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Professional Profile

Ms. Sparacio is a Licensed Geologist and specializes in the release, transport, and fate of toxic pollutants in the environment. She has 20 years of experience conducting and managing environmental studies throughout the United States. She provides scientific and strategic consultation to industrial clients on the design and implementation of CERCLA, RCRA, and state-equivalent investigations, remediation approaches, and negotiations with state and federal agencies. Ms. Sparacio specializes in reconstructing historical chemical releases to determine the timing, sources, and mechanisms of the releases to identify liable parties, apportion responsibility, and allocate costs to remediate and/or compensate for environmental harm. She has evaluated numerous types of sites including smelters, mines, manufactured gas plants, wood treatment facilities, airplane manufacturing plants, airport runways and flight lines, shipbuilding facilities, and power plants.

Academic Credentials & Professional Honors

M.B.A., Business Administrations, Seattle University, 2005

B.S., Geology, Western Washington University, 1998

Licenses and Certifications

Licensed Geologist, Oregon, #G1934

Licensed Geologist, Washington, #2495

Hazardous Waste Operations and Emergency Response 40-hour training program

OSHA 10-hour Construction training program

Professional Affiliations

Association of Environmental and Engineering Geologists

Society for Industrial Archeology

Publications

Shields, WJ, Pietari J, Sparacio T. Use of PCBs at World War II manufacturing sites. Organohalogen Compounds 2017; 79:604-607.|

Shields WJ, Pietari J, Sparacio T. Use of PCBs at World War II manufacturing sites. 37th International Symposium on Halogenated Persistent Organic Pollutants (POPs) - DIOXIN 2017. Vancouver, Canada. August 20-25, 2017.

Mesard PM, Sparacio T, O'Reilly KT. The states' perspective on cost allocation. ABA Superfund and NRD Litigation Committee Newsletter 2015; 10(3):10-12.

Mesard PM, Sparacio T, O'Reilly K. Criteria for allocation of responsibility under state law. Environmental Claims Journal 2015; 27(1):40-49.

Sparacio, T. An environmental forensics case study: Reconstructing historical chemical releases in the Hylebos Waterway. Association of Environmental and Engineering Geologists, Washington Section Meeting, Bellevue, WA, November 20, 2014.

Pietari JMH, Sparacio T, Shields W. Reconstructing historical chemical releases using industrial archaeology. Society for Industrial Archeology, 43rd Annual Conference, Portland, ME, May 17, 2014.

Murphy BL, Sparacio T, Shields WJ. Manufactured gas plants — Processes, historical development, and key issues in insurance coverage disputes. Environ Foren 2005; 6(2):161-173.

McWilliams L, Livermore D, Lamadrid D, Sparacio T, Dodak E. Using a chemical tracer to map groundwater flow in vadose zone soils. Presentation at the National Ground Water Association 2002 Ground Water Expo, Las Vegas, NV, December 2002.

Housen B, Shriver (Sparacio) T, Knowles A, Burgess M, Chase M, Fawcett T, Hults C, Kenshalo S. Transport magnetostratigraphy: Preliminary results from the Cretaceous Nanaimo Group. Poster presentation at the American Geophysical Union Fall Meeting, #GP72A-11, San Francisco, CA, December 1998.

Project Experience

Metals

Completed the Removal Site Evaluation and Removal Action Design to address lead-contaminated soil throughout the town of Cherryvale, Kansas, resulting from use of smelter residue material from the former National Zinc Smelter Site. Developed a visual classification system of smelter residue that was validated by XRF analyses to provide a cost-effective means of screening over 1,100 properties.

Evaluated the transport and fate of thallium and arsenic in fugitive dust from a landfill at a military base in Southern California. Identified issues with thallium analysis by XRF and inductively coupled plasma (ICP), and analyzed potential inhalation and ingestion of dust and soil.

Evaluated the source and allocated costs for cleanup of elemental mercury spilled during upgrades to a municipal sewage treatment plant in Dubuque, Iowa.

Evaluated groundwater contaminant sources, transport, and fate at a former alumina production facility in the U.S. Virgin Islands that was the focus of CERCLA cost recovery and cost contribution claims.

Evaluated historic contributions of cadmium, mercury, zinc, PCBs, and PAHs from a former shipyard into the Hylebos Waterway, part of the Commencement Bay Superfund Site in Tacoma, Washington. Evaluated historical site operations and chemical use from industrial World War I and World War II-era shipbuilding, and post-World War II ship dismantling, retrofitting, repair, and maintenance.

Investigated potential sources of cement kiln dust (CKD) at a former disposal site in Seattle, Washington.

Reviewed historical operations and chemical data related to operations of cement plants in the area.

Evaluated the water conveyance system and water quality of an agricultural well at a large winery near Santa Barbara, California. Determined that the well was affected by iron-related, sulfate-reducing, and slime-forming bacteria, but that the most proximate cause of clogging was a combination of carbonate and iron hydroxide precipitation in certain portions of the irrigation system.

Developed a site characterization and risk assessment work plan to evaluate residential, occupational, and recreational exposure scenarios, and managed the site characterization at the former Old Dominion mining and smelter site in Globe, Arizona. Metals of potential concern included arsenic, beryllium, cadmium, copper, chromium, lead, manganese, and zinc.

Reconstructed historical discharges and loading of arsenic, mercury, zinc, PCBs, and PAHs, into the Upper Hylebos Waterway, part of the Commencement Bay Superfund Site in Tacoma, Washington, for a CERCLA cost recovery and allocation litigation case.

Evaluated historical operations, chemical use, and discharges from a variety of sources including chlor-alkali manufacturing, ferrous scrap metals salvaging and recycling, aluminum smelting, concrete and asphalt batching, ferroalloy smelting, arsenical pesticide manufacturing, boat building, and log sorting.

Developed methods for allocating past environmental investigation costs related to the U.S. EPA's response costs for the Harbor Island Lead Superfund Site in Seattle, Washington. Separated costs related to lead from the former RSR Smelter from costs related to a second lead smelter on Harbor Island, and from costs related to organic contaminants.

Conducted allocation of past and potential remediation costs at 25 sites across the United States as part of an insurance litigation project involving secondary lead smelters and landfills. Evaluated potential future cleanup costs, third-party property damage claims, future operating and management costs, and natural resource damage claims and associated costs.

Performed effectiveness evaluations of two low-flow groundwater sampling techniques used at a former RCRA hazardous waste management facility in Seattle, Washington. Evaluated water quality parameters, metals, and volatile organic compounds from shallow, intermediate, and deep wells at the facility and downgradient of the facility; assessed available geochemical data; and reviewed client's field procedures for compliance with published sampling methods.

Performed a preliminary technology screening for a former mercury processing and reclamation plant in New Jersey. Evaluated remediation technologies for groundwater, surface and subsurface soil, and sediments.

Polychlorinated Biphenyls

Evaluated historical uses of PCBs in joint sealant materials used in airport runway and highway construction during World War II and the Cold War.

Evaluated historical uses of PCBs in relation to the manufacture of aircraft during World War II and the Cold War. Evaluated PCB sources including transformers, capacitors, hydraulic fluids, lubricants, and building materials.

Evaluated historical uses of PCBs in World War II shipbuilding (e.g., paint, electrical cable insulation, and dielectric fluid) and associated release pathways at a former shipyard in Tacoma, Washington.

Evaluated the historical uses of PCBs in U.S. Navy ships in the 1950s and 1960s and associated release pathways from ship dismantling, retrofitting, rebuilding, and repair at a former shipyard in Tacoma, Washington.

Completed documents for remediation of Reach 4 of the Shelly Ditch Site in Crawfordsville, Indiana. The site consisted of PCB-contaminated sediments and floodplain deposits along a small stream emanating from a former brake manufacturing plant. Prepared documents including a work plan, a QAPP, a request for proposal for subcontractors to perform the removal action, monthly progress reports, a closure report, and letters to the community.

Evaluated the discharge of PCBs and other contaminants from a variety of industries into the Hylebos Waterway in Tacoma, Washington, for a CERCLA cost recovery and allocation case.

Implemented a data collection effort to augment a human health risk assessment of PCBs in concrete joint sealant materials and on concrete surfaces in the 550,000-square-foot flight line area of a major aircraft manufacturing and maintenance facility in Washington State. The risk assessment had to be augmented because several years after PCB-containing joint sealant material replacement was completed, residual PCBs were discovered to have wicked into the new replacement joint sealant material.

Estimated the probability of costs for six remedial alternatives using Monte Carlo methods in cost allocation negotiations among potentially responsible parties (PRPs) for a site with PCB sediment contamination at Upriver Dam in Spokane, Washington. Remedial alternatives included monitored natural attenuation, capping, and dredging options.

Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons

Evaluated the volumes and timing of crude oil and produced water released during four separate spills at an oil production facility in central California.

Evaluated historic wood treating activities and the subsequent disturbance of PAH-contaminated soil in Ashland, Wisconsin, including eyewitness testimony, aerial and perspective photographs, engineering drawings, Sanborn Fire Insurance maps, and other historical documents.

Prepared a soil management plan to address identifying, sampling, and disposing of soils and concrete potentially contaminated with TPH, metals, and PCBs during the demolition of a power plant in California.

Evaluated the relative timing of residual contamination in localized areas of a former power plant in California to distinguish between contamination associated with historical activities carried out by the former operator and contamination associated with more recent activities carried out by the current operator.

Conducted a forensic analysis on residual TPH contamination in soils to determine the sources and relative ages of the TPH releases from various operational areas of a former power plant in California.

Used data from 1,200 soil boring logs to calculate the volume of tar in soil at six former manufactured gas plants (MGPs) in New York as part of an insurance recovery case.

Evaluated historic contributions of PAHs and other contaminants from a former shipyard into the Hylebos Waterway, part of the Commencement Bay Superfund Site in Tacoma, Washington (discussed above under Metals and Other Inorganic Chemicals).

Evaluated the discharge of PAHs and other contaminants from a variety of industries into the Hylebos Waterway in Tacoma, Washington, for a CERCLA cost recovery and allocation case (discussed above under Metals and Other Inorganic Chemicals).

Developed a conceptual site model and determined the number and age of petroleum releases for an underground storage tank (UST) system at an active gasoline station in California. Evaluated historical

records for equipment failures and spills; groundwater elevation data; and benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tert-butyl ether (MTBE) concentrations, ratios, and trends in groundwater chemical data.

Age-dated petroleum releases at approximately 10 Florida gasoline stations based on the record of equipment failures, plume development, and ratios of plume constituents.

Reconstructed past site practices and events using historical financial and accounting data from the 1890s through the 1930s in support of an insurance litigation project involving a former manufactured gas (MGP) plant in Florida.

Evaluated the hydraulic capture-zone of LNAPL in a tidally-influenced aquifer and developed a 3D visualization of groundwater at the Harbor Island Superfund Site in Seattle, Washington.

Completed a closure report for a former bulk fuel terminal in Everett, Washington, covering site structure demolition, monitoring-well abandonment, trench and site cover construction, and water management issues.

Chlorinated Solvents

Evaluated the contemporaneous but evolving "state of knowledge" of the environmental understanding and regulatory status of tetrachloroethene (PCE) from the 1940s through the 1970s. The purpose of the evaluation was to determine what was commonly understood by the industrial and scientific community related to the potential threat of PCE to groundwater, including pathways, fate, and toxicology. Reviewed findings from over 400 technical and regulatory documents.

Assisted in preparation of a preliminary environmental remediation cost estimate for a facility in southern California that manufactured explosives, munitions, and rocket motors. Reviewed historical documents to estimate the nature and extent of potential contamination and determined a range of possible costs assuming various remediation scenarios.

Other Organic Compounds

Evaluated perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) occurrence in soil, groundwater, and surface water associated with historical use of aqueous film-forming foam (AFFF) for fire training and fire-fighting at an airport facility in Europe.

Evaluated transport and fate of an herbicide (sulfometuron methyl) applied to land adjacent to farm fields in south-central Idaho. Evaluated soil taxonomy, soil erodibility, and assisted in wind erosion modeling.

Prepared a stormwater study plan for an active wood treatment facility in Joplin, Missouri, for negotiations with the Missouri Department of Natural Resources regarding renewal of the NPDES stormwater permit for the facility. Developed field sampling procedures to characterize pentachlorophenol (PCP) in stream flow and stormwater runoff, summarized procedures for determining site-specific water quality criteria, and identified potential future best management practices (BMPs) to be implemented at the facility.

Completed a RCRA Part B permit modification to accelerate closure and allow redevelopment of RCRA-regulated landfarms at an active wood treating facility in Joplin, Missouri, where the primary contaminant of concern was PCP. Prepared comments on the draft permit issued by the regulatory agency and updated the facility's post-closure care plan. Completed seven semiannual RCRA corrective action program effectiveness reports for the site that included groundwater, surface water, sediment, and subsidence data. Prepared a RCRA Class I permit modification to allow the use of low-flow groundwater sampling methods the site; the permit modification was approved by the Missouri Department of Natural Resources.

Site Investigations

Conducted a two-phase sediment investigation at two shipyards in San Diego Bay. that included analysis of metals, PCBs, PAHs, and petroleum hydrocarbons. Analyses carried out included chemical analyses of sediment, pore water, and tissues of benthic organisms; mineralogical microprobe analyses; sediment toxicity tests; sediment profile images; benthic macroinvertebrate community analyses; chemical bioaccumulation tests; histopathological examinations of fish; and analyses of fish bile for PAH breakdown products.

Conducted an environmental investigation of hexavalent chromium in groundwater at chemical plant on the Willamette River in Portland, Oregon.

Conducted an environmental investigation to determine if metals, petroleum hydrocarbons, and/or semivolatile organic compounds in groundwater and soil at an inactive sawmill in Gardiner, Oregon, were above applicable screening criteria.

Conducted a city-wide groundwater survey designed to delineate zinc and cadmium in shallow groundwater discharging into a stream in Blackwell, Oklahoma.

Conducted a two-phase baseline soil study at a silviculture-based phytoremediation pilot project at a decommissioned wood treating facility in Jena, Louisiana, impacted with chromated copper arsenate (CCA) and PAHs.