Robert A. Pope

Hydrogeologist and Forensic Aerial Photography

Mr. Pope has over 25 years of experience in the fields of geology and aerial photography. Through his consulting career in the field of environmental science, Mr. Pope has developed several specific areas of expertise.

Through his extensive experience with historical land use research and analysis, he has developed multiple methodologies for the critical review & analysis of aerial photographs. These methodologies include microscopic 3-D analysis of original negatives and contact diapositives, optical integration of chronological sequences of images for stereo analysis, digital analytical techniques, methodologies for integrating photographic and non-photographic data, and innovative techniques for exhibiting findings.

His extensive knowledge of historical map, photo, and document collections and his network of associates provide for access and acquisition of historical materials that typically are not readily available. He is skilled in organizing and compiling historical data from multiple sources to perform more thorough and complete evaluation of potential hazardous material source areas occurring from historical land use.

Mr. Pope's experience in research and development of innovative technologies has included partnering with organizations including Stanford University, University of California at Davis, Battelle Pacific Northwest National Laboratories, and the U.S. Air Force Center for Environmental Excellence. Mr. Pope has managed field-testing and engineered improvements for innovative remediation technologies, managed and supervised field-testing of confidential experimental groundwater assessment technologies, and implemented innovative comprehensive cost-benefit analysis methodologies for surface water resource valuation.

As an expert in environmental site investigations, Mr. Pope is responsible for the field management of rapid screening technologies including laser-induced fluorescence (LIF), membrane interface probe (MIP), photoacoustic spectrometry (PAS), geophysical tools and the integration of these technologies with standard sampling methodologies for soil, groundwater, soil vapor, and air.

Education

¬ B.A., Geology, Lawrence University of Wisconsin, 1988

Specialized Training and Certifications

¬ OSHA 40-HR Health and Safety Training (Hazwoper), UW-Madison, 1990.
¬ OSHA 8-HR Health and Safety Training Refresher Courses, 1991-2012.
¬ Groundwater Resources Association, Applied Environmental Statistics, 1993.
¬ First Aid and CPR Training, 1993-2012.
¬ Trench Shoring Safety Competent Person Training, 2001.

Capabilities

¬ Aerial Photo Review and Analysis
¬ Expert Witness & Litigation Support Services
¬ Historical Land Use Research and Analysis

¬ Site Characterization
¬ Research and Development of Innovative Technologies

Professional Affiliations

American Society of Photogrammetry and Remote Sensing (ASPRS) - Associate Member
President of Southwest U.S. Region (SWUS), 2012
Vice President of Southwest U.S. Region (SWUS), 2011
Membership Chair for SWUS Region, 2009-2012
Chair of Poster Presentations, ASPRS 2010 National Convention, 2009
Society of Photo-Optical Instrumentation Engineers (SPIE) – Active Member

Representative Projects

Aerial Photo Review and Analysis

¬ In a litigation matter for a large mining entity, Mr. Pope was retained to provide a review of expert reports produced by three aerial photography experts representing two opposition entities. Opposition experts contended that no mining activities were performed during the timeframe required to establish vested rights. Mr. Pope prepared a rebuttal report critiquing the methods employed by the experts and citing more appropriate methodologies. Pope presented his findings before the California State Mining and Geology Board (State Mining Board). Mr. Pope then performed an independent analysis of the photography, assembling a collection of over 500 frames of aerial photographs dating from the 1930s to the present. Mr. Pope reviewed and analyzed the photographs, cross-referencing his observations with various mining maps and production records. Mr. Pope identified specific mining activities and mining infrastructure overlooked by opposition experts. Pope presented the findings in an expert report including dozens of 3D figures showing mining activities, mining equipment, and mining infrastructure. Pope presented his findings before the State Mining Board utilizing projected 3D exhibits. The State Mining Board ruled in favor of the client, acknowledging their vested rights to mine, and placing no limits on their future mining production.

¬ For a major Los Angeles County landowner, Mr. Pope performed third-party analysis of historical aerial photographs to critique the investigation and assessment strategies of the current ¬ Feasibility Studies ¬ Phase I Environmental Assessments ¬ Environmental Compliance Audits ¬ Hazardous Building Materials Assessment and Management environmental consultant. Findings revealed five additional areas of former oil field infrastructure that were overlooked by the consultant.

¬ In a litigation matter for a major land developer, Mr. Pope assembled a collection of over 200 vertical and oblique aerial photographs dating from the 1920s to the present. These photographs represented six (6) square miles of land including three (3) square miles that were leased for oil exploration and production from the 1930s to present. Mr. Pope reviewed and analyzed the photographs, cross-referencing his observations with various oil field maps and oil exploration and production records. Mr. Pope identified several hundred areas of concern (AOCs). Within each AOC Mr. Pope identified the contaminants of concern, anticipated depths of impacted soil, and recommended investigation methods based on observed access considerations and anticipated subsurface conditions. Mr. Pope worked with GIS experts to precisely map the locations of these AOCs on a base map, staked the AOC locations in the field using survey-grade GPS equipment, and field-checked the locations by measuring from specific landmarks and evaluating topographic

features. These AOCs were then investigated. Mr. Pope's work demonstrated that unlawful oil field practices were utilized during exploration and production activities in the 1940s and 1950s, and these practices resulted in subsurface contamination that was still present at the time of the field investigation. Subsequent litigation resulted in a settlement in favor of the client (plaintiff).
¬ For a confidential energy company, Mr. Pope was retained regarding a dispute over recent mass grading and land contours. The landowner claimed the oil company had substantially changed the grade of lands in violation of their lease, impacting the view and reducing the acreage of usable level land, compromising the yard of a nearby, temporarily removed, residence. Mr. Pope's analysis of aerial photography validated the claims of the plaintiff, allowing for a rapid settlement. Mr. Pope's analysis provided the client with specific elevation goals and survey benchmarks to use for restoration of the landscape.

¬ For a Fortune 100 chemical manufacturer Mr. Pope reviewed, acquired and/or analyzed approximately 150 historical aerial photographs of the 50+ acre manufacturing complex to determine areas of concern associated with the manufacture of pesticide products, chlorofluorocarbons, sulfur-based products, and distillation of phthallic anhydride. Mr. Pope provided analysis of the aerial photographs and augmented this study with information from approximately 10,000 pages of plant records and 40 hours of employee interviews to create an inventory and map of areas of concern covering plant operations for 77 years.

¬ For a Fortune 500 aerospace company, Mr. Pope analyzed the client's collection of approximately 600 photographs of historic aircraft manufacturing processes dating from the 1930's through the 1960's. He also reviewed, acquired and/or analyzed over fifty historical aerial photographs of the site from public collections dating from the 1920's to 1995. Using previously compiled historical information, approximately 8,000 pages of plant records, and analysis of aerial photographs, Mr. Pope compiled the most thorough and complete manufacturing chronology for the property that identified manufacturing practices and areas of concern that were previously unknown. Based on this information, site characterization and remediation was successfully performed with the approval of the County of San Diego Hazardous Material Management Division.

¬ For more than fifty environmental site investigations nationwide, Mr. Pope analyzed historical aerial photographs to determine the specific locations of past underground fuel storage tanks and fuel dispensers at former service station properties. Mr. Pope integrated geological information and development plans with the aerial photo analyses to develop site-specific investigation plans that accomplish both geotechnical and environmental investigation goals in a single package.

¬ For an oil exploration and production company, Mr. Pope performed analysis of historical aerial photographs to identify the specific locations of two former oil wells that were abandoned over 50 years earlier. The purpose was to locate the wells so they could be reabandoned to current regulatory standards. Mr. Pope's analysis resulted in a site map for each well that guided the client to the precise locations of the abandoned wells. One abandoned oil well location was confirmed by geophysical to be present at the precise location mapped. A marker for the second abandoned oil well was found at the mapped location,

¬ For a Los Angeles area city redevelopment agency, Mr. Pope reviewed, acquired, and/or analyzed approximately twenty historical aerial photographs for the proposed site of a new fire department headquarters building. Development plans required excavation to depths of nearly thirty feet for subterranean parking. Review of the photography revealed concerns not previously identified, including a trolley maintenance station that was historically located on the property. Mr. Pope

designed and performed a site characterization plan that revealed the location and extent of contamination. Results of Mr. Pope's study were used to prepare a soil management plan to allow for the construction schedule to be followed without interruption.

¬ For a national grocer, Mr. Pope acquired and analyzed aerial photography for the proposed acquisition of a 50-acre site for use as a regional grocery distribution center. Mr. Pope's analysis of approximately thirty aerial photographs revealed the neighboring facility that historically manufactured asbestos pipe had performed disposal activities on the subject property. Historical photographs indicated that asbestos waste appeared to be buried on the subject property and that crushed asbestos pipe was used as road base material on the subject property. Mr. Pope designed a sampling program that confirmed the existence of buried asbestos waste and confirmed the historic use of asbestos materials as road base. Mr. Pope's observations and data interpretations were used to negotiate a successful property transaction including development plans that provided for encapsulation of asbestos materials beneath engineered pavement caps and geofabric barriers.

¬ For a Southern California landowner and developer, Mr. Pope located and analyzed a series of historical aerial photographs of a property consisting of coastal sand dunes for purposes of habitat protection planning. The outcome of the study demonstrated that nearby oil exploration and production activities had infringed on a portion of the property, requiring follow-up environmental site investigation.

¬ For an Orange County California property developer, Mr. Pope discovered, during aerial photo review, that a gasoline service station was formerly located on the subject property prior to 1930. Through stereoscopic analysis of twelve aerial photographs and four historical survey maps, Mr. Pope determined the location of the underground storage tanks within the right-of-way of the widened city street. Based on Mr. Pope's evaluation an underground fuel storage tank was discovered in the anticipated location, the surrounding soils were assessed, and the client was allowed by the city to abandon the tank in-place.

¬ Through the performance of several hundred Phase I Environmental Site Assessments nationwide, Mr. Pope has analyzed thousands of aerial photographs from over one hundred historical collections. Analyses performed by Mr. Pope met or exceeded ASTM standards of practice, and most often were performed in accordance with more strict self-imposed standards that required microscopic stereo analysis of a chronologic series of historical aerial photographs for each property evaluated.

Expert Witness and Litigation Support Services

¬ For a confidential commercial land developer, Mr. Pope was retained to perform forensic analysis of historical aerial photography to determine when certain illegal fill soils, not disclosed by the seller, were placed on the property. Mr. Pope's analysis demonstrated that the fill soils were continuously and methodically placed on the property during the full duration of ownership of the seller, and not before. Mr. Pope's analysis included identifying the grading equipment used for portions of the fill activity and associating that equipment with an adjacent facility, also owned by the seller. Mr. Pope also determined and demonstrated that the fill soils at the property were placed within wetland areas. Mr. Pope's evaluation included determining the volumes of fill soil added to the property and correlating specific dates of fill soil placement with environmentally impacted soils discovered on the property. Mr. Pope's findings helped attorneys identify additional sources of discoverable documents, and lead to a just settlement.

¬ For a confidential energy company, Mr. Pope was retained to determine to what degree oil field infrastructure had contributed to erosion of land at a 100+ acre oil lease. The land owner claimed that oil field infrastructure and mismanagement of stormwater runoff had fully caused over $10,000,000 of erosion damage. Mr. Pope's analysis demonstrated that erosion was fully caused by inappropriate agricultural practices implemented in the 1910s to 1940s, and that erosion caused by the agricultural practice had subsequently caused extensive damage to the oilfield infrastructure. Mr. Pope presented his findings in mediation at JAMS in Los Angeles and the land owner consequently, and reluctantly, sold all surface rights to the leaseholder to avoid the expense of compensating the leaseholder for damages to infrastructure arising from the erosion.

¬ For a major land owner, Mr. Pope provided expert witness services including deposition and participation in deposition of rebuttal witness. Mr. Pope's responsibilities included preparing hyper-stereo three-dimensional (3D) projection exhibits of historical aerial photographic images to demonstrate his analysis methods and findings to the jury. Based on the testimony of an expert team that included Mr. Pope as the lead expert witness in the case, the defendants settled at the onset of the jury trial.

¬ For a major land developer, Mr. Pope reviewed and inventoried data from over 13,000 pages of tenant records, to evaluate historical land use since the 1970's for a large commercial development. Types of records evaluated included historical maps, chemical inventory records, building department and environmental agency records, fire department files, employee interviews and aerial photography. This information was used to evaluate the number, type and potential chemicals for a variety of possible source areas on the subject property to determine whether known groundwater contamination beneath the property may have originated from an onsite source.

¬ Representing the defendant in an easement dispute, Mr. Pope provided expert witness services including deposition and court testimony regarding the specific measured locations of structures in historical aerial photographs and their spatial relationships with respect to the property line. Mr. Pope's testimony, delivered at the Burbank Courthouse (Los Angeles Superior Court, North Central District), included a projected chronology of aerial photographs with overlays of key observations, and in depth explanations of the processes undertaken to accomplish precise measurements.

¬ Representing the defendant in an easement dispute, Mr. Pope provided expert witness services including deposition regarding the specific measured locations of roadways and structures in historical aerial photographs and their spatial relationships with respect to the property line. Mr. Pope's testimony was scheduled to be delivered numerous times at the Stanley Mosk Courthouse (Los Angeles Superior Court, Central District), however a settlement was accomplished prior to Pope's testimony. Mr. Pope's prepared testimony included a projected chronology of 3-D aerial photographs with overlays of key observations, and in depth explanations of the processes undertaken to accomplish precise measurements.

¬ Representing the plaintiff in an environmental and real estate matter, Mr. Pope provided expert witness services including deposition and court testimony regarding historical hazardous waste generation and disposal activities on a refinery and undeveloped lands. Mr. Pope's forensic analysis of aerial photography provided specific locations, quantities and depths of waste interment. These observations and measurements from historical aerial photographs were validated by subsequent field investigation. Mr. Pope's testimony, delivered at the Superior Court of California, County of Kern, included a projected hyperstereo 3-D chronology of aerial

photographs integrated with key observations and chemical data, and explanations of the technologies applied to perform the investigation. The court ruled in favor of the plaintiff, releasing the plaintiff of remediation responsibilities, estimated to be approximately $55 million.

Research and Analysis of Historical Land Use Practices

¬ For a Fortune 500 aerospace company, Mr. Pope prepared a complete 110-year property use history for all properties located within ½ -mile hydrologically up-gradient of the subject property. The research involved creating a database of over one hundred properties including possible and known chemicals of concern associated with each property use. The data was evaluated within the context of the regional hydrogeology to determine where contaminants of concern, if released, may have migrated onto the subject property. Mr. Pope's work provided sufficient data to successfully demonstrate to the lead regulatory agency that groundwater impacted with chlorinated solvents on the subject property may have had specific offsite sources that require investigation.

Site Characterization

¬ For an energy company, Mr. Pope directed a team of 10 scientists to methodically map, sample, and document the locations of hazardous acid sludge surface seeps rising from buried refinery wastes on a 50+ acre property. Utilizing skills acquired from his experiences as an archaeologist, Mr. Pope and his investigation team processed the site like a crime scene. Forensic photogrammetry and GIS were used to document and accurately map the active surface seeps and the deposits of eroded sludges. Several methods of sampling and analysis were performed to characterize the unique hazardous wastes. Data was integrated into a conceptual model that successfully communicated the extent and nature of the environmental problem at the facility. Findings were presented at trial and the ruling was in favor of our client.

¬ For a major land developer, Mr. Pope prepared and implemented a successful assessment of over 40,000 cubic yards of import fill soil containing asbestos cement pipe. The assessment was performed by evaluating one hundred (100) 5-cubic-yard samples. Each sample was physically segregated into four fractions by grain size using an automated screening plant. The segregated materials were then hand-searched to remove all suspect asbestos containing material (ACM) for laboratory verification. Weights and measures of all samples and sample fractions were recorded. Soil samples were prepared by the CARB-435 milling process and analyzed by transmission electron microscope. The site characterization report was approved by the South Coast Air Quality Management District, saving the client many months of down-time.

¬ For a major land developer, Mr. Pope directed three months of preliminary field assessment activities on a three square mile oil field property using Rapid Optical Screening Tool (ROST). ROST is a laser-induced fluorescence sensor deployed by Cone Penetration Testing (CPT) equipment that produces continuous, real-time results without collecting and analyzing soil samples. Mr. Pope used ROST as a screening tool to determine the distribution of petroleum hydrocarbons in the subsurface and design investigation strategies to further evaluate abandoned sumps and oil wells where petroleum impacted soils were present. The ROST screening process resulted in 30% of the Areas of Concern (AOC) being removed from the investigation schedule, reducing costs and accelerating project completion. Mr. Pope was also able to use the ROST results to redefine the boundaries and depths of the subsequent soil investigations, improving accuracy, saving time, and reducing costs.

¬ For a major US port, Mr. Pope performed soil and groundwater sampling at an historic boatyard site. The project objective was to characterize the distribution of contaminants at the site to facilitate remediation and commercial redevelopment. The investigation successfully characterized the extent of petroleum hydrocarbons, chlorinated solvents, PCBs, cyanides, and metals including organic tin. The resulting site characterization report was approved by the County of San Diego Hazardous Material Management Division who directed the preparation of a remedial action plan.

¬ For a Fortune 100 chemical manufacturer, Mr. Pope supervised two field teams and a mobile analytical laboratory during the collection of soil vapor, soil, and groundwater sampling to characterize the extent of chlorinated solvents at a 60+ acre chemical manufacturing facility in response to a mandate issued by the Regional Water Quality Control Board, Los Angeles (RWQCB). The purpose of the study was to determine whether two shallow aquifers and the deep Silverado drinking water aquifer had been impacted by chemicals from the manufacturing facility. Mr. Pope designed and supervised the well construction using an air rotary casing hammer drill rig to install four nested wells at three discrete depths to ensure that cross contamination between the three separate aquifers did not occur. The information obtained from the well sampling indicated that all aquifers were impacted with chlorinated solvents; however, Mr. Pope prepared a statistical rationale demonstrating that the suite of chemicals in the upper two aquifers did not match the chemical compounds detected in the deeper Silverado. This study restored the client's relationship with the RWQCB and provided information to the RWQCB that other potential responsible parties may exist in the area.

¬ For a city redevelopment agency, designed a site investigation at a former aerospace facility primarily with soil vapor data. A limited amount of soil sampling data was collected to evaluate potential known source areas such as a diesel fuel tank and diesel pipelines. Mr. Pope designed and constructed three multi-depth soil vapor wells that were used for periodic monitoring of soil vapor from five discrete zones. Initially, the vapor wells were monitored weekly and then monthly. The resulting data was used to demonstrate that chlorinated solvents in soil were not a threat to groundwater. Using this method, Mr. Pope was able to prove that there were no chlorinated solvent-impacted areas on the site and the oversight agency agreed by granting the client site closure which allowed redevelopment to proceed on schedule.

Soil and Groundwater Remediation

¬ For a large commercial development, Mr. Pope directed several weeks of overnight excavation and disposal of PCE-impacted soils from within a former dry cleaners facility. Propane-powered excavation equipment and portable shoring were used to excavate within the shopping mall structure. Special precautions were implemented to protect foundations, structural members, and subsurface utilities. All activities were required to be completed by sunrise to allow for uninterrupted accessibility of adjacent businesses.

¬ For a city redevelopment agency, utilized a bucket auger drill rig to perform soil remediation to a depth of thirty feet within a source area where access was limited by public improvements and underground utility conflicts. Gasoline-impacted soil was removed from the source area in four foot diameter columns to a depth of thirty feet. The augered excavations were backfilled with a concrete slurry mix. The Regional Water Quality Control Board granted the client site closure for the soil remediation which allowed redevelopment to proceed on schedule.

¬ For a Fortune 10 oil company, performed project management and field supervision for the

demolition, site characterization, and remediation of two former oil and marine fuel storage reservoirs at a major refinery site. The objectives of the project were to prepare the property for potential redevelopment in accordance with a transfer agreement and to obtain no further action status with the Regional Water Quality Control Board. Los Angeles. The petroleum-impacted soils were segregated and trucked to a nearby thermal desorption facility to remove petroleum hydrocarbon contamination. Mr. Pope supervised installation of two clay caps designed to prevent the upward migration of petroleum hydrocarbons left in-place in sub grade soils. Soils remediated at the offsite treatment facility were hydrated to optimum moisture and returned to the site for fill placement and compaction. Upon completion, the project achieved the client's obligations with regard to the property transfer agreement. The site was granted closure by the Regional Water Quality Control Board, Los Angeles Region.

¬ For a major land developer, Mr. Pope provided third party oversight of the assessment and cleanup of asbestos-impacted fill soil. Mr. Pope identified errors in the implementation of the cleanup plan and brought these errors to the attention of the lead consultant, the property owner, and later to the South Coast Air Quality Management District (SCAQMD). SCAQMD issued a Notice to Comply to the lead consultant, and the consultant refused to complete the cleanup.

Research and Development of Innovative Technologies

¬ For the U.S. Air Force, Mr. Pope managed and supervised a multi-year innovative technology field demonstration of in-situ TCE-impacted soil and groundwater remediation by in-well vapor stripping (IWVS). The project was performed at the U.S. Air Force Flight Test Center (AFFTC) in partnership with Stanford University and the U.S Air Force Center for Environmental Excellence (AFCEE). Mr. Pope was responsible for maintenance, evaluation, design enhancements, budgeting, scheduling and quarterly and annual reporting of IWVS performance.

¬ For the U.S. Air Force, Mr. Pope managed and supervised design and construction of an innovative technology field demonstration combining in-situ cometabolic biotransformation of TCE with in-well vapor stripping (IWVS). The program, titled bio-enhanced in-well vapor stripping (BEHIVS) was performed at the U.S. Air Force Flight Test Center (AFFTC) in partnership with Stanford University and the U.S Air Force Center for Environmental Excellence (AFCEE). In preparation for the field demonstration Mr. Pope designed and supervised construction of 42 monitoring wells, 12 injection/extraction wells, and one treatment well with reinfiltration galleries. System operation, groundwater sampling, vapor sampling, and laboratory analyses were designed to function within a single automated system that can be monitored and controlled remotely. Mr. Pope successfully managed the project through site selection, design, and construction of infrastructure.

¬ Designed a conceptual approach for in-situ enzyme-based biodegradation of a jet fuel plume using induced gradient and multiple injections and monitoring points within the plume. The objective was to remediate jet fuel impacted soil and groundwater underlying a major taxiway at a U.S Air Force facility without damaging infrastructure. Mr. Pope introduced the technology to management and developed the relationships between contractor and consultant that led to authorization to proceed.

¬ For the Archaeological Division of the State Historical Society of Wisconsin (SHSW), Mr. Pope developed an innovative analytical protocol for comparative fingerprinting of prehistoric ceramics to determine cultural affiliations of vessels destroyed by frost action. The analytical protocol included x-ray diffraction and neutron activation analysis of clays, mineralogical

analysis of temper, and scanning electron microscopic analysis of silica surfaces.

Feasibility Studies

– For the U.S. Air Force, designed, managed, and supervised a groundwater reinjection feasibility study to explore the option of reinjection of treated groundwater generated from five remediation sites at a military base. The field study included construction of three injection wells and nine monitoring wells to support testing and monitoring of groundwater reinjection at various flow rates within three hydrogeologic environments. The study also explored the possibility of using the reinjection gradient to capture and/or redirect contaminant plumes toward treatment systems. Reinjection was monitored continuously via transducers in monitoring wells. Test results demonstrated that reinjection of treated groundwater is a viable alternative within certain hydrogeologic environments at the Air Force Base.

Publications

R. A. Pope, "Undocumented Waste Disposal Sites Revealed by Digital Analysis of Historical Aerial Photography," in Proceedings of 53rd Annual Arizona-Nevada Academy of Science (ANAS), 2009
R. A. Pope, "Forensic Aerial Photography: Projected 3-D Exhibits Facilitating Rapid Environmental Justice," in Proceedings of SPIE, Vol.7238, The Engineering Reality of Virtual Reality, Ian E. McDowall; Margaret Dolinsky, Editors, January 2009.

Presentations

Forensic Aerial Photography (Pope). Guest Lecturer for Special Session: Best Practices in Archiving and Preservation of Imagery and Geospatial Data. Presented at the American Society for Photogrammetry and Remote Sensing (ASPRS) 2014 Annual Conference, Louisville, Kentucky, March 26, 2014.

Stepping Back in Time – Integrating Historical Aerial Photogrammetry with other Investigative Sciences to Resolve Environmental Issues (Pope). Special Session: Getting a Clear Picture of Environmental Impacts – Use of Aerial Photography to Prove and Delineate Toxic Waste and other Land Degradations. Presented at the American Society for Photogrammetry and Remote Sensing (ASPRS) 2010 Annual Conference, San Diego, California, April 30, 2010.

Forensic Aerial Photogrammetric Analysis of Historic Aggregate Production on Western Aggregate LLC's Lands (Pope), presented to the California State Mining and Geology Board (SMGB) and the Citizens of California at a Public Administrative Hearing, Marysville California, August 6, 2009.

Undocumented Waste Disposal Sites Revealed by Digital Analysis of Historical Aerial Photography (Pope). Presented at the 53rd Annual Meeting of the Arizona-Nevada Academy of Science (ANAS), Joint Symposium with SWUS ASPRS, Tucson, Arizona, March 2009.

Forensic Aerial Photography: Projected 3-D Exhibits Facilitating Rapid Environmental Justice (Pope),

presented at IS&T/SPIE Electronic Imaging 2009, The Engineering Reality of Virtual Reality, Interactive Science and Virtual Observation, San Jose, California, January 2009.

Forensic Aerial Photogrammetry and Justice (Pope), presented to a confidential client in Century City California, May 2008.

Forensic Aerial Photogrammetry (Pope), presented to confidential clients in Los Angeles California, January 2008.

Forensic Aerial Photogrammetry (Pope), presented to confidential clients in Anaheim California, March 2007 and November 2007.

Aerial Photography and the Environment (Pope), presented to the students and faculty of the Whittier College Environmental Sciences Department and staff of the Fairchild Aerial Photography Collection, March 2005.

Methods of Stereo Aerial Photo Analysis for Environmental Site Assessment (Pope), presented to the students and faculty of the Whittier College Environmental Sciences Department and staff of the Fairchild Aerial Photography Collection, April 2003.