

Wagner & Bonsignore

Consulting Civil Engineers, A Corporation

Nicholas F. Bonsignore, P.E.
Robert C. Wagner, P.E.
Paula J. Whealen
Henry S. Matsunaga

David H. Peterson, CEG, CHG
David P. Lounsbury, P.E.
David Houston, P.E.
Vincent Maples, P.E.
Patrick W. Ervin, P.E.
Ryan E. Stolfus

James C. Hanson
Consulting Civil Engineer
A Corporation

DAVID H. PETERSON PROFESSIONAL RESUME

REGISTRATIONS:

California Registered Geologist No. 3830
California Certified Engineering Geologist No. 1186
California Certified Hydrogeologist No. 86

EDUCATION:

University of California, Davis - M.S. in Geology, 1980
University of California, Davis - B.S. in Geology, 1976

EXPERIENCE:

Mr. Peterson has 35 years of experience as an engineering geologist and hydrogeologist, performing site investigations for a wide variety of geologic, hydrogeologic (groundwater), geotechnical, and environmental projects throughout the western United States. Geologic and geotechnical projects have included studies for schools, hospitals, office buildings, subdivisions, bridges, pipelines, and state-regulated dam sites; active fault and landslide/slope stability evaluations, preparation of EIRs; and site investigations for utilities, marinas, subdivisions, dam sites, road alignments, office buildings, timber harvest plans, and mine facilities. Hydrogeologic services have included evaluation of groundwater availability in water scarce areas, geologic review of water rights issues for existing wells and springs, siting and design of new water-supply wells, basin-wide studies of groundwater recharge, and conducting pumping tests to assess aquifer hydraulics and the potential impacts of wells on neighboring wells and surface water supplies. Mr. Peterson also has extensive project experience in the investigation and remediation of fuel and solvent releases to soil and ground water; work related to landfills and toxic pits, characterization of PCB, asbestos, and heavy metals contamination.

TYPICAL GROUNDWATER PROJECT EXPERIENCE:

EVALUATION OF EXISTING WELLS FOR STATE WATER RIGHTS JURISDICTION - Various Sites, CA

Reviewed geologic data and Well Completion Reports, and performed site visits to assess if existing domestic and agricultural irrigation water wells pump percolating groundwater or subterranean streamflow, as part of water rights permitting and application process.

STUDIES OF RECHARGE FROM MUNICIPAL AND INDUSTRIAL IRRIGATION - Western Mojave Area, CA

Performed subsurface investigations of soil moisture, texture, and chemistry to assess the contribution of municipal and industrial irrigation to basin recharge in the western Mojave Desert area.

EVALUATIONS OF EXISTING WATER SUPPLIES TO INDUSTRIAL FACILITIES – Various Locations, CA

Performed geologic evaluation of existing industrial facilities that rely on groundwater supply, to assess potential impacts from recent drought, as well as to evaluate status of wells and pumps. Performed basin-wide research of groundwater conditions and reviewed available well test data to assess changes in well capacity or pump performance. Provided recommendations for follow-up inspections, testing, and monitoring.

GROUNDWATER AVAILABILITY STUDIES – Sonoma County, CA

Performed numerous geologic evaluations of groundwater availability for use permits and subdivisions in water-scarce areas of Sonoma County. Evaluations include estimates of groundwater occurrence, storage, and recharge to assess additional cumulative impact posed by planned project.

ASSESSMENT OF GROUND-WATER PUMPING FOR NEW WINERY - Napa, CA

Developed well test protocols and performed field pump tests to assess the potential impact of ground-water pumping from new winery well on neighboring wells. Coordinated with neighbors, Napa County regulators, and project owner's attorneys to perform test.

NEW GROUNDWATER SUPPLY STUDIES – Sonoma and Mendocino Counties, CA

Performed geologic studies for various properties, to evaluate groundwater supply and new water well locations. Studies included geologic mapping, geophysical studies, and drilling test holes to assess groundwater supply. Observed/logged geologic conditions during drilling, and performed well tests to evaluate well yield and specific capacity.

FUEL CLEANUP BY SPARGING/VAPOR EXTRACTION - Sonoma County, CA

As consultant and general contractor, designed, installed and operated in-place systems using air injection (air sparging), ozone sparging, and vapor extraction to remediate fuel constituents in soil and ground water. Systems were installed in Sonoma County and are currently in operation or pending case closure. At one site, fuel concentrations in ground water decreased by 75% after

three months of operation. Currently designing systems to remediate high levels of benzene and MTBE in ground water at sites in Petaluma, Santa Rosa, and Sebastopol.

CALIFORNIA UNDERGROUND STORAGE TANK CLEANUP FUND (FUND)

Assisted clients in obtaining compliance for reimbursement by Fund, assisted preparing requests for contractor bids, managed and performed investigations, prepared invoices and reimbursement requests to meet requirements of Fund.

U.S. COAST GUARD TRAINING FACILITIES - Two Rock, CA

Project manager for environmental consulting services during removal of underground fuel storage tanks at 20 locations on the facility. Included field observations, monitoring, and sampling during tank removal, regulatory agency coordination, and direction to contractor during soil overexcavation.

U.S. NAVY FACILITIES - San Francisco, CA

Performed evaluation of in-ground acid-dipping tanks to determine whether facilities were subject to California Toxic Pits Cleanup Act. Worked in conjunction with civil engineer to evaluate structural integrity of tanks and prepare final report for regulatory agency review.

GROUND-WATER INVESTIGATION, SOLA OPTICAL - Petaluma, CA

Performed hydrogeologic investigation of solvent release from industrial site. Scope included installation and development of monitoring and extraction wells, aquifer testing, and long-term water-level monitoring.

HUNTERS POINT NAVAL SHIPYARD - San Francisco, CA

Developed scope of work and managed field work for remedial investigation of military landfill on Bay margin. Possible materials disposed since 1940's included paints, fuels, PCB's, cyanide wastes, heavy metals, and sand blast waste. Evaluated potential impacts of leachate migration to Bay.

AIR SPARGE/VAPOR EXTRACTION REMEDIATION SYSTEM, Sebastopol, CA

Prepared remedial action plan for cleanup of fuel hydrocarbons in soil and ground water at former gas station site. Following approval of remedial plan by regulatory agency, installed remedial system components, including well installations and treatment unit, and coordinated tasks of trenching and electrical subcontractors. Remediation system was converted from air sparging to ozone sparging; sampling indicates hydrocarbon impact in groundwater has been largely mitigated. Site currently in post-remedial monitoring phase.

FUEL RELEASE INVESTIGATIONS, FRACTURED BEDROCK SITE, Petaluma, CA

Completed field investigation, performed pilot testing, and prepared feasibility studies for cleanup of a site with fuel release to fractured volcanic bedrock aquifer. Pilot studies included continuous rock coring to locate specific fracture zones; heat pulse surveys to identify potential areas of fracture flow; ground-water pumping and ozone sparging tests to evaluate the feasibility of using these cleanup methods. Remediation system consisted of ozone sparging into impacted fracture zones. System operation resulted in steep declines in hydrocarbon concentrations in ground water, leading to case closure by the regulatory agency.

GEOLOGIC/GEOTECHNICAL PROJECT EXPERIENCE:

TIMBER HARVEST PLAN REVIEWS – Various Locations in California

Performed engineering geologic review of Timber Harvesting Plans, Timber Conversion Plans, and Non-Industrial Timber Management Plans for properties in Sonoma, Mendocino, Humboldt, and Santa Cruz Counties. Review involved extensive aerial photo interpretation and geologic mapping of landslide features in forested terrain, as well as site reconnaissance with Registered Professional Foresters to evaluate impacts of timber harvest and road construction. Attended Pre Harvest Inspections with members of responsible regulatory agencies.

LANDSLIDE INVESTIGATION, NEW RETIREMENT COMMUNITY – Santa Rosa, CA

Consultant to geotechnical firm performing evaluation of landslide hazards to planned new retirement community in eastern Santa Rosa, California. Investigation involved extensive geophysical surveys and downhole borehole logging to characterize both ancient and more recently active landslides. Performed field observation and consultation as part of landslide removal and buttressing during project construction.

FAULT RUPTURE HAZARD EVALUATION, AVON REFINERY - Martinez, CA

Performed geologic evaluation of fault rupture hazards from the active Concord fault for a planned cogeneration plant at an existing oil refinery. Investigation included logging of exploratory trenches to assess presence/activity of faulting.

LANDSLIDE EVALUATION, RESIDENTIAL DEVELOPMENT - San Pablo, CA

Performed engineering geologic assessment of historical landsliding potentially affecting planned residential construction. Review prior geologic data and aerial photography dating back to the 1940's to evaluate risk of landslide movement in planned lots. Provided report to geotechnical engineers, for review by City of San Pablo.

SEISMIC HAZARDS STUDY, BROOK HAVEN SCHOOL - Sebastopol, CA

Initially performed as soil investigation for new gymnasium, discovered widespread seismic liquefaction hazard underlying existing school site. Based on findings and subsequent review and concurrence by California Division of Mines and Geology, decision was made to rebuild school campus. In conjunction with design team, developed mitigation plan for liquefaction hazards, including foundation design (driven piles, grid foundations) and ground improvement by pressure grouting.

STATE JURISDICTIONAL DAMS - Various Sites in California

Performed numerous engineering geologic evaluations of existing and proposed new earth embankment dams under jurisdiction of California Division of Safety of Dams (DSOD). In conjunction with project Civil Engineers, develop scope of investigation for DSOD review, perform field investigations and coordinate site visits with DSOD reviewers, and prepare geologic reports for submittal with design package.

NEW HIGH SCHOOL SITES - Windsor , CA

Performed geologic and geotechnical studies as part of site selection process for new high school for the Windsor Unified School District. Studies included subsurface investigation, laboratory testing, and engineering analysis to evaluate of liquefaction potential and seismic safety of an embankment dam on one of the sites. Provided soils-related testing services during project construction.

NEW MIDDLE SCHOOL - Windsor, CA

Performed geologic and geotechnical studies for development of new middle school for the Windsor Unified School District. Evaluation of geologic hazards identified potential for liquefaction of soil strata beneath site. Provided geotechnical recommendations for site development, including mitigation of liquefaction hazards. Provided geotechnical testing services during site grading and underground utility installation.

GEOLOGIC HAZARDS EVALUATIONS, VARIOUS SCHOOL SITES

Provided geologic hazards evaluations for new and existing school sites throughout Marin, Sonoma, Napa, San Francisco, and Mendocino Counties, California. Reports have been reviewed by Division of State Architect and California Division of Mines and Geology with all reports successfully accepted by the agencies.

CASCADE RANCH RESERVOIRS - San Mateo County, CA

Performed geologic and geotechnical studies for two water supply reservoirs planned in the active San Gregorio fault zone. Geologic studies included over 1,100 feet of trenching in the proposed embankment areas, to assess the potential for surface fault rupture. Because both fault and liquefaction features were found, reservoir locations were revised. Geotechnical studies evaluated safety of reservoir embankments with up to one foot of vertical or horizontal ground movements.

ENGINEERING GEOLOGIC EVALUATION - Humboldt County, CA

Preliminary soil and geologic study for proposed 10-lot subdivision. Included subsurface investigation, including trenching for active faults, laboratory testing and development of recommendations for site development. Active faults were found in a portion of the property, requiring establishment of setbacks from the areas of potential surface rupture, as well as special foundation design guidelines in areas of potential ground deformation.

ARCATA TRANSIT FACILITIES - Humboldt County, CA

Performed fault and geotechnical investigation for site of new City transit facility in active fault zone. Included trenching up to 23 feet through old fill materials into native soils to assess fault hazards. Geotechnical studies included drilling and sampling of test borings and engineering analysis of settlement potential of old fills and weak marsh deposit soils.

LAKE SONOMA MARINA - Sonoma County, CA

Boat Launch Ramp - Performed detailed geotechnical studies of proposed boat launch ramp through ancient landslide deposit. Investigation included drilling, trenching, geophysical studies,

laboratory analysis of soils, and stability analysis to evaluate stability of landslide during rapid drawdown of the reservoir.

MC LAUGHLIN GOLD MINE - Napa County, CA

Performed geotechnical studies from initial project planning and site selection through detailed investigation for project design. Included investigation of ore grinding and processing facilities, six state-sized embankment dams, and slurry pipeline route. Provided field observation of landslide repairs up to 60 feet deep during site grading.

SANTA ROSA MEMORIAL MEDICAL OFFICE BUILDING - Santa Rosa, CA

Geologic and geotechnical site investigation for 4-story medical office building and adjacent 6-story concrete parking structure in special study zones established for Healdsburg-Rogers Creek fault zone. Scope of study included detailed geologic study, trenching, test borings, and engineering analysis. Analysis included evaluation for foundation systems for heavy loads associated with concrete parking structure next to the office building.

GUALALA WASTEWATER TREATMENT FACILITIES - Gualala, CA

Performed soil and geologic studies for site of new waste-water treatment plant, storage ponds, and spray irrigation areas. Studies involved extensive permeability testing of onsite soils, evaluation of impacts to shallow ground water and engineering analysis for construction of pond embankments in seismology active region.

DEBRIS FLOW HAZARD EVALUATION - San Rafael, CA

Performed investigation of potential source areas of rapid-moving debris flow landslides to proposed residential subdivision. Studies included subsurface investigation of debris source areas and testing of soils to evaluate their susceptibility to development as debris flows. Developed recommendations for mitigation of hazards including debris fences and settling basins.

GEOTECHNICAL INVESTIGATIONS - Geysers Geothermal Area, Lake County, CA

Completed numerous geotechnical site investigations for proposed geothermal power plants, steam well pads, steam transmission lines, access roads and administrative facilities at the Geysers Geothermal area.

ROGERS CREEK FAULT RUPTURE EVALUATION - Sonoma County, CA

Evaluated potential fault rupture hazard to proposed 4 mile-long segment of new PG&E natural gas pipelines across the active Rogers Creek fault zone in southern Sonoma County. Report included estimates of amount of fault displacement and recommendations to reduce/mitigate hazards.

ALQUIST PRIOLO SPECIAL STUDIES ZONES ACT - (Various Sites)

Provided technical review of geologic reports prepared in accordance with the Alquist Priolo Special Studies Zones Act to evaluate the adequacy of the reports and advise the governing agency as to their acceptability. Performed geologic investigations of fault rupture hazard for sites in Sonoma, Mendocino, Humboldt, Contra Costa, and San Mateo Counties.

GAUER ESTATE VINEYARDS - Geyserville, CA

As part of a design team consisting of civil, geotechnical, and agricultural engineers, performed geologic planning study of proposed 6,000-acre hillside vineyard and residential property. Developed planning maps for slope stability, water supply, and aggregate supplies. Evaluated feasibility of eight water supply reservoir sites affected by landslides and active faults.

PROFESSIONAL EXPERIENCE:

2013 – Present	Wagner & Bonsignore, Consulting Civil Engineers Principal Geologist
1997 - 2013	The Geoservices Group President and Principal Engineering Geologist
1992 - 1997	Trans Tech Consultants, Santa Rosa, CA President and Principal Engineering Geologist
1991 - 1992	Consulting Engineering Geologist
1990 - 1991	GeoStrategies Inc., Hayward, CA Geologic Manager
1989 - 1990	Herzog Associates, Petaluma, CA Senior Geologist
1987 - 1989	Harding Lawson Associates, Novato, CA Senior Geologist
1985 - 1987	Van Houten Consultants, Petaluma, CA Senior Engineering Geologist
1980 - 1985	Harding Lawson Associates, Novato, CA Staff and Senior Geologist

AFFILIATIONS

Association of Engineering Geologists