across the Colorado River downstream from Hoover Dam. Access to many boreholes on the canyon walls was very difficult; one borehole had to be accessed by repelling, and the seismic equipment was lowered to the borehole by ropes. Michael also completed seismic refraction surveys at many locations along the proposed new access roadways for excavation, earthwork factor and bridge foundation characterization.

Existing Highway Bridges in AZ (2006)
To assist in assess existing foundation and scour conditions, Michael performed surface seismic refraction and ReMi seismic measurements at northbound Little Squaw Creek Bridge on Interstate I-17 south of Rock Springs, Babbitt Tanks Wash Bridge on Interstate I-40 east of Flagstaff and Beaver Dam Wash Bridge on Mohave County Highway 91. Seismic results were correlated to original design and as-built documentation as part of the assessment. Surface sampling and scan-line particle size distribution data was also collected and analysed. Recently, Michael performed seismic testing at several small rural bridges in Trinity County, Northern California as part of an assessment program in that area.

Construction Water Supply for SR260 Corridor east of Payson, AZ (2000)
Michael supervised and interpreted downhole geophysical logging at nine deep (400-500 ft depth) water wells and associated observation wells for a groundwater withdrawal and recharge project in a weathered, fractured rock aquifer. The project provided construction water for a 20 mile section of highway reconstruction in an area with severely limited water resources. Interpretation and analysis was performed on induction conductivity/ resistivity logs, guard (focused electrode) resistivity, acoustic televiewer, caliper, natural gamma, gamma density, neutron density and sonic VDL logs. Interpretation results included quantification of major contributing fractures (orientation and estimated permeabilities), and overall porosities and storage in the formations. Results of this field work was incorporated into a discrete fracture-based computer model of the aquifer.

Los Alamos and Sandia National Laboratories, NM (1992 – 2004)
Michael performed surface refraction and downhole seismic investigations at several sites as part of seismic retrofitting at these facilities. Both compression and shear seismic data was obtained to determine dynamic parameters. An extensive literature review was conducted and information synthesized to obtain seismic velocity profiles to crustal depths for seismic analysis by others. More recently, Michael has completed refraction microtremor (ReMi) shear wave profiles at locations at Sandia Labs.

Kern River Gas Transmission Line, Western WY to Southern CA (1990)
Michael supervised the refraction seismic operations for subsurface exploration and profiling for investigations of stream crossings and other critical areas along the 700-mile pipeline route. Over 200 refraction lines were performed for this project. At times, two crews were in the field simultaneously. Environmentally sensitive areas where vehicle access was forbidden or restricted were investigated by hand carrying the equipment to the sites. Michael performed a number of these lines, supervised the interpretation of the data, and performed the final reviews of the interpretations.

Example major litigation-related projects:

Study of Potential for Damage to Buried Utilities from Adjacent Blasting, Phoenix, AZ (1996)
Michael researched, analysed and prepared a report assessing the potential risk of damage to existing buried utilities from adjacent blasting. Issues addressed in this study included basic engineering mechanics associated with blasting, case studies and literature review of buried utility damage from blasting (damage rates from earthquake loadings were incorporated into the study), geologic settings and site characterization to address the need for blasting, alternative mechanical excavation methods, and recommendations and guidelines for blast monitoring and control adjacent to buried utilities. Prof. Charles H. Dowding of Northwestern University provided assistance and reviewed this work.

Fire and Explosion at Facility, Henderson, NV (1988 – 1992)
Michael performed extensive consulting and a variety of technical analyses concerning a major explosion at a solid rocket oxidizer manufacturing plant. He was deposed on this case. Various tasks he performed concerning events at the plant included analysis and interpretation of videotapes, photographs, maps and other evidence concerning locations and progression of events and assisting other experts. He also performed various tasks concerning alleged damage to about 16,000 structures, including many commercial and thousands of residential structures. These tasks included cataloging and analysing hundreds of engineering inspection reports, characterization of geotechnical conditions in the area, and serving as technical coordinator for a team of engineering and scientific experts. He also served as technical liaison for the counsel team and coordinated technical aspects of the defence effort with an

insurance auditing team and graphical information systems group. Aspects of the case concerning Michael's involvement were settled before a second series of depositions and trial.

APS vs. Swanson, et. al., Phoenix, AZ (1983 – 1986)
Michael was the project engineer providing geotechnical related services for a defendant in a major litigation concerning certain plastic pipe used in a natural gas distribution system in the Phoenix, Arizona area. His duties included performing and documenting careful excavations at over 70 sites, and review and analysis of the results of these investigations. He also performed other literature and technical reviews and prepared reports for counsel. The client's participation in the case was settled without the need for Michael to be deposed.

Blasting Activities Litigation, Belvedere Street & Westwind Drive, El Paso, TX (1990)
Michael reviewed limited available existing evidence and records of construction blasting activity near a residential area and opposing consultant's reports and analyses. He then synthesized that information into an analysis and report and advised counsel. The case was settled without the need for Michael to be deposed.

Professional History

- Wood Environment & Infrastructure Solutions, Inc., Associate Geotechnical Engineer, Phoenix, AZ, 1980 - Present

Additional Qualifications

Major Presentations related to Land Subsidence / Earth Fissures

- Earth Fissures: Finding, Understanding & Fixing, presented at GRA Webcast Web Seminar – Series on Land Subsidence Part 1 – Subsidence Impacts from Groundwater Extraction – August 6, 2014
- Ground Subsidence and Earth Fissuring: Investigations, Solutions and Monitoring, presented at the Schlemon Specialty Conference – October 2011 in Tempe, Arizona.
- Monitoring Land Subsidence in the Phoenix Area and Potential Applications to the San Joaquin Valley, presented at the AEG Symposium Groundwater-Induced Land Subsidence in the San Joaquin Valley – A 2009 Perspective, November 2009 in Fresno, California.
- Interpreting and Understanding Signatures of Measurements from Monitoring System at I&W Brine Cavern, Carlsbad, New Mexico, 2017. Rucker, M.L. and Lommler, J.C., presented at Solution Mining Research Institute (SMRI) Spring 2017 Technical Conference, 23-26 April 2017, Albuquerque, NM.

Publications related to Land Subsidence / Earth Fissures

- The Pixley Fissure Revisited – Understanding an Old Geohazard to Safeguard New Infrastructure. 2018. Rucker, M.L., Fergason, K.C., and Smilovsky, D., IAEG/AEG Annual Meeting Proceedings, San Francisco, CA, 2018 – Volume 5, pp 69-76.
- Mitigation Strategies and Engineering Solutions for Infrastructure at Risk from Earth Fissures. 2018. Fergason, K.C., and Rucker, M.L., IAEG/AEG Annual Meeting Proceedings, San Francisco, CA, 2018 – Volume 5, pp 77-83.
- Earth Fissures and Infrastructure: A Case History at the Siphon Draw Detention Basin, Central Arizona. 2018. Fergason, K.C., and Rucker, M.L., IAEG/AEG Annual Meeting Proceedings, San Francisco, CA, 2018 – Volume 5, pp 85-90.
- Dry Dams in the Desert, Chasing Land Subsidence and Earth Fissures with Geophysics. 2018. Rucker, M.L., Geostrata, January/February 2018, p 50-55.

- Subsidence Characterization and Modeling for Engineered Facilities in Arizona, USA, 2015, Rucker, M.L., Fergason, K.C., and Panda, B.B., presented at 9th International Symposium on Land Subsidence, Tokyo, in Proc. IAHS, 372, 361–366.
- Reconnaissance evaluation of a potential future sinkhole using integrated simple surface geophysics and surface monitoring points, 2013, Rucker, M.L., Hulbert, S. and Edwards, M.D., Proceedings of the 13th Sinkhole Conference, NCKRI Symposium 2, Carlsbad, NM, p 221-229.
- Characterization of subsidence impacting flood control dams and levees, 2013, Rucker, M.L., Fergason, K.C., Greenslade, M.D. and Hansen, L.A., presented at the USSD Dam Conference, Phoenix, Arizona, March.
- Using InSAR to detect subsidence at brine wells, sinkhole sites and mines, 2013, Rucker, M.L., Panda, B.B., Meyers, R.A. and Lommler, J.C., 2013, Carbonates and Evaporites, V. 28, No.1-2, p 141, May.
- Applications of Geophysics in Geotechnical Investigations and Mitigations of Distressed Flood Control Dams in an Arid Environment, 2009, Rucker, M.L. and Fergason, K.C., EEGS Fasttimes, March.
- Geophysical and Remote Sensing Characterization to Mitigate McMicken Dam, 2008, Rucker, M.L., Greenslade, M.D., Weeks, R.E., Fergason, K.C. and Panda, B.B., 2008, ASCE GeoCongress 2008, New Orleans, LA, March 11.
- Surface Seismic Methods for Locating and Tracing Earth Fissures and other Significant Discontinuities in Cemented Unsaturated Soils and Earthen Structures, 2006, Rucker, M.L. and O.C. Holmquist, Unsaturated Soils 2006, Geotechnical Special Publication No. 147, Miller, G.A., Zapata, C.E., Houston, S.L. and D.G. Fredlund, eds., ASCE, Reston, Virginia, pp. 601-612.
- Tracing an Earth Fissure Using Refraction-Seismic Methods with Physical Verification, 1998, Rucker, M.L. and Keaton, J.R., Land Subsidence, Case Studies and Current Research, Proceedings of the Joseph F. Poland Symposium on Land Subsidence, ed. J.W. Borchers, Special Publ. No. 8, Association of Engineering Geologists, pp. 207-216.
- Geomechanics Analysis of an Earth Fissure Induced by Ground-Water Withdrawal for Design of a Proposed Ash and Sludge Impoundment in Southeastern Arizona, 1998, Keaton, J.R., Rucker, M.L. and Cheng, S.C., Land Subsidence, Case Studies and Current Research, Proceedings of the Joseph F. Poland Symposium on Land Subsidence, ed. J.W. Borchers, Special Publ. No. 8, Association of Engineering Geologists, pp. 217-226.

Other Publications

- Refraction Microtremor characterization of a Landslide SR-14, Cedar Canyon, Utah, 2013, Rucker, M.L., Fadling, D.K., Fergason, K.C., Hulburt, S., ASCE Geo-Congress 2013, March 3-7.
- Assessing shallow rock conditions over a brine cavern using seismic methods, 2012, Rucker, M.L., Meyers, R.A. and Lommler, J.C., 2013, Carbonates and Evaporites, V. 27, No.2, p 199-205, June.
- Landslide and rock slope movement evaluation using surface seismic methods – some case studies, 2011, Rucker, M.L., 62nd Highway Geology Symposium, July.
- Shall we use ReMi to characterize landslides? – Some case studies, 2010, Rucker, M.L., FastTimes, Environmental & Engineering Geophysical Society, 15(2): 33-42.
- Practical Applications using CSL and GDL in Combination for Drilled Shaft Testing, 2009, Rucker, M.L., Manthey, M.T., Phillips, J.A., SAGEEP Annual Meeting, Ft. Worth, TX, March 31-April 3.
- Estimating In-Situ Geo-Material Mass Density, Modulus and Minimum Uniaxial Compressive Strength from Field Seismic Velocity Measurements, 2008, Rucker, M.L., FHWAGeophysics2008, Charlotte, N.C., December 1-4.
- Combination CSL and GDL Testing of Drilled Shafts – Advantages and Case Studies, 2008, Rucker, M.L., Manthey, M.T., Surlaker, S., FHWAGeophysics2008, Charlotte, N.C., December 1-4.
- Integrating Seismic Refraction and Surface Wave Data Collection and Interpretation for Geotechnical Site Characterization, 2006, Rucker, M.L., FHWAGeophysics2006, St. Louis, Mo., December 4-7.

- Surface Geophysics as Tools for Characterizing Existing Bridge Foundation and Scour Conditions, 2006, Rucker, M.L., FHWAGeophysics2006, St. Louis, Mo., December 4-7.
- Characterizing Unsaturated Cemented Soil Profiles for Strength, Excavatability and Erodability using Surface Seismic Methods, 2006, Rucker, M.L. and K.C. Fergason, Unsaturated Soils 2006, Geotechnical Special Publication No. 147, Miller, G.A., Zapata, C.E., Houston, S.L. and D.G. Fredlund, eds., ASCE, Reston, Virginia, pp. 589-600.
- Role of Practical Geophysics in In-situ Characterization for Underground Construction in Phoenix, Arizona, 2006, D.B. Durkee, D.B., M.L. Rucker, D.E. Smith and A.F. Ackerman, Unsaturated Soils 2006, Geotechnical Special Publication No. 147, Miller, G.A., Zapata, C.E., Houston, S.L. and D.G. Fredlund, eds., ASCE, Reston, Virginia, pp. 577-588.
- Geophysical Identification of Evaporite Dissolution Structures Beneath a Highway Alignment, 2005, Rucker, M.L., G. Crumb, R. Meyers and J.C. Lommler, in Sinkholes and the Engineering and Environmental Impacts of Karst, B.F. Beck, ed., Geotechnical Special Publication No. 144, ASCE, Reston, Virginia, pp. 659-666.
- Role of Practical Geophysics to Investigate and Mitigate a Distressed Flood Control Dam, 2004, Rucker, M.L. and K.C. Fergason, Association of State Dam Safety Officials Annual Conference, Phoenix, Arizona, September 25-30.
- Percolation Theory Approach to Quantify Geo-Material Density-Modulus Relationships, 2004, Rucker, M.L., 9th ASCE Specialty Conf. on Probabilistic Mechanics and Structural Reliability, Albuquerque, New Mexico, July 26-28.
- Quantification of Uncertainty Using Power Laws – A Geotechnical Perspective, 2004, Rucker, M.L., 9th ASCE Specialty Conf. on Probabilistic Mechanics and Structural Reliability, Albuquerque, New Mexico, July 26-28.
- Applying the Refraction Microtremor (ReMi) Shear Wave Technique to Geotechnical Engineering, 2003, Rucker, M.L., Third International Conference on the Application of Geophysical Methodologies to transportation Facilities and Infrastructure, Orlando, Florida, FHWA, December 8-12.
- Scale, Power Laws and Geo-characterization, 2003, Rucker, M.L., Soil-Rock America 2003, 12th Pan-American Conf. On Soil Mechanics & 39th U.S. Rock Mechanics Symposium, Culligan, Einstein & Whittle (eds), Verlag Gluckauf GMBH, Essen, Germany, Vol. 1, 621-626.
- Gamma Density Logging of Drilled Shafts – Some Observations and Interpretations, 2002, Rucker, M.L., Second International Conference on the Application of Geophysical and NDT Methodologies to transportation Facilities and Infrastructure, Los Angeles, California, FHWA, April 15-19.
- Seismic Refraction Interpretation with Velocity Gradient and Depth of Investigation, 2002, Rucker, M.L., Second International Conference on the Application of Geophysical and NDT Methodologies to transportation Facilities and Infrastructure, Los Angeles, California, FHWA, April 15-19.
- Simple Power-Law Characterization of Transient Ground-Borne Vibrations, 2001, Rucker, M.L. and O.C. Holmquist, Proc. Of the 4th Intl. Conf. on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, California, March 26-31.
- Applying the Seismic Refraction Technique to Exploration for Transportation Facilities, 2000, Rucker, M.L., First International Conference on the Application of Geophysical Methodologies to transportation Facilities and Infrastructure, St. Louis, Missouri, FHWA, December 11-15.
- Earthwork factors in weathered granites by geophysics, 2000, Rucker, M.L., in Nazarian, S. and Diehl, J. (eds), Geotechnical Special Publication No. 108: ASCE, Reston, Virginia, 201-204.
- Estimating Earthwork Factors for Roadcuts using Surface Geophysics, 2000, Rucker, M.L., Pacific Rocks 2000, Girard, Liebman, Breed & Doe (eds), Balkema, Rotterdam, 709-714.
- A Rippability Index Approach for Characterizing Weathered Granites, 1999, Rucker, M.L., Rock Mechanics for Industry, Amadei, Kranz, Scott & Smeallie (eds), Balkema, Rotterdam, 101-107.

- Percolation Theory Approach to Estimating Earthwork Factors in Weathered Granites, 1998, 49th Highway Geology Symposium Proceedings, September 10-14, Prescott, Arizona, pp 421-430.
- Blasting near Segmented Pipelines: Damage Potential Assessment, 1998, Rucker, M.L. and Dowding, C.H., Geotechnical Earthquake Engineering and Soil Dynamics III, eds. P. Dakoulas, M. Yegian and R.D. Holtz, Geotechnical Special Publications No. 75, American Society of Civil Engineers Geo-Institute, pp. 1518-1529.
- Seismic Velocity in Cohesionless Granular Material Deposits, 1998, Geotechnical Site Characterization, P.K. eds. Robertson and P.W. Mayne, ISC '98, Atlanta, Georgia, A.A. Balkema, Rotterdam, pp. 509-514.
- Integrating the Refraction Seismic Method into Stream Crossing Characterization for Scour and Excavation Conditions, 1996, Uncertainty in the Geologic Environment, eds. C.D. Shackleford, P.P. Nelson and M.J.S. Roth, Proceeding of Uncertainty '96. Madison, Wisconsin, 1-3 August, American Society of Civil Engineers, pp. 1163-1177.
- Three-Dimensional Characterization with Limited Data: An Example from a Playa-Lake Basin in Southeast Arizona, 1996, Rucker, M.L. and Keaton, J.R., Transportation Research Record No. 1526, Transportation Research Board, National Research Council, Washington, D.C., pp. 191-198.
- Construction Control Testing of Slurry Assisted Soldier Wall Caissons with Inclinometer and Nuclear Density Probes, 1990, Transportation Research Record No. 1277, Transportation Research Board, National Research Council, Washington, D.C., pp 35-39.