

SOUTHWEST GEOPHYSICS, INC.



Summary of Qualifications

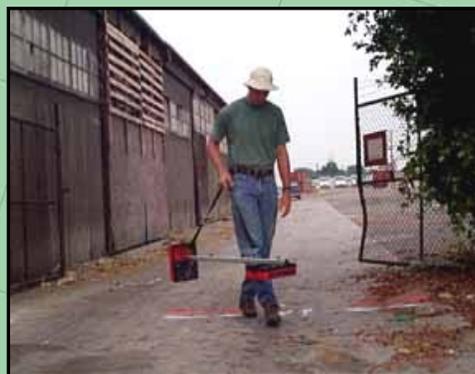


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SOUTHWEST GEOPHYSICS, INC.

SUMMARY OF QUALIFICATIONS

MISSION STATEMENT

Southwest Geophysics, Inc. is committed to providing a service that is consistent, professional, and of the highest quality at a competitive price. We strive to earn the complete and total satisfaction of our clients, while providing state-of-the-art geophysical services.

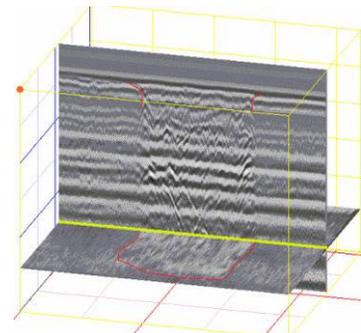
INTRODUCTION

Southwest Geophysics, Inc. is a small business enterprise (SBE), established to provide a broad range of geophysical services to clients in the governmental (federal, state, and local), commercial and private sectors. Southwest Geophysics, Inc. has provided innovative and cost effective solutions to their clients, often reducing site exploration costs and minimizing unexpected site conditions. The use of geophysics can provide useful information regarding site structural, geotechnical, geologic, and hydrologic conditions as well as subsurface infrastructure. Areas of expertise include, but are not limited to, the following:

- | | |
|--|---|
| { Rippability and Depth to Bedrock Studies | { Concrete and Pavement Condition Surveys |
| { Fault and Fracture Mapping | { Void or Sinkhole Detection |
| { Vibration Monitoring | { UST Detection Surveys |
| { Groundwater Surveys | { Map Leachate Plumes |
| { Site Characterization | { Locate Buried Drums |
| { Archeology Surveys | { Landfill Delineation |
| { Utility Mapping | { Corrosion Studies |
| { UXO Detection | { Rebar Detection |
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Southwest geophysics pledges to complete every project assignment in a high-quality manner with special attention given to quality assurance, timeliness of delivery, and cost efficiency. Specific strengths of Southwest Geophysics, Inc. which we believe make us exceptionally qualified to undertake any project, include:

- Southwest Geophysics, Inc. has completed a vast number of geophysical projects for a variety of different clients from environmental and engineering consultants to constructors, to small municipalities to the federal government.
- The firm is owned and operated by California Professional Geophysicists who have over 25 years of combined experience providing geophysical consulting and surveying services. In addition, the staff have backgrounds in the geotechnical, environmental, and construction fields which often provides them with a first hand understanding of the client's needs and potential project challenges. Staff are OSHA and Loss Prevention System (LPS) certified, as well as site safety trained for Oil Refinery activities and UXO surveying.
- Southwest Geophysics, Inc. uses latest editions of application and processing software, as well as state-of-the-art geophysical and survey instrumentation including the use of a Trimble Pro XRS GPS unit during data acquisition.



- ☑ All projects are conducted in compliance with our in-house Standard Operating Procedures (SOP) manual which provides guidelines relative to instrument calibration, data acquisition, data processing, documentation and reporting. Our SOP insures that all projects receive the same level of quality regardless of the size or budget.

PROFESSIONAL QUALIFICATIONS

Southwest Geophysics' strengths lie in the quality, diversity and technical experience of its personnel, and in the personal involvement of the principals. Southwest Geophysics has earned an exceptional reputation in the industry by providing high quality technical expertise while meeting difficult work schedules and budgetary goals. This is made possible through a methodical project approach.

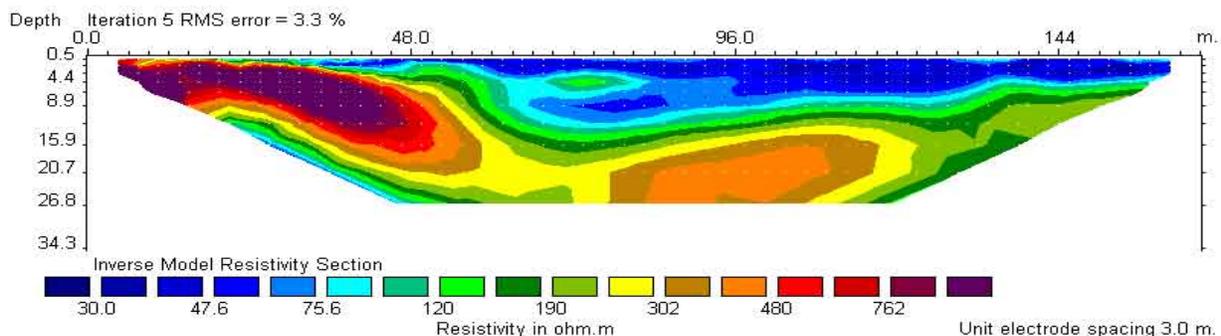
Southwest Geophysics personnel have successfully completed numerous projects for government and private industry clients including City of San Diego, Port of San Diego, Port of Long Beach, County of Los Angeles, Caltrans, State of California Department of General Services, U.S. Navy Southwest Division, Clark County School District, City of Las Vegas, Nevada Department of Transportation, Arizona Department of Transportation, U.S. Army Corps of Engineers, U.S. EPA, Department of Defense, and many other governmental agencies as well as private clients. Clients have commended Southwest Geophysics for its ability to perform within tight schedules while maintaining technical integrity. Adherence to short time frames illustrates the firm's understanding and dedication to providing the needed services in an expedient manner.



All of our personnel are highly qualified and experienced, and possess working knowledge of the required documents and standards. They are degreed and licensed in their specific disciplines and are fully committed to providing the necessary resources for successful completion of the project, and bring a wealth of experience and diversity to any project. Licenses and certifications include California Registered Professional Geophysicist (PGp), California Certified Engineering Geologist (CEG), California Registered Professional Geologist (PG), Arizona Registered Geologist (RG), and ICBO Certified Special Inspector for Reinforced Concrete. Our staff are active in accrediting professional organizations and participate in continuing education courses and seminars.

STANDARD SERVICES

Southwest Geophysics is fully equipped and prepared to perform seismic refraction and reflection surveys, downhole and crosshole shear wave studies, REMI (refraction microtremor) surveys, electrical resistivity profiles and soundings (including STING), electromagnetic (EM) studies, ground penetrating radar (GPR) profiling, magnetic surveys, vibration monitoring, and gravity surveys. These geophysical methods are often useful in evaluating rock rippability, stratigraphy, soil corrosivity, the presence of buried underground structures such as underground



storage tanks and infrastructure, site response, faults and fractures, abandoned wells, landfills, concrete condition, rebar location, UXO (unexploded ordnance), voids, grave sites, contamination plumes, and groundwater. The following table provides a general summary of geophysical methods and typical applications.

GEOPHYSICAL EXPLORATION METHODS AND APPLICATIONS

Applications	Ground Penetrating Radar	Seismics	Magnetics	Terrain Conductivity	Electrical Resistivity
GEOTECHNICAL STUDIES					
Characterize subsurface geology	◆	◆	◆	◆	◆
Evaluate depth to bedrock	◆	◆		◆	◆
Evaluate depth to groundwater	◆	◆		◆	◆
Evaluate shear wave velocity		◆			
Locate faults		◆		◆	◆
Evaluate soil corrosivity				◆	◆
Locate rebar in concrete	◆				
Map shallow stratigraphic units	◆	◆		◆	◆
Evaluate rippability		◆			
Map underground utilities	◆			◆	
Locate voids	◆	◆	◆		
Monitor ground vibrations (during blasting, pile driving, etc.)		◆			
ENVIRONMENTAL STUDIES					
Locate buried storage tanks	◆		◆	◆	
Locate underground pipes	◆		◆	◆	
Map landfill boundaries	◆	◆	◆	◆	◆
Locate previously excavated areas	◆	◆		◆	
Locate buried drums	◆		◆	◆	
Locate buried ferromagnetic objects	◆		◆	◆	
Locate buried non-ferrous objects	◆			◆	
Delineate drilling-mud pits	◆			◆	◆
Map leachate plumes	◆			◆	◆



COST CONTROL, QUALITY OF WORK, AND COMPLIANCE WITH PERFORMANCE SCHEDULES

Cost Control and Project Tracking

Southwest Geophysics' accounting department is fully networked on an independent system, allowing the efficient sharing of financial data between the members of the accounting staff. Financial information that is of importance to the technical staff is printed in the form of various reports, including the Project Tracking Report, Work-in-Progress Report, and monthly invoices. The Tracking and Work-in-Progress reports are used to track project expenses and keep project managers aware of each project's budgetary status. Draft invoices are printed preparatory to the issuing of final invoices and are checked for quality and accuracy by the project manager. The confidentiality of other financial information is assured by restricting access to the accounting network and by keeping the accounting data and computers in a locked area accessible only to authorized personnel.

Quality of Work

Southwest Geophysics is dedicated to providing superior geophysical services. Quality is achieved through a consistently-applied methodology program. Mandated procedures for conducting field work, equipment maintenance and calibration, data acquisition and processing, and reporting are described in detail in the Standard Operating Procedure (SOP) manual, which is updated on a regular basis. One important goal of the quality assurance program is to produce geophysical data of known and acceptable quality on all work assignments. Southwest Geophysics' policy is to maintain professional standards in all aspects of project tasks for all clients.

Compliance with Performance Schedules

Southwest Geophysics staff are available throughout the duration of all project assignments, 24 hours per day, 7 days per week. Point-of-contact cell phone numbers are available to the client for each project. Client requests are addressed immediately and emergency response to those projects requiring it is provided throughout the duration of the project. If required, Southwest Geophysics' staff are prepared to work evenings and/or weekends at no additional cost to the client to meet the demand of any project.

INSURANCE COVERAGE

To provide safeguards and to meet the requirements of our clients, we carry the following types of insurance:

Insurance Type	Amount	Carrier
Professional Liability	\$ 1 Million/claim \$ 2 Million aggregate	Lloyd's of London
General Liability	\$ 2 Million/claim \$ 4 Million aggregate	Travelers Indemnity Company of America
Automobile	\$ 2 Million	Travelers Indemnity Company of America
Worker's Compensation	\$ 5 Million	State Fund
Excess Umbrella Liability	\$ 3 Million	Travelers Indemnity Company of America

PROJECT EXPERIENCE

Southwest Geophysics technical staff have 25 years of combined professional experience in engineering geology and geophysics that extends throughout the southwest. This experience has afforded Southwest Geophysics the opportunity to effectively complete a variety of project types on time and within budget. Specific project experience includes the following:

Archeological Study, Palm Springs Area, California

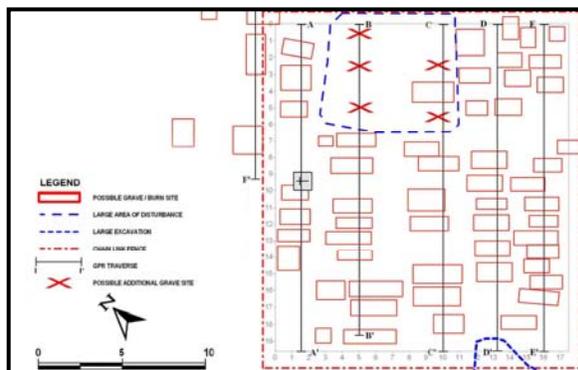
ASM Affiliates

2034 Corte del Nogal, Carlsbad, California 92009

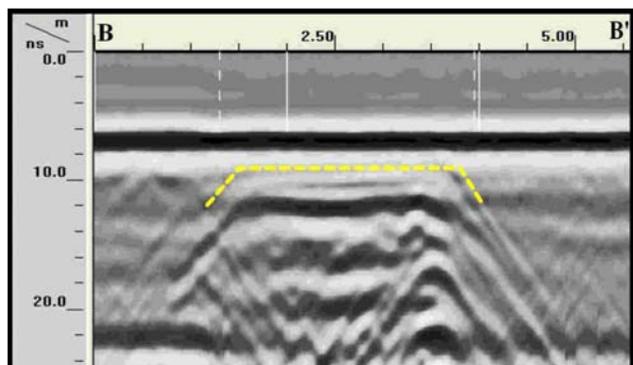
Southwest Geophysics was contracted to locate sacred burn and burial areas inside and near an existing cemetery as part of an extensive archeological study. The purpose of the geophysical services was to confirm existing marked grave sites and to delineate the limits of unmarked graves and potential sacred burn areas. The primary goal of the archeological study was to restore the grave sites and to reestablish the fenced limits of the cemetery to encompass new sites revealed during geophysical survey.



Our services included the preparation of a detailed survey grid to facilitate the collection of electromagnetic and ground penetrating radar (GPR) data. Traverses using an EM61 time domain instrument were conducted at 1 meter spacings across the study area in order to detect the presence of buried metal objects (i.e., tools, utensiles, coins, etc.) that may have been associated with a sacred burial or burning. In addition, GPR traverses were conducted at ½ meter spacings to locate areas of disturbed ground, and/or buried objects including bodies. The data were processed in the field and areas of interest were reevaluated with GPR by conducting numerous random profiles across the anomaly to define the limits and nature of the anomaly. The results of the study reestablished the limits of marked graves sites as well as uncovered several additional unmarked sites.



Site Map



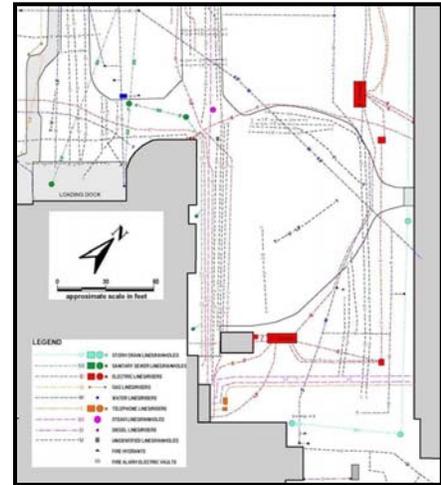
GPR Profile

Renovation of Naval Postgraduate School, Monterey, California

Soltek Pacific

2424 Congress Street, San Diego, California 92110

Southwest Geophysics was retained to provide geophysical survey services as part of the renovation project. The purpose of the geophysical survey was to delineate the location, depth, and type of underground utilities at the site so that an as-built utility map could be prepared prior to the initiation of ground breaking activities. The school was originally constructed in the late 1800's and several of the underground utilities were never documented. Historical records indicated that some underground lines were made of wood. Detailed traverses using several geophysical instruments including ground penetrating radar, electromagnetic and magnetic devices, as well as line tracers, were conducted across the site. The results of the survey were marked on the ground surface with paint and survey feathers, and plotted on a site plan. Of particular value on the project was the granular nature of the soil, which allowed for great GPR penetration and imaging. Challenges on the project included the density of the underground utilities in some areas. Portions of the site were underlain by electric, gas, water, sewer, drain, telephone, and steam lines all within very close proximity to each other.

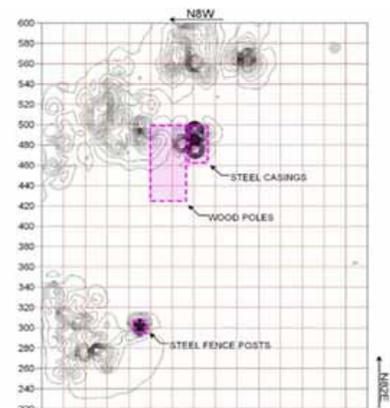


Landfill Study, Lompoc, California

Ninyo & Moore Geotechnical and Environmental Sciences Consultants

475 Goddard, Suite 200, Irvine, California 92618

Southwest Geophysics provided geophysical landfill mapping services relative to a planned residential development to be located along the central coast of California. Historical records for the site indicate that portions of the property were used for the disposal of garbage and miscellaneous debris, and then covered over with soil. In order to detect landfill debris in a 40-acre area, several rectangular grids were established and surveys using a cesium magnetometer and EM61 time domain instrument were conducted along lines spaced 10 feet apart. Following the field collection, the data were downloaded to a laptop computer in the field, and anomalies were marked on the ground surface. Of particular interest, aside from the beautiful coast line, was the abundance of rattlesnakes and dense brush, which reduced the overall speed in which the survey could be completed.



Seismic Retrofit, Loma Linda University Medical Center, Loma Linda, California

Turner Construction Company

11209 Campus Street, Loma Linda, California 92354

Southwest Geophysics was retained to provide geophysical survey services as part of a large earthquake retrofit project at the Loma Linda University Medical Center. The project includes constructing additional structural members and strengthening existing beams, walls and slabs. Southwest Geophysics' services included locating reinforcing steel inside walls, slabs, columns, and beams, as well as locating voids or empty cells inside masonry block walls. The purpose for delineating the position of the reinforcing steel was to facilitate the installation of concrete anchors, and wall penetrations. In addition, in order to increase the structural integrity of the masonry walls, empty cells inside the wall were to be filled with cement grout.



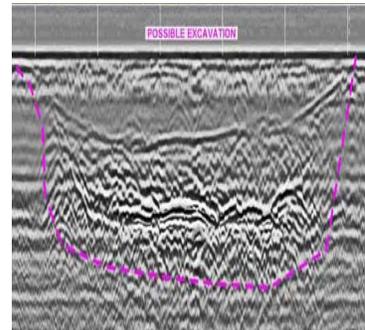
Locating the reinforcing steel was accomplished through the use of a high precision electromagnetic instrument, and a SIR 3000 ground penetrating radar (GPR) with a 900 MHz antenna. The use of both instruments allowed the accurate delineation of both transverse and longitudinal bars spaced only a few inches apart. The GPR was also used to locate or map the empty cells inside the masonry walls. Challenges included very limited access (i.e., ceiling crawl spaces, construction activities, etc.) and project coordination. Due to the tight construction schedule and sequence of tasks, Southwest Geophysics was frequently required to mobilize to the site within 12 hours of notification.

Underground Storage Tank Search, Los Angeles, California

Smith-Emery GeoServices

791 East Washington Boulevard, Los Angeles, California 90021

Southwest Geophysics was retained to evaluate the presence of an underground storage tank and associated piping at an old gas station site in Los Angeles. Previous geophysical surveys of the site did not reveal the presence of the UST or define the limits of a backfilled tank excavation. However, historical records indicated that a UST did exist on site at one time, but that the tank may have been removed. Our services included conducting an EM and GPR survey across the site as well as using line tracer methods to detect product lines. The results of our survey did reveal the location of two product lines, as well as the previous location of the UST. Both GPR and EM detected the presence of a less conductive material (gravel) in a backfilled excavation.



UXO Survey, Rialto, California

Ecology and Environment

11 Golden Shore Drive, Suite 340, Long Beach, California 90802

Southwest Geophysics’ staff provided geophysical survey services to locate unexploded ordnance (UXO) and exploded ordnance debris at the project site. The 13-acre site was previously used to store and detonate for disposal UXO during the mid 1900’s. In order to detect the UXO and ordnance debris, a formal rectangular grid was established at the site. However, prior to the construction of the survey grid, a reconnaissance level geophysical survey was performed using a handheld metal detector and magnetic gradiometer. Following the completion of the reconnaissance survey and the layout of the survey grid, traverses spaced 3 feet apart were conducted with an EM61 time domain instrument and a total field proton procession magnetometer. The collected data were downloaded to a laptop computer, processed, and analyzed in the field. Detected anomalies which could potentially represent UXO or associated debris were resurveyed in detail and then marked in the field. The results of the evaluation uncovered several pieces of debris and potential UXO. The UXO were determined to be potentially hazardous by others and detonated on site.



PROFESSIONAL STAFF

Southwest Geophysics technical staff have extensive professional experience in engineering geology and geophysics that extends throughout the southwest and Mexico. Their experience includes performing and managing geophysical studies as well as geotechnical, environmental, and construction projects. Because of their diverse backgrounds, they understand the challenges that geotechnical and environmental professionals face both technically and financially. As a result, Southwest Geophysics can appropriately design their geophysical studies to accommodate the needs of the client without sacrificing quality. The following table summarizes the experience of qualifications of our staff.

Professional Personnel				
Key Personnel	Title	Yrs. Exp.	Education	Registrations
Hans van de Vrugt	Principal Geophysicist	24	M.S., Geological Sciences B.S., Geological Sciences	P.G., C.E.G., P.Gp., R.G. (AZ), I.C.B.O., OSHA, RSO
Patrick Lehrmann	Principal Geophysicist	15	B.S., Geology	P.G., P.Gp., OSHA, RSO
Iko Syahrial	Senior Staff Geophysicist	5	M.S., Civil Engineering B.S., Civil Engineering	RSO, OSHA
Aaron Puente	Senior Staff Geophysicist	4	B.S., Geology	OSHA
Ed Verdugo	Staff Geophysicist	3	B.S., Geological Sciences	RSO, OSHA
Ryan Merkey	Staff Geophysicist	14	B.S., Environmental Sciences	OSHA
Jared Marsh	Staff Geophysicist	1	B.S., Environmental Science	OSHA

WEB SITE

Additional information concerning Southwest Geophysics' experience, background, and capabilities can also be found on the World Wide Web at www.southwestgeophysics.com