

David Wilshaw, MS, PG

President / Principal Geologist

Professional summary

David Wilshaw holds a Bachelor of Science Degree in Geology awarded by the University of London in 1984 and a Master of Science (Engineering) Degree in Foundation Engineering, awarded by the University of Birmingham in 1987. Mr Wilshaw was admitted as a Fellow of the Geological Society of London in 1989. The Geological Society of London was incorporated by Royal Charter in 1825 and Mr Wilshaw has been entitled to use the style and designation of Chartered Geologist since 1992. He has been licensed as a Professional Geologist in the State of Florida since 2006 (License No. PG2413). Mr Wilshaw has also been a Member of the Association of Engineering and Environmental Geologists since 2002 and a Member of the American Institute of Professional Geologists since 2011. He is a Regional Coordinator for the Florida Association of Professional Geologists, the local chapter of AIPG.

Mr Wilshaw has resided and worked in Florida since 2004 and has been the statutory Professional Geologist retained pursuant to §627.707 Florida Statutes for more than 850 subsidence investigations relating to insurance claims for possible sinkhole activity. He has also been certified since 2011 as a Neutral Evaluator by the Division of Consumer Services, Florida Department of Financial Services, in accordance with §627.7074 Florida Statutes, and to date has completed over 135 neutral evaluation assignments as an Agent for the Department.

Over his long career, David Wilshaw has provided geological, geotechnical and environmental science expertise for: housing, commercial and retail developments, including: public buildings; big-box/warehouse developments; cinemas; theme parks; hotels; military installations, power plants, gas stations; and restaurants. He has extensive experience in geotechnical design for transportation infrastructure, including bridge, embankment, cutting and tunnel engineering for road, rail, airport and sea port projects. He has also provided assessments of subsidence risk associated with the Florida karst terrane and the mitigation of risk from shallow, abandoned coal, limestone, and metal mining; including design and oversight of treatment schemes to stabilize open workings and mine shafts.

Professional qualifications/registrations

Professional Geologist, Florida, No. 2413, 2006

Professional Geologist, Tennessee, No. 5713, 2012

Professional Geologist, Pennsylvania, No. 5287, 2017

Neutral Evaluator, Florida Department of Financial Services (DFS), 2011

Chartered Geologist, UK, No.17903, 1992

Education

M.S. Foundation Engineering, University of Birmingham, Birmingham, UK, 1987

B.S. Geology, University of London, London, UK, 1984

Memberships/Affiliations

Geological Society of London, Fellow

American Institute of Professional Geologists, Member

Association of Engineering and Environmental Geologists, Member

International Association for Engineering Geology and the Environment, Member

Employment History

For the last 30 years, David Wilshaw's professional experience has been in the practice of Engineering Geology. The Executive Committee of the Division on Engineering Geology of the Geological Society of America defined an Engineering Geologist as follows: *"A professional engineering geologist is a person who, by reason of his special knowledge of the geological sciences and the principles and methods of engineering analysis and design acquired by professional education or practical experience, is qualified to apply such special knowledge for the purpose of rendering professional services or accomplishing creative work such as consultation, investigation, planning, design or supervision of construction for the purpose of assuring that the geologic elements affecting the structures, works or projects are adequately treated by the responsible engineer."*

Britannia Solutions, LLC President, Winter Garden, FL, May 2012 - Present

Neutral Evaluation of disputed sinkhole insurance claims on behalf of the Florida DFS, peer review of cause of subsidence reports, written and verbal expert opinions, trial testimony as an expert witness, consulting forensic engineering geology, hydrogeologic and environmental site assessments.

Valencia College Adjunct Professor – Earth Science, Orange County, FL, October 2015 - Present
Member of the part-time faculty at Valencia College in Orlando, teaching an undergraduate Earth Science class with an emphasis on geology and specifically Florida geology.

Scientific Applications in Forensic Engineering, LLC (S.A.F.E.) Partner, Davie, FL, October 2013 - Present

Principal Geologist to a full-service engineering consultancy; engaged in cause-of-subsidence investigations, forensic structural engineering and water damage investigations, geologic/geotechnical consulting for new construction, karst risk assessment and Phase I Environmental Site Assessments.

Integrity Drilling and Geophysical Services, LLC (I.D.G.S.) President and Principal Engineering Geologist, Groveland, FL, October 2013 - Present

Principal Geologist to a drilling, soil testing and geophysical surveying service provider to the geotechnical industry. FDOT approved consultant and registered Small Business for minor projects in Group 9, Sections 9.1 – Soil Exploration and 9.4.1 – Standard Foundation Studies.

BCI Engineers & Scientists / AMEC-BCI / AMEC Environment & Infrastructure Assistant Director of Forensic Engineering & Science / Geologic Hazards Manager, Lakeland, FL, 2010 – 2012

Manager of the forensic engineering & science business unit based in Lakeland and Tampa, FL, engaged in performing cause-of-subsidence investigations principally for insurance companies.

Universal Engineering Sciences, Inc., Vice President, Engineering & Environmental Services Orlando, FL, 2004 - 2010

Manager of the geotechnical engineering and environmental services departments based in Orlando, FL. Provided consulting services for a variety of land development and construction projects throughout Florida and the Bahamas, including: residential, commercial and public sector developments; transportation infrastructure; environmental site assessment, clean-up and monitoring of soil and groundwater contamination; sinkhole risk assessments and remedial designs for pre-and post-development sinkhole stabilization.

Applied GeoKinetics, Inc., Senior Engineering Geologist, Irvine, CA, 2003-2004

Forensic engineering geological investigations related to slope instability and damage to foundations

for commercial and residential properties throughout southern California.

Ian Farmer Associates (1998) Limited, Deputy Managing Director, Chester, UK, 1998-2003

Established a regional office and grew a geotechnical and environmental consultancy business throughout the UK. Service lines included geotechnical and contaminated land exploration, in-situ and laboratory testing services, environmental assessment and clean-up, foundation and earthwork design, slope stability assessment, mineworking and mine shaft stabilization.

Exploration Associates Limited, Regional Manager, Chester, UK, 1995-1998

Manager of the North West regional office serving north west England, north Wales, western Scotland and Northern Ireland. Service lines included geotechnical exploration and testing services, contaminated land exploration, geophysics and hydrographic surveying, geotechnical consulting for foundation and earthwork design, soil and rock slope stability, earth retaining structures.

Wardell Armstrong, Associate Partner, West Bromwich, UK, 1992-1995

Mining, minerals, engineering and environmental consultancy, working on projects relating mainly to geotechnical exploration and testing, contaminated land investigation, soil and groundwater clean-up, brownfields reclamation and mineworkings investigation and stabilization.

CL Associates/Soil Mechanics Limited, Engineering Geologist, Halesowen, UK, 1990-1992

Staff geologist rising to senior geologist. Carried out geotechnical and geoenvironmental investigations throughout the UK and Europe.

Independent Contractor/Consultant, Engineering Geologist, Birmingham, UK, 1988-1990

Field geologist and site agent for geotechnical and geoenvironmental site investigations throughout the UK.

Allott & Lomax, Engineering Geologist, Manchester, UK, 1987-1988

Staff geologist within an engineering consultancy involved in conventional and nuclear power plant design.

Anadrill Schlumberger, Logging Engineer, Aberdeen, UK & Bergen, Norway, 1984-1986

Mudlogging geologist working in North Sea offshore oil exploration / exploitation on a variety of wildcat wells and production platforms.

Representative projects

Neutral Evaluation of Disputed Sinkhole Insurance Claims / Britannia Solutions LLC & AMEC, Florida. Ongoing. **Neutral Evaluator** of disputed sinkhole insurance claims as an Agent for Florida DFS, including presence / absence of sinkhole activity and evaluation of remediation strategies; projects throughout Florida; over 135 evaluations completed. Also, chosen by attorneys for the insured to act as a Binding Neutral Evaluator / Qualified Geologist on Non-DFS evaluations.

Expert Witness Services / Britannia Solutions LLC, Florida Ongoing. **Recognized Expert Geologist.** Providing expert opinion to engineering firms, plaintiff and defence attorneys and insurers on the presence or absence of statutorily defined sinkhole activity and geologic mechanisms of confirmed sinkhole activity. Testifying Expert Witness at trial for, inter alia, Citizens Property Insurance Corporation in Hernando, Hillsborough, Pasco and Pinellas Counties, Florida and for Tower Hill Prime Insurance in Hillsborough, Lake and Volusia Counties.

Determination of Sinkhole Activity, Various Clients, BCI / AMEC / S.A.F.E., Florida

Ongoing. **Professional Geologist.** Completed hundreds of sinkhole and karst evaluations for insurance carriers, private individuals and corporations for residential and commercial properties throughout Florida, from the Panhandle to the Keys, including planning site investigation, conducting geophysical/soil testing, and collaboration with geotechnical engineering staff for preparation of remedial plans for subsurface grouting and underpinning. **Statutory Professional Geologist retained pursuant to §627.707 Florida Statutes for more than 850 cause-of-subsidence evaluations for residential and commercial buildings.** Peer review of subsidence reports prepared by other engineering companies.

Forensic Ground Subsidence Investigation / I.D.G.S.

Winter Haven Square Mall, Sinkhole Collapse, Winter Haven, Florida, United States

Geologist of Record. Provided first-on-scene geological assessment for the owner and property manager at Winter Haven Square Mall following a sudden sinkhole collapse on May 29th, 2014. Deployed GPR to provide real-time mapping of the progressive ground failures both at the sinkhole site and to the up-slope translational landslide, which was impacting some 300 linear feet of the parking lot. Completed deep drilling to assess the extent of the collapse zone and designed and monitored emergency backfilling to fill the sinkhole and buttress the landslip. Completed further deep investigation in the collapse zone following backfilling and provided design alternatives to the property owner for sinkhole stabilization and pavement rehabilitation. Liaison with insurance company experts.

Forensic Ground Subsidence Investigations, Various Clients, Florida, California & United Kingdom / Various Companies & Employers

Project Manager. Completed more than 250 subsidence investigations relating to various geologic hazards including: shallow abandoned mine workings, mine shafts, buried organic soils, buried trash, shrinkage and swelling of clay soils, expansive steel slag, reactivation of relict landslips, uncontrolled backfilling and tunnelling.

Forensic Investigation / Expert Witness / Ian Farmer Associates (1998) Ltd.

Re-Activation of Periglacial Shear Zone, McCaw Soft Drinks, Lancashire, UK (2001-2003)

Expert Witness: Represented a factory owner in Crown Court litigation against designers and installers of a steepened soil-nailed slope that had been designed to allow a parking lot expansion for a manufacturing facility located at the base of a river valley. The slope failed during soil-nail installation, causing damage to an up-slope road and water pipe (with subsequent flooding). Forensic geological exploration identified a soil stratigraphy consisting of thinly laminated (varved) clay sitting above fluvioglacial sand and gravel. The varved clay confined an artesian groundwater condition within the sand and gravel. Areas of periglacial shearing were identified, resulting from erosion of the toe of the slope by the river. The soil nails did not extend far enough through the periglacial shear zone to provide support beyond the active wedge, hence the reduction in vertical effective stress during slope excavation led to re-activation of the periglacial shear zone and consequent failure.

Forensic Investigation / Expert Witness / GeoKinetics, Inc.

Sprayed Concrete Collapse, West Hollywood, California, United States (2003–2005)

Project Geologist. Represented a homeowner's insurance company during litigation following the collapse of a degraded granitic rock slope that had been stabilized with sprayed concrete. The collapse of the sprayed concrete from a neighboring property destroyed the insured's home. Provided first-on-scene forensic engineering geological assessment and subsequent expert testimony in

deposition.

Forensic Investigation / Expert Witness / Wardell Armstrong

Arley Tunnel, Nuneaton, Warwickshire, UK (1993)

Project Geologist. Represented British Rail, carrying out a peer review of an engineering geological assessment carried out for the increase in height of a Victorian railway tunnel. Rockfall and groundwater control problems were being experienced during construction requiring a reassessment of the design assumptions.

Geotechnical Exploration and Design / Universal Engineering Sciences, Inc.

Dr. Phillips Center, City of Orlando, Florida, United States (2008 – 2010)

Project Manager. Geotechnical exploration and design for the proposed \$450 million Performing Arts Center in downtown Orlando. The proposed building required deep basement construction within an urban environment under shallow water table conditions. The basement to the concert hall included an acoustic and vibration isolation system. The geotechnical exploration included SPT borings and CPT soundings with piezocone and seismic cone (allowing determination of in-situ shear wave velocity for use in the vibration analysis and to determine soil stiffness).

LEGOLAND, Winter Haven, Florida, United States (2010)

Project Manager. Managed the collection and interpretation of SPT boring data for the redevelopment of the Cypress Gardens attraction into the LEGOLAND Florida Theme Park. Geotechnical exploration for new rides, attractions and water-park. Karst risk assessment for ground adjacent to existing cover collapse sinkhole and in areas previously remediated for sinkhole activity.

Orlando Hilton Convention Center, RIDA Group, Florida, United States (2009)

Project Manager. Geotechnical exploration for an 18-story hotel adjacent to the Orange County Convention Center. The project site had previously been used for stormwater management. Shallow hardpan soils had been removed over part of the building footprint. Soft Hawthorn clay deposits were present at 50-foot depth. Ground Penetrating Radar (GPR) was used to determine the distribution of the shallow hardpan layers. Deep SPT borings and CPT soundings with pore water dissipation testing were used to determine consolidation characteristics of the clay layer. Significant cost savings were realized by using a surcharge to pre-consolidate the clay layer and homogenize the density of the shallow soils, allowing the hotel to be built on a mat foundation rather than piles.

Terracina Town homes, Morrison Homes, Lake Mary, Florida, United States (2006 – 2010)

Project Manager. Geotechnical exploration for a town home development. The project site was underlain by variable fluvial deposits including deep buried muck. Ground Penetrating Radar (GPR) and Multi-Electrode Resistivity testing was used to determine the distribution of the buried muck, followed by Standard Penetration Test borings and digital Cone Penetration Test soundings. Samples of the muck were tested to determine time for consolidation. Working with the project designers, a phased surcharge program to consolidate the muck was prepared, allowing the town home product to be rolled out successively once the ground had been stabilized.

Port of Miami Tunnel, Miami, Florida, United States (2009 -2010)

Project Manager. Managed the collection and interpretation of CPT data for the \$700M twin-bore tunnel beneath Biscayne Bay. Land and marine investigation, alternating mud-rotary drilling with SPT sampling and CPT sounding within the same borehole to collect data within sensitive soils

interbedded with limestone layers, providing design parameters for Tunnel Boring Machine (TBM) design and tunnel support. Tunnel officially opened May 2014.

Clifton Pier Power Plant, New Providence, Bahamas (2009)

Project Manager. Managed the collection and interpretation of geological and hydrogeological data for a proposed expansion of one of the largest diesel power station in the world. Detailed exploration of the calcarenite bedrock including continuous rock coring, in-situ packer permeability testing and instrumentation. Cost of investigation over US\$350,000.

Geotechnical Exploration and Design / Ian Farmer Associates (1998) Ltd.

Leas Cliff Hall Expansion, Doyle Partnership, Folkestone, Kent, UK (2001 – 2003)

Project Manager. Geotechnical exploration for a proposed addition to the circa 1927 Leas Cliff Hall theatre and concert venue. The proposed expansion was on the seaward side; a self-supporting structure beneath the main hall, built into ground with a history of landslide activity caused by coastal erosion. A comprehensive geotechnical exploration (carried out with limited access equipment) identified the location of the existing failure surface; inclinometer data indicated the failure plane was still moving. Working closely with the project structural engineers, a system of vertical and raking bored cast in-situ piles was designed to support the proposed addition, despite the active landslip conditions.

Shallow Abandoned Mineworkings Investigations / Wardell Armstrong

Castle Hill Mine, Dudley MBC, West Midlands, UK (1993 – 1994)

Project Manager. Stabilization of part of the Castle Hill limestone mine within an urban conurbation, specifically within the corridor of the A4123 trunk road. Silurian limestone deposit that had been worked for over 250 years. Assessed pillar stability based upon down-hole CCTV logging within the (flooded) mine. Designed and specified a program of stabilization using combined cement / fly ash backfill, prepared contract documents for stabilization.

Surface Mine Reclamation / Universal Engineering Sciences, Inc.

Center Sand Mine, Lennar/US Home, Florida, United States (2004 – 2010)

Project Manager. Geotechnical exploration of a former sand mine prior to redevelopment as an 850-unit residential subdivision. Geotechnical constraints included areas underlain by under-consolidated clay mine tailings and an elevated local water table (due to adjacent hydraulic-dredge mining activity). Designed a phased surcharging program to maximize utilization of available onsite fill and supervised instrumentation with vibrating wire piezometers, inclinometer access tubing, and rod and plate settlement gauges to determine substantial completion of clay consolidation. Designed and supervised controlled clay removal by mud-waving and geogrid utility support over buried high-walls.

Surface Mine Reclamation / Wardell Armstrong

Automotive Component Park, Black Country Development Corporation, UK (1994)

Project Engineer. Redevelopment of the Patent Shaft Steelworks and Moorcroft Chemical Works into a commercial development site. The Patent Shaft site was partially reclaimed by opencast coal mining, removing the remnants of the Staffordshire Thick Coal, a 30-foot thick seam which had been mined for hundreds of years. The site was transected by the Coseley/Wednesbury Fault, which had a 120-foot throw to the west, leaving a buried high-wall through the center of the site after opencast mining. The Thick Coal had a huge secondary permeability; hence groundwater impacts during mining were widespread. In addition to the coal mining legacy, superficial sands and gravels had been exploited on the Moorcroft site and the borrow pit subsequently backfilled with spent oxide wastes

from the chemical works. Mr. Wilshaw worked on the project for nearly three years and was involved in supervision of the backfilling of the opencast mine, geotechnical, geo-environmental and mineworkings exploration, grouting of abandoned mine shafts and shallow abandoned mineworkings outside of the limits of the opencast site, design of ground improvement systems for buildings, design of bridge foundations for a road over the Walsall Canal, geotechnical design of the Black Country Spine Road (a one-mile four-lane highway running parallel with the opencast high wall on the north side of the site) and clean-cover isolation of the spent oxide waste. The Automotive Component Park has been operating successfully since 1995.

Landfill Reclamation / Allot & Lomax

Alsops Hill Quarry, Brierley Hill, Midland & General Homes, UK (1988)

Project Geologist. The site was a 240-foot deep basalt quarry that had been used as a major domestic landfill. The client requested a feasibility study and geo-environmental assessment of the area surrounding the property in the context of a residential development. Mr. Wilshaw's investigation determined that there was a significant landfill gas migration hazard, with gas migrating both through joint sets in the basalt and through lenses of granular soil within the overlying glacial till. Development did not proceed consequently.

Transportation Projects / Universal Engineering Sciences, Inc.

SR 434 Montgomery Road to Interstate 4, Seminole County, Florida, United States (2004 – 2010)

Project Manager. Geotechnical exploration and design for the proposed widening of SR 434 included preparing a roadway soil survey report, drainage report and bridge report to FDOT standards. Bridge widening over the Little Wekiva River required the design of precast concrete driven piles. Roadway widening involved increasing stormwater volume by the addition of additional dry and wet retention ponds. The presence of an ancient sinkhole feature on the north side of the right of way required a specific design of a surcharge and the geogrid reinforcement. The surcharge was monitored during construction.

Poinciana Parkway, Avatar Properties, Polk and Osceola Counties, Florida, United States (2004 – 2010)

Project Manager. Geotechnical exploration and design for the proposed widening of existing roads through a developed neighbourhood and a new road through undeveloped land and part of the Reedy Creek swamp. Included production of a roadway soil survey report and structures report to FDOT standards. Due to the necessity of maintaining flow through the Reedy Creek wetland and allowing unimpeded access for wildlife, a 4-mile long bridge was proposed, requiring the design of precast concrete driven piles. Roadway widening involved increasing stormwater volume by the addition of additional wet retention ponds. Road opened in 2017.

Poinciana Boulevard II, Osceola County Public Works, Osceola County, Florida, United States (2006 – 2009)

Project Manager. Geotechnical exploration and design for the proposed widening of part of Poinciana Boulevard included preparing a roadway soil survey report, drainage report and bridge report to FDOT standards. Bridge widening required the design of precast concrete driven piles. Roadway widening involved increasing stormwater volume by the addition of additional wet retention ponds.