## I. Team Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Member Type</th>
<th>Email</th>
<th>Contact Phone</th>
<th>Responsible for what part</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul da Silva</td>
<td>Team Member</td>
<td><a href="mailto:Paul.daSilva@marin.edu">Paul.daSilva@marin.edu</a></td>
<td>485-9542</td>
<td>leader</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## II. Program Review Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Committee (Chairs)</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris Schultz</td>
<td>Curriculum Committee Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blaze Woodlief</td>
<td>Educational Planning Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-Anne Chernock and Erik Dunmire</td>
<td>Planning and Resource Allocation Committee Co-Chair/Academic Senate President</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yolanda Bellisimo</td>
<td>Facilities Committee Co-Chairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nick Chang</td>
<td>Planning and Resource Allocation Committee Co-Chair/Instructional Equipment Committee Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sara McKinnon and Becky Brown</td>
<td>Program Review Committee Chair and SLO Coordinators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris Schulz</td>
<td>Student Access and Success Committee Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Irvine</td>
<td>Tech Committee Chair</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## III. Vice President of Academic Affairs

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nick Chang</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## IV. Board of Trustees President

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eva Long</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Instructions: Use this form to quickly outline your program at College of Marin. Briefly answer each of the questions and use bullet points whenever possible. Provide any attachments that substantiate or expand on the questions below.

I. Program Definition
Outline the unique qualities that define the importance of your program.

Environmental Science is an interdisciplinary program that teaches students how to solve environmental problems. It includes general grounding in the theory and practice of environmental science as well as first-hand experience with local environmental problems in Marin County. It is the response of the College of Marin to the increasing interest of students in the field and to the predictions that the greatest increase in jobs in the future will be in the area of environmental science.

Completion of the program at present leads to a certificate that can enhance a degree in another discipline to help students gain entry to environmental science programs in other institutions as well as find employment in the field of environmental science.

II. Program Purpose
Pathway:
Briefly describe how your program fits into the pathways you have chosen.

Completion of the program at present leads to a certificate that can enhance a degree in another discipline to help students gain entry to environmental science programs in other institutions as well as find employment in the field of environmental science.

III. Students Served
Briefly outline what students are served in your program.

Three main groups of students are served in this program. One is a group of transfer and general education students interested in environmental science. Another is a group of returning or re-entry students interested in changing careers. A third is a group of lifelong learners just wanting to know more about the environment.

IV. Program History
Briefly outline the recent history of your program.

In the period 1996-1998, the first environmental science classes were cross-listed in the Biology and Geology disciplines. In 1999, documentation was prepared for the A.S. degree in environmental science, but for various reasons, this was never submitted to the state Chancellor's Office. In the 2004-2005 academic year, a community advisory committee was convened to decide whether an A.S. degree in environmental science was still a good idea. In its report, approved in June, 2006, the consensus of the committee was that while demand for experience in environmental science was increasing in transfer institutions and in the job market, the strongest candidates for acceptance and hiring showed general experience in environmental science as well as experience in another recognized discipline. Thus the recommendation was that the best immediate action to take was to establish at least one certificate in environmental science using as a base the existing courses. It was also strongly suggested that an internship course be added as a keystone course, since almost all people working in environmental science gain essential experience and make important contacts through internships. It was agreed that the college could then later adapt to changing conditions by additional courses and certificates as necessary. Thus the Basic Certificate in Environmental Science, a skills certificate, was designed in 2006 and approved in 2007. Interest in the certificate has grown, despite the near-impossibility of finding it in the college catalog.

Attachments:
List and briefly describe any attachments
Five Pathways
A description of how you serve students in the five pathways as described in the Educational Master Plan.
Environmental-Science-2009

I. Please refer to the table of estimates of how many students are in each pathway for your program/discipline over the past four years.

1. Basic Skills
Students on the Basic Skills pathway seek to improve day-to-day functioning, enhance job performance, enter new careers, and/or acquire pre-collegiate fundamental skills in order to successfully complete college level courses. The Basic Skills pathway includes English as a Second Language courses offered in both credit and non-credit divisions as well as courses in developmental mathematics and English as well as basic skills courses in computers and Library.

Our program serves students in this pathway: None

2. Career and Technical Education
Students on the Career and Technical Education pathway pursue knowledge, technical and skill training necessary for career placement, career advancement and career changes or for creative endeavors that require technical skills. Their educational goals are either an associate degree or certificate. For some degrees/ certificates, such as Nursing, the course of study is defined by external professional regulations or licensing criteria.

Our program serves students in this pathway: To a great extent/ a majority of the students

3. Cultural Enrichment
Students on the Cultural Enrichment pathway focus on acquiring and expanding aesthetic abilities. Students broaden their intellectual and artistic skills through participation in creative opportunities including exhibitions, performances, or publishing work.

Our program serves students in this pathway: A good proportion of the students, but not a clear majority

4. Lifelong Learning
Students on the Lifelong Learning pathway focus on intellectual and physical enrichment. Some Lifelong students may have already completed degrees and/or may be in significantly advanced positions in their careers.

Our program serves students in this pathway: A good proportion of the students, but not a clear majority

5. Transfer
Students on the Transfer pathway seek successful matriculation from College of Marin to four-year institutions, universities, colleges or specialized educational institutions by completing courses that fulfill requirements for the baccalaureate degree or admission to specialized programs such as nursing. In the process of completing transfer requirements, these students may also earn an associate degree.

Our program serves students in this pathway:
Transfer GE: Some students
Transfer Major: None

II. What are your program’s goals for each pathway?
The program's main goals are to give students the capability to analyze and solve environmental problems.
III. How does your program/discipline help students meet these goals?
The program offers classes that give overviews and theoretical background as well as exposure to local environmental issues and efforts to solve environmental problems.

IV. How do you measure your success?
Success is measured by enrollments in classes and completion of the certificate.

V. How do you make sure your students are able to get through your program in a timely fashion?
We attempt to offer the complete set of classes within a two- or three-year period.
I. Access
Based on the enrollment numbers and demographic breakdown for your courses, what significant factors or barriers are influencing student access to your courses or program?

The main barrier to access is lack of visibility of the program, since it is not listed prominently anywhere. This has been verified by a survey of students carried out last year.

II. Student Success
Based on the student success and retention rates breakdown for your courses, what significant factors or barriers are influencing student success in your courses or program measured by completion of course and grade earned?

Note: Success Rate is the percentage if students who received a passing grade of A, B, C, or P at the end of the semester.

Note: Retention Rate is the percentage of students retained in a class at the end of the semester. In Progress and Report Delayed grades are excluded. Cancelled classes and classes with no grades shown are excluded.

Students tend to be very successful in these courses.

III. Student Retention
Based on the student success and retention rates breakdown for your courses, what significant factors or barriers are influencing the ability for the student to succeed at more advanced courses for which your course is a prerequisite.

IV. Improving Student Success and Retention
What key factors would further improve your student success and retention or support your current level of success? Please check any applicable statements below and then provide additional details/explanation on your choices below.

- [ ] Access to student support services (counseling, tutoring, etc.)
- [x] Curriculum change
- [ ] Course scheduling for students needs
- [ ] New offerings/additional sections
- [ ] Articulation for transfer or COM GE
- [x] Recruitment/outreach
- [ ] Student/job market demand change
- [ ] Faculty availability
- [ ] Facilities & technology
- [ ] Professional development

Other:

V. Please explain and provide additional details regarding your choices above:

A main recommendation is to cross list all the courses (now listed as Biology or Geology) as Environmental Science. This has been done at other institutions with success. Another recommendation is to seek state approval for the certificate.
Facilities Questionnaire
Environmental-Science-2009

What are the existing facilities issues that impact student access and success, or health and safety? (address any of the following: Size, location, conditions, maintenance, features, a/c, lighting, adjacencies, other.)

Environmental science classes need classrooms inside buildings, but they also need outdoor classrooms -- plants, animals, water and rocks on campus and in rivers and streams, mountains, forests and oceans near campus!
Curriculum
Environmental-Science-2009

1. Course Outlines of Record must be updated every 5 years to remain current for content, texts, student learning outcomes as well as for articulation purposes. Are you aware of the dates on your course outlines? If not, contact OIM to check. If you have courses that are over 5 years old, are you planning on updating them? Please list.

We have encouraged a continuous course outline revision process and are happy to expedite revision of any outlines needing immediate attention. We have been awaiting the online availability of all course outlines to facilitate revisions.

2. Are you planning on changing, updating or revising and degree or certificate requirements? If so, please explain how it will improve student learning, student success and/or access.

We plan on cross-listing all courses under the Environmental Science discipline and on seeking state approval for the certificate in order to improve student access and success.

3. Are you collaborating (or thinking about collaborating) with other departments to develop joint curriculum for learning communities? If so, please describe briefly and explain how it will improve student learning, student success and/or access.

We would like to join with others in building a more comprehensive environmental science that joins more departments and disciplines together.

4. Do you plan to develop any new curriculum? If so, please describe briefly and explain how it will improve student learning, student success and/or access.

We do not plan on developing new curriculum this year.

5. Do you plan to develop any new Distance Ed courses or develop Distance Ed versions of existing courses? If so, please describe briefly and explain how it will improve student learning, student success and/or access.

We do not plan on developing new Distance Ed courses or Distance Ed versions of existing courses.

6. Do you plan to add or increase your material fees for any of your classes? If so, please list the classes and the proposed new or revised material fees for the respective classes.
Student Learning Outcomes
Environmental-Science-2009

Five College Learning Outcomes:
1. **Written, Oral and Visual Communication:** Communicate effectively in writing, orally and/or visually using traditional and/or modern information resources and supporting technology.
2. **Scientific and Quantitative Reasoning:** Locate, identify, collect, and organize data in order to then analyze, interpret or evaluate it using mathematical skills and/or the scientific method.
3. **Critical Thinking:** Differentiate between facts, influences, opinions, and assumptions to reach reasoned and supportable conclusions.
4. **Problem Solving:** Recognize and identify the components of a problem or issue, look at it from multiple perspectives and investigate ways to resolve it.
5. **Information Literacy:** Formulate strategies to locate, evaluate and apply information from a variety of sources - print and/or electronic.

I. Degrees and Certificates
1. What degrees and certificates does your discipline offer?
   We offer the Basic Certificate in Environmental Science.

2. Keeping in mind the five College Learning Outcomes above as well as what your discipline specifically requires of your graduating students, what should students be able to do when they have completed your discipline’s requirements for each degree or certificate?
   Students completing the certificate should be able to recognize, analyze and help to solve environmental problems.

3. How do students in your program demonstrate that they meet each of the college-wide learning outcomes? What courses, activities, and/or projects are students required to complete that relate to each outcome?
   i. Written, Oral and Visual Communication

   ii. Scientific and Quantitative Reasoning

   iii. Critical Thinking

   iv. Problem Solving

   v. Information Literacy

II. General Education:
1. Does your discipline offer any classes which count for general education requirements?

2. Which General Education courses in your discipline address the each of the five College Learning Outcomes? Please list courses for each of the following:
   i. Written, Oral and Visual Communication

   ii. Scientific and Quantitative Reasoning
iii. Critical Thinking
iv. Problem Solving
v. Information Literacy

III. Course Level Outcomes:
1. Do all of your Course Outlines of Record include Student Learning Outcomes? If not, are you revising them?

2. What percentage of faculty members in your discipline include SLOs in their course syllabi?

3. Assessment:
i. How often do you assess these SLOs?

3. Assessment:
ii. In the last two years every discipline developed SLOs specifically related to College Learning Outcome #3: Critical Thinking. Have you assessed this or any of the stated Student Learning Outcomes in your course outlines over the last year? If so, please summarize the results.

3. Assessment:
iii. What improvements have you made or do you plan to make in the future?

3. Assessment:
iv. What do you plan to assess this year? Who will you assess? How will you assess?
### Faculty Members
#### Environmental-Science-2009

**I. Program Faculty**
List of Faculty Members and Total faculty Units separately for Fall, Spring and Summer

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
<th>Year Retired:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agudelo Silva</td>
<td>Fernando</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Status:**
Shared W/other program(s):
Full-time, probationary: No

<table>
<thead>
<tr>
<th>Summer 2009 TU</th>
<th>Fall 2009 TU</th>
<th>Spring 2010 TU</th>
<th>Reassigned (Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
<td>0.0</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Years of Service:**

**Specialty:**
List all areas of specialty and/or equivalency

**Leadership:** List involvement in committees or other service
see biology

---

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
<th>Year Retired:</th>
</tr>
</thead>
<tbody>
<tr>
<td>da Silva</td>
<td>Paul G.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Status:**
Shared W/other program(s):
Full-time, tenured: Yes

<table>
<thead>
<tr>
<th>Summer 2009 TU</th>
<th>Fall 2009 TU</th>
<th>Spring 2010 TU</th>
<th>Reassigned (Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
<td>0.0</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Years of Service:**

**Specialty:**

**Leadership:** List involvement in committees or other service
see biology

---

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
<th>Year Retired:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foss</td>
<td>Don</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Status:**
Shared W/other program(s):
Full-time, tenured: Yes

<table>
<thead>
<tr>
<th>Summer 2009 TU</th>
<th>Fall 2009 TU</th>
<th>Spring 2010 TU</th>
<th>Reassigned (Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
<td>0.0</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Years of Service:**

**Specialty:**
Geology
Leadership: List involvement in committees or other service
see geology

List of Faculty Members and Total faculty Units separately for Fall, Spring and Summer

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
<th>Year Retired:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mueller</td>
<td>Joe</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Status:  
Shared W/other program(s):  
Full-time, tenured  
Yes

Summer 2009 TU  
Fall 2009 TU  
Spring 2010 TU  
Reassigned (Total)

5  
00.000

Years of Service:  
Specialty:  
Biology

Leadership: List involvement in committees or other service
see biology

List of Faculty Members and Total faculty Units separately for Fall, Spring and Summer

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
<th>Year Retired:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith</td>
<td>Vic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Status:  
Shared W/other program(s):  
Adjunct, ETCUM  
Yes

Summer 2009 TU  
Fall 2009 TU  
Spring 2010 TU  
Reassigned (Total)

5  
00.000

Years of Service:  
Specialty:  
biology

Leadership: List involvement in committees or other service
see biology

Additional Teaching Unit Requests

III. FT Faculty Needs (Please fill this out ONLY if you are stating a need for new full time faculty in your area.)
1. Please indicate if there are NO FT faculty in your discipline. Please provide data regarding the length of time this discipline has been without a full time instructor.

2. Non-availability of part-time instructors in a subject area. Please provide evidence demonstrating the difficulty in finding part-time instructors to teach in the subject area.

3. RETCUM Faculty: How many FT faculty have retired in the past ten years. How many units are now taught by RETCUM faculty each year?

4. New FT Faculty: How many NEW FT faculty have been hired in past 10 years? Please list each faculty name and the year of employment. If this instructor is shared with another department, please list the equivalent FTE% for your department. Please list instructional equivalencies as necessary and
if faculty member was the result of retreat rights.

5. Reduction in department TUs as a result of FT Faculty retirements or other significant causes? Please provide data that illustrates a change in teaching unit allocation as a direct result of FT faculty retirements within your department and how this may change in the coming year(s).

6. Other reasons: Have there been other causes for a reduction in units in your discipline? If so, please explain and provide evidence.

7. Changes in Student Demand: Recent or forthcoming growth as a result of added sections due to enrollment demands. Provide evidence that illustrates the need for additional faculty due to increased student demand such as numbers of sections added and/or courses with waitlist totals showing a need for additional sections. What is the % of FTEF for this increase in units? If there has been a decline in student growth, please explain why.

8. Current of forthcoming changes that illustrate the immediate need of additional FT faculty within this department. Please outline all relevant circumstances that justify the priority of a FT hire in addition to those already outlined above. Consider changes in the field, changes in the job market and population shifts.

9. Program Review Findings: Indicate what trends you identified in your last program review that support the need for full time faculty hires. Tie these to the department and college mission.

10. Other considerations: Include such information as matriculation needs, changes in student demand or community and job market needs, response to legislation, or rapid growth of the discipline.

11. Shared Resources: If you have requested FT faculty that will be used by more than one department, please indicate here. Please indicate which disciplines and/or departments and the number of combined students/faculty or classes he/she would serve. Please indicate how it will improve access or outcomes and if it is needed for health and safety concerns or required by law.
Program Summary
Environmental-Science-2009

Instructions: after reviewing your data and reports from all other sections of your program review, use this form to briefly summarize all of the information you have provided by closing with your concluding remarks (e.g. an executive one-page summary) for your entire program review.

I. Program Excellence (Best Practices)
Please address any of the following areas:
Overall Program structure, contextualized learning/learning communities, reputation of faculty, faculty collaboration, staff, retention and success, how you maintain a supportive environment, how you address issues of diversity, any specific student learning outcomes.

Our environmental science program makes the best use of our informed, involved and concerned faculty and our privileged location in Marin to unite the theory and practice of environmental science by using real local examples of environmental problem-solving.

II. Program Resources (Responsiveness)
Briefly summarize examples of key resources required for your program to meet or exceed the college goals (as cited in this review).

The major needs of the program are continued commitment of the college to offer the classes and renewed dedication to publicizing the program.

III. Moving Forward Objectives (Planning)
Please summarize any data-driven coordinated planning has your department done to improve enrollment, student learning, access and success?

Recommendations of community advisory committee have been followed to improve the program.

IV. Assessment of 2008 Program Reviews:
1. What resources have you been granted from your previous program reviews?
2. Please assess how these resources have been used to improve access, learning outcomes and student success in your program?
3. What changes have you implemented based on previous program reviews?
4. What results have you found?

Environmental science is recognized as a major growth area for the California Community Colleges, and the College of Marin is poised to become a leader in this field.

V. Fall 2009 Requests Summary:
1. Please summarize the main requests you have made in this program review in order of your priority starting with the most important one.
2. Summarize briefly why you want each one.
3. Summarize your overall rationale.

VI. Other concluding remarks.
Area Directors and Deans Comments
Environmental-Science-2009

1. Please make any comments on the Five Pathways, Student Access and Success, Facilities, Curriculum and SLO sections.

2. Please comment on the instructional equipment requests, technology requests and other instructional materials requests sections. Please comment especially on any specific priorities without which this program cannot function.

3. Please comment on the faculty and staff sections.

4. Please itemize expenses currently covered by external funds that may revert back to general funds.

5. Other comments
   This review appears to be the same one submitted last year.