STANDARD AGREEMENT — APPROVED BY THE ATTORNEY GENERAL

THIS AGREEMENT, made and entered into this 1st day of December, 2004, in the State of California, by and between State of California, through its duly elected or appointed, qualified and acting

TITLE OF OFFICER ACTING FOR STATE
Executive Officer

AGENCY
State Coastal Conservancy

CONTRACTORS NAME
San Diego Campus, Scripps Institution of Oceanography

, hereafter called the State, and

, hereafter called the Contractor.

WITNESSETH: That the Contractor for and in consideration of the covenants, conditions, agreements, and stipulations of the State hereinafter expressed does hereby agree to furnish to the State services and materials as follows: (Set forth service to be rendered by Contractor, amount to be paid Contractor time for performance or completion, and attach plans and specifications, if any.)

SCOPE OF AGREEMENT

Pursuant to Chapter 5.5 of Division 21 of the Public Resources Code, the State Coastal Conservancy (“the Conservancy”) hereby grants to The Regents of the University of California, San Diego Campus, Scripps Institution of Oceanography (“the Grantee”) a sum not to exceed eleven million four hundred forty-three thousand five hundred sixty-six dollars ($11,443,566), subject to the terms and conditions of this Agreement. These funds shall be used by the Grantee to develop, implement, maintain and operate a portion of the comprehensive and integrated state-wide Coastal Ocean Currents Monitoring Program (“COCMP”) by completing components of the COCMP related to Southern California (“COCMP-SC”) covering the coastal ocean in Southern California, from Point Conception to the Mexican border, as shown on Exhibit A, which is incorporated by reference and attached (“the project”).

(Continued on following pages)
SCOPE OF AGREEMENT (Continued)

The project includes seven discrete tasks ("project tasks"), as follows:

1. **HF Radar.** Purchase, install, calibrate, operate and maintain approximately 21 HF Radar installations in the locations generally shown on Exhibit B. The installation consists of the placement of HF radar mast, antenna and associated computer hardware and shelter. Upon completion of installation and calibrations, the HF radar shall be fully maintained and operated by the Grantee.

2. **Nearshore and Surfzone Observations.** Purchase or create, install, calibrate, operate and maintain equipment to conduct in-situ observations spanning relatively small regions for limited time periods in the nearshore environment. Observations will be made with drifters, bottom-mounted surfzone sensors, and Acoustic Doppler Current Profilers mounted on moorings and on autonomous underwater vehicles. The installation consists of deploying drifters and current/pressure sensors, fabricating moorings, and installing cables for the transmission of data where necessary. The region of focus will be in the San Pedro Bay/Orange County region.

3. **Subsurface Observations.** Purchase or create, install, calibrate, operate and maintain approximately three underwater gliders and two underway Conductivity, Temperature and Depth meters (CTDs) for autonomous profiling of temperature, salinity, and density to depths. Installations will not be permanent.

4. **Satellite Observations.** Acquire, subset, co-register, manage, visualize and distribute near real time satellite data through integration into an existing operational system.

5. **Regional Ocean Modeling.** Assimilation of HF radar measurements, sub-surface measurements, and wind data into advanced numerical oceanic models to model ocean circulation.

6. **Data Distribution and Data Management.** Statewide integration of the full suite of HF radar current data, satellite data, and modeling data to allow broad access and distribution of both real-time and archived data.

7. **Central California High Resolution Modeling (for COCMP-NC).** Extend the Regional Ocean Modeling System (ROMS) boundary from Monterey Bay to
SCOPE OF AGREEMENT (Continued)

Bodega Bay. Implement ROMS in operational mode, providing a real-time synthesis of data and hourly now-casts of subsurface current, temperature, and salinity fields.

Upon completion of all of the project tasks, the Grantee shall operate and fully maintain the COCMP-SC, and all equipment and components of it, through the completion date, as defined in the "TERM OF AGREEMENT" section, below.

The Grantee shall carry out the project in accordance with this Agreement and the work program to be approved by the Executive Officer of the Conservancy (the "Executive Officer") pursuant to this Agreement. The Grantee shall provide in-kind services and shall make every reasonable effort to acquire and provide additional funding which shall be directed to further development and enhancement of the COCMP-SC. The amount of in-kind services and funding shall be determined through the approved Annual Work Program.

COORDINATION AND MEETINGS

In order to ensure that the COCMP is a statewide and integrated program, in carrying out the project the Grantee shall coordinate closely with the COCMP-NC consortia, Conservancy staff and other involved entities, including local, state and federal agencies, and shall participate in meetings and other communications as necessary to ensure coordination.

CONDITIONS PRECEDENT TO COMMENCEMENT OF PROJECT AND DISBURSEMENT

Conditions Precedent To Project Commencement

The Grantee shall not commence the project and the Conservancy shall not be obligated to disburse any funds unless and until the following conditions precedent have been met:

1. The Grantee shall provide documentation that the person executing this Agreement is authorized by the Grantee to execute this Agreement and to agree to its terms and conditions on behalf the Grantee.
CONDITIONS PRECEDENT TO COMMENCEMENT OF PROJECT AND
DISBURSEMENT (Continued)

2. The Executive Officer of the Conservancy ("the Executive Officer") has approved in
writing a Project Work Program as provided in the "WORK PROGRAM" section,
below.

Conditions Precedent to Commencement of Specific Project Task or Activity

The Grantee shall not commence any specific project task or activity and the
Conservancy shall not be obligated to disburse any funds with respect to that project task
or activity unless and until the following conditions precedent have been met:

3. The Executive Officer of the Conservancy ("the Executive Officer") has approved in
writing:

   a. An Annual Work Program that encompasses the project task or activity, as
      provided in the "WORK PROGRAM" section, below.

   b. Any third party that the Grantee intends to retain under contract to perform work
      on the project task or activity including any subgrantee ("contractor") and
      documentation that the contractor has complied with the "INSURANCE" section
      of this Agreement, if applicable. If the project task or activity involves
      construction or real property improvements, the Grantee must provide written
      evidence to the Conservancy that each such contractor has complied with the
      bonding requirements described in the "BONDING" section, below.

   c. For any activity that involves work on real property not owned by the Grantee,
      prior to commencing the work on the property, a written agreement with the
      owner of the property that authorizes the work to occur and provides the Grantee
      and any assignee or successor of the Grantee the right of access to the property for
      appropriate purpose and duration.

4. For any project activity for which a governmental permit or approval is required,
   prior to initiating the activity, the Grantee has provided written evidence to the
   Conservancy that all permits and approvals necessary to the completion of the project
   activity under applicable local, state and federal laws and regulations have been
   obtained.

Notwithstanding the above, upon meeting conditions precedent nos. 1 and 2, the Grantee
may negotiate and prepare agreements for work by approved contractors, prepare an
CONDITIONS PRECEDENT TO COMMENCEMENT OF PROJECT AND DISBURSEMENT (Continued)

initial Annual Work Program and initiate general planning activities for the project tasks and activities, as approved by the Executive Officer.

TERM OF AGREEMENT

This Agreement shall be effective November 15, 2004. An authorized representative of the Grantee shall sign the first page of the originals of this Agreement in ink.

This Agreement shall run from its effective date through March 15, 2008 (the "termination date") unless otherwise terminated or amended as provided by the agreement. All project work shall be completed by November 15, 2007 (the "completion date").

AUTHORIZATION

The signature of the Executive Officer of the Conservancy on this Agreement certifies that at its June 30, 2004 meeting, the Conservancy adopted the resolution included in the staff recommendation attached as Exhibit C. This Agreement is executed pursuant to that authorization.
WORK PROGRAM

Project Work Program.

Before beginning implementation of the project, the Grantee shall submit a detailed Project Work Program to the Executive Officer for review and written approval of its consistency with this Agreement. The Project Work Program shall include:

1. A schedule of completion for the project listing the anticipated completion date for each project task and component and a final project completion date.

2. A project budget. The project budget shall describe all anticipated labor and materials costs of completing each task and component of the project. For each project component, the project budget shall list all intended funding sources, including the Conservancy's grant, the Grantee's contribution and all other sources of monies, materials, or labor.

Annual Work Program

The Grantee shall submit a detailed Annual Work Program to the Executive Officer for review and written approval of its consistency with this Agreement. The initial Annual Work Program shall be submitted no later than one month following the effective date of this agreement. Subsequent Annual Work Programs shall be submitted in 2005 and in 2006, no later than September 1 of each year. The Grantee shall not commence any work proposed in the Annual Work Programs until approved by the Executive Officer and the COCMP External Review Committee; except that the Grantee may commence the following work prior to the approval of the initial Annual Work Program: negotiate and prepare agreements for work by approved contractors, prepare an Annual Work Program and initiate general planning activities for the project tasks and activities, as approved by the Executive Officer. The Conservancy will take every reasonable effort to approve or make recommendations for revisions to the Annual Work Program within 30 days of submission. In the event that the Review Process exceeds 30 days, the Grantee shall continue work with interim approval. The Annual Work Program shall include:

1. Summary of progress on all project tasks and activities identified in the Annual Work Program for the previous year, including a comparison of anticipated accomplishments to actual accomplishments and a comparison of anticipated costs and expenditures with actual costs and expenditures.

2. Identification and detailed description of all project tasks and components of a task proposed for the following year.
WORK PROGRAM (Continued)

3. For any proposed project task or component of a task that involves construction or improvements to real property, construction plans and specifications that have been certified by a licensed architect or registered engineer, or approved by the Grantee’s Public Works Director or equivalent.

4. A schedule of completion for each proposed project task and component of a task listing the completion date for each project task and component and a final task or component completion date.

5. An annual budget. The annual budget shall describe all labor and materials costs of completing each proposed task and component. For each project component, the project budget shall list all intended funding sources, including the Conservancy’s grant, the Grantee’s contribution and all other sources of monies, materials, or labor.

6. Projected in-kind services to be provided during the year and anticipated funding to be acquired and provided during the year for additional development and enhancement of COCMP-SC.

If all or any part of the project to be funded under this Agreement will be performed by contractor(s), prior to final selection of a contractor, the Grantee shall submit to the Executive Officer for written approval the names of all contractors that the Grantee intends to hire. The Grantee shall then comply with the above paragraph regarding submission and approval of an Annual Work Program prior to implementation.

Effect of Work Programs

The work programs shall have the same force and effect as if included in the text of this Agreement. However, the work programs may be modified without amendment of this Agreement upon the Grantee’s submission of a modified work program and the Executive Officer’s written approval of it. If this Agreement and a work program are inconsistent, the agreement shall control.

The Grantee shall carry out the project in accordance with the approved work programs.
The Regents of the University of California,  
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BONDING AND LIEN RELEASE

If the Grantee intends to use any contractor(s) on any portion of the project for construction or improvement to real property, construction shall not begin until each contractor has furnished a performance bond in favor of the Grantee, in the following amounts: for faithful performance, one hundred percent (100%) of the contract value; and for labor and materials, one hundred percent (100%) of the contract value. This requirement shall not apply to any contract under which the cost to undertake work involving construction or improvement to real property is less than $20,000.

Any bond furnished pursuant to this section shall be executed by an admitted corporate surety insurer licensed in the State of California.

The Conservancy shall not disburse to the Grantee payment for obligations incurred by the Grantee with respect to any construction or improvement work undertaken by a contractor or subcontractor of the Grantee on property that is not publicly owned until the Grantee submits to the Conservancy a lien release with respect to the work invoiced (and complies with the other prerequisites to payment under this Agreement).

COSTS AND DISBURSEMENTS

When the Conservancy determines that all appropriate “CONDITIONS PRECEDENT TO COMMENCEMENT OF PROJECT AND DISBURSEMENT” have been fully met, the Conservancy shall disburse to the Grantee, in accordance with the approved project budget, a total amount not to exceed the amount of this grant as follows:

The Conservancy shall disburse funds for costs incurred to date upon the Grantee’s satisfactory progress under an approved work program and upon the Grantee’s submission of a request for disbursement, which shall be submitted on a monthly basis.

The Conservancy will disburse the funds requested by the final request for disbursement for work under an Annual Work Program only upon the Grantee’s satisfactory completion of all work required under the approved Annual Work Program and compliance with the PROJECT OR ANNUAL WORK PROGRAM COMPLETION requirements with respect to the Annual Work Program.

The final disbursement under this Agreement shall be made upon the Grantee’s satisfactory completion of the project and compliance with the “PROJECT OR ANNUAL WORK PROGRAM COMPLETION” section of this Agreement, and upon the Conservancy’s acceptance of the project.
COSTS AND DISBURSEMENTS (Continued)

The Conservancy will reimburse travel and other expenses necessary to the project, if those expenses are reasonable in nature and amount taking into account the project, and its location and other relevant factors. Reimbursement for travel expenses shall be made in accordance with University of California regulations (http://www.universityofcalifornia.edu/facultystaff/policies.html) and shall not exceed University of California approved travel rates, published at (http://www.ucop.edu/ucophome/policies/bfb/g28.html). Reimbursement for the cost of operating a private vehicle shall not, under any circumstance, exceed the rate approved for equivalent State employees.

The Grantee shall request disbursements by filing with the Conservancy a fully executed request for disbursement. The Grantee shall include in the request for disbursement its name and address, the number of this Agreement, the date of the submission, the amount of the invoice, the period during which the work was actually done, and an itemized description by task, including services, materials, and expenses incurred, of all work done for which disbursement is requested. The request for disbursement shall also indicate cumulative expenditures to date, expenditures during the reporting period, and the unexpended balance of funds under the grant agreement.

The request for disbursement shall be signed by an authorized representative of the Grantee. Each request shall be accompanied by:

1. Itemized invoices by major line item categories for services, direct expenditures and indirect costs incurred by the Grantee.

2. Receipts and any other source documents for direct expenditures incurred by the Grantee or its contractors for equipment costing $5,000 or more.

3. Electronic copies of invoices from contractors that the Grantee engaged to complete any portion of the work funded under this Agreement.

4. Written substantiation of completion of the portion of the project for which disbursement is requested. This documentation need be submitted only quarterly and may take the form of the required quarterly progress as described in the “PROGRESS REPORT” section, below.

Notwithstanding the foregoing, the Executive Officer of the Conservancy may request and the Grantee shall provide receipts and other source documents for any other direct expenditure or cost, as and when necessary to resolve substantial issues concerning
COSTS AND DISBURSEMENTS (Continued)

reimbursement. Prior to requesting such documentation, the Executive Officer shall first confer with the Principal Investigator of the Grantee.

Requests for disbursement shall be submitted by the Grantee to:

State Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, CA 94612
Attn: Tya M. Robinson, Contracts Manager

The Grantee’s failure to fully execute and submit a request for disbursement and required documentation will relieve the Conservancy of its obligation to disburse funds to the Grantee unless and until the Grantee corrects all deficiencies.

EXPENDITURE OF FUNDS AND ALLOCATION OF FUNDING AMONG BUDGET ITEMS

The Grantee shall expend funds in the manner described in the approved Annual Work Program budgets. The allocation of the Conservancy’s total grant among project tasks contained in the Annual Work Program budgets may vary by as much as ten percent without approval by the Executive Officer. Any difference of more than ten percent must be approved in writing by the Executive Officer. The Conservancy may withhold payment for changes in particular budget items which exceed the amount allocated in the project budgets by more than ten percent and which have not received the approval required above. The total amount of this grant may not be increased except by amendment to this Agreement. Any increase in the funding for any particular budget item shall mean a decrease in the funding for one or more other budget items unless there is a written amendment to this Agreement.

EQUIPMENT

Title will vest in the Grantee to any equipment for which funds are disbursed to the Grantee as reimbursement under this grant agreement or to any equipment which has been fabricated or produced by the Grantee under this Agreement (“COCMP-SC equipment”).
EQUIPMENT (Continued)

The Grantee shall maintain an inventory record for each piece of non-expendable COCMP-SC equipment, including the date acquired or fabricated, cost, serial number, model identification, and any other information or description necessary to identify said equipment. A copy of the inventory record must be submitted to the Conservancy on request.

"Non-expendable" equipment, as used in this section, means equipment that has a normal life expectancy of one year or more and an approximate unit price of $5,000 or more or equipment that is of significant value and has been fabricated or produced by the Grantee pursuant to this grant agreement.

Throughout the term of this Agreement, the Grantee shall maintain any non-expendable COCMP-SC equipment in good working order, insure or self-insure any non-expendable COCMP-SC equipment against loss, damage or theft, and repair or replace any damaged, lost, or stolen non-expendable COCMP-SC equipment to the satisfaction of the Conservancy and at no expense to the Conservancy.

The Grantee’s obligation to repair or replace equipment shall terminate upon the termination of this Agreement.

Notwithstanding the foregoing, the parties agree that in the event the Grantee fails to continue to operate the COCMP-SC, generally as designed and implemented, as part of the COCMP, at any time within seven years following the termination date of this Agreement, the Conservancy may elect in its discretion to take title, on behalf of the State of California, to all or any of the COCMP-SC equipment. Upon receipt of written notice of that election, the Grantee shall undertake all acts necessary to transfer to the Conservancy title to and physical control, use and possession of the COCMP-SC equipment, including any right or interest required to access and use in place the HF radar installations and other equipment permanently installed, provided that the Conservancy shall be responsible for the cost of moving or relocating any other equipment. As used herein, the phrase “continue to operate the COCMP-SC, generally as designed and implemented, as part of the COCMP” means that the COCMP-SC is operated so as to continue to provide to the public detailed, real-time data and information relating to ocean currents that is consistent in nature and scope with the data and information provided upon completion of the project tasks under this Agreement. The obligations and rights under this paragraph shall survive the termination of this Agreement and shall remaining binding on the Grantee and the Conservancy as a separate, valid and
EQUIPMENT (Continued)

enforceable agreement between the parties for a period of seven years following the termination date.

PROGRESS REPORTS

The Grantee shall provide an Annual Work Program report and a final report, as described in the “PROJECT AND ANNUAL WORK PROGRAM COMPLETION” section, below. In addition, on a quarterly basis, commencing January 1, 2005, the Grantee shall provide a report that details the progress of work during the period covered by the report and compares that to the status required by the work program (budget, timeline, tasks, etc.).

PROJECT AND ANNUAL WORK PROGRAM COMPLETION

Within thirty days of completion of all work identified in the approved Annual Work Program, and within ninety days of completion of the project, the Grantee shall supply the Conservancy with evidence of completion by submitting a final Annual Work Program report or a final project report which includes:

1. Summary of accomplishments during the period covered by the Annual Work Program or for the project as a whole, including a detailed narrative description of all project tasks and components of tasks that have been undertaken and a description of tasks or components not completed along with an evaluation of the reasons for the failure or inability to complete the task or component. The discussion should also include recommendations for future work.

2. Complete summary of the financial status for the work under the Annual Work Program or the project as a whole, summarizing the current status of the project and comparing it to the status required by the work program.

3. Summary of in-kind services provided to the project and outside funding obtained and provided for additional development and enhancement of the COCMP-SC.

4. For the final report only: a Maintenance and Operation Plan for the ongoing operation into the future of the COCMP-SC, generally as designed and implemented, as part of the COCMP.
PROJECT AND ANNUAL WORK PROGRAM COMPLETION (Continued)

5. With respect to any construction undertaken, an inspection report by a licensed architect or registered engineer or the Grantee’s Public Works Director or equivalent certifying completion of the project according to the approved work program and as built drawings of the improvement constructed.

6. Any final work products required by the approved Annual Work Program, the approved Project Work Program, or by the External Review Committee.

7. A fully executed final request for disbursement for work under the Annual Work Program or for the project.

Within thirty days of Grantee’s compliance with this paragraph, the Conservancy shall determine whether the Grantee has satisfactorily completed the work under the Annual Work Program or the project. If so, the Conservancy shall issue to the Grantee a letter of acceptance of the work under the Annual Work Program or the project and authorize the payment of the final request for disbursement for work under the Annual Work Program or the project. The Annual Work Program or project shall be deemed complete as of the date of the letter.

EARLY TERMINATION AND FAILURE TO PERFORM

Prior to the completion of the project, the Conservancy may terminate this Agreement for any reason by providing the Grantee with sixty days notice in writing. If the Conservancy terminates the agreement prior to the completion of the project, the Grantee shall take all reasonable measures to prevent further costs to the Conservancy upon receipt of the notice and the Conservancy shall be responsible for any reasonable and non-cancelable obligations incurred by the Grantee in the performance of this Agreement prior to the date of the notice to terminate, but only up to the undisbursed balance of funding authorized in this Agreement.

Prior to the completion of the project, the Grantee may terminate this Agreement solely for good cause which is objectively reasonable and not frivolous, by providing the Conservancy with sixty days notice in writing, specifying in detail the good cause warranting termination. If the Grantee terminates the agreement for good cause prior to the completion of the project as permitted under this section, the Conservancy shall be responsible for any reasonable and non-cancelable obligations incurred by the Grantee in the performance of this Agreement prior to the date of the notice to terminate, but only up to the undisbursed balance of funding authorized in this Agreement. The Grantee shall
EARLY TERMINATION AND FAILURE TO PERFORM (Continued)

include in any agreement with any contractor a provision that entitles the Grantee to terminate the agreement for any reason on reasonable advance written notice.

On or before the date of termination of the agreement pursuant to this section, whether terminated by the Grantee or the Conservancy, the Grantee shall provide the Conservancy with all work, material, data, information, and written, graphic or other work produced or developed under this Agreement (whether completed or partial), in appropriate, readily useable form. In addition, notwithstanding any other section of this Agreement, on or before the date of termination of the agreement pursuant to this section, the Grantee shall transfer to the Conservancy title to and physical control, use and possession of the COCMP-SC equipment, including any right or interest required to access and use in place HF radar installations and other equipment permanently installed. The Conservancy shall be responsible for the cost of moving or relocating any other equipment and the costs of providing the work, material, data, information, and written, graphic or other work produced or developed or under this Agreement, but only up to the undisbursed balance of funding authorized in this Agreement.

COPYRIGHT, PATENTS, AND RIGHTS IN DATA

Copyright

The Grantee may copyright any work, material, data, information, and written, graphic or other work produced or developed under this Agreement ("work") that is subject to copyright. The Grantee shall grant the Conservancy a royalty-free, nonexclusive, and irrevocable right to reproduce, display, publish, make derivative use of or otherwise use the work and to authorize others to do so on its behalf. The Grantee shall have the right to disclose, disseminate and use the work, subject to inclusion of appropriate acknowledgment of credit to the Conservancy, to the State of California, State Water Resources Control Board and to other funding agencies identified by the Conservancy.

Except for publication of results or dissemination of materials for education or research purposes, the Grantee shall not sell or grant rights to such copyright works produced or developed under this Agreement to the Conservancy to a third party who intends to sell such works as a profit-making venture. Notwithstanding this restriction, the Grantee may use such copyright works to produce or develop derivative works for use in sponsored research activities with other third party sponsors and may grant such third party sponsors certain rights to these derivative works, including the right for such third party sponsors
COPYRIGHT, PATENTS, AND RIGHTS IN DATA (Continued)

to incorporate said derivative works into the commercial products of the third party sponsor.

Patents

With respect to any invention produced or developed under this Agreement ("invention") in which no federal funding is involved, the Conservancy shall have a nonexclusive, irrevocable, paid-up license to practice or have practiced such invention by or on behalf of the Conservancy throughout the world and the right to assign the license to any third party subject only to the written approval of the Grantee, which shall not be unreasonably withheld.

For those inventions made in whole or in part with funding from the Federal Government, the Grantee's right to elect title in said inventions is subject to applicable regulations governing the Federal Government's rights in such patents and inventions, including government-wide regulations issued by the Department of Commerce at 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements." Pursuant to such regulation and the involvement of federal funding, with respect to any invention produced or developed under this Agreement in which the Grantee chooses to elect title from the Federal Government, whether the election is voluntary or pursuant to the Conservancy's exercise of the option described in the paragraph below, the Conservancy shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced such invention by or on behalf of the Conservancy throughout the world and the right to assign the license to any third party subject only to the written approval of the Grantee, which shall not be unreasonably withheld.

For those inventions subject to 37 CFR Part 401 as to which the Grantee determines that it will not elect title from the Federal Government, the Conservancy shall have the option to require the Grantee to elect title to said invention, provided that the Conservancy agrees to reimburse the Grantee for the actual costs the Grantee reasonably incurs in the patenting of said inventions. Whenever the Grantee determines that it will not elect title to any invention, it shall provide the Conservancy with notice of its intention not to elect title, including the reasons for that determination and the total anticipated costs of patenting the invention. The notice shall be provided no later than 30 days after the Grantee discloses the invention to the Federal Government. The Conservancy shall exercise its option to require the Grantee to elect title, subject to the conditions specified in this paragraph, by notifying the Grantee in writing within 60 days of receipt of the Grantee's notice. In the event that the Conservancy exercises the option, the Grantee
COPYRIGHT, PATENTS, AND RIGHTS IN DATA (Continued)

shall promptly elect title from the Federal Government, file a patent application for U.S. patents rights prior to the end of any statutory period in which valid U.S. patent protection can be obtained and diligently pursue such application to completion.

Rights in Data

The Conservancy has the right to:

1. Obtain, reproduce, display, publish, make derivative use of or otherwise use the data first produced or developed under this Agreement.

2. Authorize others to receive, reproduce, display, publish, make derivative use of or otherwise use such data.

Preservation of Rights in Third Party Agreements

The Grantee shall include in any agreement with a third party for work under this Agreement terms that preserve the rights, interests, and obligations created by this section and that identify the Conservancy as a third-party beneficiary of those provisions.

Survival of Rights

The rights, interests and obligations created by this section survive the termination of this Agreement.

INSPECTION

Throughout the term of the agreement, Conservancy shall have the right to inspect any area utilized in connection with the project to ascertain compliance with this Agreement.

INDEMNIFICATION AND HOLD HARMLESS

The Grantee shall defend, indemnify, and hold the State of California and the Conservancy, its officers, employees, and agents harmless from and against any and all liability, loss, expense (including reasonable attorney's fees), or claims for injury or damages arising out of the performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, attorney's fees, or claims for injury or damages
INDEMNIFICATION AND HOLD HARMLESS (Continued)

are caused by or result from the negligent or intentional acts or omissions of the Grantee, its officers, agents, or employees.

If the Grantee retains any contractors, excluding any agency or department of the United States or any State, or any Federally Funded Research and Development Center (FFRDC), to accomplish any of the work of this Agreement, the Grantee shall first enter into a written agreement with each contractor by which the contractor agrees to indemnify and hold harmless the State of California and the Conservancy and its officers, agents and employees from any and all liabilities, losses, claims, demands, damages, or costs, including without limitation litigation costs and attorneys fees, resulting from or arising out of contractors performance under its agreement with the Grantee. The indemnification and hold harmless agreement shall be consistent with requirements specified in the preceding paragraph and shall specifically acknowledge that the State and the Conservancy are third party beneficiaries of the indemnification and hold harmless agreement.

INSURANCE

Throughout the term of this Agreement, the Grantee shall maintain self-insurance against claims for injuries to persons or damage to property that may arise from or in connection with any activities by the Grantee or its officers, agents, representatives, or employees associated with the project undertaken pursuant to this Agreement. If the Grantee retains any public entity contractors, excluding any agency or department of the United States, to accomplish any of the work of this Agreement, the Grantee shall first enter into a written agreement with each contractor requiring the contractor to provide and maintain similar self-insurance for the benefit of the Conservancy covering the activities of the contractor, its officers, agents, representatives, or employees.

If the Grantee retains any private entity contractors to accomplish any of the work of this Agreement, the Grantee shall first enter into an agreement with each contractor requiring the contractor to provide and maintain liability and property-damage insurance for liability arising out of the performance of the agreement with minimum limits of liability as follows: a single limit for bodily injury (including death) and property damage liability combined of $1,000,000 each occurrence and $1,000,000 in the aggregate. This insurance shall be issued by a company or companies admitted to transact business in the State of California. The liability insurance policy shall contain an endorsement specifying that the State of California, its officers, agents and employees are included as additional insured for any liability resulting from, growing out of, or in any way
INSURANCE (Continued)

connected with or incident to this Agreement; and that the policy will not be cancelled or reduced in coverage without thirty days’ prior written notice to the Conservancy.

The Conservancy is not responsible for premiums and assessments on any insurance policy.

AUDITS/ACCOUNTING/RECORDS

The Grantee shall maintain financial accounts, documents, and records (collectively, “records”) relating to this Agreement, in accordance with the guidelines of “Generally Accepted Accounting Principles” (“GAAP”) published by the American Institute of Certified Public Accountants. The records shall include, without limitation, evidence sufficient to reflect properly the amount, receipt, deposit, and disbursement of all funds related to the implementation of the project, and the use, management, operation and maintenance of the real property. Documentation of time expended and salaries and wages charged is also required. The Grantee shall maintain adequate supporting records in a manner that permits tracing from the request for disbursement or equivalent to the accounting records and to the supporting documentation.

Additionally, the Conservancy or its agents may review, obtain, and copy all records relating to performance of the Agreement on site. The Grantee shall provide the Conservancy or its agents with any relevant information requested and shall permit the Conservancy or its agents access to the Grantee’s premises upon reasonable notice, during normal business hours, to interview employees and inspect and copy books, records, accounts, and other material that may be relevant to a matter under investigation for the purpose of determining compliance with this Agreement and any applicable laws and regulations.

The Grantee shall retain the required records for a minimum of three years following the later of final disbursement by the Conservancy, and the final year to which the particular records pertain. The records shall be subject to examination and audit by the Conservancy and the Bureau of State Audits during the retention periods.

If the Grantee retains any contractors to accomplish any of the work of this Agreement, the Grantee shall first enter into an agreement with each contractor requiring the contractor to meet the terms of this section and to make the terms applicable to all subcontractors.
AUDITS/ACCOUNTING/RECORDS (Continued)

The Conservancy may disallow all or part of the cost of any activity or action that it determines to be not in compliance with the requirements of this Agreement.

COMPUTER SOFTWARE

The grantee certifies that it has instituted and will employ systems and controls appropriate to ensure that, in the performance of this Agreement, state funds will not be used for the acquisition, operation or maintenance of computer software in violation of copyright laws.

NONDISCRIMINATION

The Grantee shall include, or shall cause to be included, the following nondiscrimination clause in all contracts and subcontracts with any entity that is not a State agency, except that any contract or subcontract with a department or agency of the United States or any State, or any Federally Funded Research and Development Center (FFRDC), shall acknowledge that compliance with the nondiscrimination clause is binding only as and to the extent consistent with Federal law.

During the performance of this Agreement, the contractor and its subcontractors shall not unlawfully discriminate against harass, or allow harassment against any employee or applicant for employment because of sex, race, religion, color, national origin, ancestry, disability, medical condition, marital status, age (over 40) or denial of family-care leave, medical-care leave, or pregnancy-disability leave. The contractor and its subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination and harassment. The contractor shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12900 et seq.) and the applicable regulations (California Code of Regulations, Title 2, Section 7285.0 et seq.). The regulations of the Fair Employment and Housing Commission regarding Contractor Nondiscrimination and Compliance (Chapter 5 of Division 4 of Title 2 of the California Code of Regulations), are incorporated into this Agreement. The contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.
UNION ORGANIZING

The Grantee acknowledges the state policy contained in Government Code Sections 16645 through 16649, prohibiting the use of state funds disbursed as a grant to assist, promote or deter union organizing. In executing this Agreement, the Grantee certifies that none of the fund disbursed under this Agreement will be used to "assist, promote or deter union organizing", as that phrase is defined in Government Code Section 16645(a). The Grantee shall: (1) maintain records sufficient to show that any expenditures by the Grantee to assist, promote or deter union organizing have not been made from state grant funds; and (2) provide these records to the Attorney General upon request.

LABOR COMPLIANCE PROGRAM

This Agreement is funded in whole or in part with funds from the "Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002" ("Proposition 50"). Section 1771.8(a) of the Labor Code imposes on a "body awarding any subcontract for a public works project financed in any part with [Proposition 50] funds" responsibility for adoption and enforcement of a "labor compliance program" under Labor Code Section 1771.5(b). The Grantee shall review Labor Code Section 1771.8(a) and related provisions to determine its responsibilities, if any.

INDEPENDENT CAPACITY

The Grantee, and the agents and employees of Grantee, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of the Conservancy.

ASSIGNMENT

Without the written consent of the Executive Officer, the Grantee may not assign this Agreement in whole or in part.

TIMELINESS

Time is of the essence in this Agreement.
EXECUTIVE OFFICER’S DESIGNEE

The Executive Officer shall designate a Conservancy project manager who shall have authority to act on behalf of the Executive Officer with respect to this Agreement. The Executive Officer shall notify the Grantee of the designation in writing.

AMENDMENT

As expressly provided in this Agreement, no change in this Agreement shall be valid unless made in writing and signed by the parties to the agreement. No oral understanding or agreement not incorporated in this Agreement shall be binding on any of the parties.

LOCUS

This Agreement is deemed to be entered into in the County of Alameda.
Proposed long range HF Radar coverage. The two sites to the north are proposed to COCMP by CenCOOS, the systems in the middle (sites 3,4) are proposed by SCCOOS for COCMP, and the two systems to the south are supported by SCCOOS with funding from NOAA.
Exhibit B: Coastal Ocean Currents Monitoring Program
Proposed Statewide HF Radar Coverage

- Possible long-range antenna site
- Long-range HF radar coverage
- Standard and high resolution HF radar coverage

100 km
COASTAL CONSERVANCY

Staff Recommendation
June 30, 2004

COASTAL OCEAN CURRENTS MONITORING PROGRAM

File No. 04-034 and 04-035
Project Manager: Sheila Semans

RECOMMENDED ACTION: Authorization to: (1) accept a $7,000,000 grant from the State Water Resources Control Board (SWRCB) for implementation of the Coastal Ocean Currents Monitoring Program; and (2) disburse up to $10,200,000 to Scripps Institution of Oceanography, U.C. San Diego and up to $10,200,000 to San Francisco State University to implement the Coastal Ocean Currents Monitoring Program.

LOCATION: The Coastal Ocean Currents Monitoring Program is statewide.

PROGRAM CATEGORY: Integrated Coastal and Marine Resources Protection

EXHIBITS

Exhibit 1: Coverage map of California
Exhibit 2: Regional system design maps
Exhibit 3: COCMP benefits paper
Exhibit 4: HF Radar and other instrumentation
Exhibit 5: State Water Resources Control Board Resolution
Exhibit 6: Letters of Support

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Section 31220 of the Public Resources Code:

"The State Coastal Conservancy hereby authorizes acceptance of a grant from the State Water Resources Control Board (SWRCB) of seven million dollars ($7,000,000) for implementation of the Coastal Ocean Currents Monitoring Program. The Conservancy further authorizes the disbursement of an amount not to exceed three million five hundred thousand dollars ($3,500,000) of the SWRCB funds and six million seven hundred thousand dollars ($6,700,000) of Conservancy funds to Scripps Institution of Oceanography, U.C. San Diego, and the disbursement of an amount not to exceed three million five hundred thousand dollars
Exhibit 1: Coastal Ocean Currents Monitoring Program
Proposed Statewide HF Radar Coverage

- Possible long-range antenna site
- Long-range HF radar coverage
- Standard and high resolution HF radar coverage

100 km
**Site Locations for 1 km High Resolution CODAR Systems Operating With ~40 km Range**

High resolution HF radar array coverage for Southern California.

**Site Locations for Long Range HF Radars Operating at 6-10 km Resolution With ~150 km Range**

Proposed long range HF radar coverage. The two sites in the north are proposed to COCMP by SeaCOOS, the systems in the middle (sites 3-4) are proposed by SCCOOS for COCMB, and the two systems to the south are supported by SCCOOS with funding from NOAA.
Exhibit 2b: CeNCOOS proposed infrastructure
($3,500,000) of the SWRCB funds and six million seven hundred thousand dollars ($6,700,000) of Conservancy funds to San Francisco State University to implement the Coastal Ocean Currents Monitoring Program, subject to the following conditions:

1. Prior to disbursement of Conservancy funds, the grantees shall each submit for the review and written approval of the Executive Officer of the Conservancy the following:
   a. A final work program, schedule, and budget.
   b. The names and qualifications of any contractors to be employed in carrying out the work.
   c. Evidence that all necessary permits and/or approvals have been obtained.
   d. Evidence that the grantees have available all other funds necessary for the project.”

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed project is consistent with Public Resources Code Section 31220, regarding the Conservancy’s mandate to protect and restore marine resources.

2. The proposed project is consistent with the Conservancy’s Project Selection Criteria and Guidelines adopted by the Conservancy on January 24, 2001.”

PROJECT SUMMARY:

“Ocean managers and policy makers need comprehensive scientific information about the oceans and its environment to make wise decisions. Increased knowledge can support sustained resource use, economic development, and conservation of the ocean’s biological diversity and natural beauty.” (US Commission on Ocean Policy preliminary report, April 20, 2004, pg. 303)

Staff is recommending that the Conservancy accept a grant of seven million dollars from the State Water Resources Control Board (SWRCB) and authorize the disbursement of the SWRCB funds and an additional fourteen million of Conservancy funds to Scripps Institution of Oceanography, U.C. San Diego and San Francisco State University as lead institutions to implement the Coastal Ocean Currents Monitoring Program (COCMP), a highly collaborative statewide program to monitor and map the surface currents off the coast of California. This unprecedented program is a partnership of academic and government institutions working with industry and non-governmental organizations to design a real time monitoring system along the state’s 1100 miles of coastline.

Over the past year and a half, Conservancy staff has consulted with various academic, agency and private-sector specialists to establish the best framework for the COCMP: two regional, science-based ocean observing systems that will be integrated into one statewide program (Exhibit 1). This authorization would allow the two regional consortia, the Southern California Ocean Observing System (SCCOOS) and the Central and Northern Ocean Observing System (CeNCOOS) to implement the systems designed for their respective areas and to integrate and disseminate data on a statewide basis in close to real time Internet accessible formats.
The recently released U.S. Commission on Ocean Policy preliminary report (OCPR) highlights many objectives California has articulated through recent legislation and policy, including the need to develop applied research enabling more effective resource management. Little is known about our ocean resources, and “high quality, accessible information is critical to making wise decisions about ocean and coastal resources and their uses to guarantee sustainable social, economic, and environmental benefits from the sea” (OCPR, pg. xiii). COCMP’s primary objective is to provide water quality managers, natural resource managers, scientists, the public, and policy makers with science based tools for better management of ocean resources. Additionally COCMP will provide the capability for evaluating the effectiveness of California’s current management strategies, serving also as a risk management and early warning tool.

Through collaboration with existing monitoring networks, individual observatories and the anticipated federal ocean observing system, the information generated by COCMP will be integrated with, and benefit from, the broader multidisciplinary data sets needed to fully understand movement of water and associated materials within California’s coastal ocean.

**COCMP Benefits**

COCMP’s primary objective is to effectively translate science into useful and timely information products for policy makers, managers, educators and the public. An interactive dialogue will be developed where academics will work with end users to continually refine the system to produce the types of products needed to support management decisions. This two-way feedback will also guide new research directions and new technology.

The principal focus of COCMP is coastal water quality. Human activities on land and sea impact coastal water quality and these impacts become more severe as populations grow. Weather-independent surface current monitoring that efficiently covers large, continuous coastal areas provides new capabilities for observing coastal pollution. With COCMP data, the tracking of pollution incidents can occur in real time, or archived data can be used to forensically track down pollution events by tracing them back to the source location. These data can also be used to create simulations to forecast potential effluent trajectories, and the timing of effluent releases could be synchronized to the appropriate oceanographic conditions.

In addition to improved water quality, there will be many collateral benefits from COCMP as the system will also provide valuable information for a host of other priority issues in the California coastal ocean. Further, the value of COCMP will continue to develop as this new data is integrated with existing or future information, from both state and federal efforts. Information on surface current flows is expected to benefit the following areas:

- Promoting the scientific design of marine protected areas that aid the recovery of both marine and anadromous fisheries
- Increased effectiveness of search and rescue operations
- Usefull information for coast and ocean recreational uses such as boating and surfing
- Increased efficiency in responding to natural hazards like storm surge and coastal erosion
- Increased efficiency of maritime shipping
- Increased precision in weather and climate forecasts

Please refer to Exhibit 3 for a more complete discussion on COCMP benefits.
REGIONAL CONSORTIA

The primary technical component of the COCMP will be a network of surface current mapping devices known commonly as High Frequency Radar (HF radar), widely regarded as the most economical technology available to assess large-scale physical and biological change in the coastal ocean. HF Radar are remote sensing instruments capable of mapping ocean surface current and wave distributions using information from radio frequency equipment deployed along the shoreline (exhibit 4). It is the non-invasive, real-time, large-area-coverage aspects of HF radar systems that make them ideally suited to a statewide monitoring program, such as COCMP. Additional technologies will be deployed to augment HF Radar as needed, such as Acoustic Doppler Current Profilers (ADCP) for site-specific, surface-to-bottom current analysis.

Due to the very different oceanographic regimes off the California coast, it became evident that two distinct, but integrated, regional systems would need to be developed in order to effectively address local concerns. As well as working together in the state, the two consortia are also collaborating with partners in Mexico and Oregon to ensure a unified west coast system that will allow for larger, ecosystem-based analysis. Both regional systems are also being designed to integrate seamlessly with the national Integrated Ocean Observing System (IOOS).

SCCOOS

The Southern California Coastal Ocean Observing System (SCCOOS) is a consortium of eleven Southern California universities and laboratories that covers an area from Northern Baja CA in Mexico northward to Morro Bay. This area has a higher population density and higher economic productivity than any other coastal region in the country. Clean beaches and coastal waters are essential to both the economy and lifestyle of Southern California.

Not surprisingly, water quality is a primary concern in Southern California where 20 million people live within fifty miles of the coast. Beach usage is higher in Southern California than in the other 49 states combined and these popular beaches continue to experience more closures than any other area along the western coastline of North America. Consequently, SCCOOS has designed an observing system that, among other things, will lead to a better understanding of the transport processes that carry bacteria or other pathogens to the beach and provide for more timely warning of the start of beach contamination events. Other coastal water quality improvements will include source identification of pollution, tracking the transport and dispersion of plumes from known stormwater discharges and outfalls to identify regions of impact, and predicting high impact areas from non-point source pollution during storm events.

Because of the dense population in the area, the SCCOOS consortium has developed an implementation plan that focuses on an extensive application of high resolution/short range HF Radar systems, spaced at approximately 20-40km along the coastline and at offshore sites on the Channel Islands (Exhibit 2a). This proposed infrastructure leverages nine existing HF Radar sites and will incorporate 20 new sites. Complementary observations of nearshore currents will be made with drifters, bottom-mounted surfzone sensors, and ADCPs mounted on moorings and on autonomous underwater vehicles. To improve prediction of nearshore currents that are inshore of HF Radar coverage, in-situ observations spanning relatively small regions for limited
time periods will be used to validate and calibrate nearshore models that can be applied continuously over larger areas.

Other main benefits of the SCCOOS system will be an improved understanding of: beach nourishment processes and coastal erosion; transport of deposited dredge material and how the fine sediments might negatively impact coastal ecology; response capabilities to toxic spills and rescue operations; improved understanding of the transport, fate and impact of the brine from desalination plants.

Staff recommends the Conservancy provide up to $3,500,000 of SWRCB funds, and $6,700,000 of Coastal Conservancy funds to Scripps Institution of Oceanography, U.C. San Diego. Scripps will be the lead institution for the consortium, and will subcontract to six marine labs to implement the program.

CeNCOOS

The Central and Northern Coastal Ocean Observation System (CeNCOOS) is also a consortium of eleven universities and marine laboratories, and will cover the area from Pt. Conception northward to the Oregon border. The challenge faced by the northern consortium is how to cover such a large geographic region effectively, meeting the needs of highly populated areas and well used bays, as well as cover some of the more remote stretches of Northern California that contain some of the state’s most valuable marine resources.

In response to this challenge, CeNCOOS proposes the implementation of a multi-scale system that would enable continuous monitoring of the region, while focusing resources in areas of higher population or critical resource value. This will be accomplished through the creation of a nested array of HF radar systems of different range and spatial resolution. A large-scale, coarser resolution array (3-12 km) will observe the continental shelf and slope areas and will link the region with similar arrays in Southern California and Oregon. In the populated region between Monterey Bay and Bodega Bay, including the Gulf of the Farallones, there will also be a high-resolution nested array to resolve hourly currents at a 1-kilometer resolution. And in San Francisco Bay, a higher-resolution array (0.3 km) will provide information about the heavily trafficked region between the Port of Oakland and Carquinez Strait. This HF Radar system will also be enhanced with surf zone observations and models of longshore currents.

Ocean surface currents within the entire Northern California region out to approximately 160 km will be monitored using a network of 11 long-range HF radar systems and 15 standard-range systems. Within San Francisco Bay, 4 additional high-resolution systems will be used. The proposed infrastructure leverages nine existing sites (Exhibit 2b).

Water quality issues in the north relate primarily to the discharge of river-borne sediments and anthropogenic material, discharges through surface runoff drainage systems and permitted outfalls, marine discharges including accidents (oil spills) and intentional incidents (ballast water exchange), coastal erosion, and naturally occurring phenomena including harmful algal blooms.

North Coast fisheries management agencies can also exploit COCMP information to help separate natural fluctuations from the human induced changes. A better understanding of the integration of oceanic and coastal processes with watershed hydrologic processes will lead to
better long-term management of anadromous fish species. Related to marine fish, COCMP data will provide more information on the temporal and spatial characteristics of feeding and spawning habitats as well as larval entrainment and, possibly, settlement. This information can be built into fisheries surveys for stock assessments as well as fisheries management strategies.

Staff recommends the Conservancy provide up to $3,500,000 of SWRCB funds, and $6,700,000 of Coastal Conservancy funds to San Francisco State University (SFSU) as the lead institution for the consortium. SFSU will subcontract to ten marine labs to implement the program.

IOOS
One of the twelve critical actions recommended in the OCPR was the need to implement a national Integrated Ocean Observing System (IOOS), which would be based on a backbone of coordinated regional systems, like COCMP. The report recommends a funding build up to $650 million annually by 2010. Federal support is critical to the ongoing operation of the COCMP after the initial five years. With the $21 million dollars dedicated to COCMP proposed in this authorization, California will have made the largest commitment to coastal ocean observations of any coastal state, and taken a real leadership role on the national level. The Conservancy’s Executive Officer received a letter from the Global Ocean Observing System (GOOS) Steering Committee encouraging California to become a candidate for the first round of IOOS pilot projects. In order for California to successfully compete for sustained support from the national program, it must successfully launch the COCMP now.
SCCOOS and CeNCOOS are California’s nascent regional organizations under IOOS. IOOS is presently in a detailed planning stage and SCCOOS and CeNCOOS have been structured under IOOS governance rules and share administrative and technical goals in support of industry, NGO and public end-users.

Site Description: The COCMP will cover the entire California coast (Exhibit 1). SCCOOS will focus on the Southern California Bight (Exhibit 2a) and CeNCOOS will cover the coast from Pt. Conception to the Oregon boarder (Exhibit 2b). At various points, the system will encompass the 24 nautical mile contiguous zone of the U.S., with the continental shelf as the priority area.

The appropriate technologies to be deployed include High Frequency Radar (HF Radar) for shore-based, long-range monitoring of surface currents and ADCPs for site-specific, surface-to-bottom current analysis. HF Radar are remote sensing instruments capable of mapping ocean surface current and wave distributions using information from radio frequency equipment deployed along the shoreline. ADCPs are generally mounted on moorings in the open water and use underwater sound to measure vertical profiles of horizontal currents. Additionally, shore-based and moored meteorological stations will contribute data necessary to understand the physical-biological coupling inherent in the processes that drive currents and link water movement to biological productivity.

Project History: Although a number of the older marine laboratories, primarily Hopkins Marine Station and the Scripps Institution of Oceanography, have maintained long-term records on localized sea surface temperature, California coastal observations are generally spotty and site specific, lack sustained funding, and commonly fail to provide information applicable to the wide spectrum of resource management needs. The first attempt at an interagency focused long-term coastal ocean assessment was the California Cooperative Oceanic Fisheries Investigations
COASTAL OCEAN CURRENTS MONITORING PROGRAM

(CalCOFI) initiated in 1949 in response to the collapse of the sardine fishery. CalCOFI includes both biological and physical sampling from ships and, as one of the longest marine data sets in history, has provided much of our insight into the California Current System.

Each of California's academic marine biological laboratories maintains various shore-based or near-shore ocean and meteorological measurements. In addition, several major nearshore physical and biological oceanographic investigations have been conducted in the last twenty years. In the 1980s, the Coastal Ocean Dynamics Experiment (CODE) studied the dynamics of wind forcing on upwelling, and was conducted in two multi-year projects involving nearly all the major U.S. oceanographic institutions and federal agencies. During the mid-1990s, the Minerals Management Service funded a study of ocean currents in the Santa Barbara Channel to assist in oil spill response. This study ended in the late 1990s. Also in the mid-1990s, the Packard Foundation funded the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), the first long-term study to examine changes in intertidal and subtidal marine ecosystems over time. PISCO uses CODAR to a limited extent and also relies on acoustic Doppler current profilers for site-specific high resolution current monitoring. PISCO SCUBA survey protocols and PISCO physical oceanography information are an important part of California Department of Fish and Game's Cooperative Research and Assessment of Nearshore Ecosystems (CRANE) project, which is intended to assess ecologically and economically important nearshore species to benefit fisheries management and marine protected area monitoring.

Recognizing the need to fill the significant data gaps necessary to support coastal ocean management, in 2000 an unprecedented number of scientists came together to create a conceptual model for monitoring California's nearshore environment. The proposed program, described as CalCOOS, represented consensus among virtually every academic institution in the state that maintains a marine program. CalCOOS submitted a funding proposal to the National Science Foundation but was unsuccessful. However, the products, organization, and goals articulated by CalCOOS may well provide the template for COCMP.

Also, in 2002 the University of California Marine Council funded a new long-term program called the Network of Environmental Observations of the Coastal Ocean (NEOCO). NEOCO integrates physical, biological, and chemical data in a common quality controlled format from seven sites from La Jolla to Bodega. Working with NEOCO and other ongoing marine programs to integrate data and maximize collaboration will enhance the benefits of the COCMP.

During the past four years water providers such as the Sonoma County Water Agency and municipalities such as the City of Imperial Beach have independently funded HF radar systems in partnership with the University of California to address such divergent issues as salmon recovery and coastal water quality underscoring the utility of this type of ocean observing capability. All of these systems will be incorporated into COCMP.

In August 2003, the Conservancy Board authorized grant funding to Commonweal, Inc. to begin planning the COCMP. Commonweal, a nonprofit organization that specializes in ecosystem-based science collaborations and has a special interest in improvement of public management of coastal ocean resources and habitat, undertook a ten-month COCMP planning effort in coordination with the Conservancy. This planning effort led to a sequential grant proposal and review process that involved participation by scientists from within and outside California, industry, non-governmental organizations and extensive collaboration with state and federal
regulatory and resource agencies. The submission and review of detailed regional grant proposals from each consortium under this process are the basis for this authorization.

**PROJECT FINANCING:**

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**In-Kind Contribution:**

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**Total Project Cost** $25,037,500

*The total for the science and advisory committee member participation is an estimate of approximately 25 people, for 10 days/year, at an average salary of $75/hour for a period of two years.

The anticipated source of Conservancy funds for this project is, in part, a FY 02/03 appropriation to the Conservancy from the California Clean Water, Clean Air, Safe Neighborhood Parks and Coastal Protection Fund (Proposition 40). The Proposition 40 funds were appropriated to the Conservancy under the Watershed, Clean Beaches and Water Quality Act ("AB 2534"). AB 2534 added Chapter 5.5 to the Conservancy's enabling legislation (Public Resources Code § 31220), which, as subsequently amended, authorizes the Conservancy to undertake or provide grants for coastal and marine habitat and water quality protection and restoration projects, including projects that provide for "monitoring and mapping of coastal currents". AB 2534 also appropriated funds from Proposition 40 to the Conservancy to carry out projects under Section 31220 and specifically required that the Conservancy dedicate $7,000,000 for the purposes of funding coastal ocean monitoring and mapping projects. The funding for the proposed project directly meets and satisfies this latter requirement. In addition, the project meets the general Proposition 40 requirements for grant funding priority, since it includes a commitment of matching funds from a variety of sources.

The other anticipated source of Conservancy funding is a FY 03/04 appropriation to the Conservancy from the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50). Proposition 50 authorizes the use of these funds for the purpose of protecting coastal watersheds through projects designed to restore and protect water and land resources (Water Code Section 79570). Funds may also be used for planning and permitting associated with projects of this type. Implementation of the COCMP will serve these objectives in a variety of ways. Installation of the coastal monitoring system will serve to identify watershed pollutant source, flow and impact, will help identify the impact of sedimentation on lower estuarine ecosystems, and provide valuable information on the oceanic conditions necessary for the survival of anadromous fish species. In addition, under Proposition 50, any watershed protection activities financed with Proposition 50 funds must be "consistent with the
applicable adopted local watershed management plan and the applicable regional water quality control plan adopted by the regional water quality control board" (Water Code Section 79507). The proposed project is consistent with such plans, as described in detail in the "Consistency with Local Watershed Management Plan/State Water Quality Control Plan" section, below.

SWRCB was also appropriated $7,000,000 of Proposition 50 funds in FY 03-04, specifically earmarked by the legislature for "the California Ocean Data Observing System (CODOS) to improve the monitoring of coastal waters." Though the program name differs slightly from the COCMP project name, the intent of the legislative language was that the $7,000,000 appropriated to the SWRCB was to be contributed toward the COCMP to insure an integrated coastal monitoring system. In light of this and recognizing that the Conservancy has already established a coastal monitoring program, the SWRCB decided to grant the SWRCB Propostion 50 funds to the Conservancy for the COCMP. SWRCB Resolution No. 2004-0012, authorizing the grant, is attached as Exhibit 5.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

This project would be undertaken pursuant to Chapter 5.5 (Section 31220) of the Conservancy's enabling legislation, Division 21 of the Public Resources Code, regarding integrated coastal and marine resource protection. Consistent with §31220(a), the Conservancy has consulted with the Regional Water Quality Control Boards and the State Water Resources Control Board, and representatives from these agencies have participated on the advisory committee of the COCMP to ensure consistency with Chapter 3 (commencing with §30915) [Clean Beaches Program] of Division 20.4 of the Public Resources Code [Watershed, Clean Beaches, and Water Quality Act]. Consistent with §31220(b)(5), the proposed project will "provide for monitoring and mapping of coastal currents, marine habitats, and marine wildlife, in order to facilitate the protection and enhancement of resources within the coastal zone" by purchasing and installing the infrastructure to monitor coastal surface currents that will result in better ocean science to support resource management needs. Also consistent with this section, the Conservancy has consulted with the Department of Fish and Game, and DFG has designated a representative to sit on a COCMP science advisory committee. Finally, as required by §31220(c), the project will include an evaluation component and the ultimate product, the coastal monitoring program, will be subject to rigorous monitoring and evaluation by several qualified advisory committees.

CONSISTENCY WITH CONSERVANCY'S STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

Consistent with Goal 6, Objective B, the proposed project will serve to improve water quality and benefit coastal resources by enabling marine laboratories and other departments to track ocean pollutants (strategy 7).

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA & GUIDELINES:

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines adopted January 24, 2001, in the following respects:
Required Criteria

1. Promotion of the Conservancy’s statutory programs and purposes: See the “Consistency with Conservancy’s Enabling Legislation” section above.

2. Consistency with purposes of the funding source: See the “Project Financing” section above.

3. Support of the public: The COCMP enjoys wide ranging support from legislators, scientists, and resource managers (see Letters of Support, Exhibit 6). Support for a federal ocean observing system, which would be comprised of state systems including COCMP, was most recently articulated in the United States Commission on Ocean Policy preliminary report released in April.

4. Location: The COCMP is expected to cover as much of the coast of California as is feasible given the current funding. The system will range from the coastline out to the 24 nautical mile contiguous zone of the U.S., with the continental shelf as the priority area.

5. Need: As the number of people living near the coast continues to increase rapidly, the demand on coastal systems to provide commerce and recreation result in more severe water quality impacts. The COCMP will improve our capacity to detect regional and global changes in the ocean environment and predict how these changes will alter coastal ecosystems. This will increase our ability to more effectively protect and restore healthy coastal marine ecosystems for the benefit of all Californians. Without Conservancy funding, near-term implementation of COCMP would not be realized and its benefits would be deferred until future funding might be available.

6. Greater-than-local interest: The creation of a sustained and integrated ocean observing system has benefit for people and resources beyond even California’s shores. Data can be used for climate change predications, to improve national security, mitigate the effects of natural hazards, improve the safety of marine operations and rescue operations, reduce public health risks, and protect and restore living marine resources that know no jurisdictional boundaries.

Additional Criteria

7. Urgency: Concurrent with the evolution of COCMP, a new federal initiative of regional ocean observation systems is now under way, providing the potential for operational and funding partnerships. In order for California to successfully compete for support from the national program, it must launch the COCMP now.

8. Resolution of more than one issue: Data collected through the COCMP will address a variety of management concerns including coastal water quality, fisheries management, MPA design and evaluation, oil spill response, and coastal erosion/sediment/pollution transport.

9. Leverage: See the “Project Financing” section above.

11. Innovation: Not only will the equipment purchased for the COCMP be state-of-the-art, but so will the data integration and modeling technologies.

15. Cooperation: COCMP has proven to be one of the most technically and organizationally ambitious projects undertaken in state marine resource management science. In order to successfully implement the COCMP, the regional consortia, comprised primarily of marine
institutions, will work closely with state and federal agencies, resource managers, non-governmental organizations, industry, and various local governments.

CONSISTENCY WITH THE COASTAL ACT:

Article 4 of Chapter 3 of the Coastal Act (Public Resources Code Sections 30230-30237) sets forth policies for the marine environment. Section 30230 provides: "Marine resources shall be maintained, enhanced, and where feasible, restored... Use of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes." A well-designed COCMP will provide the technology to more effectively protect and restore healthy coastal marine ecosystems. Section 30231 states: "The biological productivity of coastal waters... appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges..." It is anticipated that predictive transport model will be produced from the data derived by the COCMP, which will enable us to understand where pollutants are moving in real-time. These results may influence the timing of effluent discharges, and at a minimum, will allow for a better understanding of the impacts and timing of pollutants on recreational beaches, thus reducing the possibility of human exposure.

CONSISTENCY WITH LOCAL WATERSHED MANAGEMENT PLAN/ STATE WATER QUALITY CONTROL PLAN:

The inherent intent of the local coastal watershed management plans is to prevent water quality degradation and to protect the beneficial uses of coastal waters. Water quality control plans adopted by the State Water Resources Control Board address the minimum requirements for effluent quality and may specifically define the maximum constitutive levels acceptable for discharge into various waters. These plans are designed to focus limited resources on key issues, the use of sound science, and promote cooperative, collaborative efforts within a watershed for the protection and enhancement of coastal waters. As a collaborative statewide program, the COCMP will contribute to the scientific information pool that supports the development of water quality standards in coastal watersheds. Also, through the use of predictive pollutant transport models, the COCMP will help refine the management of effluent and other point source discharges to the coast.

COMPLIANCE WITH CEQA: The proposed project is categorically exempt from review under the California Environmental Quality Act (CEQA) pursuant to 14 Cal. Code of Regulations Section 15304, which exempts "minor public or private alterations to land, water, and/or vegetation which do not involve the removal of healthy, mature, scenic trees." The proposed project will involve the installation of no more than 50 HR Radar systems. Most HF Radar systems will include two compact antennae (one transmit and one receive antenna) as well as a small enclosure for a personal computer for data acquisition and radial current processing (Exhibit 4). The antenna elements have receive and transmit masts ideally mounted no more than 50 m apart and near the water's edge. Installations of HF Radar units will involve only minor alterations to land and will not involve the removal of healthy, mature vegetation, and will
impact an area no bigger than 10 feet by 10 feet. Any installations will avoid adverse impact on scenic or visual resources.

HF radar units are connected via cables to electronics that operate within an environmentally controlled shelter big enough to hold a computer and monitor. Computer equipment will be placed within existing structures whenever possible. The possible construction of any housing unit for the computer equipment would be categorically exempt under 14 Cal. Code of Regulations Section 15303, which exempts from CEQA the construction or conversion of small structures, including accessory structures that could be envisioned here. Additional equipment proposed for COCMP will be used for short-term, discrete studies designed to augment predictive models in the nearshore environment. Use of this type of equipment is likewise exempt under 14 Cal. Code of Regulations Section 15304 as minor public or private alterations to land, water, and/or vegetation. Instrumentation may include ADCPs, bottom-mounted surfzone sensors, gliders, and autonomous underwater vehicles. The use of such equipment will be minimal, and the impact to the marine environment will be insignificant. Static instrumentation will be mounted typically on buoys (some existing), on structures already in the water (e.g., piers) or on the sea floor. Sea floor mountings will not occur in sensitive marine habitats.

Upon Conservancy approval of the project, staff will file a Notice of Exemption.
Coastal Ocean Current Monitoring Program

The Value of the COCMP to California

The coastal ocean is of great value to California and we need to ensure that this value is sustained. Information on water movements and transport of water-borne material is the single most important gap in management-related knowledge of the coastal ocean. The Coastal Ocean Current Monitoring Program (COCMP) will deliver pertinent, continuous and real-time information on water movements to management efforts statewide. Products will be developed to meet the specific information needs of agencies addressing coastal water quality issues and other state priorities. The efficacy of information products will be maintained and enhanced through an ongoing dialogue between providers and users of this information.

The need to sustain the value of the coastal ocean

The ocean has been at heart of California society from the earliest times, providing food and moderating the seasons. In recent centuries, the ocean has been the medium for voyages, trade, and settlement. The ocean remains at the heart of Californian culture and commerce, still a source of food, increasingly a gateway to the Pacific Rim, and central to Californian tourism and recreation opportunities. Ocean resources contribute more than seventeen billion dollars to the state’s economy (ten billion from spending on coastal tourism), generating 370,000 jobs, according to a 1997 study conducted by the Resources Agency.

Millions of Californians and visitors enjoy the benefits of the ocean – each of us deriving benefit in multiple ways. Increasingly, one beneficial use is compromised by another. Now more than ever, society needs reliable information to make wise decisions that will provide maximum societal benefit while ensuring a sustained production of ecosystem goods and services. Coastal water quality is central to the interactions between uses. It is the primary way in which one use affects another. Our concern for water quality goes beyond the impact of pollution on organisms and even beyond the risks to public health. It extends to a profound concern for the integrity of coastal systems and the lifestyle and value of coastal cities.

Given the numerous and competing demands on the ocean to provide goods and services, we are inadequately informed on how the ocean works and poorly supplied with operational information on the day-to-day conditions in the ocean as well as with data on which to base annual assessments. Our understanding of coastal waters has not kept pace with the economic needs associated with coastal waters.

The foremost information challenge in managing multiple uses of the coastal ocean is to obtain useful data on the incessant movement of coastal waters and the recurring patterns of that movement. Water-borne particles, organisms, and dissolved material move with the water, along paths that are forever changing. This fluidity of the ocean underlies most water quality patterns, as well as patterns of dispersal of the eggs/larvae/juveniles of sea life. Further, it poses a critical challenge to effective rapid response to catastrophes such as vessel and plane accidents, oil spills, and the possible malicious discharge of toxins. Ocean currents also affect shipping speeds and optimal routes, as well as navigation of big and small vessels on approaching or entering harbors and ports. Finally, the fluid nature of the ocean allows energy to propagate, resulting in waves,
Coastal Ocean Current Monitoring Program

surges, and tides that can erode the shoreline in some places and result in sedimentation in others.

We lack an operational monitoring system, however, and seldom is information available when and where it is needed for management decisions. Further, the absence of ongoing information on changing conditions precludes credible characterization of coastal ocean regions. Assessment of the risk of portions of the coast to oil spills, assessment of spatial patterns of public health risk, and assessment of the likelihood that marine protected areas are self-sustaining are three examples of the need for ongoing and spatially extensive monitoring of changing coastal circulation.

A program to provide key information on currents

The Coastal Ocean Current Mapping Program (COCMP) is designed to provide the most critical information relevant to this challenge—information that can benefit those who use or manage the coastal ocean. The COCMP is being developed in response to Propositions 40 and 50, with a mandate to create an infrastructure for the “monitoring and mapping of coastal currents, marine habitats, and marine wildlife, in order to facilitate the protection and enhancement of resources within the coastal zone.” While the COCMP emphasizes coastal water quality, with a focus on providing critical information on the transport of pollutants it will benefit a wide range of state priorities, including improved management of wastewater, stormwater, navigation, civil response, anadromous fish recovery programs, marine protected areas, aquaculture, coastal development, desalination, and marine fisheries.

In parallel with the advances in understanding coastal circulation, there have been major advances in effective and reliable technology for field observations, in the ability to capture and manage these data, and in modeling coastal circulation with computers. We now have the ability to observe the complex and recurring patterns of coastal circulation continuously and over large areas, to make the data available in real time, and to capture variations in a model that can allow for short-term predictions. For example, continuous radar observations of surface flow patterns off Imperial Beach have shown how brief northward flow events may transport fecal bacteria from southern land-based sources, resulting in contamination of popular beaches. Real-time access to these data allows the County Health Officer to include this information in making decisions about when to post a beach and to do so prior to obtaining microbiological lab results a day after the event. Similar observations from the Sonoma helped with the risk assessment of installing an ocean outfall near the mouth of the Russian River.

The COCMP is a system of ongoing, immediate, statewide information on coastal currents directed at addressing several management needs. This operational system is centered on mapping and monitoring transport pathways in the coastal ocean. It is based on available technology, with an emphasis on mapping surface circulation patterns. This priority rests on the recognition that most management issues are affected by processes in surface waters, that effective technology is available to map and monitor surface currents, and that this new program would serve as a focus for integrating existing observation efforts. In parallel with the installation and operation of hardware, there will be a concerted effort in data management and the development of models and other products that most effectively meet management needs.
Coastal Ocean Current Monitoring Program

The COCMP is a coastwide expansion of successful pilot systems that have been developed off Imperial Beach, Point Conception, Monterey Bay, and Bodega Bay with application to the need for improved information on water quality, fisheries, marine protected areas, and coastal ecosystem function.

The ultimate measure of success for the COCMP is the degree to which management efforts become more effective in a wide range of coastal ocean management concerns. Thus, key players in this development are end-users of the information products, including state, federal and local agencies, as well as NGO's and private sector interests. COCMP products will deliver value in one of four ways:

- **Operational** data in support of day-to-day decisions, for example, beach closures, search and rescue, discharge management, oil spill response.

- **Policy** decisions based on aggregated data and assessment of connectivity patterns, including year-to-year changes, for example, evaluation of annual beach water quality scores, assessment of links between thermal discharge and shoreline, assessment of salmon hatchery success, estimates of larval dispersal for proposed marine protected area design.

- **Risk assessment** based on the probability of degraded waters affecting key environments, for example, probability of oil spill from a shipping lane contacting shore, probability of a marine protected area being influenced by increased irrigation runoff.

- **Retrospective analysis of events** – improved understanding of episodic events based on spatially extensive and temporally continuous nature of data, for example, harmful algal bloom event, beach contamination event, or sourcing an oil spill of unknown origin.

While the COCMP is complete in itself, with a well-defined focus on surface current transport patterns, in time it is likely to become a key component of a more comprehensive integrated ocean observing system (IOOS). Planning at the federal level is well advanced and Californian regional efforts are already also supported by federal agencies.

**The operational components and key products of the COCMP**

Detailed descriptions of the ocean observing systems that comprise COCMP are provided in the proposals submitted to the Conservancy. These two consortia have a common approach, built around the use of high frequency radar to monitor surface currents along much of the coast of California. In addition to long-range units for large-scale mapping (range of 150km), standard units will be used for higher resolution mapping of major metropolitan areas (range of 40-70km), and high-resolution units (range of 10-25km) may be used for detailed mapping of smaller regions within San Francisco Bay. All of these systems are land-based and provide hourly maps of surface current.

While the COCMP relies primarily on high frequency radar observations, the program will also collect data with other technologies, such as sub-surface current meters, GPS drifters, wave buoys, autonomous vehicles, and satellites. A further key operational component is the database and information system that will make data available in real-time, as well as archiving data for later analysis of aggregated data sets. This information system will also serve to integrate existing data streams from satellites and sources with COCMP data and models, including data on tides, sea level, coastal winds, river flow, surface temperature, chlorophyll, winds, and
Coastal Ocean Current Monitoring Program

currents.

An ongoing collaboration between COCMP, other scientists, and end users will apply observation data from the COCMP and other sources to the development of products that will be useful for a wide range of ocean applications. Proposed and potential products include:
- Hourly maps of currents and winds
- Real-time tracking of water-borne material
- Probability estimates of origin, destination, and/or current velocities
- Model-based prediction of distribution, retention and destination of pollutants
- Data and estimates of wave energy, littoral transport, and coastal flooding
- Mean circulation and connectivity patterns
- Indices for specific issues and specific locations related to beach water quality, shore erosion, coastal flooding, wastewater plumes, fisheries, and marine protected areas
- Raw data for input to navigation software (private sector interest)

The water quality benefits of the COCMP

Water quality problems continue to beset the coastal waters of California, in spite of major improvements in wastewater and stormwater management over the last few decades. The COCMP is designed to provide critical missing information that is needed to clarify the links between origin and impact of pollutants, and, in so doing, to help managers reduce sources and mitigate impacts.

COOMP products will support day-to-day decisions as well as policy or engineering responses based on long-term assessment of the risk of water quality impacts. There are two suites of possible management and policy options – actions designed to abate the source (improve water quality), and actions designed to protect the site of potential impact (mitigate impact).

Improving water quality: The COCMP products will be used extensively by organizations involved in policy and management of the following activities:
- Discharge of wastewater, specifically via large publicly owned treatment works (POTW’s) such as Orange County Sanitation District (OCSD).
- Discharge of stormwater, which is increasingly subject to state and federal regulations.
- Discharge of cooling water from coastal power plants, e.g., San Onofre nuclear plant
- Anticipated discharge of high-salinity waters from desalination plants
- Discharges, spills, and anti-fouling paints in port, harbor and boating waters
- Oil spills (and other potential spills from bulk carriers)
- Port and harbor dredging and beach nourishment
- Wildlife management as a source of fecal pollution (for example, seals, birds, terrestrial mammals)
- Agricultural practices and the water-borne delivery of nutrients, pesticides, animal wastes and herbicides to coastal waters
- Harmful algal blooms, with associated public health threats

Mitigating the impact of degraded water quality: Management actions can also be directed at mitigating impact, if there is adequate information on the place and time of impact. Information
from the COCMP will allow for rapid-response actions as well as policies that can reduce the impact of known water quality problems. COCMP products will be used by organizations involved in management of the following activities:

- Water-contact recreation, such as swimming, surfing, kayaking and wading. Presently, postings of water quality hazards occur 1-2 days after observation of high levels of fecal indicator bacteria.
- Mariculture harvest. Shellfish farms, such as those in Tomales and Humboldt Bays, are affected by high levels of pathogens (fecal indicator bacteria) and metals.
- Conservation and biodiversity, specifically in the siting of marine protected areas. Management responses can include public warnings (such as for beach contamination), temporary shutdown of mariculture production, and deployment of booms to deflect oil spills from high-priority areas. Further, the information promised by the COCMP raises the possibility that uses of the coastal ocean could be more effectively zoned and sited to preclude negative interactions among beneficial uses of coastal waters.

Other benefits of the COCMP

In addition to the value of the COCMP in addressing water quality issues, the planned system of observations and information products will also yield substantial value in other state priorities. These collateral benefits are most notable in ecosystem management, marine life protection, fisheries, navigation, port management, search and rescue, oil spill response, and shoreline erosion.

Marine populations — fisheries, marine conservation: Data from the experimental surface radar systems off Bodega Bay and Santa Barbara are already being used in addressing fisheries issues, including key questions about salmon populations and salmon smolt survival, as well as questions about dispersal of sea urchin and crab larvae. The COCMP will make data and relevant information products available for more regions along the coast. Present and future efforts in combining COCMP and fisheries management involve both the California Department of Fish and Game and the National Marine Fisheries Service. Relevance of COCMP products will extend to other important fisheries, such as rockfish populations, as well as to defining essential fish habitat and productivity patterns.

COCMP products will also be used in developing effective marine life protection (conservation) strategies through greater understanding of how currents influence the dispersal of early life stages (eggs, larvae and juveniles). For both fisheries management and conservation management, the continuity of COCMP data in space and time will be valuable in the analysis and understanding of episodic events where altered circulation patterns may explain observed changes in population levels (for example, population die-offs during El Niño events) or mortality events (such as sea lion mortality due to alongshore propagation of a toxic algal bloom).

Navigation: Information on surface currents promises a variety of benefits to shipping and boating in California. With the planned real-time availability of hourly maps of surface current, ship captains and boat operators will be able to take currents into account in entering and leaving
Coastal Ocean Current Monitoring Program

harbors as well as in transit. This information can be expected to increase the safety and efficiency of maritime operations.

Rapid response: The operational nature of the COCMP promises to be invaluable in improved and more cost-effective response to catastrophe and unanticipated events. In past ocean catastrophes, search and rescue operations (or response to oil spills) have been severely constrained by a lack of information on surface currents and the likely drift of lifeboats, wreckage or oil slicks. Through providing this information continuously, the COCMP will lead to a much-improved response of emergency teams. For example, a recent analysis concluded that Coast Guard search and rescue operation efficiency doubled when aided by high frequency radar surface current mapping.

Shorelines: In addition to improved estimates of nearshore transport of pollutants, COCMP-derived information on waves will be of great value in reducing risk and loss associated with shore erosion and coastal hazards. In particular, during periods of large waves and high tides, real-time COCMP information will provide improved warnings of potential cliff failures and coastal flooding. Further, COCMP will result in improved assessment of the impact of plumes of fine sediment following beach nourishment activity.

Maximizing user relevance and societal benefit

While the potential value of COCMP observations may be apparent to managers of coastal ocean resources, improved management, policy, and stewardship depends on converting COCMP observation data into reliable and strategic products. Working groups of users and COCMP scientists will shepherd the development and testing of key products and expedite the use of these products in management and policy decisions by state, local and federal agencies. This collaboration of information providers, information interpreters, and information users will be a permanent dimension of the COCMP and ensure an ongoing contribution of the COCMP to sustaining and enhancing the benefits of the coastal ocean for all Californians.

This document was prepared by John Largier (SIO/UCSD), with input from participants in COCMP consortia, Coastal Conservancy staff and consultants, and information users statewide (June 2004).
HF Radar systems use high-frequency radio to measure ocean surface currents. Two compact, whip antennas are placed at the coast, mounted no more than 50 m apart, and connected via cables to electronics that operate within an environmentally controlled shelter housing a personal computer and processing unit.

The Acoustic Doppler Current Profilers (ADCP) are moored in the water column and use underwater sound to measure vertical profiles of horizontal currents.
Each HF Radar unit produces a map of ocean current speeds approaching (or receding from) the radar site along radial lines emanating from the site. Because ocean current velocities are vector quantities, data from a single site are not sufficient to map the velocity field. To obtain surface current estimates, two or more sites are needed to provide overlapping speed estimates from different observation angles.
STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2004 - 0012

AUTHORIZING EXECUTION OF AN INTERAGENCY AGREEMENT BETWEEN
THE STATE WATER RESOURCES CONTROL BOARD AND THE CALIFORNIA STATE
COASTAL CONSERVANCY (SCC) TO PROVIDE FUNDING SUPPORT FOR
THE COASTAL OCEAN CURRENTS MONITORING PROGRAM (COCMP)

WHEREAS

1. California voters enacted Proposition 40 in March 2002, the “California Clean Water, Clean
   Air, Safe Neighborhood Parks and Coastal Protection Act of 2002.” The “Watershed, Clean
   Beaches and Water Quality Act” appropriated $7 million from Proposition 40 to the SCC for
   the “purchase and installation of equipment to monitor and map coastal currents”;

2. The SCC is providing an additional $7 million from its Proposition 50 funding for the
   COCMP. New 2003 legislation (AB 847, Pavley, signed by Davis) clarifies SCC’s authority
do projects that “provide for monitoring and mapping of coastal currents, marine habitats,
and marine wildlife, in order to facilitate the protection and enhancement of resources within
the coastal zone.” In regards to such projects, “the Conservancy shall consult with the State
Water Resources Control Board in the development of the project, or grant, to ensure
consistency with Chapter 3 (commencing with Section 30915 of Division 20.4 of the Public
Resources Code (the Clean Beaches Initiative Grant Program))”;

3. Proposition 50 (Water Code Section 79542) provides $100 million for financing projects that
restore and protect the water quality and environment of coastal waters, estuaries, bays and
near-shore waters, and groundwater. The 2003-04 state budget for the State Water Resources
Control Board (SWRCB) provides $7 million in Proposition 50 funds for the California
Ocean Data Observing System (CODOS) to improve the monitoring of coastal waters.
Although the program names are slightly different, the intent of the drafters of that language
was that this $7 million was to be contributed toward the COCMP system that the SCC had
initiated. Furthermore, as AB 847 requires, the SCC shall consult with the SWRCB in
development of the COCMP;

4. The SCC has initiated a two-phase request for proposal process (concept and full proposals).
The SCC is working with all nine Regional Water Quality Control Boards as well as staff
from the SWRCB on this process; and

5. One of the essential objectives of the international, national, and state initiatives for ocean
observing and monitoring systems is that they be integrated. Integration would be more
difficult if the SWRCB decides to initiate a separate program. Since the SCC’s selection
program is considerably more advanced than the SWRCB’s efforts, and integration is more
likely if it is managed by one agency, staff recommends that the SWRCB approve an
interagency agreement that would delegate project selection and management of these funds
to the SCC.
THEREFORE BE IT RESOLVED

That the SWRCB authorize the Executive Director or designee to negotiate and execute an interagency agreement with the SCC to provide funding support for the COCMP in an amount not to exceed $7 million for Fiscal Year 2003-04.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on March 18, 2004.

[Signature]
Debbie Irvin
Clerk to the Board
June 10, 2004

Mr. Paul Morabito
Chair, California Coastal Conservancy
1330 Broadway
Oakland, CA 94612-2530

Via Facsimile: (510) 286-3840

Re: Coastal Ocean Currents Monitoring Program: Support

Dear Mr. Morabito:

I am writing in support of the proposed State Coastal Conservancy funding of the Coastal Ocean Currents Monitoring Program (COCMP). Ocean observing system development is a high priority for the National Oceanic and Atmospheric Administration and for groups such as The Ocean Conservancy that rely on good science for sound decisionmaking. The relevance of ocean observing as a critical tool in managing marine resources has recently been described in the U.S. Commission on Ocean Policy Report and Governor Schwarzenegger’s June 3, 2004 response letter to the Commission on the Report. The COCMP figured prominently in the Governor’s letter and action plan for follow-up on the Report’s recommendations.

COCMP will form the basis for the state’s ocean observing system, which will integrate the efforts of marine resource agencies such as the National Marine Sanctuaries with university researchers, private industry and the public to use our ocean and coast sustainably. Ocean observing systems such as COCMP will help guide the recovery of marine and anadromous fisheries while assisting other areas of concern such as pollution and oil spill detection and response, sediment management, and search and rescue - all issues of joint responsibility between the state and federal government. Moreover, COCMP will position California well to be able to obtain millions in federal funding for ocean observing that is widely expected to result from the recommendations of the Commission’s Report.

I urge your support for this key proposal. Please do not hesitate to contact me if you have any questions.

Sincerely,

[Signature]

Linda Sheehan
Director, Pacific Region Office
Vice-Chair, U.S. Global Ocean Observing System Steering Committee
Mr. Paul Morabito  
Board Chair, California Coastal Conservancy  
Oakland, CA 94612  
  
Re: Coastal Ocean Currents Monitoring Program Support Letter  
  
Dear Mr. Morabito:  
  
I am writing in support of the proposed State Coastal Conservancy funding of the Coastal Ocean Currents Monitoring Program (COCMP). The Pacific Coast Federation of Fisherman’s Associations is supportive of ocean observing system development. Pietro Parravano, PCFFA past president and PEW Ocean Commissioner, provided testimony at the recent California Ocean Summit in support of ocean observing systems.  
  
On a national level I have been involved in developing negotiations for a national trust fund to support partial sustained funding of ocean observing systems such as COCMP. Our staff is assisting the Conservancy in developing useful products that will be necessary for “end-user” participation so that real and meaningful applications flow from COCMP. In this context we see COCMP as being unique as a tool providing useful information for fisheries recovery and management where the fishing industry is an active participant in developing and using resource information.  
  
California is posed to become the leader in ocean observing and COCMP funding is the first step in creating a state-wide coastal ocean monitoring program. Please do not hesitate to contact me if I can be of further assistance.  
  
Sincerely,  

W.F. “Zeke” Grader, Jr.  
Executive Director  
  
WWW.PCFFA.ORG  
  
11 Office of the President  
235 Sparse Street  
Half Moon Bay, CA 94019  
Tel: (650) 726-1607  
Fax: (650) 726-1607  
  
June 10, 2004  

PACIFIC COAST FEDERATION of FISHERMEN'S ASSOCIATIONS  
  
Please Respond to:  
California Office  
PO. Box 29370  
San Francisco, CA 94129-0370  
Tel: (415) 561-5080  
Fax: (415) 561-5464  
  
Northwest Office  
PO. Box 11170  
Eugene, OR 97440-3370  
Tel: (541) 689-2000  
Fax: (541) 689-2500  
  
STEWARDS OF THE FISHERIES
EXHIBIT 6: Letters of Support

State Water Resources Control Board

Funding An Integrated Coastal Ocean Observation System In Southern California

Whereas, by passing Proposition 68, California voters recently agreed to make a significant investment in the infrastructure to improve water quality;

Whereas, new developments in technology can now provide water quality monitoring, with a solid scientific basis for evaluating the effectiveness of present management strategies and design new approaches;

Whereas, Assembly Bill 253, the Watershed, Clean Beaches, and Water Quality Act directs the State Coastal Conservancy to appropriate $7 million of Proposition 68 funding for the development and installation of this new ocean observation system to predict and determine areas of contamination and pollution in real-time;

Whereas, an ocean observation system based on the new sensor technology will provide real-time, continuous measurements as well as a state-of-the-art data management and monitoring system not previously available to the water-quality community;

Whereas, this system will serve as a risk management and early warning tool, as well as a platform for the development of next-generation sensors and scientific discovery;

Whereas, strategically placing these state funds in the southern California region will put California in the forefront of a national effort to develop a network of regionally based ocean observation systems;

Whereas, by demonstrating an organized initiative and early investment in an ocean observation system, southern California will qualify for up to $20 million in federal funding;

Whereas, Federal agencies recognize Southern California as an essential gathering place due to its significant economic and public health needs of the region, the demonstrated organized use area for environmental collaboration, and foundation of expertise to support an Integrated Coastal Ocean Observation System;

Whereas, the State Water Resources Control Board selected southern California to deploy an ocean observation system pilot project in Imperial Beach, funding last year through the Governor’s Clean Beaches Initiative;

Whereas, the California Environmental Protection Agency recognizes the extension of this pilot project throughout the southern California coast to be the logical and appropriate extension of the Governor’s Clean Beaches Initiative;

Whereas, the State of California, Cal EPA, and the State Water Board recently recognized Scripps Institution of Oceanography for its successful leadership in integrating and deploying the latest technology as well as building the collaborative partnerships for this new ocean observation system in Imperial Beach;

Whereas, Scripps Institution of Oceanography is uniquely qualified to lead the effort in deploying an integrated coastal ocean observation system and building the collaborative network to support a southern California-wide initiative, based on a century of proven leadership in building successful public partnerships, developing technological innovation and expertise, and world-renowned scientific experience;

Therefore, it is resolved that we, the undersigned, urge the State Coastal Conservancy to appropriate $7 million toward a Scripps Institution of Oceanography-led effort to develop an integrated ocean observation system in the Southern California coast.
EXHIBIT 6: Letters of Support

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
Santa Cruz Laboratory
110 Shaffer Road
Santa Cruz, California 95060

April 22, 2004

Dr. Toby Garfield, Visiting Faculty
Moss Landing Marine Laboratories
8272 Moss Landing Road
Moss Landing, CA 95039

Dear Dr. Garfield:

This letter is to offer my enthusiastic support for the two complementary proposals being submitted by a northern and central California consortium and a southern California group to the California Coastal Conservancy to install high frequency (HF) radar towers to measure and provide real-time information on surface currents along the California coast. Below I lay out the reasons that the data and information products would strongly support the research mission of my organization.

The National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA), is responsible for the conservation and management of fishery and protected resources within the U.S. federal waters. The Santa Cruz Laboratory is one of three facilities that comprise the Southwest Fishery Science Center, and conduct research in support of the agency mission in California.

The research program of the Santa Cruz Laboratory is focused in two primary areas: 1) biological and economics research supporting the restoration and recovery of threatened and endangered salmonids in California, e.g., distribution and abundance, population dynamics, genetics, ocean and estuarine ecology of juveniles, and ocean habitat utilization by adults; 2) the biological basis of rational management of west coast groundfish resources, e.g., population dynamics and stock assessment, early life history and recruitment processes, habitat ecology and marine protected areas (MPAs).

The installation of high frequency (HF) radar towers to measure and provide real-time information on surface currents along the California coast could provide information that is potentially extremely valuable to several components of both program areas. An important objective of both programs is to understand the effect of variation in the ocean environment on the demographic processes and rates that determine population productivity, and incorporate this knowledge into modeling to understand the effects of different levels and strategies of fishing, project future yields and assess extinction risk. For example, research on the ocean ecology of juvenile salmon seeks to understand how coastal oceanography influences distribution, abundance, feeding, growth, survival and migration of out migrant juvenile chinook salmon from the Central Valley of California. Research
on early life history and recruitment processes of west coast groundfish aims to understand how the ocean environment of California may regulate survival and recruitment of young life stages to adult stocks and the fisheries. Detailed information on coastal circulation from high-frequency radar towers would clearly complement our efforts, and potentially lead to improved understanding of recruitment dynamics and prediction of the strength of incoming year classes to valuable fisheries. An important aspect of MPA research where detailed knowledge of coastal ocean circulation is essential is determining ideal reserve siting and size, both of which require knowledge of source-sink dynamics of larvae and settlers as well as dispersal distance.

I think you can understand why I am enthusiastic in my support of the proposed program, and I hope my comments are useful.

Sincerely,

Churchill B. Grimes, Ph.D.
Director
NMFS Santa Cruz Laboratory
April 17, 2003

Paul Morabito
Chair, State Coastal Conservancy
13330 Broadway, 11th Floor
Oakland, CA 94612

Attn: Sam Schuchat

Re: Prop 40 funding / Southern California Coastal Ocean Observation System

As you are aware the State Coastal Conservancy currently has $7 million to allocate toward ocean monitoring equipment. I urge the State Coastal Conservancy to take a strategic approach to allocating these funds in order to position the state to be on the forefront on a national effort to develop a network of Ocean Observing Systems. A significant regional investment and timely allocation are critical.

In the coming weeks the establishment of an Integrated Ocean Observing System will become a national priority as Congress responds to the recommendations of the Pew Ocean Commission and the Presidential Commission on Ocean Policy. The central theme for each commission will be an aggressive policy agenda for management of our oceans and coastal waters. The development of a national network of Integrated Coastal Ocean Observation Systems will be one of the core recommendations highlighted in each. Legislation to support the development of a national network will require federal funding be directed towards regions that have deployed systems that have proved to be operational.

Systems that can strongly demonstrate multi-institutional collaboration, a wide range of political support and the technical capability to integrate end users, are strong candidates for an early investment of up to $50 million in federal support.

Scripps Institution of Oceanography (SIO) has been leading an effort to organize the Southern California region to take advantage of this opportunity and move California to the forefront of a growing national priority. They have recently organized NINE other
academic institutions to join the SCCOOS partnership by signing an MOU formally recognizing this regional partnership. This Southern California partnership has the potential to integrate and make more accessible, tons of millions of dollars of coastal research currently being done in Southern California.

Last fall a legislative workshop held at SIO which discussed the need to bring an Integrated Coastal Ocean Observation System to Southern California. This workshop brought together 62 participants representing elected officials, academics, agency representatives, and NGO's in support of deploying a SCCOOS – ASAP! Over twenty agencies and organizations have now adopted official resolutions of support urging the State Coastal Conservancy to allocate the $7 million toward the instrumentation of the Southern California Bight. Representatives of NOAA have stated that this unprecedented level of coordination and support for an ocean observation system serves as a model for our nation.

Southern California has not only demonstrated the ability to pull together collaborative partners, it has also demonstrated a capability to deliver. A state-funded pilot project for an integrated ocean observation system in Imperial Beach has been recognized by state, federal, regional and local agencies as a model for deploying an end-user driven Ocean Observation System. This Clean Beach Initiative funded program is a partnership with the City of Imperial Beach, the City of Coronado, the Regional Board, the County of San Diego and Scripps Institution of Oceanography.

March 31 Federal agencies will hold a national meeting to roll out their process for selecting regional pilot projects to become part of a national network. The funding process is designed to spur regional collaboration and local investment by offering significant financial incentives for regions that meet the national criteria.

With many regions competing for these federal funds, it is essential that California spend the $7 million strategically to enhance California's competitive advantage. There is an unprecedented opportunity for California to use this one-time allocation of Prop 40 funds to leverage significant, long-term federal resources. I hope the SCC will show its leadership in directing $7 million in Prop 40 funding to support the SCCOOS sooner rather than later.

Sincerely,

Denise Moreno Ducheny
Senator, 40th District
Dr. Toby Garfield  
Visiting Faculty  
Moss Landing Marine Laboratories  
8272 Moss Landing Road  
Moss Landing, CA 95039  

Dear Toby:  

On behalf of the Monterey Bay Crescent Ocean Research Consortium (MBCORC), I write in enthusiastic support of the CeNCOOS proposal to the Coastal Ocean Currents Monitoring Program, which would provide for implementation of high frequency radar along the Central and Northern California coast. The real-time and near-real-time data that the high frequency radar and associated technologies will provide on coastal surface currents will be essential to understanding the dynamics along the Central and Northern California coast. The proposed data products focusing on coastal water quality, oil spill response, navigation safety, and marine resource management will strongly support the missions of many federal, state, regional, and local agencies, as well as research and academic institutions and non-profit foundations.  

The mission of MBCORC is to promote the scientific understanding of coastal and marine systems and to facilitate the application of that knowledge for public policy, environmental awareness, and decision-making. MBCORC achieves its objectives by creating, coordinating, promoting, and endorsing research, education, and outreach activities, using the Monterey Bay as a natural laboratory. The members of MBCORC include 26 organizations (http://www.mbcorc.org) around the Monterey Bay involved in ocean research and education.  

The goals of your project are well aligned with MBCORC's mission. We are therefore strongly in support of this proposal. We look forward to working with you throughout this worthy endeavor.  

Sincerely,  

Marcia McNutt  
Chair, MBCORC
EXHIBIT 6: Letters of Support

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT
Cordell Bank
National Marine Sanctuary
P.O. Box 159
Olema, CA 94950
Ph: (415) 663-0314
Fax: (415) 663-0315

June 10, 2004

Mr. Paul Morabito
Board Chair, California Coastal Conservancy
Fax: (510) 286-3840

Re: Coastal Ocean Currents Monitoring Program Support Letter

Dear Mr. Morabito:

I am writing in support of the proposed State Coastal Conservancy funding of the Coastal Ocean Currents Monitoring Program (COCMP). Ocean observing system development is a high priority for the National Oceanic and Atmospheric Administration. The relevance of ocean observing as a critical tool in managing marine resources has recently been described in the U.S. Commission on Ocean Policy Report and Governor Schwarzenegger’s June 3, 2004 letter to the Commission in California’s response to the Report. COCMP figured prominently in the Governor’s letter and action plan.

COCMP will be the state’s foundation in developing an ocean observing system in concert with all the marine resource agencies, such as the National Marine Sanctuaries, of which there are four in California.

We share the view that ocean observing systems, such as COCMP, will help guide the recovery of marine and anadromous fisheries while assisting other areas of concern such as pollution and oil spill detection and response, sediment management, and search and rescue— all issues of joint responsibility between the state and federal government.

Please do not hesitate to contact me if I can be of assistance in the Conservancy’s endorsement and support of COCMP.

Sincerely,

Dan Howard, Manager
Cordell Bank National Marine Sanctuary