EARTH SYSTEMS PACIFIC

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Firm Profile

Earth Systems Pacific (Earth Systems) offers a full spectrum of preconstruction and construction-related services designed to aid the development process. We are part of the Earth Systems companies, which have been operating in California since 1969. With offices throughout California, the Earth Systems companies are consistently named in Engineering News Record as being among the top 500 engineering/design firms in the nation. Earth Systems has conducted numerous studies at the Port San Luis Harbor Terrace Site, including the Geologic/Geotechnical Hazards Study for the Harbor Terrace Campground (Earth Systems 2014). Our personnel, while employed with Earth Systems Pacific and previous companies, also prepared soil and geologic hazard studies in 2008, 1985, 1987, and 1995, and 1997. Several of these studies involved borings, geologic analysis, and geotechnical evaluation of data. Consequently, the staff of Earth Systems provides unequaled expertise in the soils and geologic conditions that characterize Harbor Terrace site. The lead geotechnical engineer (Dennis Shallenberger) and lead engineering geologist (Richard Gorman) who conducted the previous studies are available to provide their expertise for this next phase of the project.

Other projects for which Earth Systems has conducted geotechnical and geologic analyses include the Bob Jones City to Sea Trail, San Luis Obispo, California; the Malibu Public Access Enhancement Plan, the Uptown Family Park, Paso Robles, California; the Morro Bay to Cayucos Connector Trail, County of San Luis Obispo, California; and the Avila to Harford Pier Path, County of San Luis Obispo, California. Several of these projects included elements similar to the subject project, i.e. visitor use facilities such as campsites, pedestrian/bike trails intended to connect with other trail networks, parking lots and restrooms; a variety of topographic and geologic environments; identification of potential geotechnical and geologic constraints; and development of appropriate mitigation for potential geotechnical or geologic hazards.

The local (San Luis Obispo/Santa Maria) Earth Systems staff consists of four registered geotechnical engineers, two professional civil engineers, two certified engineering geologists, twelve soil technicians, nine special inspectors, and three laboratory technicians, augmented by drilling, drafting, and support personnel. Earth Systems maintains its own drill rigs, allowing them to schedule projects without the need to subcontract outside services for subsurface exploration.

Earth Systems' general geotechnical, geologic, and environmental assessment services include the following:

- Geotechnical Engineering Investigations
- Geotechnical Feasibility Studies
- Geologic Hazard Evaluations, Slope Stability Studies, and Fault Location Studies
- Preparation of Soil/Geology Sections for Environmental Impact Reports
- Liquefaction and Seismicity Studies
- Seismic Refraction/Rippability Studies
- Engineering Analysis of Settlement-Reduction Methods
- Development of Criteria For Earth Retention Structures
- Environmental Assessment Studies
- Groundwater Monitoring and Sampling
- Laboratory Analysis of Soil and Groundwater Samples
- Monitoring Well Installation and Development

Richard T. Gorman Chief Geologist, Certified Engineering Geologist

Mr. Gorman is a California Registered Geologist and Certified Engineering Geologist with 35 years of experience in the geologic field. He is responsible for geologic investigations involving site specific studies of seismicity, geologic hazards (including naturally occurring asbestos), landslides, faults, erosion, tsunamis, and coastal bluff retreat. He supervises excavation and logging of exploratory trenches, reviews data pertaining to regional and local geologic structure and stratigraphy, evaluates aerial photographs to observe topographic and geomorphic features related to erosion, bluff retreat, landslides, and faulting, performs slope stability analysis, and develops recommendations for mitigation of adverse geologic conditions that may affect projects. Mr. Gorman received his Bachelor of Science degree in Geology from California Polytechnic State University at Pomona. He is a member of the Association of Engineering Geologists. He has been with Earth Systems since 1989.

KEY QUALIFICATIONS

- Extensive experience at the Port San Luis Harbor Terrace project site, including soils and geologic studies performed in 1985, 1987, 1995, 1997, 2008 and 2014. As lead engineering geologist for these studies, Mr. Gorman conducted subsurface exploration, performed geologic mapping, supervised laboratory analysis of samples, and provided geologic evaluations of landslides, slope stability, faulting, erosion, and cut/fill slopes.

- Lead engineering geologist for the Avila to Harford Pier Bike/Pedestrian Path, Avila Beach, California. This project involved the development of alternative path concepts along Avila Beach Drive, the south side of which is bordered by an ocean bluff. The bluff is subject to wave impact and areas are known to be in an actively retreating state; there are also areas where rock rip-rap is present. The slopes along the north side are characterized by complex geologic conditions, with some areas affected by landslides and other types of instability. Mr. Gorman evaluated the corridor from a geologic perspective to identify potential geologic constraints to aid in the route selection process.

- Provided peer review of the geologic report that formed the basis of the Environmental Impact Report for the Malibu Parks Public Access Enhancement Plan, Malibu, California. The proposed project consisted of new campsites, parking lots, trails, and other park support facilities. The project area, which included the Malibu Bluffs, involved the construction of campsites on the ridge tops, trails that crossed landslides, and parking lots that were located in areas of expansive soils and possible landslides.

REGISTRATIONS AND CERTIFICATIONS
Certified Engineering Geologist, State of California, 1986

Registered Geologist, State of California, 1985

Certified Nuclear Gauge Operator

EDUCATION
California Polytechnic State University, Pomona
B.S., Geology, 1974

PROFESSIONAL AFFILIATIONS
Member — Inland Geologic Society, Association of Engineering Geologists and Geologic Society of America

EMAIL
rgorman@earthsystems.com

Dennis Shallenberger Chairman, Chief Geotechnical Engineer

A registered professional engineer in the states of California and Nevada, and a registered geotechnical engineer in California, Mr. Shallenberger has over 30 years of experience in conducting geotechnical engineering investigations throughout the central California coastal region. His expertise is in geotechnical engineering investigations, liquefaction evaluation and mitigation, interpretation of laboratory and field data, mitigation of unstable soil conditions, settlement analysis, geotechnical parameters for design of foundations, geotechnical aspects of LID improvements, and geotechnical peer review. He has extensive experience at the Port San Luis Harbor Terrace project site, including geotechnical and geologic studies performed in 1985, 1987, 1995, 1997, 2008, and 2014. As the supervising geotechnical engineer for these studies, Mr. Shallenberger provided oversight of site activities including subsurface exploration, laboratory analysis of samples, and engineering evaluation of the geotechnical aspects of previously proposed projects. His education consists of a bachelor's degree in Geology from the University of Montana at Missoula and a Master of Science degree in Civil Engineering with a geotechnical specialty from California State University, Long Beach. He formerly served on the County of San Luis Obispo's countywide Hydromodification Technical Advisory Committee, and was the lead engineer responsible for development of guidelines for infiltration potential assessment for the Low Impact Development Institute. He taught senior level courses in soil mechanics and foundation design at California Polytechnic University, San Luis Obispo for over 20 years.

KEY QUALIFICATIONS

- Over 30 years of experience in geotechnical engineering in San Luis Obispo County, with expertise in geotechnical engineering investigations, liquefaction evaluation and mitigation, interpretation of laboratory and field data, mitigation of unstable soil conditions, settlement analysis, geotechnical parameters for design of foundations, geotechnical aspects of LID improvements, geotechnical peer review

- Extensive experience at the Port San Luis Harbor Terrace project site, including soils and geologic studies performed in 1985, 1987, 1995, 1997, 2008 and 2014. As the supervising geotechnical engineer for these studies, Mr. Shallenberger provided oversight of site activities including subsurface exploration, laboratory analysis of samples, and engineering evaluation of the geotechnical aspects of the proposed projects.

- Lead geotechnical engineer for the Harborwalk Project in Morro Bay, California, the objective of which was to provide a continuous network of pedestrian and bike pathways along the waterfront, and to improve circulation for both vehicular and non-vehicular traffic.

REGISTRATIONS AND CERTIFICATIONS
Registered Professional Engineer (Geotechnical), State of California, (No. 2158)

Registered Professional Engineer (Civil), State of California, (No. 39909)

Registered Professional Engineer (Civil), State of Nevada, (No. 9851)

Licensed Nuclear Gauge Operator

Hazardous Waste Operations and Emergency Response, 40-hour and 8-hour refresher courses (OSHA 29 CFR 1910.120 and Title 8, CCR 5192)

EDUCATION
California State University, Long Beach, CA
M.S., Civil Engineering
Specialization: Geotechnical Engineering

University of Montana, Missoula, Montana
B.A., Geology

PROFESSIONAL AFFILIATIONS
American Society of Civil Engineers (former President San Luis Obispo Branch and Former Director, Los Angeles Section)
Fellow—Institute for the Advancement of Engineering
Corporate Representative—ASFE (formerly American Society of Foundation Engineers)
Former Member – San Luis Obispo Hydro-modification Technical Advisory Committee

EMAIL
Dennis@earthsystems.com

Dennis Shallenberger, Geotechnical Engineer

A registered professional engineer in the states of California and Nevada, and a registered geotechnical engineer in California, Mr. Shallenberger has over 30 years of experience in conducting geotechnical engineering investigations throughout the central California coastal region. His expertise is in geotechnical engineering investigations, liquefaction evaluation and mitigation, interpretation of laboratory and field data, mitigation of unstable soil conditions, settlement analysis, geotechnical parameters for design of foundations, geotechnical aspects of LID improvements, and geotechnical peer review. He has extensive experience at the Port San Luis Harbor Terrace project site, including geotechnical and geologic studies performed in 1985, 1987, 1995, 1997, 2008 and 2014. As the supervising geotechnical engineer for these studies, Mr. Shallenberger provided oversight of site activities including subsurface exploration, laboratory analysis of samples, and engineering evaluation of the geotechnical aspects of previously proposed projects. His education consists of a bachelor's degree in Geology from the University of Montana at Missoula and a Master of Science degree in Civil Engineering with a geotechnical specialty from California State University, Long Beach. He formerly served on the County of San Luis Obispo's countywide Hydromodification Technical Advisory Committee, and was the lead engineer responsible for development of guidelines for infiltration potential assessment for the Low Impact Development Institute. He taught senior level courses in soil mechanics and foundation design at California Polytechnic University, San Luis Obispo for over 20 years.

Richard Gorman, Engineering Geologist

Mr. Gorman is a California Registered Geologist and Certified Engineering Geologist with 35 years of experience in the geologic field. He is responsible for geologic investigations involving site specific studies of seismicity, geologic hazards, landslides, faults, erosion, tsunamis, naturally occurring asbestos and radon, and coastal bluff retreat. He supervises excavation and logging of exploratory trenches, reviews data pertaining to regional and local geologic structure and stratigraphy, evaluates aerial photographs to observe topographic and geomorphic features related to erosion, bluff retreat, landslides, and faulting, performs slope stability analysis, and develops recommendations for mitigation of adverse geologic conditions that may affect projects. Extensive experience at the Port San Luis Harbor Terrace project site, including geologic studies performed in 1985, 1987, 1995, 1997, 2008 and 2014. As lead engineering geologist for these studies, Mr. Gorman conducted subsurface exploration, performed geologic mapping, supervised laboratory analysis of samples, and provided geologic evaluations of landslides, slope stability, faulting, erosion, and cut/fill slopes. He is also the lead engineering geologist for the Avila to Harford Pier Bike/Pedestrian Path, Avila Beach, California. This project involves the development of alternative path concepts along Avila Beach Drive, which provides access to Port San Luis and the Harbor Terrace project site. Mr. Gorman received his Bachelor of Science degree in Geology from California Polytechnic State University at Pomona. He is a member of the Association of Engineering Geologists. He has been with Earth Systems since 1989.

Harbor Terrace

Avila Beach, CA

INDUSTRY SECTORS
- Aerospace / Defense ○
- Agriculture ○
- Commercial / Retail ○
- Educational ○
- Energy / Power ○
- Health Care / Medical ○
- Industrial / Office ○
- Institutional / Municipal ○
- Recreational / Athletic ●
- Residential ○
- Transportation ○

GEOTECHNICAL/ GEOLOGIC SERVICES
- Geotechnical Eng. Investigations ○
- Foundation/Mat. Reports (Caltrans) ○
- Geotechnical Feasibility Studies ●
- Failure Investigations ○
- Geologic Hazard Evaluations ●
- Fault Location Studies ●
- Liquefaction/seismicity Studies ○
- Forensic Studies ○
- Pavement Design/Recycled Mat. ○
- Percolation Testing (Septic) ○
- Infiltration Testing (LID) ○
- Geologic/Soils Data (EIRS) ●

ENVIRONMENTAL SERVICES
- Phase I Site Assessments (ESA) ●
- Initial Site Assessments (ISA) ○
- Prelim. Env. Assess (PEA) ○
- Aerially Deposited Lead Testing ○
- Soil/Groundwater Lab Analysis ●
- Well Monitoring ○
- Storm Water Compliance (QSP) ○
- Haz. Mat. Studies (EIRS) ●

MATERIAL INSPECTION AND TESTING SERVICES
- Soils ○
- Asphalt Conc. & Aggregates ○
- Concrete ○
- Reinforcing steel ○
- Masonry ○
- Batch Plant ○
- Concrete Mix Designs ○
- Shop and Field Welding ○
- High Strength Bolts ○
- Paints and Coatings ○
- Driven or Drilled Piles ○
- Fabrics /Other Const. Materials ○

Earth Systems has extensive experience at the Harbor Terrace site; our personnel have prepared numerous geologic and soils studies, including geotechnical and geologic studies performed in 1985, 1987, 1995, 1997, 2008, and 2014. The site, located in the hills above Avila Beach, California, encompasses five major landslides, and is crossed by the San Luis Bay fault. It has also been used in the past as an oil storage facility, and considerable depths of fill are present. In 2008, Earth Systems prepared a report that integrated geologic and geotechnical reports that had been prepared for the Harbor Terrace Planning Sub-Area dating to 1971. The purpose of the compilation was to summarize the geologic and geologic conditions in a single, comprehensive document. Several of the reports included in the compilation were reports prepared by Earth Systems staff for various projects considered over the years, including a destination resort, a recreational vehicle park, and a storage yard. In 2014, Earth Systems prepared a geologic/geotechnical hazards study that assessed the major geologic and geotechnical issues that could potentially affect the site's use as a campground that would include cabins, tent sites, tent cabins, RV sites, commercial structures, restrooms, and boat/equipment storage facilities.

Reference: Mr. Steve McGrath, Port San Luis Harbor District
(805) 595-5400 email: stevem@portsanluis.com

INDUSTRY SECTORS
- Aerospace / Defense ○
- Agriculture ○
- Commercial / Retail ○
- Educational ○
- Energy / Power ○
- Health Care / Medical ○
- Industrial / Office ○
- Institutional / Municipal ○
- Recreational / Athletic ●
- Residential ○
- Transportation ○

GEOTECHNICAL/ GEOLOGIC SERVICES
- Geotechnical Eng. Investigations ○
- Foundation/Mat. Reports (Caltrans) ○
- Geotechnical Feasibility Studies ○
- Failure Investigations ○
- Geologic Hazard Evaluations ●
- Fault Location Studies ○
- Liquefaction/seismicity Studies ○
- Forensic Studies ○
- Pavement Design/Recycled Mat. ○
- Percolation Testing (Septic) ○
- Infiltration Testing (LID) ○
- Geologic/Soils Data (EIRS) ●

ENVIRONMENTAL SERVICES
- Phase I (ESA) ○
- Initial Site Assessments (ISA) ○
- Prelim. Env. Assess (PEA) ○
- Aerially Deposited Lead Testing ○
- Soil/Groundwater Lab Analysis ○
- Well Monitoring ○
- Storm Water Compliance (QSP) ○
- Haz. Mat. Studies (EIRS) ○

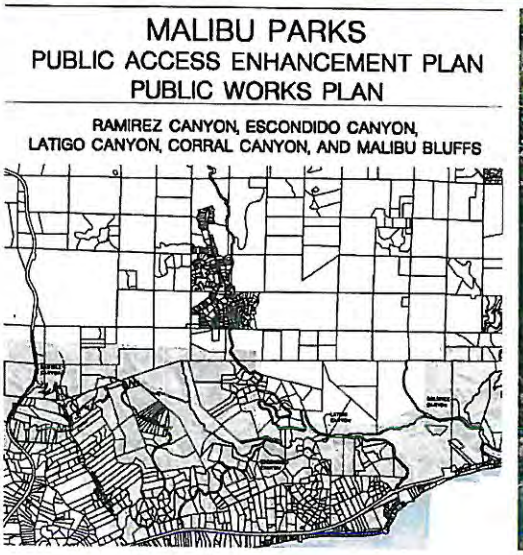
MATERIAL INSPECTION AND TESTING SERVICES
- Soils ○
- Asphalt Conc. & Aggregates ○
- Concrete ○
- Reinforcing steel ○
- Masonry ○
- Batch Plant ○
- Concrete Mix Designs ○
- Shop and Field Welding ○
- High Strength Bolts ○
- Paints and Coatings ○
- Driven or Drilled Piles ○
- Fabrics /Other Const. Materials ○

Malibu Parks Public Access Enhancement Plan

Malibu, CA

This project consists of new campsites, parking lots, new trails, and other park support facilities. Seventy-one campsites and 134 new parking spaces at five park sites are proposed. Earth Systems was retained to provide peer review of the geologic report that formed the basis of the Draft EIR (DEIR), applicable sections for Revised Project Alternatives for the Final EIR, and the Hazardous Materials section of the Final EIR (FEIR). The project area, which included the Malibu Bluffs, involved the construction of campsites on the ridge tops, trails that crossed landslides, and parking lots that were located in areas of expansive soils and possible landslides. The peer review involved evaluation of the adequacy of the work performed, the soundness of the conclusions and recommendations presented, and whether the report and DEIR and FEIR sections met CEQA guidelines.

Reference: Ms. April Winecki, Dudek
(805) 963-0651 email: awinecki@dudek.com



INDUSTRY SECTORS
- Aerospace / Defense ○
- Agriculture ○
- Commercial / Retail ○
- Educational ○
- Energy / Power ○
- Health Care / Medical ○
- Industrial / Office ○
- Institutional / Municipal ○
- Recreational / Athletic ●
- Residential ○
- Transportation ○

GEOTECHNICAL/ GEOLOGIC SERVICES
- Geotechnical Eng. Investigations ○
- Foundation/Mat. Reports (Caltrans) ○
- Geotechnical Feasibility Studies ●
- Failure Investigations ○
- Geologic Hazard Evaluations ●
- Fault Location Studies ○
- Liquefaction/seismicity Studies ○
- Forensic Studies ○
- Pavement Design/Recycled Mat. ○
- Percolation Testing (Septic) ○
- Infiltration Testing (LID) ○
- Geologic/Soils Data (EIRS) ○

ENVIRONMENTAL SERVICES
- Phase I (ESA) ○
- Initial Site Assessments (ISA) ○
- Prelim. Env. Assess (PEA) ○
- Aerially Deposited Lead Testing ○
- Soil/Groundwater Lab Analysis ○
- Well Monitoring ○
- Storm Water Compliance (QSP) ○
- Haz. Mat. Studies (EIRS) ○

MATERIAL INSPECTION AND TESTING SERVICES
- Soils ○
- Asphalt Conc. & Aggregates ○
- Concrete ○
- Reinforcing steel ○
- Masonry ○
- Batch Plant ○
- Concrete Mix Designs ○
- Shop and Field Welding ○
- High Strength Bolts ○
- Paints and Coatings ○
- Driven or Drilled Piles ○
- Fabrics /Other Const. Materials ○

Avila to Harford Pier Bike/Pedestrian Path

Avila Beach, San Luis Obispo County, CA

Earth Systems is currently working on the Avila to Harford Pier Bike/Pedestrian Path project, an approximately one-mile long non-motorized bike/pedestrian path that will link Avila Beach Park in Avila Beach to Harford Pier at Port San Luis. The objective of the project, which is currently in the design phase, is to develop three to five alternative path concepts. The path will follow Avila Beach Drive, the south side of which is bordered by an ocean bluff. The bluff is subject to wave impact and areas are known to be in an actively retreating state; there are also areas where rock rip-rap is present. The slopes along the north side are characterized by complex geologic conditions, with some areas affected by landslides and other types of instability. In view of these conditions, consideration of the geologic conditions and their ramifications will be critical when evaluating prospective alignments for the bike/pedestrian path. Earth Systems is providing geologic/geotechnical evaluation of the entire corridor, including the south, north, and possible hillside routes, on a qualitative, descriptive basis, with the objective of giving the designer a clear perspective of the geologic challenges that will be encountered and to aid in the route selection process.

Reference: Mr. Michael Sherrod, RRM Design Group
(805) 543-1794 email: mssherrod@rrmdesign.com