



# A P P L I E D *marine* S C I E N C E S



#### ADDRESS

4749 Bennett Dr.  
Suite L  
Livermore, CA  
94551

303 Potrero St.  
Suite 42-304  
Santa Cruz, CA  
95060

#### PHONE

(925) 373-7142  
(831) 426-6326

## STATEMENT OF QUALIFICATIONS

AMS PROVIDES MARINE SCIENCE  
EXPERTISE THAT HELPS OUR CLIENTS  
SUCCEED

[www.amarine.com](http://www.amarine.com) | [info@amarine.com](mailto:info@amarine.com)

<b>TABLE OF CONTENTS .....</b>	<b>3</b>
<b>ABOUT US.....</b>	<b>3</b>
<b>OUR CLIENT BASE.....</b>	<b>4</b>
<b>OUR APPROACH.....</b>	<b>4</b>
<b>OUR SERVICES.....</b>	<b>5</b>
<b>REGULATORY COMPLIANCE.....</b>	<b>6</b>
<b>WATER QUALITY .....</b>	<b>8</b>
<b>ENERGY AND INFRASTRUCTURE .....</b>	<b>10</b>
<b>ECOLOGICAL ASSESSMENTS.....</b>	<b>12</b>
<b>ENVIRONMENTAL PROGRAM MANAGEMENT .....</b>	<b>14</b>
<b>TESTIMONIALS &amp; AWARDS.....</b>	<b>16</b>
<b>OUR TEAM.....</b>	<b>17</b>

# ABOUT US



Applied Marine Sciences, Inc. is a small marine and environmental consulting team of scientists and engineers that helps clients carry out an array of environmental projects for private and public clients.

---

Our over 30-year history of success is built on scientific rigor, adaptability, and astute program management. Our experienced professional staff employs a diversity of technical skills and experiences in the environmental science and engineering fields to closely support a wide range of projects. Senior scientists at AMS average over twenty-five years of experience. With our extensive contacts at the academic, non-profit, and agency levels, we add value through collaboration with highly qualified experts in a diverse set of relevant supporting fields.

---

Dr. Robert Spies founded AMS in 1989 through his experience managing the marine science response to the *Exxon Valdez* oil spill in Alaska. AMS serves its clients from offices in Livermore and Santa Cruz, CA and coordinates projects throughout California, the United States, and internationally. We are different from other scientific advisory firms in ways that help our clients succeed.

AMS is a California-certified small business enterprise.



# OUR APPROACH

Our **strategy** fuses regional experience with a team focused on providing specialized scientific and regulatory expertise.

AMS develops close **client relationships** and employs a single point of accountability for project performance.

Our project management emphasizes regular performance and cost monitoring, with **frequent, effective communications**.

Our accounting system, reviewed and approved by the Defense Contract Auditing Agency, includes **complete project tracking and reporting**.

---

# OUR CLIENT BASE





# OUR SERVICES

AMS helps clients solve problems in marine and coastal development realms. We help public agencies and private businesses protect and interact with marine and aquatic environments and their complex biological and chemical phenomena through scientific studies and human engagement. We focus on five major areas of marine and environmental science:

## Regulatory Compliance

- CEQA-NEPA Documentation
- Mitigation Monitoring

## Water Quality

- Stormwater Management
- Water Quality Monitoring
- Total Maximum Daily Load (TMDL) support



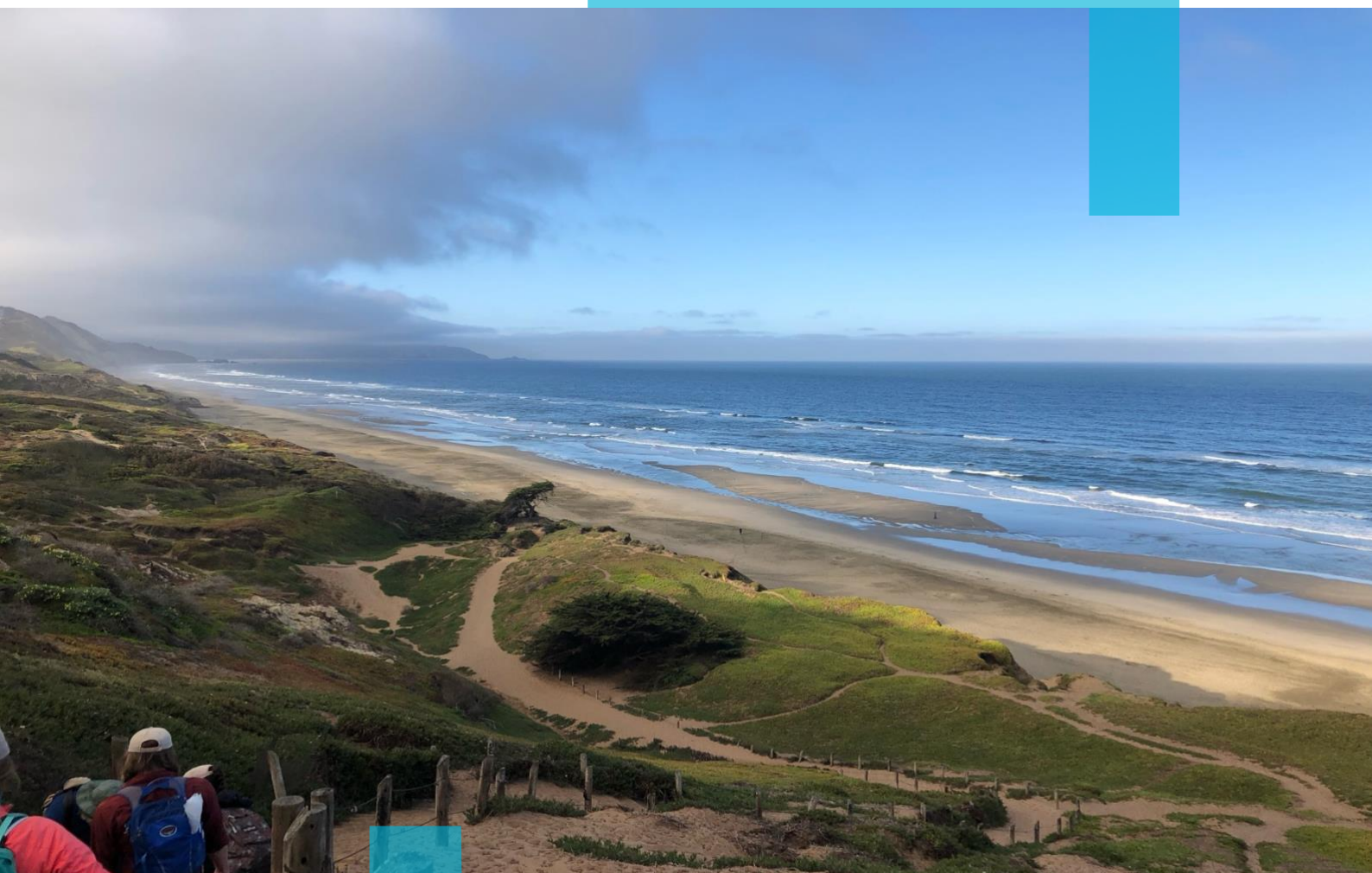
## Offshore Energy and Infrastructure

- Physical Processes
- Mitigation Monitoring
- Data and Geospatial Analysis

## Ecological Assessments

- Marine Biological Assessments
- Eutrophication and Algal Bloom Investigations
- Fisheries Assessments

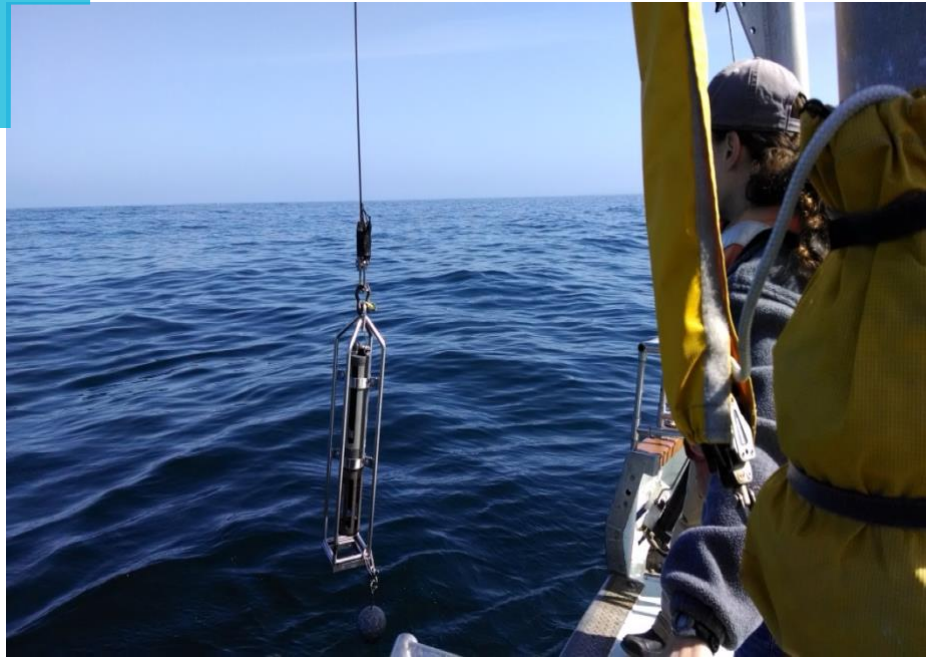
## Environmental Program Management



# REGULATORY COMPLIANCE

Our ongoing relationships with regulatory agencies and strong reputation for objective analysis make AMS a trusted name in **environmental documentation**. We develop, among others:

- Environmental Impact Statements (EIS),
- Natural Resource Damage Assessment (NRDA) studies,
- impact investigations, and
- habitat resource evaluations



*....and assessments in accordance with the:*

- California Environmental Quality Act (CEQA)
- National Environmental Policy Act (NEPA)
- European Bank for Reconstruction and Development (EBRD).

## Specialized Services

- Preparation of NEPA documents
- Preparation of CEQA documents
- International EBRD compliance assessments
- Biological Assessments (BA)
- Third-party review of assessments and technical studies





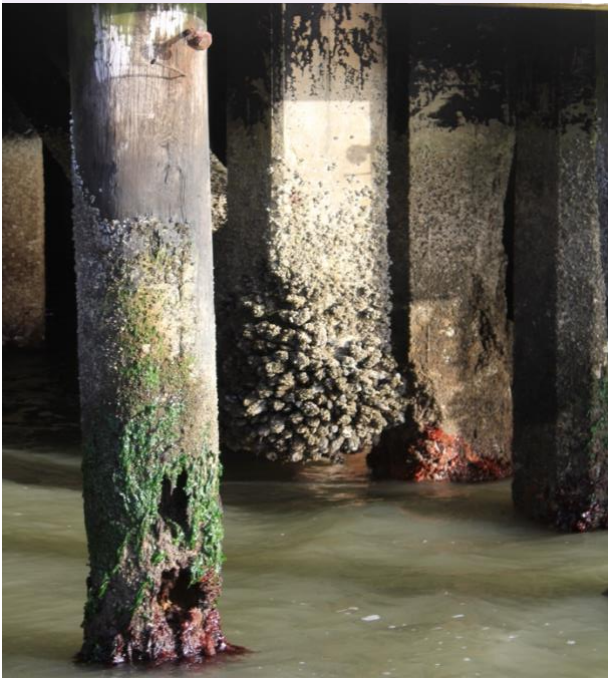
## 34<sup>th</sup> America's Cup CEQA and NEPA Assessments

In partnership with Environmental Science Associates, AMS identified and assessed potential impacts of all race activities on marine resources associated with the 2013 America's Cup races in San Francisco Bay. AMS prepared the marine biological resources impact assessments comprised of a CEQA and NEPA assessment for local, state, and federal agencies.



### Port of San Francisco Pier 70 Redevelopment Project

AMS assisted a project team in assessing potential environmental effects of the Port of San Francisco's Pier 70 redevelopment project in accordance with CEQA. We characterized and defined the site's existing marine biological communities and habitats and assessed how planned redevelopment would potentially affect current and future marine life at the site. In addition to preparing portions of the CEQA analysis, AMS conducted BAs of the site's surrounding fish and intertidal communities to more fully describe the full spectrum of possible marine life outcomes at the site.



### Ecological Assessment of Beach Nourishment

Chronic erosion has caused the shoreline to recede near a wastewater outfall owned by the San Francisco Public Utilities Commission, thereby increasing its risk of damage. SFPUC has historically used beach nourishment to reduce the outfall's hazard exposure, while also improving beach conditions for the public. AMS assessed baseline ecological conditions at nearby South Ocean Beach, as well as potential impacts to ecological values caused by sand nourishment at the beach. We designed and implemented a benthic survey on behalf of city, state, and federal agencies to assess coastal processes and support ongoing permitting efforts.





# WATER QUALITY

**Water quality is the heart of our connection to the marine environment and our clients' water quality work is central to AMS.**

With increased focus on the health of receiving waters, stormwater management, water quality monitoring, and pollution control remain high-profile issues. AMS helps resource managers achieve permit requirements in California's marine *Areas of Special Biological Significance* and we are active in regional environmental resource management task forces and advisory committees.



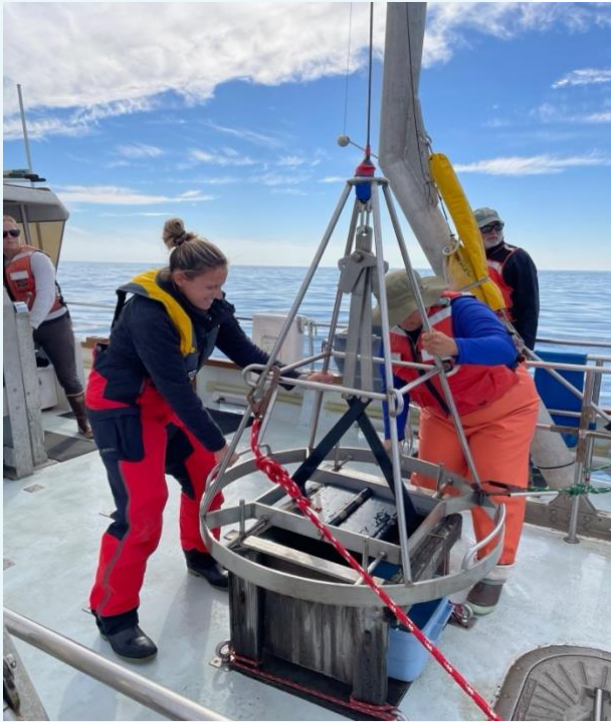
AMS has designed, implemented, and managed long-term water quality monitoring programs throughout California. AMS drives all steps of the process, from developing a scientific basis for permissible discharges, to implementing regulations, to ensuring that limited resources produce effective control strategies.

## Specialized Services

- **Best Management Practices evaluations** (BMPs).
- **Total Maximum Daily Load support** (TMDLs)
- **Fate and Effects Studies**
- **Program Design and Management**
- **Data Collection, Analysis, & Reporting**





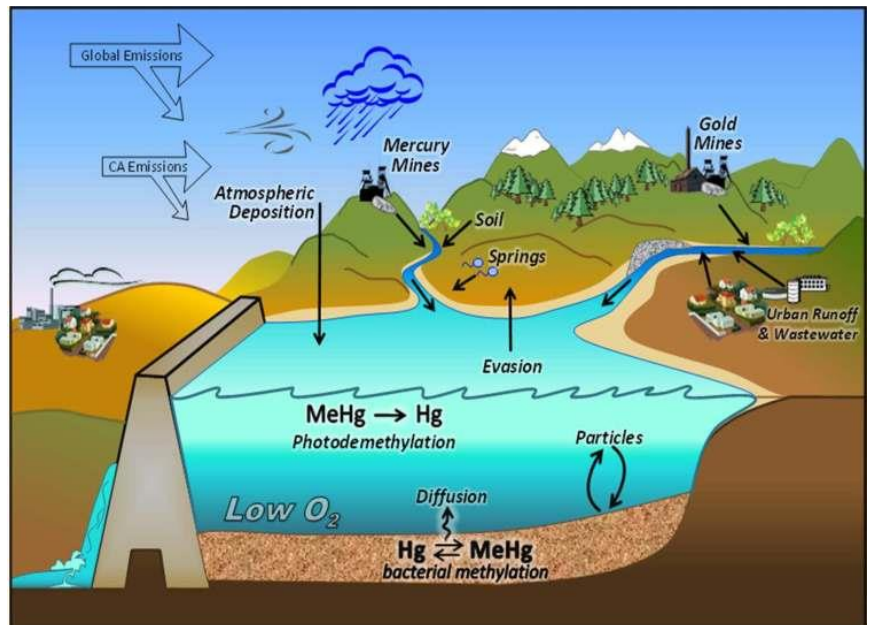


## Central Coast Long-term Environmental Assessment Network (CCLEAN)

The State Water Resources Control Board assesses water quality in Monterey Bay through CCLEAN. The program uses state-of-the-art sampling and analytical methods to measure concentrations of persistent organic pollutants in the area's rivers, wastewater, and in Monterey Bay. AMS created the overall monitoring program and provided primary scientific direction including selection and supervision of contractors, data analysis and reporting, interfacing with regulatory agencies and the public, and applying for grants to expand the program's capabilities.

## Mercury TMDL Allocations and Implementation Plan

AMS prepared five technical reports documenting mercury loads into San Francisco Bay from wastewater, wetlands, atmospheric deposition, toxic clean-up sites, and abandoned mercury mines. AMS managed the work of several contractors, and the results of the project were used by the Regional Water Board to develop the mercury TMDL for the San Francisco Estuary.



## EPA Water Quality Improvement Fund Project: Clean Watersheds for a Clean Bay

AMS provided support to the Bay Area Stormwater Management Agencies Association (BASMAA) to use an EPA grant to assist stormwater management agencies in meeting TMDL pollutant reduction targets. For this work, AMS helped manage team activities, oversaw QA and monitoring, and supported data management and interpretation for multiple monitoring projects. The work assessed the effectiveness of municipalities' Best Management Practices (BMPs) that implement TMDL limits

# ENERGY AND INFRASTRUCTURE

AMS investigates how a marine development project affects coastal environments and how to mitigate any negative effects in a cost-effective manner.

We navigate the project's interplay of regulations, scientific realities, and social factors.

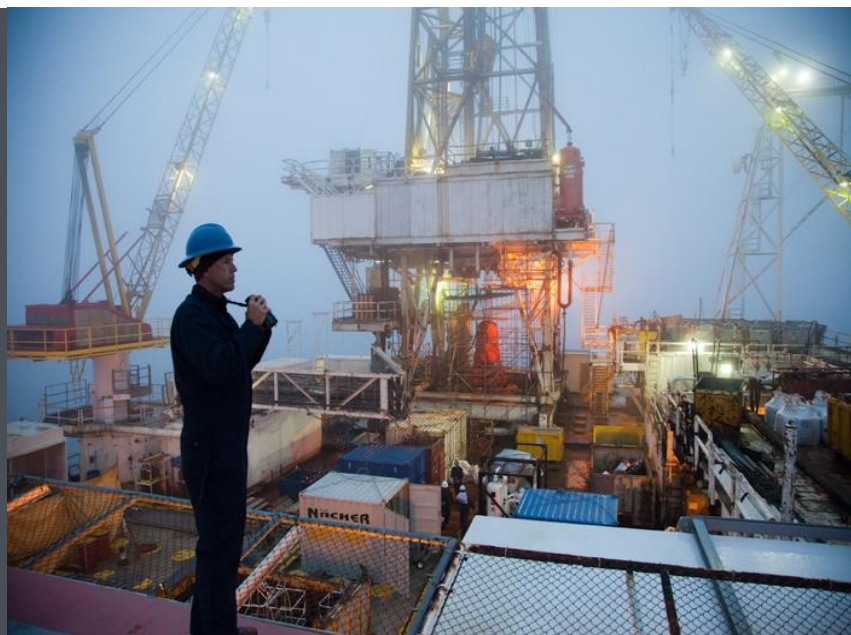
We provide independent **mitigation and compliance monitoring** services for government agencies and private businesses.

AMS designs and implements creative, effective ways to characterize physical processes that affect marine health through field observations, numerical modeling, and monitoring.



## Specialized Services

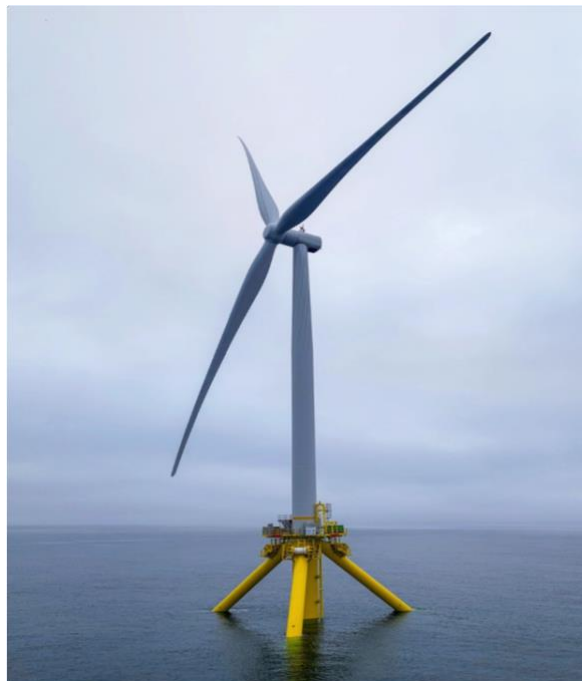
- Mitigation Monitoring Plan design
- Agency liaison services
- Sensor Systems
- Sediment transport analysis





## Floating Offshore Wind Power

AMS' long-standing collaborations with agency and academic researchers allows us to address a wide variety of environmental concerns specific to the offshore wind arena. AMS supports both developers and regulatory agencies in this burgeoning field as a Supporting Member of *Offshore Wind California*. This consortium of engineers, environmental consultants, and energy companies works together to responsibly develop offshore wind energy systems in California. AMS also provides marine consulting services to the California Energy Commission to help guide responsible energy infrastructure development in California.



## Mitigation Monitoring for the Global West Fiber Optic Cable

AMS provided environmental mitigation and permit compliance monitoring for the CSLC, the California Coastal Commission, and other agencies for the horizontal directional drilling (HDD) portion of this seven-cable fibre optic cable installation. The project involving the four offshore cable landings required on-site compliance monitoring and extensive coordination with an array of stakeholders.



## Monterey Peninsula Water Supply Project

To support an environmental impact assessment, AMS assessed the impact of brine discharge from a proposed desalination plant into the Monterey Bay National Marine Sanctuary by conducting oceanographic modeling in the bay. Oceanographic data for Monterey Bay was collected to establish baseline conditions at the proposed outfall location. AMS designed modeling scenarios that incorporated different oceanic climates and coordinated with outside firms to conduct other specific modeling. Based on this modeling, AMS assessed marine biological impacts of the possible salinity plumes.



# ECOLOGICAL ASSESSMENTS

Our assessments are essential tools for tracking ecosystem behavior, **assessing strategies for mitigating a project's environmental effects**, and documenting restoration efforts.

*Together with Water Quality, Ecological Assessments are the foundation of AMS.*

AMS fisheries investigations have been used in contentious NRDA investigations, in the design and construction of industrial facilities, and by federal, state, and local agencies to develop natural resource use and environmental protection procedures.

AMS actively participates on scientific advisory committees to develop regional approaches to complicated social-environmental issues.

Our reporting communicates complex, multi-layered environmental issues in a manner approachable to technical reviewers, regulatory agencies, and the general public.



## SPECIALIZED SERVICES

- Dredging support
- Statistical sampling design and data analysis
- Fisheries study design and entrainment evaluations
- Primary productivity measurements
- Sediment and tissue sampling



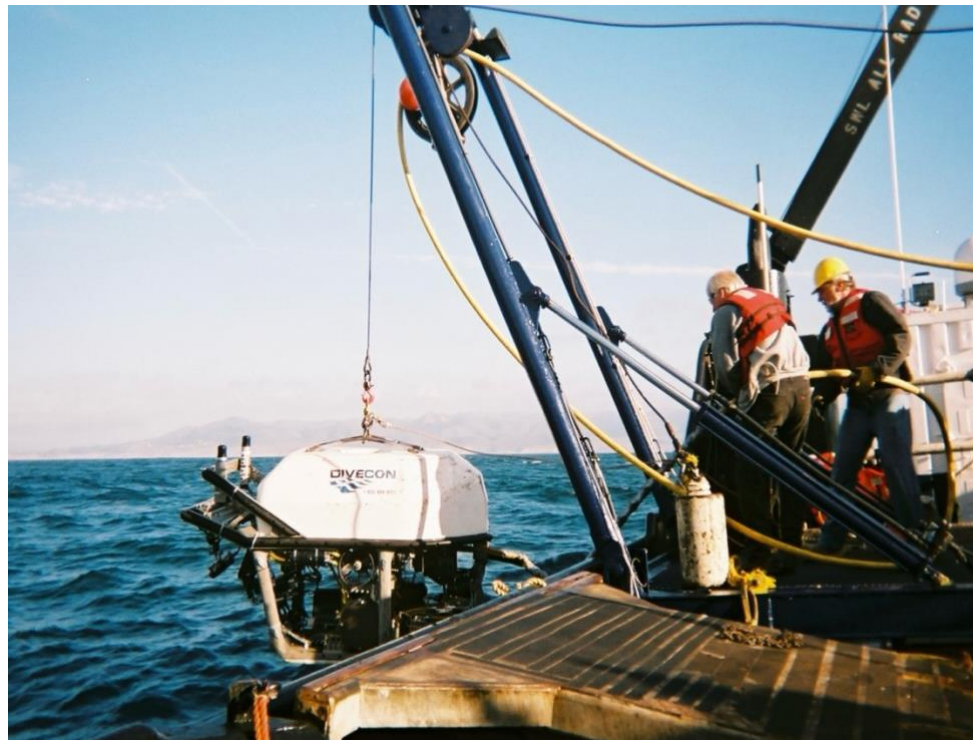


### Physiological assessment of the “Bad Suisun” phenomenon

AMS was awarded federal grants to examine whether elevated levels of ammonium are related to phytoplankton health on a basin-wide scale. The complex effort required water sampling in Suisun Bay, in the northern region of San Francisco Bay, and laboratory studies. AMS directed all project phases, from design to execution to management. The results of these field and laboratory experiments had wide-ranging implications for management decisions of ammonium discharge into San Francisco Bay, and permit requirements for wastewater treatment plants.

### Coastal Habitat and Marine Biological Assessment

To support installing multiple fiber optic cable landings into California from Asia, AMS conducted multiple ROV-based seafloor habitat surveys along undersea cable landing corridors. The SEA-US cable route in Hermosa Beach, CA and the AT&T Asia Gateway cable route in Morro Bay, CA are two recent examples of this work. AMS provided survey findings and seafloor maps to local, state, and federal permitting agencies for use in preparing project environmental impact assessments.



### Richmond Harbor and Pinole Shoal Longfin Smelt Monitoring for the U.S. Army Corps of Engineers

AMS monitored longfin smelt stocks during navigational dredging conducted in North San Francisco Bay as requested of the USACE by CDFW. AMS provided a team of biologists to conduct monitoring according to protocols approved by CDFW. AMS biologists conducted smelt monitoring around-the-clock, made daily reports to USACE and regulatory agency representatives, and wrote a comprehensive report at the conclusion of dredging activities.

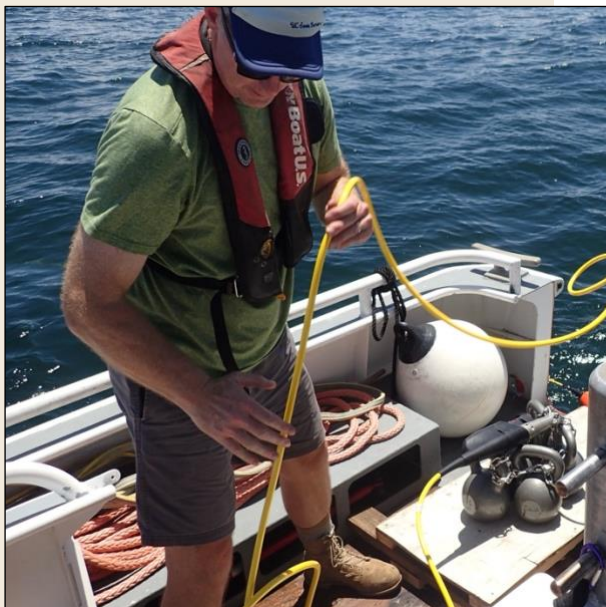
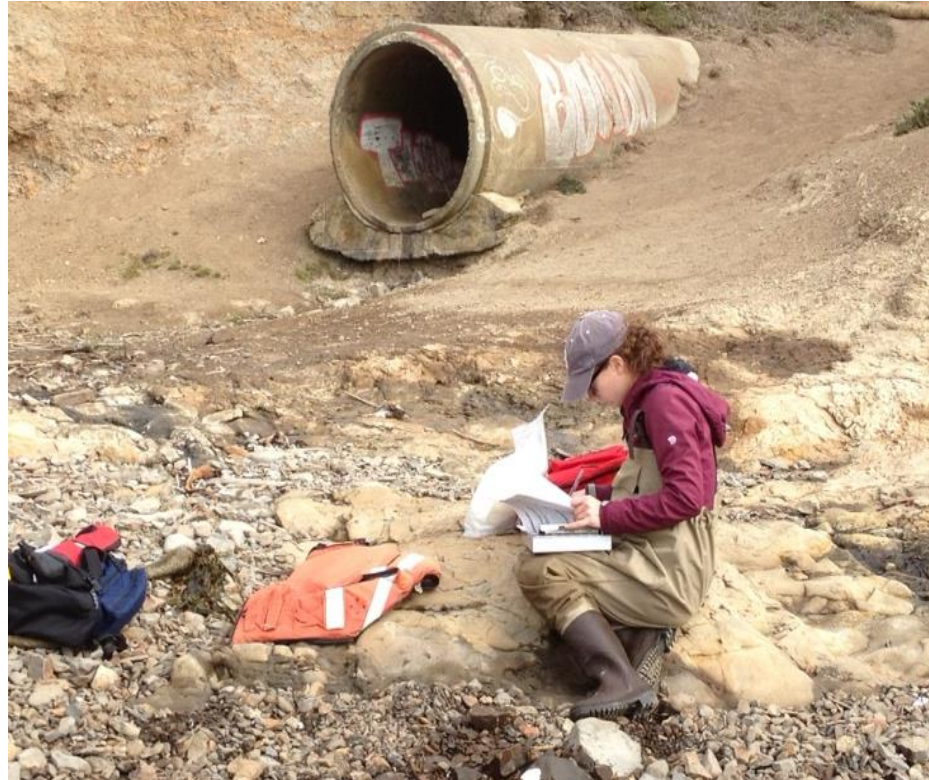


Today's complex environmental issues invoke conflicting priorities.

**AMS personnel work at the nexus of science and policy** to support sound decision-making in multi-stakeholder processes. We partner with industry, regulators, resource management agencies, the scientific community, non-governmental organizations (NGOs), and the public.

Our management strategy combines a comprehensive understanding of regulations and the law, familiarity with the latest research, and careful consideration of a system's political realities.

# ENVIRONMENTAL PROGRAM MANAGEMENT



We manage collaboratively – uniting each project's array of stakeholders towards a scientifically-valid outcome in a cost-effective way. See our *Testimonials* section for real-world examples.

## SPECIALIZED SERVICES

- Program design and management
- Stakeholder relations and facilitation
- Peer review of program components
- Data management and reporting



## Scientific Study Support for the Exxon Valdez Oil Spill

AMS provided the Chief Scientist for the government's investigations of natural resource damages from the Exxon Valdez Oil Spill (EVOS). AMS negotiated agreements and managed the work of more than 50 collaborators. As the program evolved, AMS evaluated measures to restore damaged habitat, including ecosystem management and building consensus among stakeholders. AMS assisted the EVOS Board of Trustees to develop a long-term monitoring program for the Gulf of Alaska, and to prepare and publish the results of this multi-year restoration program.



## San Francisco Bay Regional Monitoring Program (RMP)

AMS has supported design and implementation of this large-scale program for the San Francisco Estuary Institute (SFEI) and the Regional Water Quality Control Board since 1993. The program samples water and sediments for trace elements and organic chemicals and toxicity and monitors transplanted mussels and resident clams for bioaccumulation of various chemicals. AMS also participates in several technical work groups that plan future work.



## Coordinating the Clean Estuary Partnership (CEP)

AMS provided overall project design and program management for this multi-million dollar, long-term project. AMS managed this cooperative program through an agreement among three regional water agencies to provide scientific information to support development and implementation of Total Maximum Daily Loads (TMDLs) and other water quality strategies for the S. F. Bay-Delta and its tributaries. Project participants included regulators, resource management agencies, private industry, NGOs, and the public.



# TESTIMONIALS & AWARDS

Collectively, AMS staff have been honored or served in a variety of environmental research, management, and public education and outreach organizations including:

- Served as scientific reviewers for the journals *Marine Environmental Research*, *the Bryologist*, *Marine Geology*, *Aquatic Toxicology*, *Bulletin of Marine Science*, and *Limnology & Oceanography*.
- Received a commendation letter from the U.S. Attorney General for supporting restoration activities associated with the *Exxon Valdez* oil spill.
- Our certified scuba divers run AMS' scientific diving program consistent with the requirements of the National Association of Underwater Scientists.
- Testified before the U.S. Senate's Committee on the Environment and Public Works subcommittee on water and wildlife hearing following the BP Deepwater Horizon disaster.

*"We have a long-term relationship with Applied Marine Sciences spanning more than 20 years. They have always been extremely responsive, productive, professional, and cost-conscious. They have shown particular strengths in evaluating existing data in order to design the best data collection and assessment program to fit the need. We have felt that AMS has always bent over backwards to make sure our projects were successful."*

— Chris Brungardt, President RTI Solutions, Inc.

*"For over 20 years, we (MBNMS) have relied heavily on the knowledgeable, professional, and extremely accessible personnel at AMS to provide valuable insight related to regulatory issues, analytical expertise and general status and trends of many pollutants found in Monterey Bay. They are my go-to team for water quality questions and I'm extremely grateful."*

— Bridget Hoover, Dir., Water Quality Protection, Monterey Bay National Marine Sanctuary

*"Applied Marine Sciences (AMS) provided consulting services for a 5-year watershed study in Carmel-by-the-Sea. Dane Hardin and his staff worked very closely with Carmel staff to develop a cost-effective and rigorous monitoring approach...to answer the study questions. Dane provided tremendous scientific knowledge and consistent communication with the City, resulting in the successful identification of our primary sources of contaminants, and the development of effective management measures to address them."*

— Agnes Martelet, Environmental Compliance Manager, City of Carmel-by-the-Sea, CA



# OUR TEAM



Staff	Title	Years of Experience
Colin Bowser	Senior Oceanographer	5
Dovlynn Cammack	Business Manager, Principal	19
Ellen Goldenberg	Senior Marine Biologist	10
Dane D. Hardin, PhD	Senior Marine Biologist, Principal	45
Jay A. Johnson	Senior Oceanographer, Principal	40
Aroon R. Melwani, PhD	Sr. Marine Scientist, Principal	25
Jacklyn Mohay	Marine Scientist	15
Paul Salop	Senior Aquatic Scientist, Principal	30
Robert Spies, PhD	Senior Scientist / AMS Founder	50+
Diane Stafford	Senior Administrative Assistant	19
Theresa Vanello, PhD	Senior Oceanographer	8

4749 Bennett Dr.  
Suite L  
Livermore, CA  
94551

303 Potrero St.  
Suite 42-304  
Santa Cruz, CA  
95060



[AMS on LinkedIn](#)

(925) 373-7142  
(831) 426-6326

[www.amarine.com](http://www.amarine.com)  
[info@amarine.com](mailto:info@amarine.com)