E. WAYNE PEARCE, PG

Education

MS – Geology (Hydrogeology), University of South Florida, 1984 BS – Geology, Florida Atlantic University, 1976

Professional Licenses

Professional Geologist - California (No. 4191)

E. Wayne Pearce, PG

Professional Affiliations

Solid Waste Association of North America (SWANA) National Groundwater Association (NGWA) American Society for Quality (ASQ)

Professional Experience

Mr. Pearce has over 40 years of environmental project experience, with an emphasis in groundwater impact assessment, groundwater and soil gas monitoring, environmental remediation, and solid waste/hazardous waste management. He has managed environmental projects ranging in size from small site inspections to multi-year evaluation and monitoring investigations. Many of these projects have involved evaluation of environmental impacts, and monitoring and compliance for both closed and active solid/hazardous waste management facilities. This included establishing monitoring systems, preparing monitoring and compliance plans, performing ongoing monitoring through sample collection and analysis, evaluation of field and laboratory analysis results, and preparation of regulatory compliance reports for detection monitoring, evaluation monitoring, and corrective action implementation and assessment.

Mr. Pearce has also directed projects for investigation of hazardous waste sites and related impacts, and conducted Phase I and Phase II environmental site assessments (ESAs) for property transactions and development. In addition to site assessments for development and Brownfields projects, he has completed Phase II assessments to define the nature and extent of environmental impacts at hundreds of sites throughout the United States. In addition to extensive experience in California, he has managed projects in approximately 30 states, plus Jamaica, The Bahamas, and Puerto Rico. He also has participated in the first Groundwater Scientific Trade Mission between the United States and the former Soviet Union. Notable projects that Mr. Pearce has been involved in are described below.

Currently, Mr. Pearce serves as Project Manager for multiple landfill monitoring and compliance projects; Practice Area Leader for groundwater; and National Partner for Quality Management.

Major Due Diligence and Environmental Site Assessments

Southport EIP Levee Project. The West Sacramento Area Flood Control Authority (WSAFCA) was in the process of upgrading 6 miles of levees along the Sacramento River, in the Southport area. In 2012, as Project Manager, Mr. Pearce and SCS were retained to provide environmental assistance

for this project, which included an area-wide corridor assessment (preliminary Phase I), parcelspecific Phase I ESAs, Phase II ESAs, risk assessments, and cleanup planning for impacted properties. WSAFCA needed to acquire parcels, or portions of parcels, along the levee improvement corridor, and the environmental documentation was necessary for land acquisition, and to provide timely identification and clearance of potential environmental problems prior to the major levee construction work. Mr. Pearce managed SCS staff in all aspects of the project, providing Senior QA/QC review, and meetings with the client to coordinate activities. In total, the project involved environmental due diligence, site investigations, and possible cleanup activities at over 70 parcels.

City of San Jose, Preliminary Feasibility Report and Land Use Study at Nine Par Landfill, San Jose,

CA. The Nine Par Landfill was an approximately 70-acre landfill operating from 1938 to about 1970. The site was located adjacent to the San Jose wastewater treatment plant and the active Zanker Road Landfill. Mr. Pearce and SCS were retained by the City to determine the feasibility for site modifications for a variety of activities. As Project Manager, Mr. Pearce used surface geophysics to determine the site boundaries and estimate waste depth, used exploratory borings to confirm waste locations and depths and to collect LFG readings, and used test pits to determine soil characteristics for the cover soils and waste materials. The City used the data to determine the best end-use for the parcel.

Litigation Support

Mr. Peace provided expert witness testimony in the case of *Super Pallet Recycling Corporation v. Five Star Auto & Towing, Inc.*, regarding the Dixon Pit Landfill in Elk Grove, CA. Testimony was provided in the Office of Administrative Hearings, Superior Court of California, County of Sacramento. Testimony was in regards to the necessary steps needed to be taken, and the time required to respond to a Notice of Violation issued by the County of Sacramento Environmental Management Department (SCEMD).

Mr. Pearce also served as expert witness for the defense of a federal suit, *Crane et al. v. County of Merced,* regarding alleged impacts to property adjacent the Highway 59 Landfill in Merced County. Expert witness opinion was provided for groundwater conditions and impacts; U.S. District Court, Eastern District of California, January 2011.

Landfill Monitoring and Compliance

Project Manager, Landfill Monitoring and Additional Services, Neal Road Recycling and Waste Facility, Butte County, CA. Mr. Pearce has directed landfill monitoring and compliance reporting for the Neal Road Recycling and Waste Facility since 2012. Approximately 65 monitoring points, including groundwater wells, lysimeters, leachate sumps, and LFG probes are monitored quarterly, and quarterly compliance reports are compiled quarterly. In addition to the routine monitoring and compliance activities, other assigned projects have included replacement of monitoring wells that have gone dry; replacement of failed lysimeters; preparation of Water Quality Protection Standard reports; sampling and remediation of leachate spill areas; preparation of CalEPA grant applications; design of a new Covered Aeriated Static Pile (CASP) composting site; and Solid Waste Facility Permit emergency waiver and reporting support for the Camp Fire (2018) and North Complex Fire (2020).

Project Manager, Landfill Monitoring and Compliance Projects, Fink Road Landfill, Stanislaus

County, CA. The Fink Road facility includes over 25 monitoring wells, over 30 lysimeters and leachate sampling points, landfill gas (LFG) probes, and surface water monitoring. Because the site has both Class III and Class II units (ash from the on-site waste-to-energy plant goes into the Class II unit), monitoring is performed quarterly. Monitoring compliance reports are due to Regional Water Quality Control Board (RWQCB) quarterly. Mr. Pearce directs the sampling, analysis, and report

generation, including statistical analysis, and provides the point of contact for the County and RWQCB. Mr. Pearce also directed an evaluation monitoring study to determine the cause of inorganic constituent variations in groundwater, and to evaluate the source of an isolated MTBE detection. He performed a complete reassessment of inorganic concentration limits, including the statistical methods used to determine the limits, and recommended, in a new Water Quality Protection Standard Report, to modify the way concentration limits are calculated. The project began in 2006 and is contracted to continue through at least 2021.

Project Manager, Landfill Monitoring and Special Projects, Placer Western Regional Sanitary Landfill, Placer County, CA. The Western Regional Sanitary Landfill (WRSL) is a nearly 300 acre active landfill with 34 monitoring wells, plus multiple leachate sumps, leak detection sumps, storm water discharge locations, and other monitoring points. The site is sampled and reported quarterly. In addition to the routine sampling, analyses and reporting. SCS has completed multiple special projects and investigations at the site that include aquifer testing and development of a feasibility study for groundwater impact control and treatment; development of a Water Quality Protection Standard report; special groundwater isotope studies to help identify water sources; PFAS sampling and analysis; and installation of remote monitoring and controls (RMC).

Project Manager, Groundwater and Landfill Gas Investigations, Highway 59 Landfill, Merced County, CA. Beginning in 2006, Mr. Pearce directed investigation of soil gas concentrations and groundwater impacts along the southern boundary of the landfill. The initial study, which used downhole soil gas sampling during drilling, and groundwater sampling, concluded that low-level groundwater impacts south of the landfill were a result of VOC transmission via LFG migration. Following this study, Mr. Pearce prepared the Evaluation Monitoring Report to describe the nature and extent of the groundwater impacts at the landfill, an EFS to select a cost-effective corrective action approach, and a Corrective Action Plan (CAP) that was approved by the RWQCB.

Mr. Pearce also served as Project Manager for implementation of the groundwater corrective action program involving dual phase (water and soil gas) extraction and treatment. He also was Project Manager for installation of new monitoring wells, to replace wells that were dry or damaged, and installation of new LFG probes to comply with new CCR Title 27 regulations. In addition, he served as expert witness in a lawsuit brought by an adjacent landowner against the County. The suit was successfully defended in Federal court.

Project Manager, Monitoring and Compliance, L&D Landfill, Sacramento County, CA. This ongoing project involves monitoring of 30 wells, including corrective action extraction wells, leachate, surface water, retention ponds, and performance samples from the groundwater treatment system. Water levels and selected well samples are collected quarterly, and full monitoring system samples are collected semi-annually. Compliance reports are generated semi-annually and include operator-collected data, monitoring results, statistical analysis, graphic representations, and laboratory results. SCS also provides winter leachate discharge sampling and analysis and other on-call services. Mr. Pearce designed a new LFG monitoring system to comply with new CCR Title 27 requirements, and oversaw the installation of new LFG probes and monitoring wells. He also served as Project Manager for reconditioning of the groundwater corrective action system, which resulted in substantial increases in system efficiency.

Project Manager, Site Investigation, Monitoring and Compliance, Carpenter Road Landfill,

Modesto, CA. Since 2007, Mr. Pearce has served as Project Manager for work at the closed Carpenter Road Landfill, which was slated to become part of the Tuolumne River Regional Park. Initially, an investigation of the site was conducted to determine the extent and depth of wastes deposited during the period of 1956 to 1968. This investigation included evaluation of possible landfill gas impacts, and the first evaluation of groundwater conditions. It was determined that the

site was contributing to groundwater impacts in the form of VOCs. SCS then installed permanent monitoring wells and implemented a pro-active monitoring and reporting program, even though no Waste Discharge Requirements existed for the site. Mr. Pearce directed evaluation monitoring to determine the nature and extent of the impacts, and completed an EFS to determine potential corrective action measures. Plans are currently in the works to clean close a portion of the landfill and use the removed wastes to build closure cap elevations on the larger portion of the landfill. This project will result in approximately \$2M in savings for the City compared to importing enough cover soil for the cap, and results in an area suitable for construction of a storm water management basin after closure.

Project Manager, Monitoring and Compliance, Junipero Serra Landfill, Colma, CA. The Junipero Serra Landfill is a small disposal site south of San Francisco that operated between 1956 and 1983. The site has subsequently been closed and a Home Depot is located on the property. Since 2006, SCS has provided monitoring and compliance services, including monitoring LFG and groundwater, and operation and maintenance of the LFG collection and flare system. Mr. Pearce serves as Project Manager for groundwater monitoring and compliance activities, and prepares the annual reports submitted to the Bay Area RWQCB.

County of Sacramento, Monitoring and Compliance at L&D Landfill, Sacramento, CA. The ongoing project involved monitoring of 30 wells, including corrective action extraction wells, leachate, surface water, retention ponds, and performance samples from the groundwater treatment system. Water levels and selected well samples were collected quarterly, and full monitoring system samples were collected semi-annually. Compliance reports were generated semi-annually and included operator-collected data, monitoring results, statistical analysis, graphic representations, and laboratory results. As Project Manager, Mr. Pearce and SCS also provided winter leachate discharge sampling and analysis, in addition to other on-call services. Mr. Pearce designed a new LFG monitoring system to comply with new CCR Title 27 requirements, and oversaw the installation of new LFG probes and monitoring wells. He also served as Project Manager for reconditioning of the groundwater corrective action system, which resulted in substantial increases in system efficiency.

Project Manager for Evaluation of Landfill Impacts and Protection of Drinking Water Supply, Riverdale Community, Stanislaus County, CA. SCS was retained by the State of California, RWQCB Region 5, to evaluate impacts from the closed Bonzi Landfill; model groundwater flow; complete a human health risk assessment; and determine the best approach for protection of the sole drinking water supply well for the community of Riverdale. Options included expanding the landfill corrective action systems, connecting to the City of Modesto water supply, adding wellhead treatment to the existing supply well, and moving the supply well to a new location. After evaluation of options and completion of the initial phase of the project, SCS was retained to further evaluate the existing landfill corrective action systems and design additional control measures, including new extraction wells, to provide further protection of the drinking water supply. Mr. Pearce directed the project activities, met with the RWQCB and the City of Modesto to discuss project options, provided quality assurance review for geological and groundwater modeling, and prepared final reports.

Senior Quality Assurance/Quality Control (QA/QC) Reviewer, Various Projects, Southwestern U.S. In the capacity of Practice Leader for Groundwater Monitoring and Compliance in the Southwestern U.S., Mr. Pearce provides senior QA/QC review for a number of waste management facilities. This includes the closed Berkeley Landfill, the closed Oyster Bay and West Winton Landfills, and the Sand Point Landfill in Carlsbad, NM.

Experience Prior to Joining SCS Engineers

Prior to joining SCS in 2006, Mr. Pearce worked for Geraghty & Miller Consultants (1977-1980); Radian Corporation (1980 – 1987); CH2M Hill (1987-1990), and owned his own company: Phase Three Environmental Management (1990-2001). He sold Phase Three in 2001 and continued to work for the acquiring company – Jacobson Helgoth Consultants (2001-2005). During these tenures, Mr. Pearce served a wide variety of roles including Project Hydrogeologist, Project Manager, Operations Manager, and Owner. The following are examples of work performed during this time:

County of Madera, Monitoring and Compliance of the Fairmead Landfill, Chowchilla, CA. In the early 1990s, the site was under intense regulatory pressure to upgrade monitoring, reporting, compliance, and permitting with the RWQCB and the California Integrated Waste Management Board (CIWMB). Within 6 months of taking over this project as Project Manager, Mr. Pearce successfully achieved full compliance for the site and regulatory agencies were satisfied with the monitoring and compliance activities. The project included upgrading and maintaining monitoring systems, facility permitting (including a new material recovery facility [MRF]), development of customized data management system to manage the historic monitoring dataset, and installation of a landfill gas extraction groundwater corrective action system.

Monitoring and Compliance at Seven Waste Management Facilities, Inyo County, CA. As Project Manager, Mr. Pearce collected samples for monitoring, analysis of field and laboratory results, prepared compliance reports, investigated groundwater impacts, installed new groundwater and gas monitoring points, in addition to installing and monitoring a passive gas venting system. The large distances between some of the sites were the biggest challenge, including landfills adjacent to the Sierra Nevada Mountains, to sites on the east side of Death Valley.

Investigation of the Closed Meyers Landfill, South Lake Tahoe, CA. As Project Manager, Mr. Pearce managed the installation of new monitoring wells, monitoring and compliance reporting, aquifer testing and characterization, installation of a new groundwater corrective action system, investigation of landfill conditions and preparation of an evaluation monitoring report to determine the nature and extent of impacts. These services were performed for a Joint Powers Authority (JPA) with input from the US Forest Service.

Monitoring and Compliance at Avenal Landfill, Avenal, CA. As Project Manager, Mr. Pearce managed the evaluation of geologic and hydrogeologic conditions, the development of a new subsurface model of complex geology, monitoring of groundwater and gas, analysis of field and laboratory results, the preparation of compliance reports, and installation of new monitoring system wells and pumps.

Landfill Monitoring Assistance, El Dorado County, CA. As Project Manager, Mr. Pearce managed the installation of new monitoring wells, assisting statistical analysis and reporting procedures, and completed Tier II Landfill Gas Testing. This was one of the first Tier II Landfill Gas Testing Reports approved by the US Environmental Protection Agency (US EPA) under new regulations.

County of Amador, Monitoring and Compliance at Buena Vista Landfill, Watsonville, CA. As Project Manager, Mr. Pearce managed sampling and analysis of field and laboratory data, statistical analyses using intrawell methods, quarterly compliance reports, evaluating remedial action effectiveness, and the installation and maintenance of monitoring systems.

Various Environmental Projects, McClellan Air Force Base, Sacramento, CA. As Project Manager, Mr. Pearce conducted investigations of both subsurface disposal impacts and above ground industrial impacts. He oversaw some of the first monitoring well installations in the most

contaminated areas of the base, which generated both regulatory agency and local television media attention. Later projects included the assessment of air emissions from the base plating shop, and evaluation/cleanup of widespread mercury contamination from the instrument repair building.

Investigation of 23 Potentially Contaminated Sites, Beale Air Force Base, Marysville, CA. As Project Manager, Mr. Pearce managed sites, including three landfills, a spent ordnance area, several engine test cells, the flight line for the SR-71 Blackbirds and U-2 spy planes, and a photo waste liquid holding pond. The project involved an on-site team and collection of almost 1,000 samples. The final project report was over 4,000 pages.

Chevron USA, Contaminant Investigation of the Chevron El Segundo Refinery. As Project Manager, Mr. Pearce conducted an investigation involving multiple media (subsurface gas, groundwater, atmospheric emissions, and indoor air quality) to determine the impacts caused by the 1-square-mile facility over its 75-year operational history. At its peak, the project involved staff of over 70 personnel and up to eight separate sampling teams. Over 30 refinery lost-product streams floating on groundwater were identified using proprietary "GC Fingerprinting" methods. This resulted in corrective action recovery of lost-products which, in some cases, were reintroduced into the refining process to become new products.

State of California, Investigation of the McColl Hazardous Waste Site, Fullerton, CA. As Project Manager for the State of California, Mr. Pearce managed a site involving 12 acid sludge pits of petroleum industry wastes (pH <0.5 with potentially lethal SO2 emissions). The investigation characterized the types of wastes present, hazardous conditions presented by the wastes, estimated the quantity of the wastes, and recommended cleanup alternatives. Mr. Pearce also directed the trial excavation of the site to demonstrate the wastes could be safely excavated and moved to a more secure disposal location. The trial excavation involved trucking wastes through the Los Angeles basin with support "chase" vehicles, extensive emission control measures, and an FAA airspace restriction over the excavation site.

Olin Chemical, Investigation of a Possible Phosgene (Mustard Gas) Disposal Site, Lake Charles, LA. As Project Manager, Mr. Pearce managed site sampling and mapping under Level 2 "moon-suit" safety measures. The site was an illegal drum burial site and the corroded nature of the drums posed a severe safety hazard in some areas. No phosgene was detected in the investigation, nor were other chemicals; therefore, it was concluded that the site most likely was a dump site for empty drums. Olin Chemical was not held responsible for site cleanup.

City of Sacramento, Major Road Widening and New Bridge Project, Sacramento, CA. As Project Manager, Mr. Pearce conducted a Phase I ESA, which included the evaluation of over 100 businesses along the corridor for widening Industrial Boulevard and the new bridge located next to the Port of Sacramento. This was a major Phase I that included not only record searches, but also "on-the-ground" interviews with businesses and other operations in the area.

City of Folsom, Phase I and Phase II Investigation of the History Railroad Block, Folsom, CA. As Project Manager, Mr. Pearce managed the Phase I investigation for the site that was terminus of the first railroad in the Western United States, and involved over 150 years of continuous site use by the railroad and other entities. By necessity, the Phase I included over 150 years of historical information and documentation. A Phase II was later conducted to confirm suspected impacts from old railroad shop operations and a bulk fuel terminal. The project was completed in support of planned redevelopment of the block, which was partially completed to include a new parking structure and mixed-use commercial space.

Chevron Land & Development Corporation, Several Phase I Investigations, CA. As Project Manager, Mr. Pearce provided several Phase I ESAs for Chevron Land and Development, including

an old tank-farm area that was being developed in Richmond, CA, plus proposed housing developments in several other locations. These ranged from sites with known historic petroleum impacts, to large tracts of undeveloped land in rural California.

Integrated Waste Management Board Statewide Recycling Projects. As Principal Manager for the State of California, Mr. Pearce served for two evolving statewide recycling programs: WRAP and CalMAX. These programs were run by others under contract to CIWMB, but were not managed properly. Phase Three Environmental took over the contracts, expanding their statewide usage, and training CIWMB staff to manage the projects, which were then internalized back into CIWMB management.

Investigation of Red Mud Lake Impacts, ALPART Jamaica. As Hydrogeologist, Mr. Pearce provided hydrogeology oversight for investigation of potential groundwater impacts from red mud lakes in central Jamaica. The ALPART operations mined alumina bauxite and processed the ore using caustic soda. The residual wastes were pumped into red mud lakes (pH >13). Drainage from these waste ponds threatened the water supply sources for a large portion of central Jamaica. The investigation, which included drilling through Karst limestone sequences with large voids, installed groundwater monitoring points to serve as sentinels for possible impacts.

Investigation of Impacts from Hooker Chemical, Montague, MI. As Hydrogeologist, Mr. Pearce provided hydrogeologist oversight for investigation of chemical impacts from a Hooker Chemical manufacturing facility in Michigan. The study was to determine the nature and extent of the impacts due to prior on-site disposal of chemicals (as was the practice prior to environmental regulations). The study involved installation and sampling of new monitoring wells to define the groundwater impact plume, which was moving toward a nearby lake.

Corrective Action Planning, Lipari Landfill, NJ. As Hydrogeologist, Mr. Pearce provided hydrogeological services to assess possible corrective actions at the Lipari Landfill, which at the time was the No. 1 Superfund site in the country. The project involved design of a groundwater extraction system to remove contaminated groundwater for treatment.

Water Supply Upgrades, Guayama, Puerto Rico. A major electrical generating power plant in southern Puerto Rico was planning to upgrade the facility and needed more water supply for plant cooling. As Hydrogeologist, Mr. Pearce provided hydrogeological oversight for development of new supply wells. These large diameter wells had to be installed in alluvial material that had a large clay content. Development of the wells, after installation, took several weeks in order to achieve sufficient volume and quality of water.

Effluent Deep Injection Wells, West Palm Beach, FL. As Hydrogeologist and Site Manager, Mr. Pearce served as hydrogeologist and site manager for installation of five deep injection wells for secondary-treated municipal effluent. These wells were completed into a saltwater zone below 3,000 feet and involved five casing strings ranging from 72-inch diameter (surface casing to 50 feet), to 24-inch diameter to 3,200 feet, plus 500 feet of 22-inch open hole. The project was one of the first of its kind and pioneered new well construction methods and problem resolutions. Once completed, wells were tested for injection at flow rates of 10,000 gallons per minute.

Publications and Presentations

Pearce, E. Wayne, Multivariate Factor Analysis as a Tool for Evaluation of Complex Groundwater Datasets for Waste Management Facilities. The 33rd International Conference on Solid Waste Technology and Management, Annapolis, MD, March 2018.

Sullivan, Patrick S.; Pearce, E. Wayne; and Kerrin, Steve, Defending Landfills Accused If Landfill Gas Impacts on Neighboring Properties. SWANA Wastecon Conference, Washington DC, August 2012.

Pearce, E. Wayne, Will Your Facility Monitoring Data Survive a Lawsuit?, SWANA National Landfill Conference, Orlando, FL, October 2011.

Pearce, E. Wayne, Dehalogenation of Chlorinated Hydrocarbons in Anaerobic Landfill Conditions (How Nature Can Make Things More Toxic), Presentation at the Solid Waste Association of North America (SWANA) Western Regional Symposium, South Lake Tahoe, California, May 1996.