

**University of Kentucky
Humanitarian Engineering**

Statement of Qualifications

November 2019



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About the Cover: This photo was taken during a visit to Cap Haitien, Haiti in December 2014, where we worked with Miyamoto International to develop seismic microzonation maps of earthquake-prone population centers in northern Haiti. The project was sponsored by the United Nations Development Programme.

Overview

Fellow Humanitarians,

On behalf of the University of Kentucky College of Engineering, I wish to thank you for taking the time to read our Statement of Qualifications. We are active in a broad range of disciplines, but we share a common thread. We all believe that, as John F. Kennedy stated in his famous speech, that "of those to whom much is given, much is required." As engineering educators and professionals, we are privileged with the ability to solve problems to make the world a better place. We can maximize our impact by sharing our knowledge and talents with those in the global community who need it most. Our efforts in Humanitarian Engineering at the University of Kentucky allow us to realize this potential.

We are qualified to provide technical support to government and non-government organizations (NGOs) to help develop agricultural and infrastructure resources. Our experience and capabilities can be employed to address a broad spectrum of needs, including management and conservation of water resources, mitigation of the effects of natural hazards such as earthquakes and floods, infrastructure development, construction management, implementation of efficient agricultural practices and harnessing of renewable energy. Our capabilities can be applied at the national, state, local and community levels.

Please take the time to review our qualifications. We are an ideal choice for NGOs, government agencies and other organizations who seek a committed group of professionals with technical expertise to solve engineering problems in the developing world. We look forward to working with you soon.

Sincerely,

Michael E. Kalinski

Prof. Michael E. Kalinski, Ph.D., P.E.
Point of Contact
University of Kentucky Humanitarian Engineering Group

Key Personnel

Michael E. Kalinski, Ph.D.,

P.E. is a Professor in the University of Kentucky Department of Civil Engineering. His areas of expertise include geotechnical earthquake engineering, landfill design, dam design and maintenance, and laboratory and field testing of earth materials. He has worked on projects in Haiti with Haiti Engineering and the United Nations in Cap Haitien, Port-de-Paix, Ft. Liberte, Ouanaminthe, Leogane, Hinche, and Petit Goave to map groundwater resources, predict the response of sites to earthquake shaking and develop earthquake hazard maps for urban planning and development of emergency response strategies. Kalinski has additional international experience in Norway, Thailand, and the United Arab Emirates. Kalinski is the Point of Contact for Humanitarian Engineering at the University of Kentucky.



Nick Stamatiadis, Ph.D., P.E.

is a Professor in the University of Kentucky Department of Civil Engineering specializing in highway design and roadway safety. He has extensive international experience, including experience in developing nations and experience working on USAID-funded projects aimed at developing transportation solutions for developing areas and identifying alternatives for tsunami-stricken areas in Indonesia. Dr. Stamatiadis has also worked with regional and local governments in developing transportation solutions for roadway solutions and securing funding for constructing and improving roadways in Cameroon. In addition, he has worked in projects dealing with community development issues in Honduras, Ecuador, Thailand, and Indonesia. Dr. Stamatiadis has also developed and delivered training courses to communities on roadway preservation and maintenance. Professor Stamatiadis serves as Faculty Advisor for the University of Kentucky Student Chapter of Engineers Without Borders.



Shakira R. Hobbs, Ph.D. is an

Assistant Professor in the Department of Civil Engineering at the University of Kentucky. Her scholarship includes multi-disciplinary approaches to sustainable engineering, international development, and life cycle thinking applied to the food-energy-water nexus. In 2018, she founded BioGals, a U.S. non-profit organization that works internationally, empowering women of color to create sustainable solutions. Through community-engaged work with residents of the Sittie River in Belize, BioGals has applied LCA and piloted anaerobic digestion to supplement cooking fuels needs with the community. Broadening participation, gender, and global competency are complementary areas of research for her. Shakira also teaches a graduate-level course at the University of Kentucky titled “Introduction to Humanitarian Engineering.”



Mariantonieta Gutierrez Soto, Ph.D. is an Assistant Professor in the

Department of Civil Engineering at the University of Kentucky. She teaches graduate and undergraduate students and conducts structures research. Her research interests are in community resilience and developing mitigation solutions for the built environment subjected to natural hazards. In addition, she served as resident director at the Ohio State University leading service learning courses that had travel abroad components to Choluteca, Honduras and Accra, Ghana. The course projects related to alternative energy (e.g. solar, biogas and bicycle-powered), agriculture (e.g. aquaponic system), cooking stove, water sanitation and filtration, and biomedical devices. In addition to research and teaching, she has experience as a project engineer and structural engineering consulting.



Reginald Souleyrette, Ph.D., P.E.

earned his Ph.D. in Civil Engineering from the University of California at Berkeley in 1989 and is currently serving as Commonwealth Chaired Professor of Civil Engineering at the University of Kentucky. His areas of expertise include highway safety engineering, railroad design, information systems and transportation engineering. He has worked on projects implemented world-wide through the International Road Assessment Programme (iRAP). iRAP is a registered charity dedicated to preventing the more than 3,500 road deaths that occur every day worldwide. iRAP tools and training have been deployed in more than 70 countries on six continents.

iRAP is a member of the United Nations Road Safety Collaboration and its donors include the FIA Foundation, Road Safety Fund (jointly managed by the FIA Foundation and the World Health Organisation) and the World Bank Global Road Safety Facility. Souleyrette has additional international experience in China, India and Italy. Souleyrette serves on the Safety and User Systems Group Executive Council of the National Academies Transportation Research Board and is the Chair of the University of Kentucky's Department of Civil Engineering.



Isabel C. Escobar, Ph.D.,

earned her Ph.D. in Environmental Engineering from the University of Central Florida in 2000 and is currently serving as a Professor in the University of Kentucky Department of Chemical and Materials Engineering. Her areas of expertise include developing and/or improving polymeric membrane materials for water treatment and water reuse operations. In the field of membrane separations, she works on low-fouling membranes using temperature-sensitive polymers, anti-biofouling materials and biologically inspired materials, among others. She has worked on projects in Jordan with Jordan University of Science and Technology (JUST) and Morocco with Tofail University to address biofouling of membranes using anti-microbial green nanoparticles in a project funded by USAID.

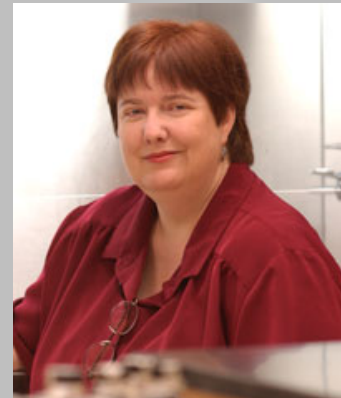
Escobar has additional international experience in Singapore with the National University of Singapore.



Alan Fryar, Ph.D. received his PhD in Geology from the University of Alberta (Canada) in 1992 and is a Professor in the University of Kentucky Department of Earth and Environmental Sciences. He specializes in hydrogeology, particularly field-based studies of groundwater recharge and chemistry, groundwater-stream interactions, and contaminant fate and transport. His international projects have included studies of springs in the Middle Atlas region of Morocco and in southwest China and controls on water quality in the Ganges and Mekong floodplains of India and Thailand, respectively. He is currently an Associate Editor of the journal Groundwater for Sustainable Development.



Gail Brion, Ph.D. is a Professor in the University of Kentucky, Department of Civil Engineering, and holds a joint appointment in the Department of Preventive Medicine and Environmental Health in the College of Public Health (founding member). She has extensive experience in water supply and treatment with a specialized background in public health microbiology and water reuse. Dr. Brion will provide technical expertise on potable water supply, sanitation, appropriate technologies, environmental monitoring and analysis, risk assessment, and policy. She will be involved in mainstreaming gender perspectives for the process of planned actions, policies, programs, and legislation to assure that the concerns and experiences of all are an integral part of the project and that benefits are shared equitably.



Experience

Project: Groundwater Investigation in Leogane, Haiti

Dates: August 2017 – June 2019

Key Personnel: Michael E. Kalinski

Sponsor: Geoscientists without Borders

Project Budget: \$49,836

Project Description: Michael Kalinski traveled to Haiti in February 2018 to map the depth to groundwater in the community of Leogane. Many of the shallow water wells in Leogane had recently gone dry and it was believed that the construction of new roads and a stormwater drainage system has disrupted groundwater recharge and negatively impacted the wells. Kalinski performed well surveying and geophysical DC resistivity to develop a groundwater map for the entire city of Leogane. This information was provided to the residents of Leogane and the equipment acquired for the project was donated to the State University of Haiti so that they can perform similar surveys in other communities within Haiti.

Reference: Linda Ford (email: lford@seg.org).



Geophysical testing at a park in Leogane, Haiti

Project: Salima, Malawi Linthipe School Kitchen Facility Project

Dates: December 2016-October 2018

Key Personnel: Nikiforos Stamatiadis

Sponsor: Engineers Without Borders (EWB) and University of Kentucky

Project Budget: \$20,000

Project Description: Nikiforos Stamatiadis traveled to Salima, Malawi in summer 2017 with a group of two students to identify the community needs based on their initial request to improve the health and well-being of the students in the area. During the trip, the team visited multiple sites to further their understanding of location specific challenges and determine which school was in the most need of help. Based on these visits, the school of Linthipe was chosen and it was determined that the project with the greatest potential to affect students and their quality of life was the building of a new kitchen facility, since the existing one was in disrepair and lacked any roof. The team worked to develop a construction plan for the facility based on the demands of the community regarding its size and following local practices, in order to ensure not only know-how for construction but also to allow for future maintenance based on local expertise, tools and personnel. In summer 2018, Stamatiadis led a team of four students back to Malawi to undertake the construction of the facility working closely with the community. The team and the community volunteers completed the facility in 10 days. The facility has been used successfully since its completion and does not experience any issues.



Original kitchen facility



New kitchen facility

Project: Sustainable Energy Recovery from Waste for Sittee River, Belize

Dates: May 2015- August 2018

Key Personnel: Shakira Hobbs

Sponsor: NSF-IGERT

Project Budget: \$22,690

Project Description: There have been several trips to Belize to work on sustainable waste management strategies with Sittee River Village. Our first trip in June of 2015 consisted of interviews with community members to better understand their energy needs, waste management techniques, and standard of living. Meetings with the village council indicated that converting waste to energy could be a great economic benefit to Sittee River. In August of 2016, the research team returned to Belize to collect real-time data on organic waste generation and composition. In July, we were given permission by the village council to begin building a digester prototype. We worked with the village council and Ramirez Constructions to design the digester. All materials were purchased in the country. At the end of the trip, construction was complete and community members began filling the digester with waste. Our many trips to Belize created a trusting relationship with the village council, community members, and the Methodist School's teachers. During the Sittee River council meetings, it was agreed that an anaerobic digester would be a good idea for sustainable waste disposal. Anaerobic digestion is an attractive technology given its ability to allow community members to generate their own cooking fuel and stimulate economic development. The community is looking forward to our return, to assess the digester prototype, and provide design ideas for improvement. Future visits to Belize will continue to further establish our relationship with the community, build the final digester, and provide education for sustainable waste disposal.

Reference: Willem Vermaas (e-mail: wim@asu.edu)



Prof. Hobbs explaining how to anaerobic digester works to student in Sittee River Village, Belize.

Project: Barrio 9 de Marzo, Ecuador Sanitation Project

Dates: December 2013-October 2016

Key Personnel: Nikiforos Stamatiadis

Sponsor: Engineers Without Borders (EWB) and University of Kentucky

Project Budget: \$10,000

Project Description: Nikiforos Stamatiadis traveled to Santo Domingo, Barrio 9 de Marzo, Ecuador in summers 2014 with a group of four students to identify the community needs based on their initial request to improve the sanitation conditions in the area. During the trip, the team evaluated current conditions and determined that the community lacked any sewer system and the grey and black water was deposited in septic tanks that had no walls. The sewage from these tanks had the potential to contaminate the ground water that many people used for their daily needs. The team developed a plan to retrofit the septic tanks with a pipe and cap in order to allow for periodic cleaning of the tanks. A cleaning schedule for the community was also developed along with a funding mechanism through the local NGO for ensuring that cleaning will be completed as scheduled. The project was completed in the following summers of 2015 and 2016 where Stamatiadis led a team of four students each time to work on the retrofit. The project has been successfully completed and the community has completed the first round of periodic cleaning.



Project: Use of green nanoparticles as biofouling-resistant agent in RO desalination

Dates: January 2014 – January 2016

Key Personnel: USA Lead PI: I.C. Escobar, University of Kentucky; USA co-PIs: V. Craver, Univ. of Rhode Island; T. Harris, Georgia Tech. International Lead PI: Muna Abu-Dalo, Jordan Univ. of Science & Technology

Sponsors: USAID and NSF

Budget: **USAID:** \$45,706 (US portion); \$150,000 (International portion); **NSF:** \$99,996 (US only)

Project Description: This collaborative research proposal seeks to address a major technical challenge in membrane technology, mitigation of membrane biofouling, due to rejected chemicals and microbes, by impregnating the solutions with cost effective nanoparticles. This will elucidate the mitigation of biofouling, through comprehensive experimental analyses and testing. Most of the research and development in the area of biofouling prevention has focused on pretreatment of the feed water, improved cleaning solutions and cleaning procedures. In this project, an international team will develop biofouling-resistant (BRN) nanocomposite membranes, loaded with copper or silver nanoparticles, from synthesis to macro scale production. To meet this objective an international team of experts will characterize water conditions (Muna Abu-Dalo, Jordan University of Science and Technology (JUST), and Elham El-Zanati, Egyptian National Research Center (ENRC)) develop and characterize (Vinka Craver and Isabel Escobar, Universities of Rhode Island (URI) and Toledo (UToledo), respectively), fabricate (Tequila Harris, Georgia Institute of Technology, Georgia Tech), and implement/test (Muna Abu-Dalo, JUST) the proposed BRN membranes for analysis in harsh brackish water environments.

Reference: Lina Sheqem, USAID (lina.sheqem@ecoconsult.jo).



International research team for desalination project

Project: Engineering Service Learning at Honduras and Ghana

Dates: Choluteca, Honduras (2014-2015), Accra, Ghana (2015-2016)

Key Personnel: Mariantonieta Gutierrez Soto

Project Description: Used my expertise in engineering and project management to lead various humanitarian engineering projects as part of a semester long undergraduate course that has a 2-week study abroad component. Shown here are sample projects that were implemented: a solar-powered aquaponic system, an improved indoor cooking stove, a human-powered nebulizer and a bicycle-powered electric generator.

Reference: Angie Overholt, Director of the Choluteca School of Nursing, Honduras (Email: overholtosu@yahoo.com)



Sustainable humanitarian engineering projects performed as part of the Engineering Service Learning courses at OSU.

Project: Northern Haiti Loss Study – Phase I, Geophysical Investigation

Dates: December 2014 – January 2015

Key Personnel: Michael E. Kalinski

Sponsor: United Nations Development Programme (UNDP)

Project Budget: \$30,000

Project Description: Michael Kalinski traveled to Haiti in December 2014 to participate a project to measure the stiffness of soil in the northern cities of Cap Haitien, Ft. Liberte, Ouanaminthe, and Port-de-Paix that are susceptible to destructive earthquakes. Kalinski worked with Miyamoto International, Inc. and used an efficient geophysical method to make the measurements. As a result of this investigation, Kalinski developed maps that depict areas within these cities where earthquake-induced shaking is expected to be the greatest. Using this information, engineers and emergency response personnel can do a better job of designing buildings to be earthquake-resistant and be better informed to direct their emergency response efforts to areas that will need it most.

Reference: Kamina Ntenda, UNDP (email: kamina.ntenda@undp.org).



Geophysical testing at a school in Ouanaminthe, Haiti

Project: Shear Wave Velocity Measurement and Estimation of Seismic Site Response in Port-au-Prince, Haiti

Dates: February 2014 – December 2015

Key Personnel: Michael E. Kalinski

Sponsor: Geoscientists without Borders

Project Budget: \$49,707

Project Description: Michael Kalinski visited Haiti in July 2013 and performed geophysical seismic surface wave testing at several sites near the epicenter of the 2010 earthquake to assess the relative seismic hazard of each site. The team consisted of Kalinski, Haitian student Melinda Jean-Louis, and Herby Lissade from Haiti Engineering. Data were acquired at numerous sites which will allow seismic design at these sites to proceed using state-of-practice building code methods. Another important part of the project was the transfer of technology to Haiti Engineering so they can perform the testing themselves in a self-sufficient manner.

Reference: Rhonda Jacobs, Program Manager (email: rjacobs@seg.org).



Working with the Congregation at the St. Michel Church Site in Leogane

Project: Identifying Seasonal Signals in Spring Flow from the Middle Atlas

Dates: January–May 2014

Key Personnel: Alan E. Fryar

Sponsor: Moroccan-American Commission for Educational & Cultural Exchange (MACECE)

Project Budget: \$15,744

Project Description: Alan Fryar spent 4 months in Morocco during 2014 as a Fulbright Research Scholar. He examined how springs used for public water supplies in the Middle Atlas region respond to precipitation. Working with his host Prof. Lahcen Benaabidate (Faculté des Sciences et Techniques Fès) and the National Office of Electricity and Water, Fryar installed instruments at springs used by the cities of Azrou, Ifrane, and Meknès. Water levels and temperatures were automatically logged at 15-minute intervals from March 2014 to May 2015. In addition, daily samples were collected at one of the springs for isotopes of water from March 2014 to March 2015. Two of the springs showed short-term and seasonal responses to precipitation, but the third spring did not. These results are important because they indicate that springs in the region will respond differently to anticipated climate change.

Reference: James Miller, MACECE (email: j.miller@macece.ma)



Wrapping a stilling well with filter cloth prior to installation (left); stilling well after installation in spring run (right). Location: Sidi Rached spring near Azrou, Morocco.

Project: TivaWater Filter Microbial Challenge Study

Dates: May 2014 – August 2014

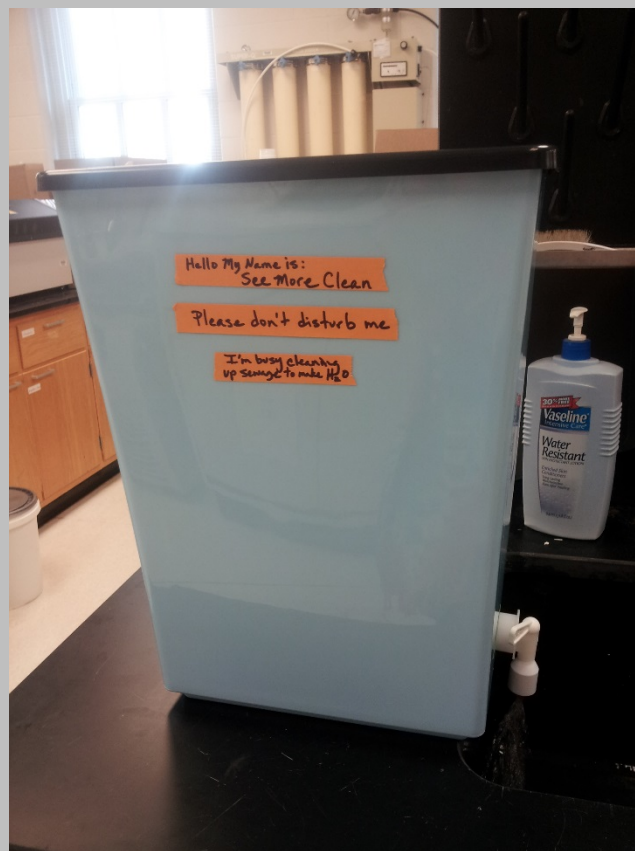
Key Personnel: Gail Brion

Sponsor: TivaWater International

Project Budget: \$14,000

Project Description: Used my expertise in potable water recycling and public health microbiology to design a testing protocol for an in-home water treatment unit for the best and worst case bacterial removal from water polluted with human sewage. Conducted tests and evaluated filter performance and reliability. Performed WHO risk estimates using the demonstrated best and worst case removal ranges found experimentally to predict reductions in Disability Adjusted Life Years for communities reliant upon unimproved water supplies. Suggested improvements in product based on observation, technical knowledge, and expertise. Resulting protocol and results accepted for presentation at the Unite for Sight Global Health & Innovation Conference, convened at Yale University March 2015.

Reference: Matt King, Director of International Operations, TivaWater International (email: matt@tivawater.com)



Project: Electrical DC Resistivity Testing to Identify and Delineate Underground Karst Reservoirs in Saraburi Province, Thailand

Dates: February–August 2012

Key Personnel: Michael E. Kalinski

Sponsor: Kingdom of Thailand Department of Groundwater Resources

Project Budget: \$27,000

Project Description: Michael Kalinski visited Thailand in March 2012 and performed geophysical electrical resistivity testing at dozens of sites in the Saraburi Province of Thailand northeast of Bangkok to identify and delineate underground karst reservoirs that may be used as a source of groundwater for agricultural applications. The team consisted of Kalinski, P. E. LaMoreaux and Associates and Water Resources Engineering of Bangkok. Professor Kalinski provided geophysical consulting services and assisted in the acquisition, processing and interpretation data, as well as the preparation of a comprehensive report detailing the relative potential for underground reservoirs throughout the province.

Reference: PELA GeoEnvironmental, Inc., Tuscaloosa, Alabama (tel: 205-752-5543).



Field DC resistivity testing with students from Chiang Mai University

Project: Nkuv Cameroon Roadway Project

Dates: December 2009-October 2011

Key Personnel: Nikiforos Stamatiadis

Sponsor: Engineers Without Borders (EWB) and University of Kentucky

Project Budget: \$20,000

Project Description: Nikiforos Stamatiadis traveled to Nkuv, Cameroon twice (summer 2010 and 2011) with a group of four students each time to review the current conditions of the roadway connection between the village of Nkuv and Kumbo, the closest major city to the village. The existing roadway had deteriorated to a point that it was not drivable by any vehicles and the community did not have any means to move their produce to the market and easily reach medical facilities resulting in several deaths in the last years. Stamatiadis led a team of students in evaluating the existing conditions, developing a work plan and alternatives for improving the existing roadway, and consulting with regional and local government in identifying means and funding to improve the road. The goal of the project was to identify areas where immediate improvement was needed and develop a construction schedule to address them. Stamatiadis also developed a short training that provided locals with instructions on how to organize a local committee to survey the road after each rainy season to determine required maintenance and organize working groups to address minor repairs. The training also included the demonstration of minor repairs and the development of a calendar for activities in a cooperative manner. The local government in summer of 2012 repaired the road and the community is following on the minor repair schedules as of recently.

Reference: Peter Njodzeka, Life and Water Development Group (email: info@lwdgc-africa.org).



Prof. Stamatiadis and students reviewing collected data in the field

Project: US and International Road Assessment Program

Dates: 2004 – 2011

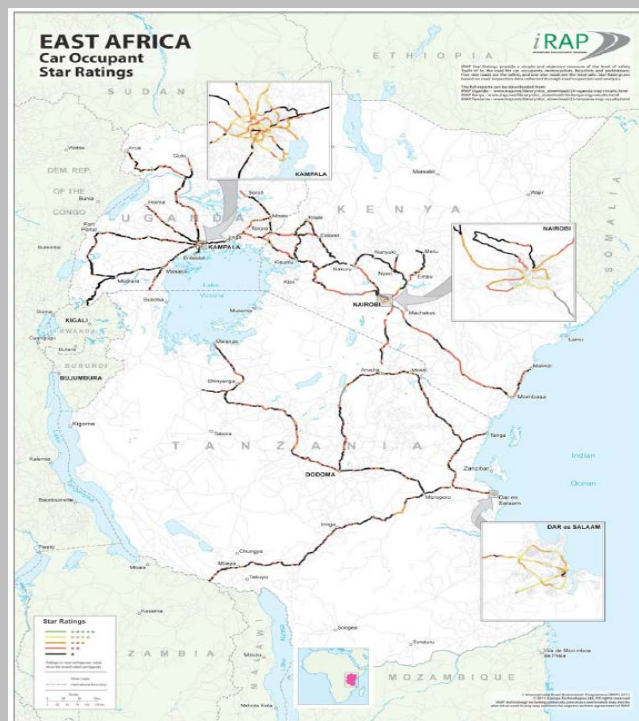
Key Personnel: Reginald R. Souleyrette

Sponsor: AAA and FIA Foundations for Highway Safety through Midwest Research Institute

Project Budget: \$422,402

Project Description: Reginald Souleyrette led the application of geographic information systems to support the implementation of the United States Road Assessment Program (usRAP). During the project, the usRAP team supported risk assessment and mapping for the International Road Assessment Programme (iRAP) in Europe and Africa. The World Bank suggests use of the iRAP protocols in assessing the full life cycle costs for road investments in developing countries. Previously, assessment focused only on economic development and on-system costs. Calling it an epidemic, the World Health Organization estimates 1.3 million lives are lost each year, many of these in the developing world where highway crash costs are increasing most rapidly. In response, the iRAP programme has developed its “vaccines for roads” approach in which data driven decisions are facilitated by the mapping and visualization tools developed in part by this project.

Reference: J. Peter Kissinger, AAFTS (pkissinger@aaafoundation.org).



Project: Banda-Aceh Trash Collection Truck Routing Alternatives

Dates: August 2009-December 2009

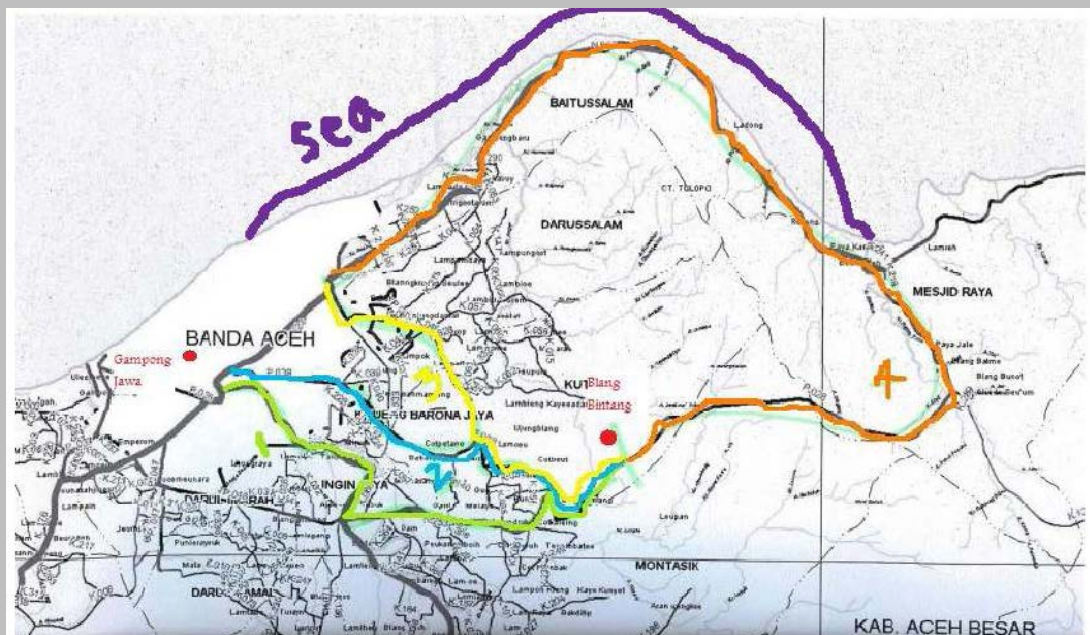
Key Personnel: Nikiforos Stamatiadis and Erica Brown

Sponsor: USAID and University of Kentucky

Project Budget: \$10,000

Project Description: Nikiforos Stamatiadis traveled to Banda Aceh, Indonesia with two students in August 2009 to review the current situation and systems of refuse collection and disposal and provide solutions to address the issues after the 2004 tsunami. One of the major issues was the need to move the existing landfill from its current location close to the sea to an inland location to address possible issues from a future tsunami. Stamatiadis and the students reviewed the current conditions and systems in place and evaluated possible routes to be followed by the trucks collecting the refuse minimizing both travelling through communities and travel times in order to decrease costs and environmental impacts. As a result of this investigation, Stamatiadis and the students developed a proposal for the optimum route and the required equipment (i.e., trucks and trash compaction machines) to be purchased and worked with the local government to ensure the viability of the project.

Reference: Sofyan Saleh, Syiah Kuala University (sofyan_saleh@yahoo.com).



Example of routes evaluated

Resumes of Key Personnel

Michael E. Kalinski, Ph.D., P.E.

Education

1998 Doctor of Philosophy, Civil Engineering, University of Texas at Austin
1994 Master of Science, Civil Engineering, University of Texas at Austin
1985 Bachelor of Science, Geophysical Engineering, Colorado School of Mines

Employment

2017-Present Professor, University of Kentucky Department of Civil Engineering
2007-2017 Associate Prof., University of Kentucky Dept. of Civil Engineering
2014-2015 Visiting Prof., American University of Sharjah, UAE
2002-2007 Assistant Prof., University of Kentucky Dept. of Civil Engineering
2000-2001 Senior Engineer, GeoSyntec Consultants, Huntington Beach, CA
1999 Research Fellow, Norwegian Geotechnical Institute, Oslo, Norway
1992-1998 Research Assistant, University of Texas Dept. of Civil Engineering
1989-1991 Exploration Geophysicist, Shell Oil Company, Houston, Texas
1986-1988 Exploration Geophysicist, Tenneco Oil Company, Lafayette, LA

Licensure

California Professional Engineer No. C63845
California Professional Geophysicist No. GP1037
Florida Professional Engineer No. 86697
Kentucky Professional Engineer No. 22758
Texas Professional Engineer No. 98833

Sponsored Projects

Title: DC Resistivity Sounding for Groundwater Development in Leogane, Haiti

Investigator: Michael E. Kalinski

Study Period: 2017-2019

Sponsor: Society of Exploration Geophysicists Geoscientists Without Borders

Total Award: \$49,836

Title: Plan for Reduction of Seismic Risks in Northern Haiti

Investigator: Michael E. Kalinski

Study Period: 2014-2015

Sponsor: United Nations Development Program and Miyamoto International, Inc.

Budget: \$330,000

Title: Seismic Site Response Analyses at Locations near Port-au-Prince, Haiti

Investigator: Michael E. Kalinski

Study Period: 2013-2014

Sponsor: Society of Exploration Geophysicists Geoscientists Without Borders

Budget: \$49,707

Title: Use of Geophysical Methods to Map Groundwater Features in Thailand

Study Period: 2012

Client: P.E. LaMoreaux and Associates

Budget: \$27,000

Publications

Kalinski, M. E., Duda, N., Donaghy, H., and Lissade, H., "Groundwater Mapping using DC Resistivity in Leogane, Haiti," Proceedings of the Society of Exploration Geophysicists 88th Annual Meeting, October 14-19, Anaheim, California, pp. 2481-2485 (2018).

Kalinski, M. E., "A Simple Method to Develop Seismic Microzonation Maps for Cities in Northern Haiti and Elsewhere," Proceedings of the Symposium on the Application of Geophysics to Environmental and Engineering Problems, March 19-23, 2017, Denver, Colorado (2017).

Gilani, A. S. J., Miyamoto, H. K., Kalinski, M. E. and Nifuku, T., "Seismic Risk Assessment for Northern Haiti Based on Geological Investigation and Building Typologies," Proceedings of the ASCE Geotechnical and Structural Engineering Congress, Phoenix, Arizona, pp. 1331-1342 (2016).

Kalinski, M. E., Miyamoto, K., and Gilani, A., "A Simple Method to Develop Seismic Microzonation Maps for Cities in Northern Haiti and Elsewhere," International Journal for Science Learning in Engineering, Humanitarian Engineering and Social Entrepreneurship, Vol. 10, No. 2, pp. 1-17 (2015).

Kalinski, M. E., Jean-Louis, M. and Lissade, H., "Transferring Technology for Surface Wave Testing and Seismic Site Response Analysis in Haiti," The Leading Edge, Vol. 33, No. 12, pp. 936-940 (2014).

Ponta, G. M., Kalinski, M.E., and Memon, B. A., "Interpretation of Geophysical Data Groundwater Potential Assessment and Management in the Saraburi Group, and Complicated Geological Structures," report prepared for Water Resources Engineering, Ltd., Bangkok, Thailand (2012).

Presentations

Geoscientists Without Borders luncheon speaker at the Symposium on the Application of Geophysics to Environmental and Engineering Problems, March 19-23, 2017, Denver, Colorado

Oral presentation "A Simple Method to Develop Seismic Microzonation Maps for Cities in Northern Haiti and Elsewhere" at the Symposium on the Application of Geophysics to Environmental and Engineering Problems, March 19-23, 2017, Denver, Colorado.

Oral presentation "Transferring Technology for Surface Wave Testing and Seismic Site Response Analysis in Haiti" at the Society of Exploration Geophysicists 84th Annual Meeting, October 26-30, 2014, Denver, Colorado

Invited presenter to the Papal Nuncio to Haiti (Port-au-Prince, Haiti) on the use of nondestructive surface wave testing for geotechnical engineering and earthquake design (2013).

Nick Stamatiadis, PhD, PE

Overview

Dr. Stamatiadis has been involved both in teaching and research in the field of transportation engineering since 1984. His research expertise includes highway design, traffic safety, traffic calming, traffic modeling, and human factors. Dr. Stamatiadis has been successful in securing research funds in these areas from local, national and international agencies. His work in the area of Context Sensitive Design and Solutions has vaulted him in international prominence and he is considered one of the pioneers in this area. Dr. Stamatiadis has extensive international experience and has been involved in several projects dealing with community organization to secure funds for development projects, delivered numerous workshop for local governments, and led for the past 11 years students through Engineers without Borders (EWB) to Cameroon, Honduras, Ecuador and Malawi to address and roadway, water, and sanitation issues.

Education

1990 Doctor of Philosophy, Civil Engineering, Michigan State University
1986 Master of Science, Civil Engineering, Michigan State University
1983 Diploma in Surveying Engineering, Aristotle University (Greece)

Relevant Experience

1. Spring 2005 sabbatical in Bangkok, Thailand working at the Asian Institute of Technology. Taught a course in airport design for graduate students, delivered three seminars on roadway safety for local government officials, and met with university representatives for establishing education activities with UK.
2. Spring 2005 sabbatical in Cagliari, Italy working at the University of Sardinia. Taught a short course in highway safety, presented seminars to local agencies, and met with faculty to explore research opportunities.
3. Worked on a grant by USAID awarded to UK for faculty exchange between Indonesian universities and UK. Helped in the initial contacts by visiting the universities in spring 2005, hosted faculty while in the US, and worked with faculty in Brawijaya University (BU) in 2009 where delivered a short course on safety for graduate students and faculty, delivered two seminars for local agencies, met with academic units (not only CE) for establishing common degree programs between UK and BU.
4. Led a service-learning course in Banda Aceh, Indonesia (8/2009) to evaluate alternative routes for transporting trash from a collection facility to a landfill after the tsunami, met with local agencies for identifying other future activities for similar opportunities, and delivered a seminar on highway safety for local police and government.
5. Delivered workshops in Greece and Cyprus to government officials and practicing engineers on Context Sensitive Solutions in 2006 and 2007, have conducted several one-day seminars on the same topic for the Ministry of Transportation in Greece and consulting engineers.

6. Have been invited to several venues in China for seminars on highway safety to local agencies (Xian 2006, Beijing 2006, Nanjing 2009); similar invitations also in Europe (Athens 2006, 2008, 2014, 2015, and 2018, Rome 2012, Paris 2014, Catania 2017).
7. Summers 2010 and 2011 led a group of students in an EWB project in Nkuv Cameroon dealing with the development and design of roadway connection between Nkuv and Kumbo. The project involved meetings with local authorities, organizing the community to perform minor road repairs, delivering a training workshop presenting means and activities for road maintenance, establishing a roadway committee to deal with various issues, and organizing the required logistics for the local authorities to complete the construction.
8. Spring 2012 sabbatical in Bangkok, Thailand working at the Chula Longkorn University. Taught a course in highway safety for graduate students, delivered three seminars on highway design and roadway safety for local government officials, reviewed design plans for roadway construction and highway projects, and met with university representatives for establishing education activities with UK.
9. Spring 2012 sabbatical in Catania, Italy working at the University of Catania. Taught a short course on Context Sensitive Design, delivered two workshops on highway design and roadway safety for local officials.
10. Summers 2012 and 2013 led a group of students in an EWB project in El Carrizo, Honduras dealing with the development of a water distribution system for the community. The project involved establishing current health conditions of the community due to water-borne diseases, identifying water sources and their sustainability for providing water to the community, designing a water tower and gravity-fed water system, developing an operations and maintenance manual for the system, establishing a committee to oversee the project, and organizing the community to obtain funding for the project.
11. Fall 2013 teaching a month-long service-learning course at the University of Catania, Italy for graduate students dealing with the development of solutions for local governments dealing with the improvement of pedestrian and bicycle facilities in small communities.
12. Summers 2014 and 2015 led a group of students in an EWB project in Barrio 9 de Marzo, Santo Domingo, Ecuador dealing with the development of a latrine pit cleaning process and addressing sanitation issues. The project involved establishing current health conditions of the community due to improper sanitation practices, identifying potential water degradation due to location of latrine pits, and developing a solution to address the sanitation concerns. Retrofit of the latrine pits was completed in 2015 and cleaning has been successfully completed since the project completion.
13. Summers 2017 and 2018 led a group of students in an EWB project in Salima, Malawi dealing with the construction of a kitchen facility for an elementary school and addressing sanitation issues. The project involved establishing current health conditions for the school due to lack of a kitchen facility and construction of a new facility that has been in use for the past two years.

Shakira R. Hobbs, Ph.D.

Education

2017 Ph.D., Civil Engineering, Clemson University
2014 M.S. Engineering, Arizona State University
2012 B.S., Environmental Science and Technology, University of Maryland

APPOINTMENTS

2019-Present Assistant Professor, University of Kentucky
2017-2019 Research Associate, University of Virginia
2015-2017 Graduate Research Assistant, Clemson University
2014-2015 Graduate Fellow, Arizona State University
2014 Graduate Teaching Assistant, Massachusetts Inst. of Technology

Appearances in Popular Media

“Our Journey with BioGals-Creating a Non-Profit to Build Waste to Energy Systems in Central America” (2019)
“From Biowaste to Biogas: Empowering this community to Fuel itself” *UVA Today* (2019)
“A sense of belonging: Black American women engineers and biodigesters” *Stabroek News* (2018)
“Today’s STEM Leaders, Tomorrow’s Innovators” *Women of Color Magazine* (2017)

Sponsored project

Title: Sustainable Energy Recovery from Waste for Sittie River, Belize

Investigators:

PI: S.R. Hobbs, University of Kentucky
Co-PI: E.V. Morton, Arizona State University

Study Period: 2015-2018

Sponsors: ASU NSF-IGERT

Budget: \$22,690

Selected Peer-reviewed publications

Hobbs, Shakira R., Bethany Gordon, Evvan V. Morton, Leidy Klotz. (2019). “Black women engineers as allies in adoption of environmental technology: Evidence from a developing community in Belize.” *Environmental Engineering Science*

Hobbs, Shakira R., Prathap Parameswaran, Barbara Astmann, Jay Devkota, Amy Landis. (2019). “Anaerobic co-digestion of food waste and polylactic acid: Effect of pretreatment on methane yield and solid reduction.” *Advances in Material Science and Engineering*

Dixon, Phillip, James Mihelcic, Sarina Ergas, Shakira R. Hobbs. (2019). “Effect of Substrate to Inoculum Ratio on Bioenergy Recovery from Food Waste, Yard Waste and Biosolids via High Solids Anaerobic Digestion.” *Environmental Engineering Science*

- Hobbs, Shakira R.**, Amy E. Landis, Bruce E. Rittmann, Michelle Young and Prathap Parameswaran. (2018). "Enhancing Anaerobic Digestion of food waste through Biochemical Methane Potential Assays at different substrate: inoculum ratios." *Waste Management*
- Hobbs, Shakira R.**, Ewan E. Morton, Nicole Barclay, Amy E. Landis. (2018). "Sustainability Approach: Food waste to energy solutions for small rural developing communities." *International Journal of Environmental, Cultural, Economic, and Social Sustainability: Annual Review*
- Unger, Scott R., Troy A. Hottle, **Shakira R. Hobbs**, Cassandra L. Thiel, Nicole Campion, Melissa M. Bilec, Amy E. Landis. (2017). "Do single-use medical devices containing biopolymer reduce the environmental impacts of surgical procedures compared with their plastic equivalents?" *Journal of Health Services Research and Policy*

Selected Peer-Reviewed Conference Proceedings

- Morton, Ewan V. and Shakira R. Hobbs. (2018). Sustainable Waste Management Strategies for Sittee River, Belize." 7th International Symposium on Energy from Biomass and Waste, October 15-18, 2018 Venice, ITL.
- Hobbs, Shakira R., Tyler Harris, William J. Barr and Amy E. Landis. (2018) "The World's Environmental Problems: Causes, Effects and Solutions of Food and Plastic Pollution." American Academy of Sciences. International Conference on Environmental Science and Technology, June 25-29, 2018 Houston, TX.
- Hobbs, Shakira R., Jay Devkota, Prathap Parameswaran, and Amy E. Landis. (2016). "Environmental Implications of Food and PLA Waste Management Options." American Academy of Sciences. International Conference on Environmental Science and Technology, June 6-10, 2016 Houston, TX.
- **Hobbs, Shakira R., Prathap Parameswaran, Barbara A. Astmann, Jay Devkota, and Amy E. Landis. (2016). "Enhanced anaerobic digestion of bioplastic and food waste." International Waste Working Group, 6th International Symposium on Energy from Biomass and Waste, November 14-17, 2016 Venice, ITL.
- *McCall, Shakira R., and Odesma O. Dalrymple. (2015). "Research to Practice: Teaching Energy Concepts using Chain Reaction Machines". 121st ASEE Annual Conference & Exposition. American Society of Engineering Education, June 15-18, 2015, Indianapolis, IN.
- *Last name formerly McCall

Extracurricular

President and CEO of BioGals (www.biogals.com)

Mission: To empower and increase the visibility of women of color conducting sustainability research globally

Mariantonieta Gutierrez Soto, Ph.D.

Education

2017 PhD, Civil Engineering, The Ohio State University, Columbus, OH
2012 MS, Civil Engineering, The Ohio State University, Columbus, OH
2010 BS, Civil Engineering, Lamar University, Beaumont, TX

Employment

2017-Present Assistant Professor, University of Kentucky, Department of Civil Engineering
2016-2017 Presidential Fellow, The Ohio State University
2014-2016 Resident Director, Engineering Study Abroad, The Ohio State University
2011-2016 Graduate Teaching Associate, The Ohio State University, Department of Engineering Education
2010-2011 Graduate Fellow, The Ohio State University

Selected Appointments/Honors/Awards

2019 Faculty Mentor of the Week, Office of Undergraduate Research, University of Kentucky

Relevant Experience:

Courses Taught: Engineering Study Abroad Ghana (ENG 5797.17S) and Engineering Study Abroad - Choluteca (ENG 5797.11S).

- Managed program budget and reviewed project proposals for engineering study abroad at Choluteca, Honduras and Accra, Ghana
- Co-instruct and supervise multidisciplinary engineering capstone-like projects during a two-week implementation and evaluation phase with 20 students
- Prepare grant proposals and lectures focusing on humanitarian engineering and social entrepreneurship

Publications

R. Dzwonczyk, M. Brockman, D. George, N. Hankins, M. McHugh, and M. Gutierrez Soto (2015) "A Method of Powering a Nebulizer Manually using Parts Locally Available in Honduras" *IEEE Global Humanitarian Technology Conference*, October 8. Seattle, WA

M. Gutierrez Soto and R. Dzwonczyk (2015) "Maximizing Service and Learning in an International Engineering Service Learning Program" *IEEE Global Humanitarian Technology Conference*, October 8. Seattle, WA

C. Montoya Rodriguez, Gutierrez Soto, M., Dzwonczyk, R., Merrill, J., Greene, H., Cater, M. (2014) "Application of Sustainable Solutions in International Service Learning" *American Society of Engineering Education Conference*, June 19. Indianapolis, IN

Kijewski-Correa, T., Alagusundaramoorthy, P. Alsieedi, M. Crawford, S. Gartner, M. Gutierrez Soto, M. Heo, Y. Lester, H. Marshall, J. Micheli, L. Mulchandani, H. Prevatt, D. Roueche, D. Johnson, V. Mosalam, K. Robertson, I. (2019) "StEER – Hurricane Dorian Preliminary Virtual Reconnaissance Report (PVRR)" *DesignSafe-CI [publisher]*, DOI:10.17603/ds2-saf8-4d32

Alipour, A.; Aly, A.; Davis, B.; Gutierrez Soto, M.; Kijewski-Correa, T.; Lenjani, A.; Lichty, B.; Miner, N.; Roueche, D.; Salman, A.; Smith, D.; Sutley, E.; Mosalam, K.; Prevatt, D.; Robertson, I. (2018-10-19), "Structural Extreme Event Reconnaissance Network Hurricane Michael: Preliminary Virtual Assessment" Preliminary Virtual Assessment Team (P-VAT) Report", *DesignSafe-CI*

A. Palacio-Betancur and M. Gutierrez Soto (2019) "Adaptive tracking control for real-time hybrid simulation of structures subjected to seismic loading" *Mechanical Systems and Signal Processing* 134, 1 December 2019, 106345

M. Gutierrez Soto and H. Adeli (2019) "Semi-active Control of Isolated Highway Bridge Structures using Replicator Dynamics" *Engineering Structures* 186: 536-552 DOI: 10.1016/j.engstruct.2019.02.031

Presentations

F. Lombardo, D.B. Roueche, R.J. Krupar, D.J. Smith, M. Gutierrez Soto (2017) "Observations of Building Performance under Combined Wind and Surge Loading from Hurricane Harvey" *American Geophysical Union*, Fall Meeting, Abstract NH23E-2856 New Orleans, Dec. 11-15.

A. Bellamy, J. Boustani, C. Brehm, M. Gutierrez Soto (2019) "Towards resilient adaptive origami-inspired diagrid building envelope" Proc. SPIE 10967, Active and Passive Smart Structures and Integrated Systems XII, 1096713 (27 March 2019) Denver, CO. DOI: 10.1117/12.2514132

B. Enbody and M. Gutierrez Soto (2019) "Biomimicry of School of Fish for Community Windstorm Design" In *Bioinspiration, Biomimetics, and Bioreplication IX* (Vol.10965, p. 109650A). International Society for Optics and Photonics. Denver, CO. doi: 10.1117/12.2514133

M. Gutierrez Soto (2019) "Game theory vibration control methodology for resilient civil structures" 2019 EMI International Conference. INSA Lyon, France, July 3-5 2019

A. Palacio-Betancur and M. Gutierrez Soto (2019) "Numerical Integration Methods for Real-Time Hybrid Simulation of Structures Subjected to Earthquake Loading" Engineering Mechanics Institute Conference. June 18. Pasadena, CA.

Sponsored project

Title: Load Rating of Bridge Size Culverts (FRT 198)

Investigators: Harik, I.E., Peiris, M.N.A., and Gutierrez Soto, M.

Sponsors: Federal Highway Administration and Kentucky Transportation Cabinet.

Study Period: 05/01/2013 to 06/30/2019

Budget: \$700,000

Reginald R. Souleyrette, Ph.D., P.E.

Education

1989 PhD, Civil Engineering (Transportation), University of California, Berkeley
1986 MS, Civil Engineering, University of Texas at Austin
1984 BS, Civil Engineering, University of Texas at Austin

Employment

2014-Present Chair, University of Kentucky, Department of Civil Engineering
2011-Present Professor, University of Kentucky, Dept. of Civil Engineering
2003-2011 Gerald and Audrey Olson Professor, Iowa State University,
Department of Civil, Construction and Environmental Engineering
1996-2003 Associate Professor, Iowa State University, Department of Civil,
Construction and Environmental Engineering
1993-1996 Assistant Professor, Iowa State University, Department of Civil,
Construction and Environmental Engineering
1989-1993 Assistant Professor, University of Nevada, Las Vegas,
Department of Civil and Environmental Engineering

Licensure

Kentucky Professional Engineer No. 29286
Iowa Professional Engineer No. 14662 (inactive)

Sponsored Projects

Title: US Road Assessment Program

Investigator: Reginald R. Souleyrette

Study Period: 2011-2014

Sponsor: AAA Foundation for Highway Safety through MRI Global

Budget: \$93,558

Title: US Road Assessment Program Outreach

Investigator: Reginald R. Souleyrette

Study Period: 2007-2010

Sponsor: U.S. DOT Midwest Transportation Consortium

Budget: \$168,108

Title: US and International Road Assessment Programs

Investigator: Reginald R. Souleyrette

Study Period: 2004-2011

Sponsor: AAA Foundation for Highway Safety through Midwest Research
Institute

Budget: \$422,402

Publications

Rose, J. and R. Souleyrette, "Hot-Mix Asphalt (Bituminous) Railway Trackbeds: In-Track Tests, Evaluations, and Performances -- A Global Perspective" Proceedings

of the *3rd International Conference on Transportation Infrastructures - ICTI 2014*, Pisa, Italy, April 22-25, 2014.

Falciani, J., A. Pratelli, M. Martello and R. Souleyrette, "Calibration of a Method for Selecting Roundabouts in Function of the Inner Island Treatment." *Fifth International Conference on Sustainable Development and Planning*, New Forest, WIT Press. July 2011.

Souleyrette, R., M. Caputcu, M. *, T. McDonald, R. Sperry, Z. Hans, and D. Cook, "Use of a Combination of Statistical Computing Methods in Determining Traffic Safety Risk Factors on Low Volume Roads," *2nd International Symposium on Computing in Science and Engineering*, Kusadasi, Aydin, Turkey, June 1-4, 2011. pp. 673.

"Highway Safety and iRAP: The Challenge of Heterogeneous Traffic Mixes," *International Conference on Best Practices to Relieve Congestion on Mixed-Traffic Urban Streets in Developing Countries*, IIT Madras, Chennai, India. Sep. 12-14, 2008. pp. 339-348.

Souleyrette, R. and D. Plazak, "Use of Geospatial Information and Remote Sensing Data to Support Improved Roadway Access Management," *Twelfth International Conference on Urban Transport and the Environment*, Prague, July 2006, pp. 477-490.

Presentations

"Hot-Mix Asphalt (Bituminous) Railway Trackbeds: In-Track Tests, Evaluations, and Performances -- A Global Perspective" *3rd International Conference on Transportation Infrastructures - ICTI 2014*, Pisa, Italy, April 22-25, 2014

"Highway Safety and iRAP: The Challenge of Heterogeneous Traffic Mixes," *International Conference on Best Practices to Relieve Congestion on Mixed-Traffic Urban Streets in Developing Countries*, IIT Madras, Chennai, India. Sep. 12-14, 2008.

"Road Assessment Programs: A New Approach to Highway Safety Management and Communications," *32nd International Traffic Records Forum*, Palm Desert, Aug 2006.

"Use of Geospatial Information and Remote Sensing Data to Support Improved Roadway Access Management," *Twelfth International Conference on Urban Transport and the Environment in the Twenty-First Century*, Prague, Czech Republic, July 12, 2006.

Moderator, "GPS and Probe Vehicles; Incident & Congestion Management," *8th International Conference on Application of Advanced Technologies in Transportation Engineering*, Beijing, China, May 27, 2004.

Isabel Escobar, Ph.D.

Education

1995 University of Central Florida, Environmental Engineering, B.S.
1996 University of Central Florida, Environmental Engineering, M.S.
2000 University of Central Florida, Environmental Engineering, Ph.D.

Employment

2015-Present Professor, University of Kentucky Department of Chemical and Materials Engineering
2014-2015 Associate Dean for Research Development and Outreach, The University of Toledo College of Engineering
2010-2015 Professor, The University of Toledo Department of Chemical and Environmental Engineering
2010-2011 Acting Director of Catharine S. Eberly Center for Women, The University of Toledo
2009, 2010, 2013 Visiting Professor, National University of Singapore
2006-2010 Associate Professor, The University of Toledo Department of Chemical and Environmental Engineering
2000-2006 Assistant Professor, The University of Toledo Department of Chemical and Environmental Engineering

Honors

2015 The University of Toledo Edith Rathbun Outreach and Engagement Excellence Award
2011 American Institute of Chemical Engineers (AIChE) Separations Division FRI/John G. Kunesh Award
2009 Winner of the Toledo 20 Under 40 Leadership Awards Recognition Program (9/30/2009):
<http://www.toledobiz.com/Files/2009recipients2040/20under40recipients2009.html>
2009 YWCA's Milestones: A Tribute to Women Award for Education (3/26/2009):
<http://www.ywca.org/site/pp.asp?c=hgLRJ0NNG&b=4923615>

Sponsored Projects

Title: The use of green nanoparticles as biofouling-resistant agent in RO desalination

Investigators:

USA Lead PI: I.C. Escobar, University of Kentucky;
USA co-PIs: V. Craver, Univ. of Rhode Island; T. Harris, Georgia Tech.
International Lead PI: Muna Abu-Dalo, Jordan Univ. of Science & Technology

Study Period: 2014-2016

Sponsors: USAID and NSF

Budget: **USAID:** \$45,706 (US portion); \$150,000 (International portion)

NSF: \$99,996 (US only)

Presentations

Isabel Escobar, Vinka Craver, Tequila Harris, and Muna Abu-Dalo (2015). Biofouling Resistant Membranes for International Desalination Applications. 2nd International Workshop on Membrane Distillation and Innovative Membrane Operations in Desalination and Water Reuse. Ravello, Italy.

Escobar, I.C., Oyanedel-Craver, V., Abu-dalo, M., and Harris, T. (2015). Biofouling resistant membranes made of green silver nanoparticles. ECI - Advanced Membrane Technology VI: Water, Energy, and New Frontiers. Sicily, Italy.

Tequila A. L. Harris, Scaled Processing of Cellulose Acetate Membranes. For platform presentation at International Conference of Advanced Material (ICAM)), Irbid, Jordan , April 27-29, 2015

Oyanedel-Craver, V., Abudalo, M., Escobar, I., and Harris, T. (2015). Green synthesis of silver nanoparticles for their incorporation in nanofiltration membranes. 3rd Sustainable Nanotechnology Conference. Boston, MA.

Escobar, I.C., Oyanedel-Craver, V., Abu-dalo, M., and Harris, T. (2014). The Use of Green Nanoparticles As a Biofouling- Resistant Agent in Membrane Separations. 2014 AIChE Annual Meeting. Atlanta, Georgia, USA.

Escobar I.C., T. Harris, V. Craver, and M. Abu-Dalo (2014). Women changing research in global desalination. American Chemical Society Annual Meeting. San Francisco, CA, USA.

Alan E. Fryar, Ph.D.

Education

Ph.D. Geology, University of Alberta, November 1992

M.S. Geology, Texas A&M University, August 1986

B.S. *cum laude* Geology and History, Duke University, September 1984

Employment History (full-time)

Asst/Assoc/Full Professor, University of Kentucky (2001-present)

Visiting Associate Prof., Univ. of the South, Sewanee, Tennessee (2006–2007)

Research Associate, University of Texas at Austin (1992–1995)

Honors

Fulbright Scholar, Geology, Morocco, 2014

Fulbright Specialist, Environmental Science, Pakistan, 2009–2010; India, 2017

International Service Award, International Association of Hydrogeologists, 2016

International Grants

Exploring water quality in Kolkata and Kentucky (C.D. Hanley, PI; R.L. Freeman and A.E. Fryar, co-PIs): U.S. Department of State, \$150,418, 2017–2018.

Hydrogeochemical studies and modeling of the Houzhaihe Catchment, Puding (A.E. Fryar, PI; Chen Zhu and Tao Peng, co-PIs): State Key Laboratory for Environmental Geochemistry (China), 100,000 RMB (\$15,248), 2016-2017.

US-Thailand planning visits: Influence of climate on groundwater interactions with Mekong River: Implications for arsenic concentrations in alluvial aquifers (A.E. Fryar and M. Schreiber, PIs): National Science Foundation, \$36,511, 2013-2014.

Identifying seasonal signals in spring flow from the Middle Atlas (A.E. Fryar, PI): Moroccan-American Commission for Educational & Cultural Exchange, \$15,744, 2014

BOOST H₂O (Helping Hydrologic Outreach) in Indonesia and Turkey (A.E. Fryar, PI; A. Milewski C. Agouridis, C. Hanley, M. Reed, K. Tanaka, and P. Schroeder, co-PIs): U.S. Department of State, \$197,299, 2012–2014.

Enhancing capacity for water-resource studies in Egypt and Morocco (A.E. Fryar, PI; A. Milewski and M. Sultan, co-PIs): U.S. Department of State, \$247,472, 2011–2013.

Selected Professional Service

External reviewer for PhD candidates in Egypt, Morocco, India and Pakistan

Faculty Associate for visiting Fulbright Scholars in Morocco and Niger

Instructor, ARCHES – An innovative workshop to better understand the water resources of the MENA region, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia, Jan. 11–13, 2015

External reviewer for tenure and promotion in Pakistan

Reviewer, Application for Rating, National Research Foundation, South Africa, 2007

Selected Journal Articles

- Coomar, P., Mukherjee, A., Bhattacharya, P., Bundschuh, J., Verma, S., Fryar, A.E., Ramos Ramos, O., Ormachea Muñoz, M., Gupta, S., Mahanta, C., Quino, I., and Thunvik, R., 2019, Contrasting controls on hydrogeochemistry of arsenic-enriched groundwater in the homologous tectonic settings of Andean and Himalayan basin aquifers, Latin America and South Asia: *Science of the Total Environment*, v. 689, p. 1370–1387.
- Howell, B.A., Fryar, A.E., Benaabidate, L., Bouchaou, L., and Farhaoui, M., 2019, Variable responses of karst springs to recharge in the Middle Atlas region of Morocco: *Hydrogeology Journal*, v. 27, p. 1693–1710.
- Taheri Tizro, A., Fryar, A.E., Pour, M.K., Voudouris, K.S., and Mashhadian, M.J., 2019, Groundwater flow simulation under climate change in a semi-arid area of western Iran: *Groundwater for Sustainable Development*, v. 9, article 100273.
- Mukherjee, A., Fryar, A.E., Eastridge, E.M., Nally, R.S., Chakraborty, M., and Scanlon, B.R., 2018, Controls on high and low groundwater arsenic on the opposite banks of the lower reaches of River Ganges, Bengal basin, India: *Science of the Total Environment*, v. 645, p. 1371–1387.
- Hssaisoune, M., Bouchaou, L., N'Da, B., Malki, M., Abahous, H., and Fryar, A.E., 2017, Isotopes to assess sustainability of overexploited groundwater in the Souss-Massa system (Morocco): *Isotopes in Environmental and Health Studies*, v. 53, no. 3, p. 298–312.
- Jeelani, G., Shah, R.A., Deshpande, R.D., Fryar, A.E., Perrin, J., and Mukherjee, A., 2017, Distinguishing and estimating recharge to karst springs in snow and glacier dominated mountainous basins of the western Himalaya, India: *Journal of Hydrology*, v. 550, p. 239–252.
- Moumouni, A., and Fryar, A.E., 2017, Controls on groundwater quality and dug-well asphyxiation hazard in Dakoro area of Niger: *Groundwater for Sustainable Development*, v. 5, p. 235–243.

Selected Invited Lectures

- How do karst springs respond to environmental stresses? Field studies from China and Kentucky: College of New Energy and Environment, Jilin University, Changchun, China, 10/2019.
- Impacts of development and climate change on water resources of South Asia: 4th Multi Disciplinary Student Research International Conference, University of Wah, Wah, Pakistan, 08/2018.
- Thermal and chemical responses of karst springs to forcings at multiple time scales: 11th International Symposium on Geochemistry of the Earth's Surface, Guiyang, China, 06/2017.
- Springs, water resource and cultural heritage: School of Environmental Science and Engineering and the Department of Geology and Geophysics, Indian Institute of Technology– Kharagpur, 03/2017.
- Arsenic in alluvial aquifers in south and southeast Asia: Department of Civil Engineering, Indian Institute of Technology–Guwahati, 02/2017

Gail M. Brion, Ph.D.

Personal Statement of Research and Professional Interest: Protecting public health by provision, treatment, and improvement of potable and environmental water quality and infrastructure.

Education

1995	Ph.D., Civil Engineering, University of Colorado at Boulder
1991	M.S., Civil Engineering, University of Colorado at Boulder
1985	M.S., Public Health, University of North Carolina at Chapel Hill
1978	B.S., Environmental Science, University of California

Employment

2006-present	Professor, College of Engineering & College of Public Health, University of Kentucky
2002-present	Director, Environmental Research and Training Laboratories, Univ. of Kentucky
2001-2006	Associate Professor, College of Engineering & College of Public Health, University of Kentucky
2000-2001	Assistant Professor, School of Public Health, Univ. of Kentucky, Lexington
1995-2001	Assistant Professor, College of Engineering, Univ. of Kentucky, Lexington
1992-1995	Research Assistant, College of Engineering, University of Colorado at Boulder
1989-1991	Research Assistant, School of Public Health, Chapel Hill, NC
1988-1990	Environ. Engineer and NAAQS Policy Analyst, USEPA Air Quality Headquarters-NC
1984-1988	Environ. Engineer Drinking Water Branch-Regional Asbestos Coord., USEPA, Region VIII-CO
1982-1983	Water Chemist for Ft. St. Vrain Nuclear Power Plant, CO
1979-1981	Sewage Treatment Plant Operator, PA and WY (certified)
1978-1979	Sewer Field Studies Team Supervisor, Duncan Lagnese and Assocs. Consulting Eng., PA

Selected Appointments/Honors/Awards

2012, 2009	Golden Apple Award, UK Student Public Health Association for Excellence in Teaching
2005-2011	Raymond-Blythe Professor of Civil Engineering
2008	Bill Barfield Award for Outstanding Contributions in Water Resources Research, KY WRRRI
1996-2006	American Society of Civil Engineers Environmental Public Health Engineering Committee (1996-2002 member, 2002-2003 Vice Chair, 2003-2006 Chair).
2004	Research Poster Award, 8th International Conference on Diffuse/Nonpoint Pollution of the International Water Association at

- Kyoto, Japan, October 2004.
- 2003 Research Poster Award, International Water Association, Health-related Microbiology Group at the World Water Congress at Capetown, South Africa, Sept. 2003.

Journal Articles, Book Chapters, Abstracts

Coyle, E., Ormsbee, L.E., and Brion, G.M. (2014) "Peracetic Acid as an Alternative Disinfection Technology for Wet Weather Flows". *Water Environment Research*, 86:8:687-697.

Reed, T.M., Fryar, A.E., Brion, G.M., and Ward*, J.W. (2011) "Differences in Pathogen Indicators Between Proximal Urban and Rural Karst Springs", *J. Environmental Earth Sciences*, 64:47-55.

Warden, J.G., Fryar, A.E., Brion, G.M., Macko, S.A., and Ward, J.W. "Bacterial Survival and the Fate of 15N Isotope Enriched Escherichia coli in Preparation for Pathogen Tracing" in *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, page 651, Portland, OR, October 2009.

Coakley, T.C., Brion, G.M., and Fryar, A.E. "Relationships between Indicators of Fecal Load, Source, and Age: Developing a Multi-Indicator Approach for Risk Characterization" *IWA WaterMicro: 15th International Symposium on Health-Related Water Microbiology*, Naxos Island, Greece, June 2009.

Arrowood, K., Beck, G., Brion, G.M., Browning, S., Caldwell, G.C. "Characterizing Health Risks in Privately-Supplied Drinking Water due to Agricultural Practices in Rural Western Kentucky, Leading to an Intervention Study" *CSREES National Water Conference*, St. Louis, MO, February 2009.

Chandramouli, V. Neelakantan, T.R., Brion, G.M., and Lingireddy, S. (2008) "Predicting Enteric Virus Presence in Surface Waters Using Artificial Neural Networks" *Environmental Engineering Sci.*, 25:1:62-71.

Black, L.E., Brion, G.M. and Freitas, S.J. (2007) "Multivariate Logistic Regression for Predicting Total Culturable Virus Presence at the Intake of a Potable Water Treatment Plant: Novel Application of the AC/TC Ratio" *Appl. & Environ. Microbiology*, 73:12:3965-3974.

Brion, G.M., Chandramouli, V., Neelakantan, T.R., Lingireddy, S., Girones, R., Lees, D., Allard, A., and Vantarakis, A. (2005) "Artificial Neural Network Prediction of Viruses in Shellfish," *Appl. & Environ. Microbiology*, 71:9:5244-5253.

Artificial Neural Network Applications in Water Supply Engineering. (2005) *Task Committee Report. Water Supply Engineering Committee. ASCE*. Editors: Lingireddy, S. and Brion, G.M. ISBN: 0-7844-0765-7.

Brion, G.M, O'Banion, N.B., and Marchin, G.L. (2004) "Comparison of Bacteriophage for use in Iodine Inactivation: Batch and Continuous Flow Studies," *Journal of Water and Health*, 02.4:261-266.

Organizational Capacity

All UK Humanitarian Engineering projects will be supported and administered by the University of Kentucky Research Foundation. The University of Kentucky Research Foundation (UKRF), a not-for-profit Kentucky corporation, was established in 1945 to receive, invest, and expend funds to promote and implement scientific, educational, and developmental activities at the University of Kentucky. The University of Kentucky

Research Foundation serves as the university's agent in the receipt of all external grants and contracts, intellectual property income and other designated income, oversees the protection, development, and commercialization of intellectual properties, and manages special cooperative agreements. Awards received and administered through UKRF are consistently over \$200 million annually, with awards from federal agencies accounting for around half of this total.



Contact Information

For more information about our organization or to inquire about possible projects and collaborations, please contact:

Michael E. Kalinski, Ph.D., P.E.
University of Kentucky
161 Raymond Bldg.
Lexington, KY 40506-0281
USA
Tel: (+1) 859 257-6117
Fax: (+1) 859 257 4404
Email: michael.kalinski@uky.edu



Contact:

Michael E. Kalinski, Ph.D., P.E.
University of Kentucky
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