President

Joseph D. Germano, Ph.D.

Education

Ph.D, Biology, Yale University, 1983

M.Phil., Biology, Yale University, 1980

A.B., *magna cum laude,* Biology, Harvard University, 1973

Areas of Specialization

Sediment Profile Imaging

Benthic Ecology/Organism-Sediment Relationships

Statistics & Sampling Design

Contaminated Sediment Management

Dredged Material Management & Monitoring

Confined Aquatic Disposal Management

Environmental Impact Assessment

Ecological Risk Assessment

Environmental Mediation

Professional Memberships

Estuarine Research Federation
Pacific Estuarine Research Society
Western Dredging Association
Society of Environmental Toxicology and Chemistry (SETAC)

Employment History

2001 - present **-** President, Germano & Associates, Inc., Bellevue, WA

1996 - 2001: Director, Marine Environmental Studies, EVS Environment Consultants, Inc. Seattle, WA

1995 - 1996: Associate Director, Arthur D. Little, Cambridge, MA

1985 - 1995: Division Manager, Assistant Vice President, Science Applications International Corporation, Newport, RI

1981 - 1985: President and CEO, Marine Surveys, Inc., New Haven, CT

Experience Summary

Dr. Germano is a marine ecologist with more than 20 years of experience in domestic and international marine environmental programs. His technical expertise is in the areas of benthic ecology, organism-sediment relationships, ecological risk assessment, statistics and the design of sampling strategies, and environmental impact assessment of ocean disposal. As one of the originators of REMOTS technology, an innovative seafloor reconnaissance sampling technique combining Sediment Profile Imaging (SPI) with computer image analysis, he has pioneered its application in seafloor monitoring studies on all coasts of the United States as well as in Europe, Asia, and New Zealand. Dr. Germano is recognized as one of the leading authorities in SPI image analysis and interpretation. During the past two decades, he has performed or supervised the interpretation of more than 30,000 SPI images collected from a wide diversity of estuarine, oceanic, and freshwater sites throughout the world. His project experience includes environmental baseline, impact, and site designation studies for diverse open-water dredged-material disposal projects and sediment quality surveys in a number of estuaries.

Dr. Germano has broad expertise in diverse aspects of marine biology and ecology, oceanographic sampling, sampling design and statistics, data analysis, and program management for offshore, estuarine, and coastal environmental impact analysis, monitoring, and research. He is recognized as a leading international authority on environmental impacts of ocean disposal of dredged material, and has served as an advisor to international governmental agencies on the environmental impacts of contaminated sediment disposal. Dr. Germano has also testified as an expert witness on the physical, chemical, and biological impacts of dredged material disposal for congressional hearings as well as state and federal court cases.

WORK EXPERIENCE

- ***Environmental Assessment***

Fish Waste Characterization, Akutan & Ketchikan, AK

In Sept-Oct 2010, Dr. Germano was the principal investigator for combined SPI and Plan-View camera surveys at two of Trident Seafoods' fish processing plants in Alaska. In addition to the benthic camera surveys, water quality monitoring (CTD/DO profiles) was also performed at selected stations to assess the impact of the processing plant discharge on both water quality and the benthic environment.

Historical Area Remediation (HARS) Disposal Site Survey, NY Bight

In August 2010, Dr. Germano performed a combined SPI/Plan-View imaging survey in the dredged material disposal site managed by the NY Army Corps of Engineers in the NY Bight. More than 300 SPI and plan view images were collected in addition to sediment samples for benthic community analysis and laboratory toxicity testing. This survey was performed as part of the long-term monitoring program at the NY dredged material disposal site carried out under the joint planning of both EPA Region 2 and the US Army Corps of Engineers.

SPI and Plan View Survey of the Cape Cod Disposal Site, Sandwich, MA

In September 2010, Dr. Germano was the principal investigator of a combined SPI/Plan-View imaging survey at the Cape Cod Disposal Site carried out for the New England Army Corps of Engineers under the DAMOS monitoring program. Over 50 stations were sampled at the disposal site and reference stations in the course of two days in the field.

Sediment and Benthic Characterization for the Remedial Investigation of Potrero Point, San Francisco Bay, CA

In October 2010, Dr. Germano was the principal investigator of a combined SPI/Plan-View imaging and benthic sampling survey in San Francisco Bay for and RI being performed by Haley & Aldrich for Pacific Gas & Electric Company. Ten benthic stations and fifty SPI/Plan-View stations were sampled during the last week of October in water depths ranging from 4-45 feet.

RI Sediment Characterization, Berrys Creek, NJ

In April, 2009, Dr. Germano was the principal investigator for SPI surveys in Berrys Creek, a tributary of the Hackensack River, NJ. Over 500 images were collected at 167 stations, with a final report submitted to the client within 3 weeks following completion of the field survey.

LNG Gas Pipeline Post-construction Impact Assessment

In 2009 and 2010, Dr. Germano was the principal investigator of a combined SPI/Plan-View imaging survey in Massachusetts Bay for the Neptune LNG terminal project. A series of SPI and plan view images were collected along the entire 27 mile length of the pipeline to assess sediment and benthic conditions resulting from the disturbance caused by pipeline installation.

Sediment Characterization of Pallanza Bay and Fume Toce, Lago Maggiore, Italy

In October 2008 and March 2009, Dr. Germano was the principal investigator of a combined SPI/Plan-View imaging survey in the Toce River and Pallanza Bay in Lago Maggiore. Over 300 SPI and plan view images were collected; the final report focused on habitat characterization and sediment transport patterns seen in the both the surface and cross-sectional images.

San Francisco Deep Ocean Disposal Site (SFDODS) Monitoring

SF-DODS is the nation's deepest offshore disposal site located in over 3000 meters of water off the California coast; Dr. Germano was in charge of the ocean studies program as part of the original EIS studies between 1991-1994 and was also the principal investigator for the sediment profile imaging survey carried out as part of the annual monitoring in 2006 and 2007. As a subcontractor to ENSR, the scientists from Germano & Associates assisted with the box coring tasks for benthic and chemistry samples in addition to collecting replicate sediment profile images at all of the selected deep-water stations. Dr. Germano was also contracted by EPA Region 9 to conduct all image analysis and interpretation of all SF-DODS SPI photographs collected in 2008 and 2009 by SAIC.

Port of Olympia Post-Dredging, Interim Cap SPI Survey

In March, 2009, Dr. Germano was the PI on an SPI survey from a recently dredged area that had an interim cap placed over exposed sediment with elevated chemical constituents. The profile images were analyzed for cap thickness, mixing between native and cap sediments, and biological mixing depth.

Port of Seattle East Waterway SPI/Plan View Survey

In October, 2008, Dr. Germano was the PI for a combined SPI/Plan View imaging survey performed as part of a supplemental remedial investigation for the Port of Seattle. Working as a subcontractor to Windward Environmental, LLC, the scientists from Germano & Associates, Inc. collected images at 63 stations in the two-day field study to characterize sediment, benthic habitat, and biological community conditions throughout the waterway.

Sediment and Habitat Characterization of Augusta Bay, Italy

During the summer of 2008, Dr. Germano was the principal investigator for sediment characterization of the Rada diAugusta off the coast of Sicily; over 100 stations were surveyed with SPI technology to gain a better understanding of animal-sediment relationships and document gradients in benthic community disturbance patterns and sediment physical characteristics.

Wood Waste Investigations, Puget Sound

Between 2005 – 2008, Dr. Germano was principal investigator for SPI surveys at Port Gamble and in the Hylebos waterway for industrial clients to both characterize the extent of wood waste at former log rafting/transfer sites and assess the status of benthic recovery in these areas. The results from the SPI surveys were used to delineate the extent of wood waste impacts and provide a rapid characterization of the status of the benthic community.

RI Baseline Characterization, Saginaw River, Michigan

Dr. Germano was the chief scientist and principal investigator for the sediment profile imaging survey performed as part of a baseline characterization for a remedial investigation performed in the fall of 2007 along 22 miles of the Saginaw River; over 1300 sediment profile images were collected during 7 days in the field with a complete analysis and comprehensive report submitted to the client in early 2008.

Seafood Waste Pile Assessment, Dutch Harbor

In the spring of 2007, Dr. Germano was the chief scientist and principal investigator for a private client to assess the success of a seafood waste pile cleanup at a remote inlet outside of Dutch Harbor, AK. A precision bathymetric survey combined with sediment profile and plan-view imaging accurately mapped the remaining seafood waste remaining on the bottom at the former disposal site as well as provided the client with an accurate assessment of benthic recolonization status in the affected area. The complete results of both the acoustic and optical surveys were turned into the client and presented to federal regulatory authorities within 30 days following completion of the field survey.

Retrospective Data Review and SMMP Revision for SF-DODS, EPA Region 9

Under contract to EPA Region 9 in 2006-2007, Dr. Germano assembled a team of experts to review all monitoring data collected at the San Francisco Deep Ocean Disposal Site from 1993-2007 to summarize results and recommend changes to the site's monitoring and management plan. As a result of our report, EPA was able to implement a rule change and streamline the monitoring plan to collect monitoring data in a much more cost-effective manner.

Alaska DEC 303(d) List Monitoring in Schulze Cove and Thorne Bay

Dr. Germano was the chief scientist and principal investigator for the benthic and sediment profile imaging survey at former log transfer and storage areas in Thorne Bay and Schulze Cove, Alaska. As part

of a team under a multi-year environmental task order services contract with Alaska DEC, Germano & Associates performed all sediment chemistry and benthic sampling in addition to sediment profile and plan-view imaging in May, 2007, to assess the nature and extent of impacts associated with wood waste on the seafloor.

Habitat Mapping Survey, Hackensack River. New Jersey

In May 2007, Dr. Germano conducted a benthic habitat mapping survey along five separate reaches of the Hackensack River in northern New Jersey. The survey involved the collection of 300 SPI images and 33 grab samples for benthic community analysis. The results were used to map benthic habitats, characterize the distribution of benthic invertebrate communities, and assist the New York Army Corps of Engineers in selecting candidate sites for potential habitat restoration. Scientists from Germano & Associates, Inc. performed the field work, analyzed all the SPI and benthic data, and prepared an interpretive technical report

Sediment Quality Survey, Hackensack River. New Jersey

Dr. Germano was the chief scientist and principal investigator for a private client to assess sediment and benthic habitat quality at an industrial site on the Hackensack River; a comprehensive profile imaging survey was carried out in 2006 with complete results submitted to the client within 4 weeks of completing the field survey.

Measurement of Biological Mixing Depth, Housatonic River, MA

Dr. Germano was the chief scientist and principal investigator for a sediment profile imaging survey at selected areas in the Housatonic River under contract to Weston Solutions, Inc. in the spring of 2006. Approximately 50 stations were sampled over the course of two days along the upper reaches of the river near Pittsfield, MA to measure biological mixing depth to assist EPA in their water quality modeling efforts. Results were submitted to the client within one week following completion of the field work.

Port Everglades and Miami ODMDS Monitoring, EPA Region 4

Dr. Germano was the chief scientist for the sediment profile and plan-view imaging surveys at the Port Everglades and Miami Ocean Dredged Material Disposal Sites in the spring of 2006. Over 50 stations were surveyed at the two sites under contract to EPA Region 4. A complete interpretive report was submitted to the client showing the spread of dredged material at both sites as well as the status of benthic recolonization within the site boundaries.

Eutrophication and Benthic Habitat Assessment, Jamaica Bay, NY

Dr. Germano was one of the key investigators for the sediment profile imaging survey performed as part of the multi-year, comprehensive benthic eutrophication studies carried out in Jamaica Bay for NY DEP. Germano & Associates was a subcontractor to Battelle Memorial Institute for the spring and summer surveys carried out each year between 2005—2007; approximately 50 sediment profile stations were sampled each season with multi-year comparisons performed in the latter years to look at both annual and seasonal changes in benthic community response to eutrophication patterns in this shallow bay in Long Island.

Thorne Bay Bark and Benthic Assessment

Dr. Germano was the chief scientist and principal investigator for the benthic and sediment profile imaging survey at a former log transfer facility in Thorne Bay, Alaska. As a subcontractor to Tetra Tech for TMDL support to the Alaska Department of Environmental Conservation, Germano & Associates

performed all water and sediment sampling in addition to sediment profile and plan-view imaging in June, 2005, to assess the nature and extent of impacts associated with wood waste on the seafloor.

Evaluation of Sediment and Benthos Characteristics at a Proposed LNG Deep Water Port

Dr. Germano was the principal investigator for a comprehensive sediment profile imaging survey as part of a permit application baseline study for a proposed pipeline route and deepwater port associated with an LNG offloading terminal for a facility on the east coast of the United States. A total of 160 stations were surveyed in July 2005 in a range of water depths between 200-300 feet, and a complete report and interpretation of all profile images was submitted to the client within 30 days following completion of the field survey.

Habitat Restoration Project, Woodard Bay, Puget Sound

In May, 2005, Dr. Germano was the principal investigator for a combination SPI/plan-view survey of a former log storage area in Puget Sound that was scheduled to undergo a restoration for oyster habitat by the Nature Conservancy. The proposed area was surveyed in one day of field work, and the results of the SPI and plan-view camera analysis to determine whether or not the proposed area was suitable for oyster habitat were submitted to the client within 2 weeks of completion of the field work.

Caspian Sea Environmental Surveys

Dr. Germano was the principal investigator for post-drilling sediment profile imaging surveys at two areas in the Caspian Sea in November, 2004, as part of a larger project conducted by Germano & Associates to perform sediment and water sampling for ExxonMobil. This study was performed to assess environmental impacts of two exploratory wells drilled in 600 and 800 meters water depths. A complete report and interpretation of all sampling activities was submitted to the client within 90 days following completion of the field surveys.

Hunters Point Survey

Dr. Germano was the principal investigator for a sediment profile imaging study for the US Navy SPAWARS division to look at contaminant remediation in marine sediments off Hunters Point Naval Shipyard in San Francisco Bay. The results of the sediment profile survey performed in May 2004 were used to measure bioturbation depth in order to more accurately model natural recovery.

Effects of Dredging-Induced Sedimentation

As part of an ongoing research effort at the US Army Corps' Waterways Experiment Station (WES), Dr. Germano was in charge of convening a panel of experts in a variety of marine disciplines to help define priorities for WES's research program to investigate the biological impacts of sedimentation caused by dredging projects. The results of the workshop were summarized in ERDC TN-DOER-E19 to address questions about the appropriate scales of concern for biological response to sediment deposition, the requirements for modeling, and methods for measuring deposition in both field and laboratory situations.

Disposal Area Monitoring (DAMOS) Survey

Dr. Germano was in charge of SPI surveys between 2003- 2011 as a subcontractor to ENSR to investigate the impacts of dredged material placement at a series of open water disposal sites off the coasts of Maine, Massachusetts, and Connecticut. Responsibilities included field operations for successful acquisition of profile images as well as analysis & interpretation of the images for the final reports.

Oil Platform Monitoring, Bay of Campeche

Dr. Germano was the principal investigator for all sediment profile imaging studies to assess the environmental impacts surrounding several oil platforms off the coast of Mexico in the Bay of Campeche. A total of 126 stations were sampled as part of a multidisciplinary study being carried out by Battelle and IMP for PEMEX in December of 2003, with data analysis and interpretation completed in 2004.

Puget Sound Naval Shipyard CAD/ENR Study

Dr. Germano was principal investigator for SPI surveys at both the Confined Aquatic Disposal (CAD) pit and the Enhanced Natural Recovery (ENR) areas at the Bremerton Naval Complex in Sinclair Inlet, Puget Sound in October, 2003. Over 160 stations were sampled and results submitted to the client within one month after completion of all field work.

Ketchikan Fish Waste Monitoring

Dr. Germano was in charge of benthic studies and SPI surveys to assess the recolonization status of fish waste disposal sites in Tongass Narrows off Ketchikan, Alaska in the fall of 2003. SPI technology was used to delineate the extent of four disposal piles, and benthic grabs were taken at two disposal piles and a reference site. Both the SPI results and benthic community data were integrated for the final report to provide an assessment of overall benthic community health.

El Paso Gas Pipeline Environmental Impact Assessment

In November, 2002, Dr. Germano led a study to perform a sediment profile imaging survey at over 200 locations along a proposed gas pipeline route off the coast of New Jersey and New York to document benthic habitat baseline conditions. Field work was successfully completed over the course of two weeks and a final report characterizing sediment and benthic community conditions along the entire pipeline route was completed on schedule.

Gas Pipeline Baseline Characterization Study, West Africa

In December, 2002, Dr. Germano was principal investigator for the sediment profile imaging portion of a multidisciplinary baseline study along 150 km of a proposed pipeline route off the coast of Africa; over 150 sediment profile images were taken and assessed on board to decide where additional grab sampling stations should be located. A complete image analysis and comprehensive report was submitted within 45 days following completion of the field work.

Confined Aquatic Disposal Monitoring, Sinclair Inlet, Puget Sound

During the summer of 2002, Dr. Germano performed a sediment profile imaging survey of the confined aquatic disposal borrow pit adjacent to the Puget Sound Naval Shipyard in Bremerton, WA. The survey was performed for the US EPA to investigate the cause of elevated contaminant concentrations found in sediment samples from the nearby seafloor taken after capping operations were completed. The SPI survey showed that the dredged material apron extended over 200 meters beyond the designated CAD pit boundary.

Post-Drilling EIA Monitoring, Caspian Sea

In September 2002, Dr. Germano was in charged of a comprehensive mapping survey to delineate the footprint of drilling muds/cuttings surrounding three former oil well sites in the Caspian Sea off the coast of Azerbaijan. The sediment profile imaging survey documented the lateral extent of drilling muds on the seafloor in depths from 70 – 500 meters; SPI technology was used at all three sites to map the footprint of the muds. The film was developed immediately on-board following completion of the reconnaissance

SPI survey, and the results were used to plan the location of the grab samples taken for sediment chemical and biological analyses.

Capping Demonstration Project, Los Angeles Harbor

As part of a comprehensive capping demonstration project in Los Angeles Harbor being carried out for the US Army Corps of Engineers, Los Angeles District in coordination with the Contaminated Sediments Task Force, Dr. Germano carried out baseline, post-disposal, and post-capping monitoring surveys using Sediment Profile Imaging technology in the summer and fall of 2001. Approximately 40 stations were monitored in this time-series to study the effectiveness and impacts of confined aquatic disposal as a management tool for contaminated sediments.

Sediment Profile Imaging Survey, Lower Willamette River

As part of a multi-disciplinary RI/FS investigation of the Lower Willamette River, Dr. Germano was the program manager for a baseline characterization of the lower 15.7 miles of the river using sediment profile imaging technology. The report produced from this study was a required deliverable under the Stipulated Agreement for Portland Harbor which was incorporated by reference into the Administrative Order on Consent for the Portland Harbor CERCLA Site. The SPI results provided reconnaissance information on the physical and biological features of surface sediments in the Willamette River from Ross Island to the Columbia River. A total of 514 stations were sampled between November 26 and December 10, 2001.

PSDDA Disposal Site Monitoring

Under subcontract to Striplin Environmental Associates, Dr. Germano was in charge of all SPI monitoring at the Commencement Bay and Elliott Bay Disposal Sites in 2001 and 2002. Between 50-70 sediment profile imaging stations were sampled at each site, with maps of the dredged material footprint submitted to the client within 24 hours of the field sampling; a comprehensive report on the profile imaging results was submitted within 4 weeks of completion of the field work at each site.

Comprehensive Environmental Impact Baseline Survey, People's Republic of China

Dr. Germano carried out a comprehensive SPI survey in the fall of 2001 as part of a multi-disciplinary environmental impact study for an industrial client in the People's Republic of China. A baseline characterization of an entire bay over 650 km² in area was surveyed using Sediment Profile Imaging as a requirement for building a large industrial coastal facility. Field work was completed within one week, and a complete analysis/report delivered to the client within 5 weeks of completion of all field activities.

Contaminated Sediment Workgroup, San Francisco Estuary Institute

Dr. Germano served as an invited workgroup member to assist SFEI with their investigations of the transfer of contaminants from sediments to biota in San Francisco Bay. As part of this panel, Dr. Germano attended meetings, provided expertise on bioturbation and animal-sediment relationships, and reviewed SFEI's PCB fate and transport model.

Gulf of Mexico Deep-Water Monitoring Studies

In the summer of 2001, Dr. Germano carried out a comprehensive series of Sediment Profile Imaging surveys as a subcontrator to Virginia Institute of Marine Sciences at three monitoring sites in the Gulf of Mexico in water depths ranging from 900-1200 meters. Over 1,300 sediment profile images were collected as part of a multidisciplinary sampling program to investigate the environmental impacts of synthetic drilling muds on the seafloor.

SPAWARS PRISM Project: Field Verification of Bioturbation Depths

The Navy is in the process of identifying, assessing, and remediating a large number of coastal facilities with contaminated sediments; as part of this effort, the PRISM project is developing a set of diagnostic tools for characterizing and quantifying in-place contaminant pathways to aid in the effective selection, permitting and monitoring of *in-situ* sediment management strategies. Dr. Germano served as principal investigator for all sediment profile imaging surveys as part of this multidisciplinary, comprehensive program development carried out in San Diego Harbor, CA and Pearl Harbor, Hawaii in 2001-2002.

Ecological Impacts of Potential New Jersey Sand Mining Operations, Minerals Management Service

As a subcontractor to Continental Shelf Associates, Dr. Germano was principal investigator for Sediment Profile Imaging (SPI) surveys as part of baseline ecological assessment of potential sand resource mining areas off the coast of New Jersey carried out in 2001.

Ecological Assessment of Sand Mining Impacts, Civil Engineering Dept.

Dr. Germano was program manager and principal scientist for an environmental impact assessment of the South Cheung Chau disposal site and East Lamma Channel sand mining operation, February-March 2001, for the Civil Engineering Department, Hong Kong. This project used SPI technology to assess environmental impacts and verified deposition and dispersion pattern of suspended sediments from hopper dredging operations for sand mining associated with the new Disney theme park in Penny's Bay, Hong Kong.

Silver Bay Baseline Monitoring, City and Borough of Sitka, Alaska

Dr. Germano was program manager for a comprehensive baseline survey of Sawmill Cove in Silver Bay, Alaska for the City and Borough of Sitka. He directed comprehensive underwater video and sediment profile imaging (SPI) surveys of a 100 acre site, interpreted SPI results and designed a sediment sampling strategy with a follow-up survey for traditional benthic community analyses to document baseline conditions and ecosystem recovery as well as presenting the final results to City officials, Alaska Department of Environmental Conservation, and the interested public.

Port of Oakland 50' Deepening Project

Dr. Germano was the program manager for sediment analyses for the Port of Oakland's 50-ft Harbor Deepening Project. He developed sampling and analysis plans, negotiated with relevant state and federal regulatory agencies for plan approvals, managed the collection and analysis of more than 200 vibracores to -52 ft, interpreted sediment testing results, directed the preparation of all reports/deliverables, and supported the Port in public outreach meetings. He also performed a reconnaissance survey using Sediment Profile Imaging (SPI) technology to characterize an area in Oakland Middle Harbor earmarked for habitat restoration using dredged material to create a shallow-water eelgrass habitat with associated nearshore wetlands.

Monitoring Survey of LA2 and LA3 Disposal Sites, US Army Corps of Engineers, Los Angeles District

Principal Investigator, August 2001, in a comprehensive sediment profile imaging survey at the LA2 and LA3 disposal sites to map distribution and impacts of dredged material disposal for the LA Corps of Engineers. Over 200 stations were sampled in one week, with preliminary results of the dredged material footprint given to the client by the end of that same week.

Housatonic River Baseline Ecological Risk Assessment, EPA Region I

Program Manager for aquatic components of the BERA; EVS was brought in to this on-going study in summer of 2000 to handle the data analysis/interpretation for the benthic community studies, the sediment quality triad studies, and to be the study lead for all the aquatic components of the

comprehensive BERA being performed. As the EVS' program manager, Dr. Germano organized and directed all of EVS' technical tasks, presented position papers on the EPA team approach to joint EPA/PRP meetings, and participated in the overall EPA team meetings held periodically in Pittsfield, MA up until the time he left EVS in 2001.

Seabed Ecology Program, Civil Engineering Department

Principal investigator for Hong Kong's Seabed Ecology Program, an 18-month project initiated in 1996 and sponsored by the Geotechnical Engineering Office of the Hong Kong government to address the cumulative environmental impacts of the many marine dredging and disposal projects under its jurisdiction. Supervised statistical analysis of all available historical data to refine the study objectives, supplied all SPI technology services (data acquisition in Hong Kong, analysis, and interpretation in Seattle) for the study program, supplied field technicians to assist with benthic grab sampling, provided interpretation and statistical analysis of all the biological community grab sample results, integrated the SPI results with benthic community data to provide insights into the structure and function of benthic communities at the disposal mounds and capped borrow pits, and attended meetings with government officials in Hong Kong to present program results.

Ecological Impacts of Potential North Carolina Sand Mining Operations, Minerals Management Service

As a subcontractor to Continental Shelf Associates, Dr. Germano was principal investigator for Sediment Profile Imaging (SPI) surveys as part of baseline ecological assessment of four potential sand resource mining areas off the coast of North Carolina carried out in 1998.

Independent Review of Bolsa Chica Ecological Risk Assessment Work Plan, US Army Corps of Engineers, Los Angeles District

Program manager for a comprehensive review of a proposed risk assessment for the Bolsa Chica Wetlands Restoration project in southern California. The task also included developing alternative strategies for a site-specific ecological risk assessment as part of site's wetlands management plan.

Hong Kong Coastal REMOTS® Survey

Directed a series of comprehensive Sediment Profile Imaging (SPI) surveys of Hong Kong coastal waters between 1993 -1995 for the Geotechnical Engineering Office (GEO) of the Hong Kong Government's Civil Engineering Department. A total of 800 SPI images were collected at various locations in Hong Kong's coastal waters as a demonstration project to see if SPI technology would be useful for the government's marine environmental monitoring program. A variety of dredged material disposal sites were investigated as well as areas under investigation as part of the Chep Lap Kok airport reclamation project. The results showed that overall, the sedimentary facies of Hong Kong/Kowloon shelf represent moderately high kinetic energy regimes where surface bottom instability is the rule rather than the exception. While evidence of increasing organic enrichment and a compromised benthic community indeed were documented in a few areas (e.g., Fairway and Tathong transects), most of the areas surveyed show little evidence of stress or impact at a population level of functional trophic groups and animal-sediment interactions. The results showed that SPI technology was indeed an appropriate monitoring tool for Hong Kong's territorial waters and a series of SPI surveys were carried out over the next 2 years as part of the comprehensive monitoring program to assess dredging impacts in Hong Kong territorial waters.

Dredged Material Disposal Impact Assessment, Mud Dump Site, New York

Managed a variety of investigations for the U.S. Army Corps of Engineers (ACOE) New York District assessing the effectiveness and stability of capping dioxin-contaminated sediments, and biological

community characteristics at the Mud Dump Site. Supervised geophysical investigations to support alternate disposal site selection in the New York Bight region for ACOE and USEPA.

Field Studies to Support ERA at a Coastal Superfund Site, Industrial Client
Supervised sediment vibracoring in a coastal wetland at an industrial Superfund site for advanced chemical fingerprinting of sediment hydrocarbon contaminants.

Disposal Area Monitoring System (DAMOS) Investigations, New England Division, US Army Corps of Engineers
Program manager 1985-1991 of the Disposal Area Monitoring System (DAMOS) contract for the New England Division of ACOE, the most comprehensive, long-term, multi-disciplinary environmental monitoring program for open water dredged material disposal in the United States. Played a major role in adapting existing technology and developing new technology to allow accurate and expedient monitoring of dredged material disposal to assess water quality impacts; performed extensive physical oceanographic monitoring; and measured both short- and long-term effects on sediment quality, benthic fauna, macrofauna, and fish communities. Was responsible for design and interpretation of numerous sediment profile imaging surveys at active disposal sites. Designed and implemented numerous studies to investigate the effectiveness of capping as a remediation alternative for contaminated sediment disposal; played a key role in developing the program's overall long-term tiered monitoring and management strategy.

San Francisco Deep Water Disposal Site Ocean Studies, US EPA Region IX
Managed a comprehensive ocean studies program for the deep-water disposal site located off the Farallone Islands for USEPA Region IX and designed the long-term monitoring program for the site.

Outfall Siting Studies, Massachusetts Water Resource Authority
Managed comprehensive REMOTS® surveys for baseline characterization of potential sites for locating discharge pipes for sewage effluent from a Massachusetts sewage treatment plant.

Sediment Quality Survey, San Francisco Bay, NOAA
Program manager for a sediment quality survey and baseline gradient characterization of San Francisco Bay for NOAA's Status and Trends Program using REMOTS® technology and traditional sampling methods.

Sediment Quality Survey, Pensacola & Hillsborough Bay, Florida DER
Applied REMOTS® technology to characterize benthic habitat gradients in Pensacola and Tampa for the Florida State Department of Environmental Regulation.

Dredged Material Site Designation Studies, Chesapeake Bay & Puget Sound, US Army Corps of Engineers
Managed programs and served as principal investigator on baseline assessments of bedforms, sediment type, and biological communities as part of site designation studies in Puget Sound and in Chesapeake Bay for the ACOE Seattle and Baltimore Districts respectively.

Sediment Quality & Habitat Assessment Studies, Various Clients
Principal investigator on sediment profile imaging surveys for sewage disposal effluent impacts, pulp/paper mill discharge impacts, offshore oil and gas platform discharge impacts, dredged material disposal (confined, unconfined, and thin layer disposal) impacts, aquaculture impact, anoxia/hypoxia assessment, and identification of pollution "hot spots" in shallow and deep water on all coasts of the United States plus locations in Canada, UK, Ireland, France, Spain, Hong Kong, and New Zealand.

- ***Guideline & Protocol Development***

Development of Beneficial Re-Use Sediment Screening Guidelines, San Francisco

Managed program as well as being one of the principal investigators for the San Francisco Regional Water Quality Control Board, Port of Oakland, and California Coastal Conservancy during 2002-2003 to develop new screening guidelines for beneficial re-use of dredged material for wetland restoration.

Expert Advisor in Marine Ecology, Civil Engineering Department, Hong Kong

Advisor to the government of Hong Kong on the adequacy of their current territorial marine environmental monitoring programs; helped them design a comprehensive monitoring program to address environmental issues surrounding disposal of contaminated sediments.

Expert Witness on Impacts of Dredged Material Disposal , US Congressional Hearings

Testified in the U.S. House of Representatives during the summer of 1994 before the subcommittee hearings on the Ocean Dumping Act and Federal Dredging Policy on West Coast dredging issues and alternative technologies for dealing with contaminated sediments and dredged material.

Expert Witness on Impacts of Dredged Material Disposal, US Navy

Provided expert witness testimony for the U.S. Navy in Washington State Water Quality Review Board hearings on the environmental effects of dredged material disposal that led to the granting of a water quality permit for the Navy to proceed with construction of the Everett Homeport facility.

Expert Witness on Impacts of Dredged Material Disposal, US Army Corps of Engineers

Provided expert witness testimony in Federal District Court hearings on the environmental effects of dredged material disposal which led to the re-opening of the WLIS III Dredged Material Disposal Site in Long Island Sound after it had been closed by federal court order following a suit filed by the Town of Huntington.

Environmental Mediation, Ports of Auckland, New Zealand

Facilitated a successful environmental mediation effort in a series of 23 meetings during the summer of 1992 in New Zealand for the Ports of Auckland to address controversy surrounding the designation of an open-water dredged material disposal site.

PUBLICATIONS

Germano, J.D., D.C. Rhoads, R.M. Valente, D. Carey, and M. Solan. 2011. The use of Sediment Profile Imaging (SPI) for environmental impact assessments and monitoring studies: Lessons learned from the past four decades. Oceanography and Marine Biology: An Annual Review 49: 247-310.

Wilson, S.J.K., T.J. Fredette, J.D. Germano, J.A. Blake, P.L.A. Neubert, and D.A. Carey. 2009. Plan-view photos, benthic grabs, and sediment-profile images: Using complementary techniques to assess response to seafloor disturbance. Marine Pollution Bulletin 59: 26-37.

Germano, J.D. and D.G. Browning. 2006. Marine log transfer facilities and wood waste: When dredging is not your final answer. *IN* Randall, R.E. (ed). Proceedings of the Western Dredging Association Twenty-Sixth Technical Conference. June 25-28, 2006, San Diego, CA. Center for Dredging Studies, College Station, TX.

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