Adopted: November 27, 2007

ACADEMIC SENATE
of
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA

AS-660-07

RESOLUTION ON
PROPOSAL FOR THE ESTABLISHMENT OF THE
CENTER FOR COASTAL MARINE SCIENCES (CCMS)

RESOLVED: That the Academic Senate of Cal Poly endorse the attached proposal for establishment of **The Center for Coastal Marine Sciences (CCMS).**

Proposed by: Biological Sciences Department and
The College of Science and Mathematics
Date: October 15, 2007

State of California

Memorandum

RECEIVED

OCT 15 2007

ACADEMIC SENATE

CAL POLY

SAN LUIS OBISPO
CA 93407

To: Bruno Giberti, Chair
Academic Senate

Date: October 10, 2007

From: William W. Durgin
Provost and Vice President of Academic Affairs

Copies: Susan Opava
Phil Bailey
Mark Moline

Subject: Request for Academic Senate Review of the Proposal for the Establishment of the Center for Coastal Marine Sciences (CCMS)

Attached is a copy of a preliminary proposal to establish the Center for Coastal Marine Sciences (CCMS). In accordance with campus policy for the Establishment, Evaluation and Discontinuation of Centers and Institutes, this proposal received conceptual approval by the college deans at their meeting on October 8, 2007. I would now appreciate the Academic Senate's review of this proposal as soon as possible. Simultaneously an *ad* hoc committee, appointed by me, will review organizational and financial aspects of the proposed center. Please feel free to contact Dr. Mark Moline, Biological Sciences Department, author of the proposal, should you have any questions or would like him to make a presentation to the Academic Senate.

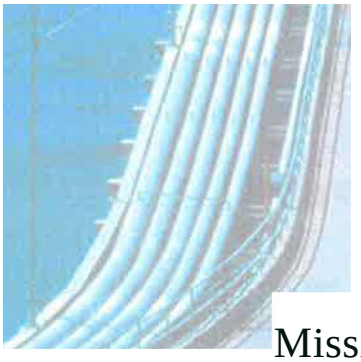
Thank you, and if you have any questions, please do not hesitate to contact my office.

Enclosure

Establishment of the Center for Coastal Marine Sciences

Proposal

Mark A. Moline
Professor
Biological Sciences Department
California Polytechnic State University



Mission Statement:

To promote and facilitate basic and applied interdisciplinary studies of coastal marine systems for the purpose of addressing environmental concerns and fostering hands-on student learning throu discovery and outreach.

Rationale

More than half the population of the United States lives in coastal counties, which is expected to increase by 25 million people by 2015. More than 180 million people visit the shore for recreation every year. Though a comprehensive monetary value has not been assigned to our coastal economy, it is clear that it contributes significantly to the nation's overall economic activity. Tens of thousands of jobs in fishing, recreation, and tourism depend on healthy, functioning coastal ecosystems. All Americans depend on the oceans and affect the oceans, regardless of where they live. Ocean currents circulate the energy and water that regulate the Earth's climate and weather and, thus, affect every aspect of the human experience. Our very dependence on and use of ocean resources are exposing limits in natural systems once viewed as too vast and inexhaustible to be harmed by human activityl.

A recent national survey indicates that the American public has only a superficial awareness of the importance of the ocean to their daily lives, let alone its importance to all life on the planet. The ocean is a source of food and medicine, controls global climate, provides energy, supplies jobs, supports economies, and reveals information about the planet that cannot be gained from any other source. The ocean conceals the highest mountains and deepest canyons on Earth, as well as valuable cultural artifacts. Exploration of the ocean has revealed amazing organisms straight out of science fiction and entire ecosystems previously unknown to humankind. But the extent of what we do not know-what remains undiscovered-sparks the imagination. With so much of the marine environment still unexplored, the ocean can be viewed as the final frontier on Earth. While most people do not recognize the number of benefits the ocean provides, or its potential for further discovery, many do feel a positive connection with it, sensing perhaps that the vitality of the sea is directly related to human survival. This connection can be a powerful tool for increasing awareness of, interest in, and responsible action toward the marine environment, and is critical to building an ocean stewardship ethic, strengthening the nation's science literacy, and creating a new generation of ocean leaders[2].

Strengthening the nation's awareness of the importance of the oceans requires a heightened focus on the marine environment, through both formal and informal education efforts. Curricula should expose students to ocean issues, preparing the next generation of ocean scientists, managers, educators, and leaders through diverse educational opportunities. In addition, informal education aimed at the entire population is needed to foster lifelong leaming[2].

The proposed Center for Coastal Marine Sciences (CCMS) will address these scientific and learning needs by engaging students and faculty at Cal Poly in dialog, basic/applied research, instruction related to the coastal marine environment, and providing enhanced infrastructure toward these efforts.

The location of Cal Poly on the central coast of California affords a unique opportunity to establish a center for excellence in marine studies. Cal Poly is the only university with a

marine presence for 400 kln along one of the most pristine stretches of the coastline between Monterey and Santa Barbara. Cal Poly is the closest university to Point Conception, one of the most important biogeographic ocean boundaries in the eastern Pacific Basin. The central coast of California is an area of intense upwelling and is very productive biologically, stimulating significant research interest from the larger community. It is also an important area on the West Coast for recreation, fisheries, oil development and issues relating to land use, coastal management and larger scale issues of climate change.

As marine science is inherently interdisciplinary, the CCMS will pool talent from across Cal Poly to foster collaborative work, promote professional development opportunities for faculty, aid in obtaining external support, augment Cal Poly's instructional programs, and build ties with industry, institutions and the community.

CCMS Functions

Faculty Impact

The CCMS will be dedicated to providing opportunities for the professional development of faculty through basic and applied research and development activities. These will primarily be through sponsored programs from government agencies, commercial companies, non-government organizations and through competition for internal university funds. Faculty members of the CCMS may also be given internal CCMS funds, when available, to stimulate new ideas, take advantage of new opportunities, and support collaborative exchange between faculty through travel and release time (see below).

In an effort to recruit expertise and grow the CCMS, interdepartmental and cross-college cooperation will be facilitated. The current founding member list (below) illustrates this CCMS function. These efforts will include open invitations, seminar exchange between departments/colleges, collaborative projects, inclusion in decision making within the CCMS and co-advising students from various disciplines. The CCMS will also facilitate these collaborative efforts by providing access to the marine environment, infrastructure, new faculty interactions and a continuing array of exciting projects.

The CCMS will be dedicated to dissemination of information to Cal Poly faculty, students, other institutions and the general public. Scientific reports, journal articles, books, and, in most cases, data will be made available over the web or in various publications. Additional efforts will be ongoing to provide information through public talks, professional seminars, and workshops organized by the CCMS. The founding members have been active in sharing findings and contributing to the general knowledge.

Faculty will use involvement in the CCMS as a means to conduct instruction complementary to the campus departments, develop their professional programs and provide service to the departments, colleges and the University. In addition, faculty involvement with CCMS will be interdisciplinary and thus will have cross-cutting impacts. Faculty members of CCMS will also provide mentorship and guidance to

individuals being considered for retention, tenure, and promotion to foster continued development, productivity and personal success. Individual accomplishments and broader impacts will be highlighted in letters provided by the CCMS director in support of retention, tenure, and promotion.

Student Opportunities and Mentorship

One of the central themes of the CCMS is to provide hands-on student learning, as highlighted in the mission statement above. This is a long standing mission of Cal Poly and one the CCMS will promote in the marine sciences. This requires the CCMS to facilitate access for students to the environment, develop infrastructure support, provide basic and advanced equipment as tools to address questions, and develop collaborations within and outside the University to extend the number and diversity of study areas. Coincident with the tangible needs, CCMS will assist departments in providing students with coherent curriculum that builds on previous learning (see below).

At the core of student success will be active mentorship by both the engaged faculty of the CCMS as well as undergraduate and graduate students. The CCMS will develop mechanisms for more inclusive student participation and will provide unique learning environments. This approach will result in a *vested* student interest, affirmation of abilities, identification with role models, exposure to real and viable careers, and practical experience within marine sciences, engineering, and other disciplines across the University.

Many departments at Cal Poly have graduate programs which have the opportunity to take advantage of the CCMS. Graduate students will actively participate in ongoing sponsored research opportunities for their thesis work and benefit from financial support. Faculty and research projects will gain from the continuity that graduate students provide. The interaction of graduate students will also promote student mentoring, departmental exchange and enhance the overall academic environment.

Relationship to Current Organizational Structure

The CCMS will serve a number of functions that are supplementary to departmental and college functions. These include promoting and facilitating research for faculty and students, enhancing the learning experience for students by providing infrastructure and equipment, serve as an information source for the public, and forge partnerships with other institutions and industry that serve the mission of the CCMS. Cal Poly is uniquely located on a pristine area of the California coastline. Without access to the marine environment, the University's academic programs are not able to integrate marine related areas into the curriculum and limit student and faculty learning and research opportunities. While the CCMS will not offer courses, the unit will provide an opportunity for departments to offer marine-related course modules, laboratories and courses. The participation of faculty from different departments will also facilitate possible cross-listed courses, team-taught courses, and GE course offerings.

The existing fiscal restrictions, limited staff and requirements for coordination and administration do not allow for significant investments by departments in specialized

areas. As marine science is inherently interdisciplinary, the CCMS will serve this role for a number of departments and colleges of the University. In addition, an integrative unit is necessary to facilitate departmental and college-level integration across the University, something that may be challenging for individual departments.

The CCMS will provide a vehicle for exciting research opportunities, which will generate funding from external sources and help participating departments. Faculty will require sponsored projects to support release time. This sustained release time through the CCMS should promote additional faculty hiring within participating departments, and increase the disciplinary expertise across campus. External funding will also allow the CCMS to support undergraduate student research/summer internships and graduate student stipends in pursuit of their thesis projects within various departments across the campus.

CCMS Structure

The CCMS will be comprised of participating faculty and staff that conduct research and/or have a shared interest in marine related studies. Membership in the CCMS will require active participation in the functions of the CCMS, such as research, grant writing, student supervision and mentorship, faculty mentorship, curriculum activities, community outreach and industry partnerships. The founding members of the CCMS are listed below with their department affiliation and area of marine-related expertise and interests. This list highlights the integrative nature of the CCMS mission and the diversity of participation across the University.

Founding Faculty Members

Dr. Nikki Adams (BIO)	fuvertebrate Development, Physiology, Ecology
Dr. Thomas Bensky (PHYS)	Marine Optics
Dr. Charles Camp (MATH)	Ocean/Atmosphere futeractionIModeling
Dr. Jennifer Carroll (CHEM)	Marine Natural Products
Dr. Paul Choboter (MATH)	Coastal Ocean Dynamics and Modeling
Dr. Christopher Clark (CSC)	Underwater Vehicle Design and Control
Dr. Pat Fidopiastis (BIO)	Marine Microbiology and Symbiosis
Dr. Elizabeth Griffith (PHYS)	Ocean Currents, Fluid Dynamics
Dr. Chris Kitts (BIO)	Marine Microbiology
Dr. Corinne Lehr (CHEM)	Metal Chemistry
Margot McDonald (ARCH)	Marine Laboratory Design and Architecture
Dr. Mark A. Moline (BIO)	Oceanography, Ecology and Technology Application
Dr. Royden Nakamura (BIO)	Fisheries Science, Aquaculture and Population Genetics
Dr. Lars Tomanek (BIO)	fuvertebrate Physiology, Proteomics, Ecology
Dr. Thomas Richards (BIO)	Marine Resources
Dr. Louis Rosenberg (ME)	Robotics, Education
Dr. John Stephens (BIO)	Fisheries Ecology *(adjunct appointment)*
Dr. Francis Villablanca (BIO)	Vertebrate Genetics, Seabirds, Marine Mammals
Dr. Dean Wendt (BIO)	fuvertebrate Physiology, Ecology, Ecosystem Management

The director will serve to coordinate the activities of the CCMS in tenns of monitoring grant activity, generating funding, developing future plans and direction, facilitating student and faculty mentoring, reporting to the existing academic units when appropriate, running CCMS meetings, supervising CCMS staff members and serving as the primary contact for the CCMS. The membership would make decisions based on consensus agreement. The CCMS would fonn an advisory board to provide help with CCMS goals, future directions and fund raising efforts. The full proposed structure and bylaws of the CCMS are detailed in Appendix A.

CCMS Facilities and Support

One of the most important components of the CCMS is access to the marine environment. This enables experimental manipulations in the field, equipment testing, environmental monitoring and a staging ground for other activities (i.e. boat launching, diving) for accessing additional sites. In November, 2001, the Unocal Corporation donated a kilometer-long, steel and concrete pier and oceanfront in San Luis Obispo Bay off of Avila Beach, CA to Cal Poly for use in developing a marine science education and research program **(Figure** 1). Soon after, the facility was accepted by the CSU and Cal Poly for use as a marine station and laboratory. The pier facility, the facilities on campus and the program have been developing since then, towards the establishment of the CCMS. The current status of the facilities, activities and the plans for fiscal support are highlighted in the following section.

Figure 1. The Cal Poly Center for Marine and Coastal Sciences pier in San Luis Obispo Bay off Avila Beach, CA. The facility was donated in November, 2001 and is the center of Marine related activity at Cal Poly.

Current Activities

Development of Facilities and Space

One important component of the CCMS will be to provide faculty and students access to the marine environment as well as computing infrastructure and equipment. The marine

faculty have been working for the past 6 years to acquire and improved off-campus facilities, on-campus facilities, computing infrastructure and equipment resources. Below is a summary of progress in each of these areas, as well as future plans for the growth of facilities and space for the CCMS.

Off-campus Facilities

As referred to above, Cal Poly acquired and is in the process of transforming a kilometer-long petroleum transfer pier into a marine facility for the University. This facility is 15 minutes from the main campus and is the only marine facility along the 400 km coastline from Santa Barbara to Monterey. The marine program acquired two passenger vans, which are used to move students and equipment to and from the facility. The location is extraordinary:

- A pristine rocky intertidal community is at the base of the facility with a dense kelp forest extending 200 m offshore.
- The Morro Bay National Estuary is 20 km to the north.
- Point Conception, one of the most important oceanographic and biogeographic features in the eastern Pacific, is visible to the south.
- The coastline to the north, extending to the Monterey Bay National Marine Sanctuary, is relatively undeveloped and ideal for the educational and research goals of the CCMS.

The facility has two components, the base of the pier and the pier itself. The base of the pier is a two-acre open bluff and a parking area for vehicles. As the bluff has restricted access, the adjacent rocky intertidal areas are protected and serve as excellent field sites with a rich and diverse array of flora and fauna, including a harbor seal haul-out. Approximately 200m off-shore, there is a 50 m wide kelp forest that transects the pier and has a resident population of sea otters as well as a subtidal kelp forest community.

Figure 2. The platform at the south end of the pier facility where the majority of the current activity (i.e. course instruction, research, events, boat operations) occur.

The pier extends 1 km into San Luis Obispo Bay. The structure is 7 m wide with a one-lane road for access to a large platform at the south end of the pier **(Figure** 2). The surface of the road is concrete for the first 300 m for enhanced structural integrity in the surf zone with a galvanized steel-grating surface for the rest of the length. The road transitions into a large 55 m long by 35 m wide platform at the southern end of the pier where the seawater system will be installed. The platform is 10 meters above the water. There are two existing structures on this platform. The largest structure is approximately 2,000 sq. ft., with office space, a small wet laboratory, a machine shop, the electrical room, a storage room, a dive locker, a conference/classroom, a computer facility and restrooms with showers. The second structure, a boathouse and storage area, is currently being removed for installation of a new seawater system (see below).

The total electrical capacity of the facility is l2Kv with multiple 480volt circuits. The high power design was required to power a moored ship, high capacity pumps, power the multiple banks of stadium-type lighting that exists around the platform, and two new 1-ton capacity hoists. This equipment with the exception of the lighting and two hoists was removed. The existing high capacity power will facilitate the operation of the pump and filtration for the seawater system (see below).

The steel pilings of the pier extend to the bedrock and are filled with concrete, which mushrooms at the base of each piling for added structural integrity. The facility was constructed with a cathodic protection system to prevent corrosion. Before receiving the facility, Cal Poly assessed the state of this system and determined that after 15 years of operation, 80% of the cathodic system is still available. Projecting into the future, the existing system should provide protection without significant maintenance until 2060.

On the west side of the platform is a counterbalanced trap door that opens to a staircase for access to the water and boats. The water access points are two 3 x 6 m platforms that alternate use depending on the tidal water height. Although there is access to the water, the current configuration is not ideal for small boat docking and a replacement system is currently being considered (see below). The facility presently has three day-boats for sampling the offshore water column and accessing the many remote coastal sites. The nearby breakwater provides excellent protection against wave action, which greatly facilitates small boat operations off the pier.

To oversee the pier facility and operations, a pier manager was hired. The manager has been responsible for general operations, maintenance, coordination with Facilities Services on campus (despite being an off-campus facility, Facilities Service is required to administer work performed at the pier), coordination with other state and local agencies for permitting, assist faculty and students on projects, and help develop plans and priorities for future work.

Future plans include a number of improvements to the pier facility. One project that has just been completed is a seawater system of pumps and filters to continuously draw seawater onto the pier facility. This 1000 Llmin seawater system covers about a third of

the existing platform and consists of a new concrete foundation, a structure housing the pumps and filtration systems, and room for both indoor and outdoor aquaria for holding marine organisms for display and experimentation. The new system will enable new research opportunities and be a conduit for public outreach. This system is part of the Port San Luis Harbor Districts Master Plan that has been developed in consultation with the pier manager. In addition to the seawater system, plans are being developed for a new boat landing for easy access to the water, improvements to the landing for public access and stability of the bluff area, maintenance to the structure (i.e. painting), and plans for a new building to replace the existing structure which would include new classrooms, offices, laboratory spaces and conference facilities.

Campus Facilities

During the development of the off-campus facility, there have been complementary efforts to acquire and improve campus facilities. Two areas that were being used for storage have been converted into usable space for the program. The first space was an 1000 sq. ft. boat house to the south of building 53. This was cleaned out, renovated and is now serves a number of functions; staging area for equipment going to the pier, equipment testing and calibration, storage and space for research projects. An additional 2,000 sq. ft. space, the second story of building 20, was fully renovated into a laboratory facility with climate control, a recirculating seawater system, a microscope room, computer/conference room, a formal laboratory space with a fume hood, a reference material space and an incubator room. This facility is currently used by faculty, staff and students working on sponsored program and undergraduate senior projects.

Computing Facilities

The pier facility has been outfitted with a continuous real-time monitoring capability, measuring changes in physical, biological and chemical parameters below the pier. In addition, a meteorological station measuring wind speed and direction, relative humidity, air temperature, barometric pressure, and rainfall has been installed. These measurements are archived in a data base on a server at the pier. The server is mirrored on campus by a second server via a T1 line. The on-campus mirrored server is connected to a web server that hosts the developing CCMS website (www.marine.calpoly.edu). A portal from these servers to a server in ITS has been established that in linked to the campus mass storage device with 3 Tb of storage capacity dedicated to the program. In addition, a wireless environment has been established at the pier facility that is within the Cal Poly firewall. Future plans include a new high capacity data server on campus and developing improved bandwidth capacity between campus and the pier facility with fiber. This will allow for more advanced remote testing, real-time video streaming and will facilitate more industry collaboration.

Use of Facilities

The renovated on campus facilities have been in constant use since completion in 2004 and have been the center of active research in the Biological and Physical Sciences Departments. The availability of the facility has also supported an active undergraduate summer research, with an average of 10 students participating each year. The primary facility used for the program in terms of numbers has been the pier facility. This

visitation and use can be broken down into a number of categories, such as Cal Poly students, students from other institutions or public K-12 schools, industry, or general public. The numbers of visitors and the impact of those visits have been a positive force for everyone involved and is conveying to the general public our intention to contribute to knowledge of our coastal environment in a serious and effective way for the foreseeable future.

Visitation to the pier began in Spring, 2003. Since then and up until Spring, 2007, the average number of Cal Poly students visiting for classes or student related projects each academic year is 1,200. One hundred and fifty students from other schools visit each year with an additional 400 non-student visitations per year. Cal Poly courses hosted at the facility include;

Architecture 352, Arch. Design
Architecture 453, Senior Design Studio
Biology 114, Plant diversity & Ecology
Biology 151, Intro to Biology
Biology 152, Biology of Plants
Biology 263, Ecology and Evolution
Biology 328, Marine Biology
Biology 438, Aquaculture
Botany 437, Phycology
ENVE 434 Aquatic Chemistry
Physical Sci 201, Intro. Oceanography
SCM 330, Ocean Discovery/Technology
Zoology 336, Invertebrate Zoology
Zoology 423, Fisheries Science
Zoology 425, Parasitology

Major meeting/visitations to the pier facility include;

Auxiliary Officers Association Research Administration Committee
Biology Graduate Student Welcome
Cal Poly Facilities Staff Tour
Cal Poly Facilities Trades Group
Cal Poly Foundation Administrators meeting
Cal Poly Police Department Supervisors meeting
Cal Poly Week of Welcome
Cal Poly Parents Weekend tours
Cal Poly Open House
California Regional Water Quality Control Board meeting
Central Coast Science Project (teachers) tour
County Parks Junior Lifeguard program tours
Environmental Biotechnology Institute and Unocal representatives' tour
Executive Dean's Group
Morro Bay EBM Science Team meeting
Morro Bay National History Museum Docents tour
Multiple candidate tours for Biological Sciences and Provost

President's Cabinet Partners Program
San Luis Obispo County Park Jr. Lifeguards tours
Tri Beta pier tour
U.S. Representative Lois Capps

Research Activity

The founding CCMS faculty have developed an active research program with a significant number of ongoing research projects that are using the existing facilities and offering opportunities for student engagement. These projects range across disciplines and sub-disciplines within marine science, some of which are highlighted on the CCMS website (http://www.marine.calpoly.edu/researchprograms/). One internal requirement of the CCMS research, which applies to all current projects, is that research is planned, proposed and conducted with active student participation in mind. Having primarily undergraduate students engaged during all phases of research is unique to the CCMS and provides an opportunity for leadership in the marine science community.

Institutional and Industry Collaboration

The active marine research programs have attracted the attention of academic institutions, government agencies and industry at a local, state, national and international level. These programs, the uniqueness of our facilities, the location along the California coastline and most importantly, our focus on undergraduates have lead to strong active collaborations. The number and diversity of these collaborators listed below, illustrate the need, viability and potential of the CCMS.

Aethon, Inc.
Aanderaa Data Instruments
Bigelow Institute of Oceanography
Bodega Marine Laboratory
Bureau of Land Management
California Fish and Game
California Maritime Academy
California Regional Water Quality Control Board
California State Parks
California State University Channel Islands
California State University East Bay
California State University Fullerton
California State University Long Beach
California State University Los Angeles
California State University Monterey Bay
California State University Northridge
California State Polytechnic University, Pomona
California State University San Marcos
City of Morro Bay
CNRS Villefranche
Continental Control, Inc.
Cuesta College

Desert Research Institute
Florida Environmental Research Institute
Hopkins Marine Station
Humboldt State University
Hydroid, Inc.
Mineral Management Service
Monterey Bay Aquarium Research Institute
Morro Bay Harbor District
Morro Bay National Estuary Program
Moss Landing Marine Laboratories
Mote Marine Laboratory
NASA, Jet Propulsion Laboratory
Naval Postgraduate School
Naval Research Laboratory, Stennis
Naval Research Laboratory, Washington D.C.
Old Dominion University
Oregon Health & Science University
Oregon State University
Pacific Gas and Electric Company
Pacific Northwest National Laboratory
Port San Luis Harbor District
Reson, Inc.
Rutgers University
San Diego State University
San Francisco State University
San Jose State University
San Luis Obispo County School District
Satlantic, Inc.
Scripps Institution of Oceanography
SeaBird, Inc.
SeaBotix, Inc.
Sonoma State University
Tenera Environmental, Inc.
U.S. Coast Guard
U.S. Fish and Wildlife Service
U.S. Geological Survey
UC Davis
UC Irvine
UC Los Angeles
UC Reserve System, Cambria
UC Reserve System, Santa Cruz Is.
UC San Diego
UC Santa Barbara
University of Arizona
University of Florida, Gainesville
University of Hawaii

University of Illinois
University of Maine
University of Massachusetts
University of New Hampshire
University of Oslo
University of Southern California
University of Southern Mississippi
University of Southampton
University of Trondheim
University of Troms0
University of Washington
Unocal Corporation
Virginia Institute of Marine Science
WetLabs, Inc.
Woods Hole Oceanographic Institution
World Wildlife Fund

Support

Since 1998, Cal Poly's Marine program has grown in terms of the number of faculty, graduating students, science publications and the amount of funding received (Table 1). Current support of the Marine activities has been primarily through sponsored programs with steady growth in new projects and funding levels. Unocal also provided $500,000 of initial operating funds in 2002 and a $3 million endowment, from which interest income is used for general pier maintenance.

Table 1. History of marine related efforts at Cal Poly since 1998.

Year	Faculty	Peer-reviewed Publications	Grant Awards	Grant Funding	Undergraduate Students	Graduate Students
2006	10	12	6	$4,341,226	60	9
2005	7	15	6	$4,085,384	60	7
2004	5	9	8	$1,595,282	54	4
2003	4	7	12	$641,095	47	2
2002	3	3	18	$1,396,994	27	2
2001	2	6	7	$409,499	25	4
2000	2	10	5	$403,336	16	2
1999	2	1	4	$263,672	11	1
1998	2	4	1	$19,204	15	1
Totals		**67**	**65**	**$13,125,692**	**255**	**32**

As evident from the externally sponsored research funding in Table 1, the faculty members are highly motivated and have demonstrated to the federal and state agencies and to private foundations that the CCMP is a viable unit to conduct high quality work. As indicated above, grant funding provides release time and summer salary for faculty, salaries for 6 full-time Cal Poly Corporation employees, and salaries for graduate and undergraduate students. Grants also fund some of the operations and purchase and maintenance of equipment. Below is a listing of sources of external sponsored research programs.

Federal
Depamnent of Energy
Environmental Protection Agency
National Aeronautics and Space Administration
National Oceanic and Atmospheric Administration
National Science Foundation
Office of Naval Research

State
California Depamnent of Health
California Ocean Protection Council
California Regional Water Quality Control Board (Region 3)
California Sea Grant
California State Coastal Conservancy

Non-Government Organizations
David and Lucile Packard Foundation
Resources Legacy Foundation Fund
World Wildlife Fund

Industry
Pacific Gas and Electric Company
Chevron (Unocal) Corporation

Individuals
Beverly B. Hardy
Robert A. Larsen
Paul A. Dubsky
Cynthia and Gregory Eisen
Rodney Grieve
Kelley A. Lounsbury

Fiscal Sustainability

Fiscal sustainability of the CCMS requires sufficient consistent funds for maintenance of the facilities, funding of faculty research programs, staff support and capital outlays for advancing the program. As demonstrated, individual donations and sponsored projects have been secured and will be continually sought to provide the program development and operations. Sponsored projects have also generated significant recovered indirect costs, which have also been used for program development and sustainability. The seawater system that was recently completed cost $1.8 million, none of which was supported by the University per se, illustrating that the CCMS can conduct large capital projects.

As with any entity, the program must be adaptable to changing financial conditions. Given the current track record of funding it is likely that funding can be sustained at some

level by the participating faculty. Good forward planning can place the CCMS in a strong position to continue the activities of the CCMS during fiscally challenging times. Enhancement of the current endowment by solicitation of donations by industry and individuals is an ongoing effort, which would help in times of low sponsored program funding. As the marine environment captures the imagination of the general public, fund raising events could also supplement the effort, although these have not been thoroughly explored.

The current activities demonstrate a strong commitment to the development and growth of the CCMS. The CCMS will provide unique opportunities across campus to faculty and students interested in the interdisciplinary field of marine science. The Center will enhance the academic setting of the University, foster collaborations on campus and across the nation, and generate new and exciting discoveries into the dynamics of the marine environment and the influence of human interactions.

References

1 America's Living Oceans: Charting a Course for Sea Change. Pew Oceans Commission. June, 2003.

2 An Ocean Blueprint for the 21st Century. U.S. Commission on Ocean Policy. September, 2004.

APPENDIX A

BYLAWS OF THE CENTER FOR COASTAL MARINE SCIENCES

California Polytechnic State University, San Luis Obispo

These bylaws are applicable within the authorization established by the Board of Trustees of the California State University and the California Polytechnic State University, San Luis Obispo.

ARTICLE I - NAME

The name of this organization shall be the CENTER FOR COASTAL MARINE SCIENCES, referred to in these bylaws as the Center.

ARTICLE II - PURPOSE AND POLICIES

Section 1 - Purpose

The primary purpose of the CENTER FOR COASTAL MARINE SCIENCES will be to promote and facilitate basic and applied interdisciplinary studies of coastal marine systems for the purpose of addressing environmental concerns and fostering hands-on student learning through discovery and outreach. The Center will foster interaction within the University, with other Institutional partners and industry, consistent with the overall goals of California Polytechnic State University, San Luis Obispo.

The CENTER FOR COASTAL MARINE SCIENCES will serve as a vehicle for securing industrial sponsorship and support to sustain marine-oriented projects at the Center.

The CENTER FOR COASTAL MARINE SCIENCES will be fmanced by grants, contracts, and revenue generated by Center activities.

Section 2 - Policies

The policies of this Center shall be in harmony with the policies of The California State University, the California Polytechnic State University, San Luis Obispo ("University"), and the California Polytechnic State University Corporation ("Corporation").

ARTICLE III - PARTICIPANTS

Section 1 - Participants

Participants may be faculty, staff, and students of the University or Corporation, and affiliated researchers, consultants, industry representatives, association representatives, and others interested in the Center.

a – Faculty

Faculty participants are persons appointed by the University to faculty rank and participating in the activities of the Center.

b - Staff

Staff participants are persons employed by the University or Corporation and participating in the activities of the Center.

c - Students

Student participants are persons engaged in study at the University on either a full-time or part-time basis and participating in the activities of the Center.

d - Affiliated Researchers

Affiliated researchers are faculty or other persons from outside the University who carry out or collaborate on research and/or other projects under the auspices of the Center.

e - Industry Representatives

Industry representatives are persons actively engaged in the oceanography as practitioners, vendors, or industry advocates.

f - Association Representatives

Association representatives are persons affiliated with a professional or trade association! organization representing Center interests and activities.

Section 2 - Approval to Participate

All interested faculty, staff, and students of the University or Corporation, and interested parties outside of the University, are eligible to participate in the Center upon approval by the Executive Committee and the Director. Any faculty, staff, student, or outside participant may recommend individuals for participation in the Center. Such recommendations shall be made to the Director.

Section 3 - Terms and Conditions

Terms and conditions of participation shall be determined by the Director, in consultation with the Executive Committee.

Section 4 - Role of Participants

Participants are encouraged to be actively engaged in the activities of the Center. They may propose programs to be implemented by the Center. If approved, these programs will receive Center support as necessary and possible. Participants will have priority consideration in Center activities and interaction with industry.

Participants are expected to support the programs of the Center and assist the Director in program development.

ARTICLE IV - ADMINISTRATION

Section 1 - Administration

The Center administration shall include a Director, Executive Committee, and External Advisory Board.

Section 2 - Director

The Center will be administered by a Director, appointed by the Dean of the College of Science and Mathematics. The term of appointment is three (3) years. The appointment may be renewed at the discretion of the Dean of the College of Science and Mathematics.

The Director may be an active Cal Poly faculty or staff member or may be hired from outside the University on a contract basis. A faculty/staff Director will serve on a released time or added compensation basis. The amount of time will vary from quarter to quarter and will depend on available funds and anticipated work load for the particular quarter. The Director will report to the Dean of the College of Science and Mathematics.

The Director shall submit an annual report following each academic year to the Provost and Vice President for Academic Affairs, appropriate college deans, and the Dean of Research and Graduate Programs. The report shall include a summary of the year's activities and a financial report, as well as information on scholarly publications and technical reports, students supported by the Center, theses and senior projects completed under the auspices of the Center, honors and awards to faculty and students, and any other noteworthy achievements.

Section 3 - Executive Committee

The Executive Committee shall consist of five to seven members, including the Director and the Dean of the College of Science and Mathematics. The balance shall consist of active faculty participants. Recommendations for faculty participation will be made by the Director directly to the Dean of the College of Science and Mathematics.

The Executive Committee shall be responsible for: a) approving candidates for Center participation; b) recommending members of the External Advisory Board; c) recommending Center programs and activities; d) developing operating guidelines to implement Center programs and activities; and e) advising the Director on matters of general policy and operations.

ARTICLE V - EXTERNAL ADVISORY BOARD

Section 1 - Membership

External Advisory Board ("Board") members are those persons recommended by the Executive Committee and appointed by the Dean to serve in an advisory capacity to the Center.

The Board shall be composed of a minimum of three (3) members representing a spectrum of expertise and background associated with Marine Sciences.

The Board will be appointed by the Dean. Initial appointments of from one to three years may be used to stagger Board membership terms. Thereafter, terms will be three years.

Section 2 - Powers and Duties

The Board shall provide advice and comment on Center programs, shall engage in public relations and support activities for Center programs, and shall provide overall guidance and direction to the Center, and to the Dean, as appropriate.

Section 3 - Meetings

The Board will meet at least once a year to review Center programs and to provide general direction to the Center. The Board may elect to meet for special purposes at any other time upon agreement of a majority of Board members.

Section 4 - Number Constituting a Quorum

A majority of Board members shall constitute a quorum.

ARTICLE VI - FISCAL POLICIES

Section 1 - Fiscal Year

The fiscal year shall correspond to that of the Corporation.

Section 2 - Accounts and Audit

The books and accounts of the Center shall be kept by the Corporation and shall be audited annually in accordance with Corporation policies.

Section 3 - Funding

Funding for the Center shall come from private or governmental grants and contracts, gifts, and fees from Center-generated short courses, conferences, and Center-generated publications.

Section 4 - Dissolution

In the event the Center is dissolved, any assets remaining after payment of all debts and liabilities shall be distributed to the Corporation in trust for College of Science and Mathematics. If debts and liabilities exceed assets, the College of Science and Mathematics will be responsible for said debts and liabilities.

ARTICLE VII - AMENDMENTS

The bylaws may be amended by a majority vote of the Executive Committee with the approval of the Dean of the College of Science and Mathematics and the Dean of Research and Graduate Programs. Any participant in the Center may propose amendments to the bylaws.

CAL POLY

SAN LUIS OBISPO
CA 93407

State of California

Memorandum

To: Bruno Giberti
Chair, Academic Senate

Date: January 7, 2008

From: Warren J. Baker
President

Copies: W. Durgin
P. Bailey
S.Opava
M. Moline
M. Yoshimura

Subject: Response to Academic Senate Resolution AS-660-07
Resolution on Proposal for the Establishment of the Center for Coastal Marine Sciences (CCMS)

Based upon the above-subject resolution, the positive endorsement by the Academic Deans at its October 8,2007, meeting, as well as the recommendation of Provost William Durgin, I am pleased to approve the establishment of the Center for Coastal Marine Sciences (CCMS).