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## BIOGRAPHICAL SKETCH

I am an engineering geologist with experience in geohazard and risk assessment, geomechanics, structural geology, geomorphology, hydrogeology, computational geology, GIS applications, and the use of geologic information to support planning and policy decisions. My background combines research, professional practice, university teaching, and leadership roles with formal training in both geology and engineering. In recognition of my contributions, I received the Claire P. Holdredge Award (AEG, 2006) for my book on computational geosciences and was honored as the Richard H. Jahns Distinguished Lecturer in Engineering Geology (AEG-GSA, 2011).

My current position is Senior Consultant with Fugro GeoConsulting in Houston, where I lead the company's multidisciplinary Quantitative Geohazards Group. Since joining Fugro in 2011, I have led or contributed to a variety of projects primarily for energy industry clients. Examples of my technical work with Fugro have included:

- Geohazard assessment and engineering geology for deepwater oil and gas developments around the world, using 3D seismic, high resolution autonomous underwater vehicle (AUV) geophysical data, stratigraphic core data, geophysical log data, and geotechnical test results as appropriate.
- Development of GIS based workflows for regional probabilistic seismic slope stability assessment, automated seafloor fault scarp delineation, ice gouge mapping and prediction, and other site characterization challenges.
- Seafloor change detection using AUV multibeam bathymetric data, including evaluation of survey reproducibility and detection limits.
- Use of 3D seismic data, 2D and 3D AUV geophysical data, ultrahigh-resolution photo mosaics, and finite element modeling to understand development of a seafloor fault system associated with production induced fluid expulsion.
- Monte Carlo simulation of uncertainty in fault slip rates and annual exceedance probabilities as estimated from AUV geophysical data and <sup>14</sup>C dates.
- Application of least cost-path methods for offshore pipeline route risk minimization in areas of geologic complexity, including stochastic simulation of geocost surfaces and development of an industry standard guidance document.
- Development of hybrid physical-empirical dredge spoil dispersion models for regulatory permit applications.
- Geophysical characterization of gas hydrate reservoirs, including principal component analysis of 3D seismic spectral decomposition results.

I also perform senior level reviews in my role as an internal Technical Advisor, mentor junior staff, manage technical and commercial aspects of international projects, and play a major role in the company's business development efforts.

Before joining Fugro in 2011, I was an independent consultant for 12 years. My work included geologic applications of airborne LiDAR data, development of GIS approaches to landslide mapping and modeling, land subsidence evaluations, 3-D digital rock slope characterization using LiDAR and terrestrial photogrammetry, mathematical modeling of geologic processes, and geohazard assessments on projects in North America, Canada, Mexico, India, Nepal, and Papua New Guinea.

My work has also included service as Assistant Director and Senior Engineering Geologist with the New Mexico Bureau of Geology & Mineral Resources (including management of the bureau's Albuquerque office), time as a petroleum geologist in the Appalachian basin, and adjunct faculty positions at the University of Cincinnati, Portland State University, and New Mexico Tech.

- EDUCATION** **Ph.D.**, 1989, Geology, University of Cincinnati. Primary emphasis: geomechanics. Secondary emphasis: engineering geology and hydrogeology. Dissertation: *Hydrology and Drainage of a Thin Colluvium Hillside in Delhi Township, Ohio*. Advisor: Arvid Johnson.
- M.S.**, 1985, Geology, University of Cincinnati. Primary emphasis: structural geology. Thesis: *Fractures in the Cambrian Rome Formation near Wytheville, Virginia*. Advisor: Kees De Jong.
- B.S. cum laude**, 1982, Bowling Green State University (Ohio). Major: geology. Minor: general science.
- EMPLOYMENT** **Fugro Marine GeoServices (GeoConsulting), Houston, Texas**
- Senior Consultant and Quantitative Geohazards Group Leader, 1/15 - present. Previously Consultant, and Consultant and Quantitative Geohazards Group Leader (10/11 -12/14)
- Haneberg Geoscience, Seattle, Washington and Cincinnati, Ohio**
- Consulting Geologist, 7/99 – 10/11.
- Department of Geology, University of Cincinnati, Cincinnati, Ohio**
- Adjunct Professor of Geology, 9/09 – 10/11.
- Graduate Assistant, Department of Geology, 9/82 - 5/85 and 9/86 - 5/88.
- Hydrogeologist, Groundwater Research Center, 6/87 - 8/87.
- Department of Geology, Portland State University, Portland, Oregon (9/00 -12/00)**
- Adjunct Associate Professor of Geology, 9/00 – 12/00
- New Mexico Institute of Mining and Technology, Socorro and Albuquerque, New Mexico**
- Senior Engineering Geologist and Assistant Director, New Mexico Bureau of Mines and Mineral Resources—Office of State Geologist. Also Albuquerque satellite office manager. Previously Engineering Geologist and Assistant Director, and Engineering Geologist, 1/89 – 6/99. Tenure at NMIMT granted in 1992.
- Faculty Adjunct, Department of Earth & Environmental Sciences and Department of Mineal & Environmental Engineering, 1/90 – 9/05.
- Manitou Exploration Company, Granville, Ohio**
- Petroleum Geologist, 6/85 - 7/86.
- Geology Department, Bowling Green State University, Bowling Green, Ohio**
- Graduate Teaching Assistant (summer field camp), 6/82 - 8/82.
- Undergraduate Research Assistant, Department of Geology, 1/82 - 5/82.
- LICENSES AND CERTIFICATION** **Professional Geoscientist**, Texas, #11398
- Professional Geologist**, Wisconsin, #356
- Licensed Geologist, Engineering Geologist, and Hydrogeologist**, Washington, #501
- Certified Professional Geologist**, AIPG, #10311
- PROFESSIONAL AFFILIATIONS** **Fellow**, Geological Society of America
- Member**, American Geophysical Union
- Member**, American Association of Petroleum Geologists

**Member**, Association of Environmental & Engineering Geologists

**Member**, Houston Geological Society

**AWARDS** **Outstanding Reviewer**. *Environmental & Engineering Geoscience*, 2013.

**Richard H. Jahns Distinguished Lecturer**. Association of Environmental & Engineering Geologists and Geological Society of America, 2011.

**Samuel Mayfield Distinguished Lecturer**, Bowling Green State University, Department of Geology, 2010.

**Claire P. Holdredge Award**, Association of Environmental & Engineering Geologists, for *Computational Geosciences with Mathematica* as a publication judged to be an outstanding contribution to the advancement of the profession, 2006.

**Meritorious Service Award**, Geological Society of America, Engineering Geology Division, 2006.

**Visiting Scholar**, Western Michigan University, Department of Geosciences, 2006.

**Presidential Citations**, Association of Environmental & Engineering Geologists, 2004, 2006-2010.

**Editor's Citation for Excellence in Scientific Refereeing**, American Geophysical Union, 2002.

**Certificate of Distinction** from the New Mexico State Engineer for contributions made as a member of the Costilla Dam Independent Review Team resulting in the State's recovery of nearly \$5 million in cost overruns associated with the reactivation of a dormant landslide, 1994.

**Outstanding Teaching Assistant**, Department of Geology, University of Cincinnati, 1985.

**PROFESSIONAL SERVICE** **Society for Underwater Technology**, Houston Offshore Site Investigation & Geotechnics Committee, 2015-present.

**COMMITTEES** **Environmental & Engineering Geoscience**, Editorial Policy Board. Chair, 2007-2010. Member, 2001-2007. Joint AEG-GSA appointee, 2008-2010. GSA appointee, 2001-2007. Associate Editor, 1995-2001.

**The Hillside Trust**, Cincinnati, Ohio, Trustee, 2010-2011.

**Geological Society of America**, Engineering Geology Division, Chair, 2003-04. Previously vice-chair (2002-03), secretary (2001-02), and management board member-at-large (2000-01).

**Association of Environmental & Engineering Geologists**, Digital and Electronic Technology in Geology Technical Working Group, Chair, 2007-2011.

**Geological Society of America**. Professional Development Committee, Chair, 2004-2006. Committee member, 2003-2004.

**Geological Society of America**, Engineering Geology Division, Annual Meeting Joint Technical Program Committee Representative, 2002 and 2003.

**International Association for Engineering Geology**, Member, Commission No. 1 (Engineering Geologic Visualization and Characterization), 2007-present.

**Geological Society of America**, *Ad Hoc* Committee on Divisions. Member, 2006.

**Association of Engineering Geologists**, Shlemon Conference Operational Committee, 2004.

**New Mexico State Engineer**, Mid-Rio Grande Technical Advisory Committee, 1995-1999.

**New Mexico Interstate Stream Commission**, Regional Water Planning Work Group, 1996.

**New Mexico Institute of Mining & Technology**, Institute Senate Research Committee, 1992-1994.

**Geological Society of America**, External Awards Committee, Member, 1998.

**Geological Society of America**, Engineering Geology Division, E.B. Burwell, Jr. Award Panel,

1990-1992.

**Western States Seismic Policy Council**, State delegate from New Mexico, alternate years 1992 - 1998.

**U.S. Forest Service**, National Advanced Resource Technology Center Faculty, April 1995.

**New Mexico Institute of Mining & Technology**, Institute Senate, Vice-chair, 1994-1995.

**City of Cincinnati**, Infrastructure Commission. Member, 1987.

**PROFESSIONAL  
SERVICE**

CONFERENCES AND  
SESSIONS ORGANIZED OR  
CHAIRIED

**Advances in Quantitative Geohazard and Georisk Assessment**. 2015 Offshore Technology Conference.

**Advances in Submarine Slope Stability**. 2013 Offshore Technology Conference.

**Working with Uncertainty and Complexity in Modern Engineering Geology**. 2013 AEG Annual Meeting (with J. Keaton).

**Mass Wasting in Disturbed Watersheds**. AEG Shlemon Conference, Durango, Colorado, Spring 2006 (with S. Cannon, J. Coe, and P. Santi).

**Fractured Rock Characterization in Applied Geology**. Geological Society of America 2006 Annual Meeting.

**Earth Fissures**. AEG Shlemon Conference, El Paso, Texas, April 2004 (with J.R. Keaton).

**GIS, GPS, and Remote Sensing Applications in Geologic Hazard Assessment**. Geological Society of America 2004 Annual Meeting (with N. Levine).

**Characterizing Complexity in Geomechanics, Engineering Geology, and Hydrogeology**. Geological Society of America 2003 Annual Meeting (with E. Medley).

**Humans as Geologic Agents**. Geological Society of America 2002 Annual Meeting (with J. Ehlen and R. Larson).

**Nothing Ventured, Nothing Gained: Geology and Risk Assessment in the 21<sup>st</sup> Century**. Geological Society of America 2001 Annual Meeting (with S. Burns).

**Faults and Subsurface Fluid Flow: Fundamentals and Applications to Hydrogeology and Petroleum Geology**. Geological Society of America Penrose Conference, Taos, New Mexico, September 1997 (with J.C. Moore, L.B. Goodwin, and P.S. Mozley).

**Quantifying Hazardous Natural Processes for Risk Assessment**. Association of Engineering Geologists 1996 Annual Meeting (with J.R. Keaton).

**Instability of Clay and Shale Hillslopes**. Geological Society of America 1992 Annual Meeting (with R.W. Fleming).

**PROFESSIONAL  
SERVICE**

MANUSCRIPT OR  
PROPOSAL REVIEWER

*Nature, Geological Society of America Bulletin, Geology, Water Resources Research, Geomorphology, Journal of Geology, Journal of Geophysical Research, Bulletin of the Seismological Society of America, Landslides, Catena, Engineering & Environmental Geoscience, Engineering Geology, Hydrogeology Journal, Journal of Geotechnical Engineering, American Association of Petroleum Geologists Bulletin, Clays and Clay Minerals, Annals of Geophysics, Advances in Water Resources, Computers & Geosciences, Advances in Space Research, Kansas Geological Survey, U.S. Geological Survey, Columbia University Press, Oxford University Press, National Science Foundation, U.S. Department of Energy, Wyoming Water Resources Research Institute, Petroleum Research Fund.*

**EXPERT TESTIMONY**

**Terbush v United States**, United States Court for the Eastern District of California, Case No. 1:02-CV-05509-SMS. Deposed as expert for the plaintiffs regarding use of airborne LiDAR data to map rock discontinuities related to groundwater flow and a fatal rock-fall in Yosemite National Park. 2009.

**Angeles et al v McKesson et al**, United States Court for the Central District of California, Case No. 2:01-CV-10532. Deposed as expert for the plaintiffs regarding effect of surface loading from large rubble piles on shallow aquifer system compaction, groundwater flow, and contaminant transport. 2007.

**Skow v State et al**, Iowa Courts Case No. 08562 LALA004727. Deposed as expert for the plaintiffs regarding effects of highway embankment construction on earth movement and damage to an adjacent home. 2004.

**Water Rights Hearing**, New Mexico Office of State Engineer, SP 03919. Testified under oath as expert for the applicant (US Forest Service) regarding leach field effluent travel time calculations as pertinent to water rights return flow credit. 1994.

**BOOKS** Haneberg, W.C., 2004, *Computational Geosciences with Mathematica*: Springer-Verlag, 381 pp.

WRITTEN OR EDITED Ehlen, J., Haneberg, W.C., and Larson, R.L., editors, 2006, *Humans as Geologic Agents*: Geological Society of America Reviews in Engineering Geology, 158 pp.

Haneberg, W.C., Mozley, P.S., Moore, J.C., and Goodwin, L.B., editors, 1999, *Faults and Subsurface Fluid Flow in the Shallow Crust*: American Geophysical Union Geophysical Monograph 113, 220 pp.

Haneberg, W.C. and Anderson, S.A., editors, 1995, *Clay and Shale Slope Instability*: Geological Society of America Reviews in Engineering Geology 10, 160 pp.

**PAPERS** Westgate, Z.J., Haneberg, W.C., and White, D.J., in review, Effect of spatial variability in as-laid pipeline embedment on lateral pipe-soil interaction: Canadian Geotechnical Journal (invited contribution).

PEER REVIEWED JOURNALS  
AND MULTI-AUTHOR BOOKS

Haneberg, W.C., submitted, Lidar, in P.T. Bobrowsky and B. Marker, editors, *Encyclopedia of Engineering Geology*: Springer (invited contribution).

Haneberg, W.C., 2016, Incorporating correlated variables into GIS-based probabilistic submarine slope stability analyses, in G. Larmarche et al, editors, *Submarine Mass Movements and Their Consequences*: Springer, Advances in Natural and Technological Hazards Research 41, 529-536.

Haneberg, W.C., Devine, C.A., Feregrino, D.N.V., and Calderón, M.O., 2015, Optimizing deep-water pipeline routes in areas of geologic complexity—an example from the Gulf of Mexico, in V. Meyer, editor, *Frontiers in Offshore Geotechnics III*: London, Taylor & Francis, 963-968.

Haneberg, W.C., 2015, Understanding the element of time in probabilistic submarine slope stability analysis, in V. Meyer, editor, *Frontiers in Offshore Geotechnics III*: London, Taylor & Francis, 957-962.

Haneberg, W.C., Kelly, J.T., Graves, H.L., and Dan, G., 2015, A GIS based multicriteria decision support approach to deep-water drilling hazard maps: *The Leading Edge*, v. 34, no. 4, 398-404 (doi: 10.1190/tle34040398.1).

Murari, M.K., Owen, L.A., Dortch, J.M., Caffee, M.W., Dietsch, C., Fuchs, M., Haneberg, W.C., Sharma, M.C., and Townsend-Small, A., 2014, Timing and climatic drivers for glaciation across monsoon-influenced regions of the Himalayan-Tibetan orogeny: *Quaternary Science Reviews*, v. 88, p. 159–182 (doi:10.1016/j.quascirev.2014.01.013).

Gurung, N., Haneberg, W.C., Ramana, G.V., and Datta, M., 2011, Engineering geology and stability of the Laprak landslide, Gorkha District, Nepal: *Environmental & Engineering Geoscience*, v. 17, p. 23-38 (doi: 10.2113/gseegeosci.17.1.23).

Haneberg, W.C., 2009, Improved optimization and visualization of drilling directions for rock mass discontinuity characterization: *Environmental & Engineering Geoscience*, v. 15, p. 107-113 (doi: 10.2113/gseegeosci.15.2.107).

Haneberg, W.C., Cole, W.F., and Kasali, G., 2009, High-resolution LiDAR-based landslide hazard mapping and modeling, UCSF Parnassus Campus, San Francisco, USA: *Bulletin of Engineering*

*Geology and the Environment*, v. 68, p. 273-286 (doi: 10.1007/s10064-009-0204-3).

Adam, B., Dietsch, C., Owen, L.A., Caffee, M.W., Spotila, J.A., and **Haneberg, W.C.**, 2009, Exhumation and incision history of the Lahul Himalaya, northern India, based on (U-Th)/He thermochronometry and terrestrial cosmogenic nuclide dating techniques: *Geomorphology*, v. 107, p. 285-299 (doi:10.1016/j.geomorph.2008.12.017).

Dortch, J.M. Owen, L.A., **Haneberg, W.C.**, Caffee, M.W., Dietsch, C., and Kamp, U., 2009, Nature and timing of large landslides in the Himalaya and Transhimalaya of northern India: *Quaternary Science Reviews*, v. 28, no. 11-12, p. 1037-1054 (doi:10.1016/j.quascirev.2008.05.002).

**Haneberg, W.C.**, 2009, Simplified analysis of vibration induced rock toppling: *Environmental & Engineering Geoscience*, v. 15, p. 41-45 (doi: 10.2113/gseegeosci.15.1.41).

**Haneberg, W.C.**, 2008, Using close range terrestrial digital photogrammetry for 3-D rock slope modeling and discontinuity mapping in the United States: *Bulletin of Engineering Geology and the Environment*, v. 67, no. 4, p. 457-469 (doi: 10.1007/s10064-008-0157-y).

**Haneberg, W.C.**, 2008, Elevation errors in a LIDAR digital elevation model of West Seattle and their effects on slope stability calculations, in R.L. Baum, J. Godt, and L. Highland, editors, *Landslides and Engineering Geology of the Greater Seattle Area*, Washington: Geological Society of America Reviews in Engineering Geology, v. 20, p. 55-66 (doi: 10.1130/2008.4020(03)).

**Haneberg, W.C.**, 2006, Effects of digital elevation model errors on spatially distributed seismic slope stability calculations: an example from Seattle, Washington: *Environmental & Engineering Geoscience*, v. 12, p. 247-260 (doi: 10.2113/gseegeosci.12.3.247).

**Haneberg, W.C.**, 2004, Simulation of 3-D block populations to characterize outcrop sampling bias in block-in-matrix rocks (bimrocks): *Felsbau*, v. 22, no. 5, p. 19-26.

**Haneberg, W.C.**, 2004, A rational probabilistic method for spatially distributed landslide hazard assessment: *Environmental & Engineering Geoscience*, v. 10, p. 23-47, (doi: 10.2113/10.1.27).

**Haneberg, W.C.**, Bauer, P.W., and Chávez, W.X., Jr., 2002, Multilevel geologic hazard assessment mapping in the Rio Grande gorge, northern New Mexico, USA, in P. T. Bobrowsky, editor, *Geoenvironmental Mapping: Method, Theory and Practice*: A.A. Balkema, p. 75-91.

**Haneberg, W.C.**, 2000, Deterministic and probabilistic approaches to geologic hazard assessment: *Environmental & Engineering Geoscience*, v. 6, p. 209-226, (DOI: 10.2113/gseegeosci.6.3.209).

Heynekamp, M.R., Goodwin, L.B., Mozley, P.S., and **Haneberg, W.C.**, 1999, Controls on fault-zone architecture in poorly lithified sediments, Rio Grande rift, New Mexico: implications for fault zone permeability and fluid flow, in Haneberg, W.C., Mozley, P.S., Moore, J.C., and Goodwin, L.B., editors, *Faults and Subsurface Fluid Flow in the Shallow Crust*: American Geophysical Union Geophysical Monograph, v. 113, p. 27-50.

Whitworth, T.M., **Haneberg, W.C.**, Mozley, P.S., and Goodwin, L.B., 1999, Solute sieving induced calcite precipitation on pulverized quartz sand— experimental results and implications for the membrane behavior of fault gouge, in Haneberg, W.C., Mozley, P.S., Moore, J.C., and Goodwin, L.B., editors, *Faults and Subsurface Fluid Flow in the Shallow Crust*: American Geophysical Union Geophysical Monograph, v. 113, p. 149-158.

**Haneberg, W.C.**, 1999, Effects of valley incision on the subsurface state of stress— theory and application to the Rio Grande valley near Albuquerque, New Mexico: *Environmental & Engineering Geoscience*, v. 5, p. 117-131.

**Haneberg, W.C.**, Gomez, P., Gibson, A., and Allred, B., 1998, Preliminary measurements of stress-dependent hydraulic conductivity of Santa Fe Group aquifer system sediments, Albuquerque Basin, New Mexico: *New Mexico Geology*, v. 20, p. 14-20.

**Haneberg, W.C.**, 1995, Steady-state groundwater flow across idealized faults: *Water Resources Research*, v. 31, p. 1815-1820.

**Haneberg, W.C.**, 1995, Depth-porosity relationships and virgin specific storage estimates for the upper Santa Fe Group aquifer system, central Albuquerque Basin, New Mexico: *New Mexico*

*Geology*, v. 17, p. 62-71.

**Haneberg, W.C.**, 1995, Groundwater flow and the stability of heterogeneous infinite slopes underlain by impervious substrata, in Haneberg, W.C. and Anderson, S.A., editors, *Clay and Shale Slope Instability*: Geological Society of America Reviews in Engineering Geology, v. 10, p. 63-78.

**Haneberg, W.C.** and Friesen, R.L., 1995, Tilts, strains, and ground-water levels near an earth fissure in the Mimbres Basin, New Mexico: *Geological Society of America Bulletin*, v. 107, p. 316-326.

**Haneberg, W.C.** and Gökce, A.Ö., 1994, *Rapid water-level fluctuations in a thin colluvium landslide west of Cincinnati, Ohio*: U.S. Geological Survey Bulletin 2059-C, 16 p.

**Haneberg, W.C.** and Bauer, P.W., 1993 Geologic setting and dynamics of a rockslide along NM 68, Rio Grande gorge, northern New Mexico: *Bulletin of the Association of Engineering Geologists*, v. 30, p. 7-16.

**Haneberg, W.C.**, Austin, G.S., and Brandvold, L.A., 1993, Soil lead distribution at an abandoned smelter site in Socorro, New Mexico: *Environmental Geology*, v. 21, p. 90-95.

**Haneberg, W.C.**, 1993, Drape folding of compressible elastic layers— II. Matrix solution for two-layer folds: *Journal of Structural Geology*, v. 15, p. 923-932.

**Haneberg, W.C.**, 1992, Drape folding of compressible elastic layers— I. Analytical solutions for vertical uplift: *Journal of Structural Geology*, v. 14, p. 713-721.

**Haneberg, W.C.**, 1992, Geologic hazards in New Mexico— Part 2: *New Mexico Geology*, v. 14, p. 45-52.

**Haneberg, W.C.**, 1992, Geologic hazards in New Mexico— Part 1: *New Mexico Geology*, v. 14, p. 34-41.

**Haneberg, W.C.**, 1991, Pore pressure diffusion and the hydrologic response of nearly-saturated, thin landslide deposits to rainfall: *Journal of Geology*, v. 99, p. 886-892.

**Haneberg, W.C.**, 1991, Observation and analysis of short-term pore pressure fluctuations in a thin colluvium landslide complex near Cincinnati, Ohio: *Engineering Geology*, v. 31, p. 159-184.

**Haneberg, W.C.** and Tripp, G., 1991, An irrigation-induced debris flow in northern New Mexico: *Bulletin of the Association of Engineering Geologists*, v. 28, p. 359-374.

**Haneberg, W.C.**, 1990, A Lagrangian interpolation method for three-point problems: *Journal of Structural Geology*, v. 12, p. 945-947.

**Haneberg, W.C.**, 1988, Some possible effects of consolidation on growth fault geometry: *Tectonophysics*, v. 148, p. 309-316.

**Haneberg, W.C.**, 1982, A paradigmatic analysis of Darwin's use of uniformitarianism in *The Origin of Species*: *Compass*, v. 60, p. 89-94.

## PAPERS

CONFERENCE PROCEEDINGS  
NON-PEER REVIEWED

**Haneberg, W.C.** and Brumley, K., proposal submitted, A GIS approach to quantitative ice gouge depth mapping, analysis, and prediction: 2016 Arctic Technology Conference.

Devine, C.A., **Haneberg, W.C.**, Liu, M., and Chang, G., in press, A sensible approach to subsea pipeline route determination—moving from hand-drawn routes to geologically constrained, least-cost optimized paths: 2016 Offshore Technology Conference, Paper OTC-26940-MS.

Trandafir, A.C. and **Haneberg, W.C.**, in press, Top-hole formation pore pressure assessment at deepwater well sites using a geotechnical approach: 2016 Offshore Technology Conference, Paper OTC-26994-MS.

**Haneberg, W.C.**, Campbell, K.J., and Mackenzie, B., 2016, Concept stage site assessments, deepwater development risks, and long-term value preservation: Why getting it right the first time is more important than ever: 2016 Offshore Technology Conference-Asia, Paper OTC-26520-MS.

**Haneberg, W.C.**, 2015, Stochastic incorporation of uncertainty and subjectivity in deepwater pipeline route optimization: Offshore Technology Conference, Paper OTC-25785-MS.

**Haneberg, W.C.**, Bruce, B., Kelly, J.T., and Davis, L., 2015, A simple model for glory hole dredge spoil dispersion assessment: Arctic Technology Conference, 23-25 March, Copenhagen, OTC-22606-MS.

**Haneberg, W. C.**, 2014, Evaluating the effects of input cost surface uncertainty on deep-water petroleum pipeline route optimization, in G. Lolino, D. Giordan, K. Thuro, C. Carranza-Torres, F. Wu, P. Marinos, and C. Delgado, editors, *Engineering Geology for Society and Territory-Volume 6*: Springer International Publishing, 351-355.

**Haneberg, W. C.** and Campbell, K. J., 2014, Evolution of a submarine mass-transport complex in space and time, in G. Lolino, A. Manconi, J. Locat, Y. Huang, and M. Canala Artigas, editors, *Engineering Geology for Society and Territory-Volume 4*: Springer International Publishing, 205-208.

**Haneberg, W.C.**, 2012, Spatially distributed probabilistic assessment of submarine slope stability, in P. Allan and 9 others (editors), *Offshore Site Investigation and Geotechnics: Proc.*, 7<sup>th</sup> International Offshore Site Investigation and Geotechnics Conference, London, UK, 551-556.

O'Leary, L., Spinewine, B., **Haneberg, W.**, Clare, M., Thomas, S., , and Wu., H., 2014, An integrated sediment mobility and scour assessment: characterization, calibration, and mitigation studies for a pipeline in the South China Sea: Offshore Technology Conference Asia, 25-28 March 2014, Kuala Lumpur, OTC -24872-MS.

Keaton, J.A. and **Haneberg, W.C.**, 2013, Landslide inventories and uncertainty associated with ground truth, in F. Wu and S. Qi, editors, *Global View of Engineering Geology and the Environment*. London, Taylor & Francis, 105-110.

**Haneberg, W.C.**, Bruce, B., and Drazba, M.C., 2013, Using qualitative slope hazard maps and quantitative probabilistic slope stability models to constrain least-cost pipeline route optimization: 2013 Offshore Technology Conference, OTC-23980-MS.

**Haneberg, W.C.**, 2012, Spatially distributed probabilistic assessment of submarine slope stability, in P. Allan and 9 others (editors), *Offshore Site Investigation and Geotechnics: Proc.*, 7<sup>th</sup> International Offshore Site Investigation and Geotechnics Conference, London, UK, 551-556.

Watts, C.F., Underwood, S.A., **Haneberg, W.C.**, and Rogers, J.D., 2012, Fully rationalized equations for incorporating joint water pressure in rock slope stability analyses at Glacier Point in Yosemite National Park, California, in E. Eberhardt, C. Froese, K. Turner, and S. Leroueil, editors, *Landslides and Engineered Slopes (Volume 2)*: Proc., 11th International & 2nd North American Symposium on Landslides, Banff, 3-8 June, 2012.

Gates, W.C.B. and **Haneberg, W.C.**, 2012, Comparison of standard structural mapping results to 3-D photogrammetric model results: Boundary Transformer Banks rockfall mitigation project, Metaline Falls, Washington: Proc., 46<sup>th</sup> US Rock Mechanics/Geomechanics Symposium, Chicago, 24-27, ARMA Paper 12-368.

Pate, K. and **Haneberg, W.C.**, 2011, Photogrammetric and LIDAR 3-D rock slope discontinuity mapping and interpretation surveys to improve baseline information for planning, design, and construction of capital improvement projects at hydroelectric facilities: Proc., 45<sup>th</sup> US Rock Mechanics/Geomechanics Symposium, San Francisco, CA, June 26–29, 2011 (ARMA 11-520).

**Haneberg, W.C.**, 2008, Revisiting an old project with new technology— digital terrain modeling and multi-layered virtual geologic hazard mapping along a proposed highway realignment, Rio Grande gorge, New Mexico, in Proceedings, 59<sup>th</sup> Highway Geology Symposium, Santa Fe, May 5-9, 2008, paper #5.2, 21 pp.

**Haneberg, W.C.**, 2007, Directional roughness profiles from three-dimensional photogrammetric or laser scanner point clouds, in E. Eberhardt, D. Stead, and T. Morrison, editors, *Rock Mechanics: Meeting Society's Challenges and Demands: Proceedings, 1<sup>st</sup> Canada-U.S. Rock Mechanics Symposium, Vancouver, May 27-31, 2007*, p. 101-106.

**Haneberg, W.C.**, Norrish, N.I., and Findley, D.P., 2006, Digital outcrop characterization for 3-D



structural mapping and rock slope design along Interstate 90 near Snoqualmie Pass, Washington: *Proceedings, 57th Annual Highway Geology Symposium*, Breckenridge, Colorado, September 27-29, 2006, p. 146-160.

**Haneberg, W.C.**, Creighton, A.L., Medley, E.W., and Jonas, D.A., 2005, Use of LiDAR to assess slope hazards at the Lihir gold mine, Papua New Guinea, in O. Hungr, R. Fell, R. Couture, and E. Eberhardt, editors, *Landslide Risk Management: Proceedings of International Conference on Landslide Risk Management*, Vancouver, Canada, 31 May - 3 June, 2005, Supplementary CD.

**Haneberg, W.C.**, 2000, Influence of valley form on the subsurface state of stress— application of simple elastic models to understand modes of Appalachian coal mine roof failure, in J. Girard, M. Liebman, C. Breeds, and T. Doe, editors, *Pacific Rocks 2000 (Proc. Fourth North American Rock Mechanics Symposium, Seattle, July 31 - August 1, 2000)*: Balkema, p. 873-879.

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### GRADUATE STUDENTS SUPERVISED

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Narayan Gurung, *Landslide investigation and mitigation: a case study of Laprak landslide, Gorkha, Nepal*. M.Tech in Geotechnical and Geoenvironmental Engineering, Indian Institute of Technology, Delhi, India, 2009. External co-supervisor.

Jodi Clark, *Liquefaction susceptibility mapping of the shallow alluvium, Inner Valley, Rio Grande Basin, Albuquerque, New Mexico*. M.S. in Geology, NM Tech, 2004. Research advisor.

## William C. Haneberg, Ph.D.

Geoff Rawling, *Hydrogeologic characterization of the Sand Hill fault zone, Albuquerque Basin, New Mexico*. Ph.D. in Geology, NM Tech, 2001. Committee member.

Andrew Dunn, *Geology and hydrogeology of the Costilla Dam landslide, northern New Mexico*. M.S. in Hydrology, NM Tech, 2001. Research advisor.

Michiel Heynekamp, *Controls on fault-zone architecture and fluid flow in poorly consolidated sediments: the Sand Hill fault, central New Mexico*. M.S. in Geology, NM Tech, 1998. Committee member.

Daniel Detmer, *Permeability, porosity, and grain size distributions of Pliocene and Quaternary sediments in the Albuquerque Basin, central New Mexico*. M.S. in Geology, NM Tech, 1995. Research advisor.

William Linderfelt, *Field study of capture zones in a shallow sand aquifer*. Ph.D. in Hydrology, NM Tech, 1994. Committee member.

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Garret Ross, *Environmental geologic maps of Santa Fe County, New Mexico*. M.S. in Mineral Engineering, NM Tech, 1992. Research advisor.

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<b>COURSES TAUGHT</b>	Geol 699	<b>Geology Colloquium</b> (UC, 2009-2011)
UNIVERSITY	Geol 331	<b>Elementary Structural Geology</b> (UC, 2010, 2011)
	Geol 394	<b>Digital Terrain Modeling</b> (NKU, 2010)
	Geol/Hydro 572	<b>Mechanics of Earth Surface Processes</b> (NMT, 1997, 1998)
	Geol/Hydro 504	<b>Hydrogeology</b> (NMT, team taught, 1994)
	Geol/Geoph 558	<b>Brittle Deformation (Mechanics of Earthquakes)</b> (NMT, team taught, 1994)
	Geol 571	<b>Mechanics of Geologic Processes</b> (NMT, 1993)
	Geol 391	<b>Structural Geology</b> (PSU, 2000)
	Min Engr 540	<b>Numerical Methods in Geotechnical Engineering</b> (NMT, 1990, 1992)
	Min Engr 581	<b>Geologic Hazards</b> (NMT, 1991)
	Min Engr 427	<b>Site Investigation</b> (NMT, 1992)

UC: University of Cincinnati

NKU: Northern Kentucky University

NMT: New Mexico Tech

PSU: Portland State University

<b>COURSES TAUGHT</b>	<b>Digital Terrain Modeling with Airborne LiDAR</b> . Association of Environmental & Engineering Geologists Annual Meeting, Los Angeles, September 24, 2007.
PROFESSIONAL	<b>Virtual Structural Mapping Using 3-D Digital Rock Slope Models</b> . Association of Environmental & Engineering Geologists Annual Meeting, Los Angeles, September 25, 2007 (with J. Keaton, G. Poropat, and A. Gaich).



## William C. Haneberg, Ph.D.

**Introduction to Computational Hydrogeology: Developing Solutions to Groundwater Flow and Transport Equations.** Northwest Environmental Training Center, Seattle WA, February 9-10, 2005.

**Environmental Statistics for Site Managers,** Northwest Environmental Training Center, Seattle WA, June 25-26 and August 21-22, 2003.

**Applied Hydrogeologic Site Characterization for Environmental Professionals,** Northwest Environmental Training Center, Seattle WA, May 29-30, 2003.

**What are the Odds? An Introduction to Probabilistic Methods for Environmental and Engineering Geologists.** AEG-AIPG 2002 Joint Annual Meeting, Reno, September 2002.