



11th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst™: INTEGRATING SCIENCE AND ENGINEERING TO SOLVE KARST PROBLEMS

September 22-26, 2008 | Ramada Conference Center Tallahassee Tallahassee, Florida, USA

FINAL PROGRAM

Earn Up to 24 Professional Development Hours



www.karstconference.org



Sponsored by the Geo-Institute of ASCE and PELA



Conference Welcome Letter

On behalf of the entire Conference Planning Committee, "Welcome to this conference and welcome to Tallahassee!"

You have made the right decision to participate in the **11th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst™**. These conferences began in Florida in 1984 and have reconvened 10 times since then in karst areas around the U.S. It is only fitting that we return to our "birthplace" periodically.

While participating in what has become the most important professional meeting in the world discussing recent developments on the practical aspects of karst, you will be joining civil and environmental engineers, geologists, hydrogeologists, geographers, and other professionals from around the globe to exchange the latest ideas on dealing with the complex and unusual terrain that is karst. Whether it is engineering a highway through an area where sinkholes collapse, tracing contaminated groundwater to limestone springs, or attempting to seal a leaking dam foundation, this is the conference at which you will learn how others are dealing with these challenges.

Headlining our program are two outstanding Keynote Speakers, Michael Zoccola from the U.S. Corps of Engineers and Dr. Francisco Gutierrez from the University of Zaragoza in Spain. While in Tallahassee you can also tour the karst hydrogeology of the Woodville Karst Plain, under which lays the longest penetrated underwater cave system in the U.S. At the banquet, Dr. Todd Kincaid will show us how this system was explored.

This conference is dedicated to the memory and contributions of Dr. Philip E. LaMoreaux, a pioneer in the application of modern karst science and a long-time supporter of this conference series, who passed away this past June 23.

I'd like to thank the Conference Planning Committee for their many untold hours to ensure this Conference provided a stellar program. We know you will be pleased with their efforts. Of course, this Conference could not go on without the principal sponsorship of the Geo-Institute of ASCE and P.E. LaMoreaux & Associates, Inc. (PELA). In addition, we owe a debt of gratitude to our other sponsors, who contributed toward the cost of this Conference. In these difficult economic times, the contributions of these sponsors who have stood by their commitment, and those who have contributed more recently, deserve to be recognized. When you meet their representatives, please let them know you appreciate their contributions.



Sincerely,

Barry F. Beck, Ph.D., C.P.G., P.G., M.ASCE
P.E. LaMoreaux & Associates, Inc. (PELA)
General Conference Co-Chair

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Conference Program-At-A-Glance

Monday, September 22

7:30 a.m. – 5:00 p.m.	Registration Open
7:30 a.m. – 5:00 p.m.	Speaker Ready Room Open
8:30 a.m. – 5:00 p.m.	Short Courses
10:00 – 10:15 a.m.	Beverage Break for Short Course Participants
12:00 noon – 1:00 p.m.	Lunch for Short Course Participants
3:00 – 3:15 p.m.	Beverage Break for Short Course Participants

Tuesday, September 23

7:30 a.m. – 7:30 p.m.	Registration Open
7:30 a.m. – 5:00 p.m.	Speaker Ready Room Open
8:00 a.m. – 5:30 p.m.	Field Trip (Participants Board Buses at Ramada Convention Center Entrance)
	Exhibitor Move-in/Set-up
3:00 – 5:00 p.m.	Grouting Committee Meeting
6:00 – 10:00 p.m.	Welcome Reception in Exhibit Hall
7:00 – 9:00 p.m.	

Wednesday, September 24

7:30 a.m. – 5:30 p.m.	Registration Open
7:30 a.m. – 5:00 p.m.	Speaker Ready Room Open
8:20 – 10:00 a.m.	Plenary Session
8:30 a.m. – 6:30 p.m.	Posters on Display
10:00 a.m. – 6:30 p.m.	Exhibit Hall Open
10:00 – 10:20 a.m.	Networking Beverage Break in Exhibit Hall
10:20 a.m. – 12:00 p.m.	Technical Session
12:00 noon – 1:20 p.m.	Lunch in Exhibit Hall
1:20 – 3:00 p.m.	Technical Sessions
3:00 – 3:20 p.m.	Networking Beverage Break in Exhibit Hall
3:20 – 5:00 p.m.	Technical Sessions
5:00 – 6:30 p.m.	Posters on Display with Authors & Wine & Cheese Reception
	Planning Meeting for 12th Sinkhole Conference: All interested parties are invited to participate.
6:30 – 7:30 p.m.	

Thursday, September 25

7:30 a.m. – 5:30 p.m.	Registration Open
7:30 a.m. – 5:00 p.m.	Speaker Ready Room Open
8:00 a.m. – 6:30 p.m.	Posters on Display
8:20 – 10:00 a.m.	Plenary Session
9:00 a.m. – 3:30 p.m.	Exhibit Hall Open
10:00 – 10:20 a.m.	Networking Beverage Break in Exhibit Hall
10:20 a.m. – 12:00 p.m.	Technical Sessions
12:00 noon - 1:20 p.m.	Lunch in the Exhibit Hall
1:20 – 3:00 p.m.	Technical Sessions
3:00 – 3:20 p.m.	Networking Beverage Break in Exhibit Hall
3:20 – 5:00 p.m.	Technical Sessions
6:30 – 9:30 p.m.	Banquet and Keynote Speaker

Friday, September 26

7:30 – 10:00 a.m.	Registration Open
7:30 a.m. – 12:00 noon	Speaker Ready Room Open
8:00 a.m. – 12:00 noon	Posters on Display
8:20 – 10:00 a.m.	Technical Sessions
10:00 – 10:20 a.m.	Networking Beverage Break
10:20 a.m. – 12:00 noon	Technical Sessions
12:00 noon	Conference Adjourns

Conference Overview

Karst phenomena impact all aspects of land use as well as ground and surface water resources. Key karst issues relate to waste disposal and management, stormwater management, water supply, highways and other transportation facilities, structure foundations, utilities, mines, and quarries. Civil, geotechnical and environmental professionals, geologists, geophysicists and other professionals involved in the earth sciences will benefit from the topical, relevant information shared at the conference. Specifically, you will have the opportunity to share knowledge and experiences with many disciplines involved in the scientific and technological aspects of karst and its practical applications. Well-documented case histories of those applications to be presented at this conference bring special relevance and practical examples that you can use in practice.

Short Courses

MONDAY, SEPTEMBER 22, 8:30 a.m. – 5:00 p.m.

Space is limited and registrations are processed on a first-come, first-served basis. Onsite registrations will be accepted based on availability.

Registration fee includes a printed version of the course lectures, notes, lunch, and refreshment breaks.

Geologic Site Characterization in a Karst Setting

Instructors: Lynn Yuhr, P.G., President of Technos, Inc., Miami, Florida
 Ron Kaufmann, P.G., Vice President of Technos, Inc., Miami, Florida
 Kelton Barr, P.G., Principal Hydrogeologist of Braun Interfec, Minneapolis, Minnesota
 Mike Wilson, P.E., Ardaman & Associates, Inc., Tallahassee, Florida
 Richard C. Benson, P.G., C.P.G., Sr. Engineering Geologist of Technos, Inc., Miami, Florida

Since site characterization is the technical foundation for all geotechnical and environmental projects, you'll want to be involved in this most relevant topic. The objective of a site characterization is to gain an understanding of subsurface conditions that will impact the engineering or environmental decisions made at a site. If the site characterization is done right, these decisions will be made with a high degree of confidence and be supported by reliable technical data.

This course is based upon an integrated approach to site characterization. A wide range of topics will be covered from a discussion of the problem, a strategy, appropriate levels of site characterization, the impact of scale, the methods available, and case histories to illustrate the process. All of the presenters have specialized in site characterization with an emphasis on karst and represent more than 130 years of diverse experience.

Grouting for Geotechnical Support and Groundwater Control in Karst

Instructor: Michael Byle, PE., F. ASCE, National Discipline Lead, Civil/Geotechnical Engineering for Tetra Tech EC, Langhorne, PA

This short course will provide an oversight of karst conditions and situations where grouting would be an appropriate method of stabilization or improvement for the support of structures and to control groundwater flows. The course will also provide an introduction to karst formation with a focus on geotechnical support and groundwater control applications including the potential difficulties for quarries, tunnels and other deep excavation and underground construction. Karst features applicable to grouting including deep conduits, voids, sinkholes, enhanced weathered zones and pinnacles will be addressed. Methods of investigation will be discussed that are appropriate to the location and detection of karst features for design of grouting mitigation. Investigation methods including geologic reconnaissance, air photo interpretation, and geophysical methods will be discussed together with intrusive methods of investigation including borings, test excavations, and rock coring. Case histories of application of these methods will be presented to illustrate the application of the techniques presented in the course.

Field Trip

TUESDAY, SEPTEMBER 23, 8:00 a.m. – 5:30 p.m.



Field Trip Guide:

Todd R. Kincaid, Ph.D., Group Leader, H2H Associates, LLC, Reno, NV

An optional field trip on Tuesday, September 23 will precede the week's technical sessions. The field trip will focus on the hydrogeological characterization of the Woodville Karst Plain and the engineering and planning techniques that have been adopted or are being considered by city, county, and state authorities to mitigate water resource problems in this region.

Tallahassee, the Florida state is an area of active karst development, as well as associated water resource problems. Part of the field trip will focus on Wakulla Spring, which is considered the "Crown Jewel" of the Florida State Park System and the primary discharge point from one of the world's largest underwater caves. You will have the opportunity to learn about the recent advances in underwater cave exploration and the application of cooperative efforts between explorers, scientists, environmentalists, and regulators that are aimed at protecting Wakulla Spring. You will also examine other engineering problems endemic to karst areas.

Important Note: Participants board busses at Ramada Convention Center entrance

Registration Fee: \$150 Registration includes lunch, beverages/water, Field Guide, and transportation.





Plenary Sessions

WEDNESDAY, SEPTEMBER 24, 8:20 – 10:00 a.m.

Welcome:

Barry F. Beck, Ph.D., C.P.G., P.G., M.ASCE, Vice President for Karst, Chief-of-Operations, P.E., LaMoreaux & Associates, Inc. (PELA), Oak Ridge, TN

Presentation: *The Problem is the Solution: A History of Seepage, Piping, and Remediation in a Karst Foundation at Wolf Creek Dam*



Keynote Speaker: Michael F. Zoccola, CELRN-EC-ED, Chief, Civil Design Branch, Nashville District, U.S. Army Corps of Engineers, Nashville, TN

In 1968, about 17 years after first being impounded, wet areas, muddy flows in the tailrace, and sinkholes in the downstream toe of the embankment signaled serious foundation seepage problems at Wolf Creek Dam. The Nashville District Corps of Engineers began an emergency investigation, along with an instrumentation and grouting program that was generally credited with saving the dam. Data generated revealed an extensive interconnected network of solution features in the limestone foundation and inadequate foundation treatment measures taken during construction.

It was decided that grouting alone could not be relied upon as a long term solution in such geology. Thus, from 1975 through 1979, a concrete cutoff wall was installed through the embankment and into the rock foundation. Since that time, the project has been closely monitored. Based on instrumentation readings, investigations, and visual observations, it is apparent that seepage has found new pathways through features left untreated by the first wall. The Nashville District will be installing a new wall upstream of the existing wall to a greater depth and lateral extent to cut off remaining seepage paths.

Mr. Zoccola will describe the underlying problems, previous remediation efforts, and the proposed remediation plan. His presentation will touch briefly on various aspects of the Corps' major rehabilitation process, risk-based prioritization program, and interim risk reduction measures taken at the project.

THURSDAY, SEPTEMBER 25, 8:20 – 10:00 a.m.

Welcome:

Michael J. Byle, P.E. F. ASCE, National Discipline Lead Civil/Geotechnical Engineering, Tetra Tech, Langhorne, PA

Presentation: *Is it Possible to Predict the Occurrence and Behavior of Sinkholes?*



Keynote Speaker: Dr. Francisco Gutiérrez, Permanent Lecturer at the Geology Department of the University of Zaragoza, Spain

Predicting where and when new sinkholes will occur and how pre-existing sinkholes will behave in the future are key aspects for sinkhole risk mitigation. A general approach commonly applied by geologists (not prophets) to produce predictions on hazardous processes is to extrapolate our knowledge on the past behavior of such processes towards the future; the past is the key to the future. Information on the characteristics and spatio-temporal distribution of sinkholes in the past can be obtained from multiple sources (aerial photographs, paleokarst, trenches, etc.).

In his address, Dr. Gutiérrez will present some recently developed methodologies that may be applied to forecast the occurrence and behavior of sinkholes: (1) The study of the stratigraphy and structure of the sediments filling particular sinkholes by means of retrodeformation analysis and absolute datings allows reconstructing the subsidence history of the sinkhole (subsidence mechanisms, cumulative displacement, subsidence regime and rate). This information can be used as an objective basis to forecast the future behavior of the sinkholes. (2) Subsidence structures exposed in the cuttings adjacent to linear infrastructures, like the high-speed Madrid-Barcelona railway, may be used to produce sinkhole susceptibility zonation. (3) Susceptibility models can be generated analyzing the statistical relationships between the spatial distribution of sinkholes and that of conditioning factors. The predictive capability of the susceptibility models can be quantitatively evaluated using an independent sinkhole population. Additionally, validated susceptibility models can be transformed into hazard models (number of sinkholes/km² year) with an independent temporal population of sinkholes.

Receptions & Banquet

In addition to six networking beverage breaks, the Conference includes the following functions providing excellent networking opportunities:

TUESDAY, SEPTEMBER 23, 7:00 – 9:00 p.m.

Welcome Reception

The Welcome Reception is a great opportunity to connect with colleagues and to browse the exhibits. A technical poster session will also be held during this time.

Registration: Included for all Full and Student Registrants.
Additional Tickets: \$25

WEDNESDAY, SEPTEMBER 24, 5:00 – 6:30 p.m.

Wine and Cheese Reception and Poster Session

Come enjoy a beverage and sumptuous cheese display while you view and discuss the posters on display.

Registration: Included for all Full and Student Registrants. **Additional Tickets:** \$20

THURSDAY, SEPTEMBER 25, 6:30 – 9:30 p.m.

Conference Banquet

Presentation: *Exploring North America's Longest Underwater Cave & Defining its Hydrologic Significance*



Banquet Speaker:

Todd Kincaid, Ph.D., Group Leader, H2H Associates, LLC, Global Underwater Explorers, Reno, NV

On Saturday July 28, 2007 at 12:20 p.m., the Woodville Karst Plain Project Cave Divers, led by Casey McKinlay and Jarrod Jablonski, connected two of the largest and most celebrated underwater caves in the world and established the Wakulla-Leon Sinks Cave System as the longest mapped underwater cave in North America – fourth largest in the world. Exploring,

mapping, and documenting the now more than 45 km of underwater conduits averaging 80 m below the water table surface has required more than 20 years of dedicated effort of more than 100 of the world's best cave divers, the development of new diving equipment and techniques, and more than \$3 million of volunteer contributions. Their diving efforts have contributed far more than previous maps and videos as for the first time cave divers, scientists, water resource managers, and concerned citizens have come together to explore the significance of the caves to groundwater and springs protection in Florida, and in so doing, have essentially revolutionized our collective understanding of Florida's hydrogeology. From a scientific perspective, their work to facilitate the installation and maintenance of sampling tubes and hydrologic meters in numerous conduits sourcing different waters has given us data that would have otherwise been impossible to collect and has helped make Wakulla Cave one of the most instrumented karst conduit systems in the world. Moreover, the resulting data is driving significant changes to land use policies that will likely improve and protect groundwater quality in the basin for years to come including a \$220 million upgrade of Tallahassee's waste water treatment system as well as new focus on recharge from storm water and septic systems.

In his address, Dr. Kincaid will take us through part of the cave system with the exploration team via video footage compiled by the Woodville Karst Plain Project and then provide an overview of how their explorations and the science they've facilitated has changed our understanding of the Floridian aquifer.



Technical Program

SEPTEMBER 24

8:20 - 10:00 a.m.

Opening Remarks

Barry F. Beck, Ph.D., C.P.G., P.G., M.ASCE P.E.

LaMoreaux & Associates, Inc. (PELA), General Conference Co-Chair

Keynote

Is it Possible to Predict the Occurrence and Behaviour of Sinkholes?

Dr. Francisco Gutiérrez, Permanent Lecturer at the Geology Department of the University of Zaragoza Spain

Special Presentation

3-D Photo Real Modeling of Devil's Sinkhole in Rocksprings, Texas

E. Calvin Alexander, Jr., Ph.D., Minneapolis, MN USA;
Bobbie Jeanne Neubert, B.S., Dallas, TX USA;
Geary M. Schindel, Hon.M.ASCE, San Antonio, TX USA;
Jerome A. Bellian, M.S., Austin, TX USA;
Kevin McGowan, Houston, TX USA;
Xueming Xu, Ph.D., Dallas, TX USA

10:00 - 10:20 a.m.

Networking Beverage Break in Exhibit Hall

10:20 a.m. - 12:00 NOON

Track Name: Karst Development & Mapping

Session Name: The Formation of Karst and Sinkholes

Session Chair: Brad Stephenson, Shaw Environmental & Infrastructure, Inc.

Hypogenic Karst and its Implications for Minnesota Hydrogeology

Kelton Douglas Barr, B.A., M.S., R.G., Minneapolis, MN USA;
E. Calvin Alexander, Jr., Ph.D., Minneapolis, MN USA;
Alexander B. Klimchouk, Simferopol, UKR

Compressive Structure's Control on the Karst Development

Guoyu Luo, Nanjing, CHN;
Yuying Wang, Nanjing, CHN;
Mingzhu Chen, Nanjing, CHN;
Qiwei Zhan, Nanjing, CHN;
Jiajun Wan, Nanjing, CHN;
Xi Chen, Nanjing, CHN;
Jun Zheng, Nanjing, CHN;
Junhui Guo, Nanjing, CHN

Bedrock Structural Controls on the Occurrence of Sinkholes and Springs in the Northern Great Valley Karst, Virginia and West Virginia

Daniel H. Doctor, Ph.D., Reston, VA USA;
David L. Nelms, B.S., P.G., Richmond, VA USA;
David J. Weary, P.G., Reston, VA USA;
George Edward Harlow, Jr., M.S., P.G., Richmond, VA USA;
Mark D. Kozar, Charleston, WV USA;
Randall C. Orndorff, Reston, VA USA

Causes of House Subsidence in an Area Adjacent to Illinois' Sinkhole Plain

Samuel Vincent Panno, M.S., Champaign, IL USA

Scott Lake: The Formation and Investigation of a Large Sinkhole Occurrence in the Mantled Karst of West-Central Florida

Ted J. Smith, M.S., P.G., Lakeland, FL USA; Carl W. Christmann, P.E., Lakeland, FL USA

12:00 NOON - 1:20 p.m.

Lunch in Exhibit Hall

1:20 - 3:00 p.m.

Session Name: The Formation of Karst and Sinkholes

Session Chair: Brad Stephenson, Shaw Environmental & Infrastructure, Inc.

Soil Creeping in Weathering Crusts of Carbonate Rocks and Underground Soil Losses in Karst Mountain Areas of Southwest China

Xinbao Zhang, Chengdu, Sichuan, CHN
Yongbin He;
Shi-jie Wang;
Xiubin He;
Yi Long;
Yunqi Zhang

Session Name: Unique Investigation Techniques for Karst

Session Chair: Kelfon Barr, Braun Interfec

Application of Audio Frequency Electrical Penetrative Imaging Technology for the Detection of Karst Features of the Ordovician Limestone in Coal Mines, North China

Li Gongyu, Xi'an, Shaanxi, CHN;
Feng Hong, Xi'an, Shaanxi, CHN

Infrared Imagery of the Karst Terrain of Lancaster County, Southeastern Pennsylvania

William E. Kochanov, P.G., Middletown, PA USA;
Jay Parrish, Middletown, PA USA

Development of Neutrally Buoyant Sensors for Mapping Conduits in Karst Aquifer

Joshua D. Kenney, Automation and Data Systems Division;
Gregory C. Willden, Automation and Data Systems Division;
Ronald N. McGinnis, Department of Earth, Materials, and Planetary Sciences, Southwest Research Institute;
Ben A. Abbott, Automation and Data Systems Division;
Ronald T. Green; Department of Earth, Materials, and Planetary Sciences, Southwest Research Institute

Session Name: GIS Mapping and Computer Databases of Karst Features

Session Chair: Yongli Gao, East Tennessee State University

A Conceptual Database Model for Spatial Analysis and Resource Management in Karst

Yongli Gao, Ph.D., Johnson City, TN USA;
David J. Weary, P.G., Reston, VA USA

3:00 - 3:20 p.m.

Networking Beverage Break in Exhibit Hall

3:20 - 5:00 p.m.

Session Name: Applications of Geophysics for Investigating Karst

Session Chair: Daniel Casto, Technos, Inc.

The Selection and Application of Geophysical Test Methods in Karst Terrains

Michael James Wightman, P.G., St. Petersburg, FL USA;
Edward D. Zisman, P.E., Tampa, FL USA

Electrical Resistivity In Northeastern U.S. Karst - A Case History

James Michael Connor, P.G., Chalfont, PA USA;
Donald Jagel, M.S., P.G., Malvern, PA USA;
James G. Mcwhorter, M.S., P.G., Bernardsville, NJ USA;
Joseph A. Fischer, M.ASCE, P.E., Bernardsville, NJ USA;
Matthew McMillen, B.S., Plumsteadville, PA USA;
Richard W. Greene, P.E., Morristown, NJ USA

Application of Electrical Resistivity Method in Steeply Dipping Karst Terrain

Maung T. Myat, P.E., Rolla, MO USA;
Amos Wamweya, B.S., MEng, Rolla, MO USA;
Neil Anderson, P.G., Rolla, MO USA;
Oleg Kovin, Rolla, MO, USA
Jonathan L. Robison, Rolla, MO, USA

Geophysical Investigation of the Delaware Avenue Sinkhole- Nixa, Missouri

Jonathan Lindsey Robison, P.E., Springfield, MO USA;
Neil Anderson, P.G., Rolla, MO USA

Karst Characterization of the Marshall Space Flight Center: Two Years Later

Lynn Yuhr, P.G., Doral, FL USA;
Ron Kaufmann, P.G., Doral, FL USA;
Daniel Casto, P.G., Doral, FL, USA;
Michael Singer, P.G., Oak Ridge, TN, USA;
Bill McElroy, P.E., CGWP, Gainesville, FL, USA;
Jason Glasgow, P.E., Huntsville, AL, USA



SEPTEMBER 25

5:00 - 6:30 p.m.

Posters on Display with Authors & Wine & Cheese Reception

8:20 - 10:00 a.m.

Opening Remarks

Michael Byle

Keynote

The Problem is the Solution: A History of Seepage, Piping, and Remediation in a Karst Foundation at Wolf Creek Dam

Michael F. Zoccola, Chief, Civil Design Branch, Nashville District Corps of Engineers;

Special Presentation

3-D Mapping and Characterization of Sistema Zacatón from DEPTHX (DEep Phreatic THERmal eXplorer)

Marcus Gary, B.S., Buda, TX USA;
David Wettergreen, Pittsburgh, PA USA;
George Kantor, Pittsburgh, PA USA;
John M. Sharp, Jr., Austin, TX USA;
Nathaniel Fairfield, B.S., Pittsburgh, PA USA;
William C. Stone, P.E., Del Valle, TX USA

10:00 - 10:20 a.m.

Networking Beverage Break in Exhibit Hall

10:20 a.m. - 12:00 NOON

Track Name: Karst Water Resource Management

Session Name: Hydrology of the Woodville Karst Plain

Session Chair: Todd Kincaid, H2H Associates, LLC

Conduit Flow Paths and Conduit/Matrix Interactions Defined by Quantitative Groundwater Tracing in the Floridan Aquifer

Todd Richard Kincaid, Ph.D., Reno, NV USA;
Christopher Werner, P.G., Tallahassee, FL USA

Mapping and Drilling of Conduits within the Woodville Karst Plain of North Florida

Lynn Yuhr, P.G., Doral, FL USA;
Ron Kaufmann, P.G., Doral, FL USA;
Brie Coane, Tallahassee, FL USA
Rodney DeHan, P.G., Tallahassee, FL USA

Conduit Prevalence in the Woodville Karst Plain

Eric Chicken, Ph.D., Tallahassee, FL USA;
Prabhakar Chalise, Tallahassee, FL USA
David E. Loper, Tallahassee, FL USA

Probing the Plumbing of Wakulla Spring: Instrumentation and Preliminary Results

David E. Loper, Ph.D., Tallahassee, FL USA;
Christopher Werner, P.G., Tallahassee, FL USA;
Eric Chicken, Ph.D., Tallahassee, FL USA;
Gareth James Davies, M.S., Oak Ridge, TN USA;
Rodney Dehan, Tallahassee, FL USA;
Todd Richard Kincaid, Ph.D., Reno, NV USA

Modeling Karstic Controls on Watershed-Scale Groundwater Flow in the Floridan Aquifer of North Florida

Brent A. Meyer, M.S., Reno, NV USA;
Timothy J. Hazlett, Ph.D., Orlando, FL USA;
Todd Richard Kincaid, Ph.D., Reno, NV USA

12:00 NOON - 1:20 p.m.

Lunch in the Exhibit Hall

1:20 - 3:00 p.m.

Track Name: Karst Water Resource Management

Session Name: Hydrology of the Woodville Karst Plain

Session Chair: Todd Kincaid, H2H Associates, LLC

Using Numerical Modeling, Age Dating, and Geochemical Analyses to Delineate Contributing Areas to Public Supply Wells in the Karstic Upper Floridan Aquifer, Tallahassee, Florida

Hal Davis, M.S., Tallahassee, FL USA;
Brian G. Katz, Tallahassee, FL USA

Session Name: Modeling in Karst
Session Chair: Daniel Doctor, U.S. Geological Survey

The Hydrogeology of Ebenezer Swamp and Vicinity - Preservation of a Ground-Water Dependant Ecosystem

Lois D. George, Tuscaloosa, AL USA;
Bashir Ahmed Memon, Ph.D., Tuscaloosa, AL USA;
Michael Ray Burston, Tuscaloosa, AL USA

Water Level Variation and Prediction of the Pingshan Sinkhole in Guizhou, Southwestern China

Longgang Shu, Nanjing, Jiangsu, CHN;
Guiming Dong, Nanjing, Jiangsu, CHN;
Lihong Liu, Nanjing, Jiangsu, CHN;
Yufei Tao, Nanjing, Jiangsu, CHN;
Maomei Wang, Nanjing, Jiangsu, CHN

Simulation of Rainfall-Underground Outflow Responses of a Karstic Watershed in Southwest China with an Artificial Neural Network

Xi Chen, Ph.D., Nanjing, Jiangsu, CHN;
Peng Shi, S.M.ASCE, Nanjing, Jiangsu, CHN;
Cai Chen, Nanjing, Jiangsu, CHN;
Qinqin Hao, Nanjing, Jiangsu, CHN;
Zhikai Zhang

Lattice-Boltzmann Simulations of Carbonate Systems

Scott C. Alexander, Minneapolis, MN USA;
Martin O. Saar, Minneapolis, MN USA;
Stuart D.C. Walsh, Minneapolis, MN USA

1:20 - 3:00 p.m.

Track Name: Pro-Active and Remedial Engineering in Karst Terrain

Session Name: Sinkhole Mitigation and Repair

Session Chair: Michael Byle, Tetra Tech EC

Forensic Geotechnical Engineering Studies of Detection and Mitigation of Karst Sinkholes

Christopher C. Basile, MBA,P.E., Lakeland, FL USA;
Dhirendra S. Saxena, F.ASCE, MEngr, NAFE, P.E., Lakeland, FL USA

Sand Slurry Injection: An Alternative Remediation for Special Projects

Scott Edward Barfield, P.E., The Villages, FL USA
Nicolas E. Andreyev

Development of a Business Park in Karst Terrain

Wayne A. Karem, Ph.D., Shelbyville, KY USA
Bruce E. Ealey

Subgrade Evaluation and Repair of a Roadway Depression Caused by a Deep Seated Sinkhole

Nick Hudyma, M.ASCE, Jacksonville, FL USA
Raymond Saliba;
Binay Prakash

Design Considerations for Underpinning of Structures Affected by Karst Using Hydraulically Driven Piles

Jose Carlos Busquets, A.M.ASCE, BEngr, EI, Tampa, FL USA;
Timothy Roda, A.M.ASCE, BEngr, MEngr, P.E., Tampa, FL USA
William C. Bracken

3:00 - 3:20 p.m.

Networking Beverage Break in Exhibit Hall

3:20 - 4:40 p.m.

Track Name: Karst Water Resource Management

Session Name: Water: Management, Monitoring & Remediation

Session Chair: Beth Gross, GeoSyntec Consultants

Surface and Groundwater Interactions in Penn State's Big Hollow Watershed

Larry Fennessey, P.E., University Park, PA USA;
John W. Gaudlip, L.S., M.ASCE, P.E., Alexandria, PA USA

A Statistical Strategy for Determining Contaminant Impacts of an Industrial Monofill on Karst Springs

Wanfeng Zhou, Ph.D., Oak Ridge, TN USA;
Barry F. Beck, M.ASCE, Oak Ridge, TN USA
Jie Wang;
Arthur J. Pettit

Rapid Recharge Events in a Karstic Aquifer: An Example from Lake of the White Roses, Lechuguilla Cave, New Mexico

Lewis Land, Ph.D., P.G., Carlsbad, NM USA;
Paul Burger, MEngr, Carlsbad, NM USA

Dye Trace Study of a New Septic System in Door County, Wisconsin

Jeff Green, M.S., P.G., Rochester, MN USA;
Brian Forest, B.S., Sturgeon Bay, WI USA;
E. Calvin Alexander, Jr., Ph.D., Minneapolis, MN USA;
Scott C. Alexander, Minneapolis, MN USA;
William Schuster, Sturgeon Bay, WI, USA

3:20 - 4:20 p.m.

Track Name: Pro-Active and Remedial Engineering in Karst Terrain

Session Name: Grouting Techniques
Session Chair: Eric Drumm, University of Tennessee

Reducing Conduit Water Flow into a Quarry in North-Central Alabama: A Case Study

Michael Ray Burston, Tuscaloosa, AL USA;
Daniel Scott Green, P.G., Tuscaloosa, AL USA;
Bashir Ahmed Memon, Ph.D., Tuscaloosa, AL USA

Construction of Grout-plugs within Karstic Collapse Columns to Restore Flooded Mines: A case study at Dongpang Mine, Xingtai, China

Qisheng Liu;
Gongyu Li;
Shenghui Nan

Grouting in Karst - Time for New Thinking

James Warner, P.E., Mariposa, CA USA

6:30 - 9:30 p.m.

Banquet and Keynote Speaker

SEPTEMBER 26

8:20 - 10:00 a.m.

Track Name: Karst Water Resource Management

Session Name: Groundwater Tracing
Session Chair: Jim Kaufmann, U.S. Geological Survey

Dye Tracing Animal Waste Effluent in the North Fork Basin, Southern Missouri

Joe Gillman, Rolla, MO USA
 R.G. Jeffrey Crews;
 Jerry Prewett, P.E., Springfield, MO USA

Spring Characterization Methods & Springshed Mapping

Jeff Green, M.S.,P.G., Rochester, MN USA;
 Scott C. Alexander, Minneapolis, MN USA;
 E. Calvin Alexander, Jr., Ph.D., Minneapolis, MN USA;
 Andrew James Luhmann, B.S., Minneapolis, MN USA
 Andrew J. Peters, P.G., Rochester, MN USA;

Dye Tracing Within the St. Lawrence Confining Unit in Southeastern Minnesota

E. Calvin Alexander, Jr., Ph.D., Minneapolis, MN USA;
 Scott C. Alexander, Minneapolis, MN USA;
 Jeff Green, M.S.,P.G., Rochester, MN USA;
 Anthony Charles Runkel, Ph.D.,RG, St. Paul, MN USA;
 Andrew J. Peters, P.G., Rochester, MN USA;
 Andrew James Luhmann, B.S., Minneapolis, MN USA

Session Name: Planning and Regulation

Session Chair: Daniel Doctor, U.S. Geological Survey

Development of Proposed Environmental Resource Permit Criteria for Sensitive Karst Areas: In the Southwest Florida Water Management District, Florida, USA

Colin T. Miller, A.M.ASCE,P.E., Tampa, FL USA;
 Charles L. Miller, F.ASCE,P.E., Lutz, FL USA

Achieving Karst Aquifer Protection Within a Regulatory Framework

Joseph Woods, III, B.A., Franklin, IN USA

8:20 - 10:00 a.m.

Track Name: Pro-Active and Remedial Engineering in Karst Terrain

Session Name: Engineering Man's Infrastructure in Karst
Session Chair: Nick Hudyma, University of North Florida

The Development and Use of Karst Maps in the Location of Highways in East Tennessee

Harry L. Moore, B.S.,M.S.,P.G., Knoxville, TN USA;
 Lori McDowell, BEng,EIT,M.S., Knoxville, TN USA

Assessment of Karst Activity at Springfield Route 60 Study Site

Maung T. Myat, P.E., Rolla, MO USA;
 Amos Wamweya, B.S.,Mengr, Rolla, MO USA;
 Neil Anderson, P.G., Rolla, MO USA;
 Iana Muchaidze;
 Jonathan L. Robison

Karst Evaluation of a 90-Mile Transmission Line

Robert J. Turka, P.G., Homestead, PA USA;
 Richard E. Gray, P.G., Monroeville, PA USA

Quarrying in Karst: Geotechnical Estimation of Environmental Risk

Ernst H. Kastning, Ph.D.,P.G., Concord, NH USA

10:00 - 10:20 a.m.

Networking Beverage Break

10:20 a.m. - 12:00 NOON

Track Name: Karst Development & Mapping

Session Name: Risk Assessment
Session Chair: Wanfang Zhou, PELA, Inc.

Undrained Stability of Residual Soil in Karst

Eric C. Drumm, M.ASCE,P.E., Knoxville, TN USA;
 Haluk Akgun, Ph.D.,P.E., Ankara, Balgat, TUR;
 Levent Tutluoğlu, Ankara, TUR;
 Özgür Aktürk, Bengr, Ankara, TUR

Knowledge Based Geologic Hazard Risk Assessment for Municipal, Transportation, Energy, and Industrial Infrastructure

Michael Perlow, Jr., B.S.,M.S.,M.ASCE,P.E., East Greenville, PA USA

Predicting Sinkhole Susceptibility in Frederick Valley, Maryland, Using Geographically Weighted Regression

Katarina Z. Doctor, Reston, VA USA;
 Barry J. Kronenfeld, Fairfax, VA USA;
 Daniel H. Doctor, Ph.D., Reston, VA USA;
 David K. Brezinski, M.S., Baltimore, MD USA;
 David W. Wong, Ph.D., Fairfax, VA USA

A Statistical Approach to Karst Collapse Hazard Analysis in Missouri

James E. Kaufman, Rolla, MO USA

Estimation of Sinkhole Danger at a One Building Site in Moscow, Russia

Victor P. Khomenko, Ph.D., Moscow, RUS
 Liudmila A. Aleshina

10:20 - 11:20 a.m.

Track Name: Pro-Active and Remedial Engineering in Karst Terrain

Session Name: Foundation Design and Construction, Shallow or Deep
Session Chair: Walter Kutschke, Nicholson Construction Company

Foundation Design and Site Development for a New Hospital over a Complex Karst System

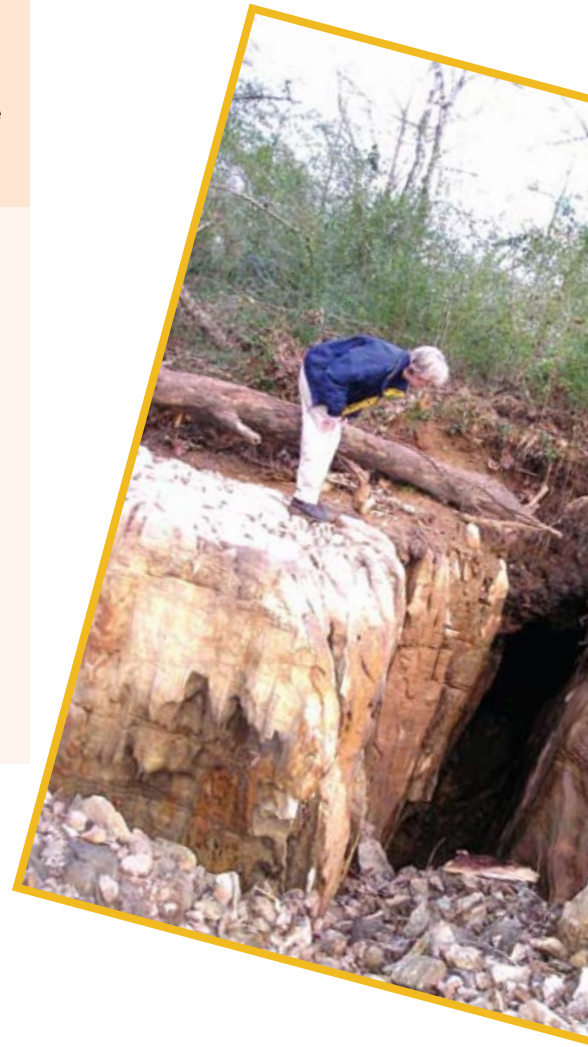
Peggy Hagerty Duffy, P.E., Jeffersonville, IN USA

Use of Seismic Reflection Surveying to Enhance Traditional Subsurface Exploration for Karst Evaluation

Mark A. Roenfeldt, P.E., St. Louis, MO USA;
 James E. McCleish, P.E., St. Louis, MO USA;
 Douglas W. Lambert, M.S., St. Louis, MO USA

The Importance of Geologic Characterization of Fault-Controlled Karst at a Raw Water Intake Site

John Stephen Nealon, M.ASCE,P.E.,P.G., Erlanger, KY USA
 Mark A. Hushebeck





Poster Sessions

Poster presentations will be on display throughout the conference, with posters with authors on Wednesday evening, allowing you to meet with the authors and discuss their presentations.

The poster sessions will be as follows:

Wednesday, September 24

8:30 a.m. – 6:30 p.m. Posters on Display
5:00 – 6:30 p.m. Posters with Authors and Wine & Cheese Reception

Thursday, September 25

8:00 a.m. – 6:30 p.m. Posters on Display

Friday, September 26

8:00 a.m. – 12:00 noon Posters on Display
12:00 noon – 1:00 p.m. Dismantle Posters

Track Name: Karst Development & Mapping

Session Name.: Applications of Geophysics for Investigating Karst

Application of Surface Geophysics for Providing a Detailed Geotechnical Assessment of a Large Resort Development Site in Anguilla, BWI
Sandy Nettles, P.G., Palm Harbor, FL USA;
Eric Cross, M.S., Palm Harbor, FL USA
Bret Jarrett

Prediction of Karst Occurrences by Interpreting Borehole Data Within the Inception Horizon Hypothesis

Marco Filipponi, Lausanne, Vaud, CHE
Pierre-Yves Jeannin

Session Name: GIS Mapping and Computer Databases of Karst Features

Application of Geographic Information System (GIS) Hydrologic Data Models to Karst Terrain
Charles Joseph Taylor, Louisville, KY USA
William P. Kaiser;
Hugh L. Nelson, Jr.

An Assessment of Karst Collapse Hazards in Guilin, Guangxi Province, China

Jianling Dai, Guilin, Guangxi, CHN;
Mingtang Lei, Guilin, Guangxi, CHN;
Sheng Lai, Hangzhou, Zhejiang, CHN;
Songcheng Tang, IV, P.E., Guilin, Guangxi, CHN;
Wen Liu, III, P.G., Guilin, Guangxi, CHN

Session Name: Risk Assessment

A Method of Quantifying Sinkhole Risk
Edward D. Zisman, P.E., Tampa, FL USA

Session Name: Unique Investigation Techniques for Karst

Monitoring Soil Void Formation Along Highway Subgrade Using Time Domain Reflectometry (TDR), A Pilot Study at Guilin-Yangshuo Highway, Guangxi, China

Xiaozhen Jiang, Guilin, Guangxi, CHN;
Mingtang Lei, Guilin, Guangxi, CHN;
Xiaohong Sang, V, Tangshan, Hebei, CHN;
Yan Meng, IV, Guilin, Guangxi, CHN;
Yongli Gao, Ph.D., Johnson City, TN USA

Track Name: Pro-Active and Remedial Engineering in Karst Terrain

Session Name: Engineering Man's Infrastructure in Karst

Gypsiferous Soils: An Engineering Problem
Jie Zhang, Ph.D., M.ASCE, P.E., Las Cruces, NM USA
R. Solis

The Vazante Underground Mine, Brazil - An Example of Controlled Water Table Drawdown in Karstic Areas

Cristian Bittencourt, Sr., HG, Vazante, Minas Gerais, BRA;
Edmar Eufrazio de Araújo, Sr., P.G., Vazante, Minas Gerais, BRA;
Vanio de Bessa, Sr., P.G., Vazante, Minas Gerais, BRA

Threading the Needle: Designing and Implementing Roadway Improvements in South Central Texas in Areas with Potential Threatened and Endangered Species Karst Habitat

Patrick Cossins, B.A., B.S., P.G., Austin, TX USA
Steven W. Carothers;
Kemble White;
Blake Weissling;
Clover Clammons

To the problem of the Assessment of Karst Economic Risk for Pipelines (an example from the Tatarstan Republic southeast)

Vladimir Aleksandrovich Yolkin, Ph.D., Moscow, RUS

Session Name: Grouting Techniques

Two Case Histories of Sinkhole Repair Using Low Mobility Grouting Methods

Charles J. Naples, III, A.M.ASCE, Wallingford, PA USA;
Michael J. Miluski, P.E., Wallingford, PA USA

Session Name: Sinkhole Mitigation and Repair

Cavities Detection and Treatment at a Residential Area Under Development in the State of Kuwait

Rana Abdullah Al-Fares, A.M.ASCE, Ph.D., SAFAT, KUWAIT

Venterspost Town and Village, South Africa: A Sinkhole Farm or Developable Land?

Anna Catharina Oosthuizen, Pretoria, Gauteng, ZAF;
Robbie Kleywegt, Pretoria, Gauteng, ZAF;
Greg Heath, P.G., Pretoria, Gauteng, ZAF

Detection and Treatment of Sinkholes and Subsurface Voids Along Guilin - Yangshuo Highway, Guangxi, China

Mingtang Lei, Guilin, Guangxi, CHN;
Yan Meng, IV, Guilin, Guangxi, CHN;
Fuping Gan, P.G., Guilin, Guangxi, CHN;
Liping Yu, IV, P.G., Guilin, Guangxi, CHN;
Yu Li, III, Guilin, Guangxi, CHN;
Yongli Gao, Ph.D., Johnson City, TN USA

Track Name: Karst Water Resource Management

Session Name: Modeling in Karst

Analysis and Discussion of Karst Conduit Waves
David E. Loper, Ph.D., Tallahassee, FL USA;
Eric Chicken, Ph.D., Tallahassee, FL USA

Session Name: Water: Management, Monitoring & Remediation

Along Strike Migration and Degradation of Halogenated Hydrocarbons at Depth Through Fractured Limestone

Gheorghe Ponta, P.G., Tuscaloosa, AL USA;
Lois D. George, Tuscaloosa, AL USA

General Information

ADA Compliance

The Ramada Conference Center Tallahassee is fully accessible to the physically challenged and includes volume control pay phones, TDD, assistive listening devices, and automatic doors. If you require special assistance at the conference, please visit the registration desk to share your requirements. While G-I ASCE will make every effort to meet the needs of the physically challenged, accommodations cannot be guaranteed without prior notification.

Attire

The dress code for the Conference is business casual. Meeting room temperatures will vary, so wear layered clothing to ensure your personal comfort. We also recommend attendees wear comfortable shoes.

G-I Membership

Joining the Geo-Institute of ASCE is not only a great way to save money on conference registrations, educational programs, and geotechnical publications, but to gain access to relevant information to help with today's geotechnical challenges. G-I membership includes the bi-monthly *Geo-Strata* magazine plus numerous other benefits.

For information: www.geoinstitute.org.

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Ramada Conference Center Tallahassee

2900 North Monroe Street

Tallahassee, FL 32303

Hotel: (850) 386-1027

Check in time is 3:00 pm. Check out time is 12:00 noon.

Local Attractions

Local attractions and their distance from the Ramada Conference Center include:

- Leon County Convention Center _____ 3.4 mi
- Old Capitol Museum _____ 3.5 mi
- Mary Borgan Museum of Arts and Science _____ 3.7 mi
- Museum of Florida History _____ 3.7 mi
- Doak Campbell Stadium _____ 4.0 mi
- Governor's Mansion _____ 4.0 mi
- Knott House Museum _____ 4.0 mi
- Florida State University/FSU _____ 5.0 mi
- Mission San Luis Archaeological _____ 5.0 mi
- State Capitol _____ 5.0 mi
- Florida A & M University/FAMU _____ 6.0 mi
- Goodwood Museum and Gardens _____ 6.0 mi
- McClay Gardens State Park _____ 6.2 mi
- Leon County Fairgrounds _____ 7.0 mi
- Tallahassee Community College/TCC _____ 7.0 mi
- Tallahassee Antique Car Museum _____ 7.1 mi
- Tallahassee Museum of History & Natural Science _____ 9.3 mi
- Wakulla Springs State Park _____ 15.0 mi
- St. Marks Wildlife Refuge _____ 24.0 mi
- Pebble Hill Plantation _____ 25.0 mi
- JCKC Dog Racing and Poker Room _____ 30.0 mi
- Shell Point Beach _____ 30.0 mi
- Bald Point State Park & Beach _____ 40.0 mi

Meeting Room Capacity

G-I/ASCE will make every effort to schedule popular topics in rooms large enough to accommodate anticipated attendance. Since many topics are popular, it is wise to select alternative sessions as you plan your Conference schedule. G-I/ASCE and the Ramada Hotel personnel are REQUIRED to follow local fire regulations and may ask participants in rooms filled to capacity to choose another session.

No Smoking Policy

G-I/ASCE supports a "No Smoking" policy. Smoking is prohibited in the Ramada Hotel and all venues hosting G-I/ASCE events.

Parking

Free parking is available at the Ramada Conference Center.

Professional Development Hours (PDHs)

You may earn PDHs, which are nationally recognized units of record, by attending conference technical sessions. Please note that there are differences from state to state in continuing education requirements for professional engineering licensure. Each state licensing board has the final authority to approve course, credits, PDHs, and other methods of earning credits in that state. G-I/ASCE strongly recommends that individuals regularly check with their state licensing boards for specific continuing education requirements in their jurisdictions that affect professional engineering licensure and the ability to renew licensure.

Earn up to **24** Professional Development Hours by attending the technical activities available at this conference.

Proceedings

One copy of the Proceedings is included with each Full registration category and the Student Full Package. All those who receive the Proceedings with their registration category or who have purchased a copy via their registration form will receive a copy of the Proceedings at the onsite Registration Counter. You MUST pick up your Proceedings onsite.

If you fail to pick up your Proceedings onsite, then post-conference you must mail in your Proceedings ticket with a written request within 30 days of the Conference, or no later than Friday, **October 24**.

Post-conference Proceedings can be ordered via ASCE's Publications Department at www.pubs.asce.org.

Program Changes

Programs and Sessions are subject to change, and G-I ASCE reserves the right to substitute a program, session, and/or speaker of equal caliber to fulfill educational requirements.

Restaurants

- Monroe Street Grille and Lounge _____ In Hotel
- Cracker Barrel _____ Next To Hotel
- Chez Pierre _____ 1.0 mi
- Melting Pot _____ 1.0 mi
- On the Border _____ 2.0 mi
- Food Glorious Food _____ 2.6 mi
- Bonefish Grille _____ 3.0 mi
- Marie Livingstons Steakhouse _____ 3.0 mi
- Carrabba's Italian Grill _____ 4.0 mi
- Osaka Japanese Steakhouse _____ 4.5 mi



Registration Information

Included in Your Registration Fee

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THURS BANQUET
PROCEEDINGS
FIELD TRIP
SHORT COURSES

Registration Category	SESSIONS & EXHIBIT HALL	TUES WELCOME RECEPTION	WED WINE & CHEESE RECEPTION	WED LUNCH	THURS LUNCH	THURS BANQUET	PROCEEDINGS	FIELD TRIP	SHORT COURSES
Member G-I/ASCE	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE
Member Cooperating Org	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE
Author	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE
Session Chair	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE
Student Basic Package	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE
Student Full Package	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE
Non-member	✓	✓	✓	✓	✓	✓	✓	ADDITIONAL FEE	ADDITIONAL FEE

Badge Policy and Ribbons

Your name badge is your admission to the technical sessions and the Exhibit Hall. Please wear your badge at all times while in the hotel. G-I/ASCE recommends you remove your badge when leaving the hotel for your personal safety. Tickets are required for the pre-conference special events. Be sure to bring tickets with you to each event, as you will not be admitted without a ticket. Ribbons will be available at the Registration desk.

Badge Sharing Not Allowed: Please note that registrations are per individual and are not exchangeable between colleagues.

Children Attending the Conference

No children under 18 years of age are allowed to attend unless registered as a guest and accompanied by an adult.

Onsite Registration Hours

The Conference Registration Desk will be located in the Ramada Conference Center Hotel. Registration hours are:

Monday, September 22	7:30 a.m. – 5:00 p.m.
Tuesday, September 23	7:30 a.m. – 7:30 p.m.
Wednesday, September 24	7:30 a.m. – 5:00 p.m.
Thursday, September 25	7:30 a.m. – 5:30 p.m.
Friday, September 26	7:30 – 10:00 a.m.



Exhibit Hall

The Exhibit Hall will present the most innovative products, equipment, materials, services and computer applications, and feature best practices in the environmental and geotechnical industries.

Special events held in the Exhibit Hall along with the open hours are as follows:

Tuesday, September 23

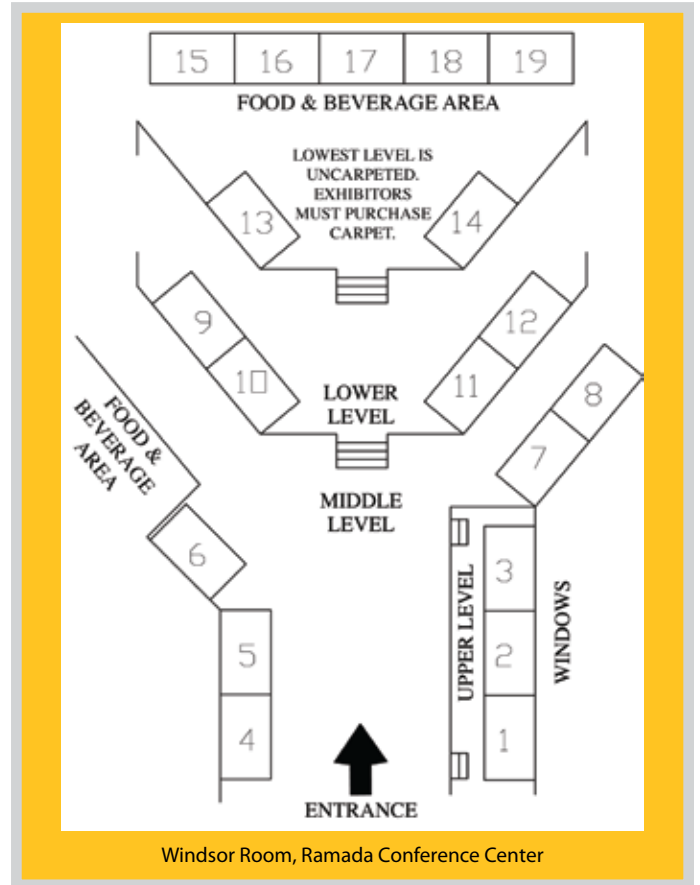
- 3:00 – 5:00 p.m. Exhibitor Move-in/Set-up
- 7:00 – 9:00 p.m. Welcome Reception in Exhibit Hall

Wednesday, September 24

- 10:00 a.m. – 6:30 p.m. Exhibit Hall Open
- 10:00 – 10:20 a.m. Networking Beverage Break in Exhibit Hall
- 12:00 noon – 1:20 p.m. Lunch in Exhibit Hall
- 3:00 – 3:20 p.m. Networking Beverage Break in Exhibit Hall
- 5:00 – 6:30 p.m. Wine & Cheese Reception

Thursday, September 25

- 9:00 a.m. – 3:30 p.m. Exhibit Hall Open
- 10:00 – 10:20 a.m. Networking Beverage Break in Exhibit Hall
- 12:00 noon – 1:20 p.m. Lunch in the Exhibit Hall
- 3:00 – 3:20 p.m. Networking Beverage Break in Exhibit Hall
- 3:30 – 8:00 p.m. Exhibit Dismantle/Move-Out



Windsor Room, Ramada Conference Center

Exhibitors

- Insurance Restoration Professionals
- Bucks Geophysical Corporation
- C&N Foundation Technologies
- Chance/Hubbell Power Systems
- Earth Tech
- Florida Geological Survey
- Geophysical Survey Systems, Inc.
- H2H Associates, LLC
- Hayward Baker, Inc.
- Layne GeoConstruction
- Paul C. Rizzo Associates, Inc.
- SPADAC
- Technos, Inc.
- Tetra Tech
- Coastal Caisson Corporation

Booth

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- #17
- #4
- #8





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Technos
info@technos-inc.com

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Todd R. Kincaid, Ph.D.
Group Leader
H2H Associates, LLC
tkincaid@h2hassociates.com

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jgeraci@mooreandtaber.com

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Carol W. Bowers, P.G., CAE
Director
(703) 295-6352
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