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EVALUATION OF THE REGIONAL TROPICAL  
WATERSHED MANAGEMENT PROJECT  
(Project Number 596-0106)

Prepared for:

RADO/ROCAP  
U. S. Agency for International Development  
San Jose  
Costa Rica

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## CONTENTS

<u>Section</u>	<u>Page</u>
<u>Acronyms</u>	i
<u>Preface</u>	ii
I. <u>Summary of Findings and Recommendations</u>	1
II. <u>Introduction</u>	20
III. <u>Evaluation</u>	23
A.  Relationship of Activities to Project Purpose	24
B.  Project Management and Decision Making	27
1.  Ample Resources	28
2.  RTWMP As a Subprogram	36
3.  Decision Making	40
4.  RTWMP Management System	43
5.  Long-Term Viability of Watersheds Program	47
C.  Project Linkages	49
1.  National Agencies	49
2.  AID Bilateral Missions and Projects	54
3.  Other CATIE Offices	56
D.  Training Programs	58
1.  Rio Tuis Watershed	58
2.  CATIE Graduate Degree Program	62
3.  Non-Degree or Non-CATIE Graduate Program	67
4.  Short Courses	68
5.  Regional Workshops and Seminars	70
6.  Study Tours	70
E.  Technical Assistance	72
F.  Data Base and Information Systems	78
1.  Data Base	78
2.  Project Information Office	82

### Appendices:

A -- Scope of Work	A-1
B -- List of Individuals Interviewed	B-1

## ACRONYMS

AID	U.S. Agency for International Development
ARD	Associates in Rural Development, Inc.
CATIE	Tropical Agricultural Center for Research and Training
DRNR	Department of Renewable Natural Resources (of CATIE)
ECLA	Economic Commission for Latin America
FAO	Food and Agriculture Organization (of the United Nations)
GIS	Geographic Information System
IICA	Instituto Interamericano de Ciencias Agrícolas
INFORAT	Information and Documentation for Tropical America
PIO	Project Information Office
PP	Project Paper
ROCAP	Regional Office for Central America and Panama (of AID)
RTWMP	Regional Tropical Watershed Management Project
UNEP	United Nations Environment Program
WWP	Wildlands and Watersheds Program

## PREFACE

A three-person team from Associates in Rural Development, Inc. (ARD), conducted an interim evaluation of the ongoing Regional Tropical Watershed Management project (RTWMP). The ARD team was composed of Mr. Richard Donovan, team leader and a natural resources specialist from ARD's home office in Burlington, Vermont; Dr. Lawrence Hamilton, watershed resources planner from the East-West Center in Honolulu, Hawaii; and Dr. Richard Saunier, natural resources planner and project advisor, on short-term leave from the Organization of American States in Washington, D.C.

For the field work component of evaluation, all three team members spent a little more than two weeks in Costa Rica, and Mr. Donovan and Dr. Saunier spent an additional five days each in Honduras and Panama, respectively. Of the time in Costa Rica, approximately half (or seven days) was spent at the Tropical Agricultural Center for Research and Training (CATIE) in Turrialba. While in Costa Rica, the team produced a draft executive summary in Spanish and English, which was the basis for evaluation briefings at the end of the field work at CATIE. Staff from the U.S. Agency for International Development's (AID) Regional Office for Central America and Panama (ROCAP) and CATIE attended the briefings. ARD's evaluation team then produced a more detailed draft report. This draft report was then reviewed by each team member; ARD's home office technical staff; Mr. Sam Kunkle, a watershed scientist at the U.S. National Park Service; and Mr. James Meiman of Colorado State University. Finally, it was revised by Mr. Donovan, the team leader, at ARD's headquarters in Vermont.

The ARD evaluation team would like to thank Ms. Gina Green for her valuable assistance during its work in Costa Rica, in particular for her insights and comments on draft recommendations and findings. The team also appreciates the support and patience of the CATIE and ROCAP staffs. Because of the short time frame (three weeks) in which the field work was accomplished, and the need to constantly change appointments to address gaps in information, many schedule changes were made and everyone worked long hours. To everyone involved, thank you.

## I. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Regional Tropical Watershed Management project is a five-year project being implemented by CATIE and funded primarily by AID/ROCAP. The goal of the project is to protect the environment and conserve natural resources, with special emphasis on maximizing the contribution of water to the social and economic development of the participating countries. The purpose of the project is to improve the institutional capacity in Central America and Panama for managing the region's watershed resources.

The project consists of three components, each of which includes a number of proposed activities:

- Component One--Training:
  - M.S. degree and visiting scholar programs
  - foreign study program
  - short courses
  - workshops and seminars
  - study tours
- Component Two--Advisory Services:
  - short and long-term technical assistance
- Component Three--Support Services at CATIE:
  - regional data base
  - instructional design and materials office
  - project information office

As of September 1985, RTWMP is being implemented by eight staff based at CATIE in Turrialba, Costa Rica, and three country coordinators based in Costa Rica, Honduras and Panama. The project paper (PP) envisioned that over the life of the project, country coordinators would also be hired in El Salvador and Guatemala, and that six additional staff would be hired to work out of the project offices at CATIE in Turrialba. Others participating in project activities include national agencies and training institutions in each of the three countries, representatives of bilateral AID missions in those countries, and the AID/ROCAP regional environmental specialist based in San Jose, Costa Rica.

A three-person team from ARD was asked to perform a mid-project evaluation of RTWMP for the purpose of providing guidance to CATIE and ROCAP on ways in which the project's technical and administrative management might be improved for the remainder of the five-year project period (approximately three years). The

evaluation focuses on an assessment of project progress to date and development of a series of options for improving the project. Wherever possible, the evaluation team has attempted to clearly identify what it believes to be the best option to be pursued by CATIE and/or ROCAP.

The ARD team discussed with AID/ROCAP whether this evaluation should focus on revising project outputs and indicators for the project's five-year life, or whether the team should consider recommending a project extension. Based on discussions with ROCAP, it was decided that the team should not consider an extension of the project at this time. Rather, it was expected that the ARD team would recommend necessary changes in outputs (and magnitude of outputs) for a infive-year project to make them more realistic.

The findings and recommendations of the ARD team are listed below. All are of high priority. However, given the pervasive management problems facing RTWMP, CATIE and ROCAP should pay particular attention to those findings and recommendations which treat management issues and should address them immediately.

Finding #1: The activities proposed in this project do address project purpose and are appropriate in relation to the PP. However, the PP did not provide enough guidance to RTWMP staff on how project activities should be focused. Valuable RTWMP staff time has been spent on attempting to find a definition for "watershed management" rather than clarifying which institutions should be assisted in managing watershed resources--the purpose of this project according to the PP.

Recommendation #1: All project-related staff should work toward ensuring that RTWMP activities address all types of agencies involved in managing watershed resources, not just water- or natural resource-related agencies.

Finding #2: RTWMP faces a serious staff shortage. This has been an important factor in the limited progress of both the technical assistance and data base components of the project. RTWMP's recruiting process is working, although it is not always as high a priority as it should be. The RTWMP staff have very good technical qualifications and experience for performing their tasks. Delays in acquiring staff have been caused largely by poor composition of staff selection committees, inadequate representation within the committee from the CATIE director's office, and the absence of early screening of salary demands. The PP includes very high estimated inputs into the project from personnel from both CATIE and national cooperating agencies that have not been met to date.

Recommendation #2: Staff recruitment should be top priority for the RTWMP project manager, CATIE and AID. The director of CATIE, head of CATIE's Department of Renewable Natural Resources (DRNR) and RTWMP project manager should consider the following changes in the staff selection process:

- place a representative from the office of the CATIE director on each selection committee in order to enhance the authority of the committee;
- ensure that, wherever possible, each selection committee has at least one member with training in the discipline of the position being filled; and
- screen salary limitations/requirements of applicants at the earliest stage possible.

The ARD team also suggests that as part of the recommended RTWMP staff review of the project's logical framework, estimated inputs from CATIE and host-country participating agencies listed in the PP (pages 6 and 9 of Annex IID) should be reviewed. Such a review could result in a greater emphasis on more substantial and timely host-country and CATIE personnel contributions to RTWMP activities.

Finding #3: Consistent delays in acquisition of financial and material resources have been caused by poor project and activity planning by RTWMP staff, weak administrative support from CATIE, and poor orientation of project administrative staff on AID procedures. Of particular note are the bureaucratic delays within CATIE for authorizing project expenditures and limits on the availability of financial resources for CATIE counterpart contributions. Project administrative staff have been forced into a trial-and-error situation, which seems quite curious given the long history of AID/ROCAP and CATIE cooperation.

Recommendation #3: Planning procedures should be improved so that resource needs are better anticipated. This is part of the overall need for better management throughout the project. CATIE, ROCAP and RTWMP administrative staff should meet to review weaknesses in budgetary, recruiting and hiring practices, with particular emphasis on streamlining administrative procedures for authorizing project expenditures.

Finding #4: To date, the inclusion of watersheds as a subprogram within the Wildlands and Watersheds Program (WWP) has not affected RTWMP's efficiency or effectiveness. In fact, during the early years of the Watersheds subprogram, this association has been extremely important in terms of bringing RTWMP to CATIE. However, for technical and management reasons, the continuing association of Watersheds with Wildlands in WWP now presents two basic problems. First, the development approaches of each

subprogram are distinct and may, in fact, be in direct conflict in certain situations. Second, as a separate program, Watersheds (Wildlands also, in fact) will be somewhat easier to manage through a clearer, more direct line of authority to the DRNR head, have greater identity within CATIE, and may be easier to fund.

Recommendation #4: CATIE should set up a separate program entitled "Watershed Management" within DRNR. Both the head of DRNR and the director of CATIE should carefully consider who should be the head of this new program.

Finding #5: The new CATIE structure proposed in the draft 10-year plan may provide needed centralization of key support services. It may also lead to more of the multidisciplinary work that donor organizations and national agencies expect of CATIE. However, if RTWMP staff are diverted to other programs or offices within CATIE and given new responsibilities, the project will suffer. DRNR's staff has one of the strongest commitments at CATIE to the sound management of watershed resources. As such, the evaluation team believes that DRNR is the appropriate department for this project.

Recommendation #5: RTWMP staff should remain 100 percent focused on and responsible for implementing RTWMP-related activities. While departments clearly need to improve coordination on this project, RTWMP should continue to reside within DRNR for the purpose of long-term institution-building.

Finding #6: The quarterly reports and individual and annual work plans are written in a potentially useful format. However, they are not nearly as useful as they could be because:

- plans and reports (particularly annual work plans) are not readable, and summaries pointing out major issues, achievements or problems are not included;
- the level of detail in the quarterly reports is inconsistent, if not misleading--it is very difficult to have confidence in the contents' quality, and neither CATIE nor ROCAP can depend on these documents for management purposes; and
- contrary to PP expectations, country programs are presented in a piecemeal fashion, reducing the value of the work plans or quarterly reports for developing a unified country program and/or strategy.

No annual evaluation report has been produced by RTWMP.

Recommendation #6: Annual plans should contain a summary section and a separate, unified section on country-specific activities. Word-processing capabilities at RTWMP would facilitate this. Quarterly reports should present project issues, especially problems, more openly and in greater detail. Avoiding full detail in these reports has contributed to the project management difficulties confronted by RTWMP. In addition, the director of CATIE and head of DRNR should conduct an annual internal project review for management purposes. The results of this review should be presented in a memorandum for internal project circulation only, including ROCAP.

Finding #7: Individual work plans, while helpful on a general level, are based on terms of reference which do not indicate how much time is to be devoted to specific tasks (technical advisory services, teaching, etc.) and output indicators from the PP which are unrealistic.

Recommendation #7: Task responsibility within the project needs to be defined more clearly, including percentages of time to be devoted to each task. The RTWMP project manager, or the AID-funded land-use planner, should review, and revise as needed, staff scopes of work and individual work plans based on more realistic project outputs. With assistance from ROCAP, and based on the findings and recommendations of this evaluation, a complete revision of the RTWMP logical framework should be undertaken by RTWMP staff.

Finding #8: The PP envisioned the use of national and regional advisory committees, with national coordinators working with CATIE-based project staff to prioritize activities. Excellent country coordinators have been hired. Project advisory committees have not been formed, but national coordinators are making a concerted effort to do so. Their efforts have taken place with little assistance or substantive direction from RTWMP staff at CATIE. The role of the committees has not been defined, and country coordinators, project staff and host-country agencies lack a common understanding of responsibilities. The priority placed on training activities during the past year was an ad hoc decision by project staff that has detracted from overall project progress.

Recommendation #8: The role of the advisory committees and their relationship to the country coordinators should be clarified, written down and distributed to all parties as at the RTWMP retreat. Based on this agreed-upon role, CATIE-based project staff should visit the countries as soon as possible and assist coordinators in organizing the committees. The evaluation team does not believe that the advisory committees should decide on project priorities. Rather, they should be given a complete list of options for different activities in each component, discuss them, and rank or recommend activities to be implemented. At

quarterly meetings, the national coordinator (sometimes with CATIE-based staff in attendance) should provide a short written and oral presentation on project activities. With assistance from ROCAP, RTWMP staff should come up with a list of technical (including institution-building) criteria by which to assess and prioritize project opportunities.

Finding #9: The PP offers no definition of methodologies or procedures for management decision making. To date, RTWMP's decision-making methodology has been ad hoc, performed through mechanical and literal implementation of the overambitious PP. Reliance on the PP has led to an overload for some project staff at CATIE. Poor personnel management has meant that others are not being fully utilized. As ambitious and difficult as the project is, it is further complicated by inefficient planning and an absence of effective leadership at both the departmental (DRNR) and project levels. The ARD team believes that the magnitudes of outputs suggested in the PP are too ambitious. The current RTWMP project manager does not agree and, as such, has not attempted to revise the magnitudes of output. The combination of the overambitious PP objectives and the project manager's "hard-line" attitude of emphasizing, rather than modifying, the PP outputs has had an extremely negative effect on the overall progress of this young project. In addition, based on what is outlined in the PP, the head of the DRNR has been seriously remiss in not addressing the project's management problems in a timely manner. This lack of effort raises the question of whether it is necessary for CATIE's director to have more direct involvement in making the necessary changes. At present, the management atmosphere within RTWMP is decidedly negative.

Recommendation #9: Personnel changes in terms of decision making must be made immediately to rectify the situation. CATIE--both the director and the head of DRNR, specifically--should take the lead in making these changes in consultation with ROCAP. The following options should be considered:

- During a three-month trial period, a concerted effort should be made by the project manager to delegate authority, establish a decision-making procedure that more appropriately addresses the needs of the project and meets the approval of the department chairman and subprogram head. A review should then take place under the joint direction of the CATIE director and DRNR head, with input from the subprogram head and regional environmental specialist from ROCAP, to assess whether actual positive changes have taken place and whether a staffing change is necessary. During this three-month period, the project manager will meet weekly with the DRNR head and subprogram head in order to

discuss and subsequently implement measures for improving project management and decision making.

- A project management consultant should be brought in to assist the project manager in improving project management and decision-making processes.
- An immediate change should be made in the project manager position, and the current project manager should assume a technical support role.
- An immediate change should be made in the project manager position, and the current project manager should leave the project.

It should be noted that each of the above options has advantages and disadvantages. The first provides the current project manager with an opportunity for improvement. However, a number of RTWMP, CATIE and ROCAP staff believe that this opportunity has already been given and no change has occurred. If that is true, then the first option would be a waste of resources. The second option could be used in combination with all of the others. Having such an individual to assist in revising the logical framework, individual scopes of work and other tasks would be invaluable. The third option would allow for continued benefits from the current project manager's substantial technical expertise. The fourth would clearly put the project on hold while a new project manager comes on and would not take advantage of the current manager's knowledge of RTWMP activities. It would, however, offer the benefit of eliminating completely the very negative project management atmosphere observed within RTWMP by the ARD evaluation team.

Finding #10: The PP mentions the need to develop plans for long-term self-sustainability of RTWMP-type activities. However, this is not scheduled to occur until the fourth and fifth years of the project. Within both the Watersheds subprogram and CATIE in general, a number of people are already concerned about long-term sustainability. Project staff, particularly the Watersheds subprogram head, believe that planning for this should start earlier. In addition, other CATIE staff are now developing an aggressive strategy for long-term fund-raising.

Recommendation #10: In 1985, the heads of DRNR and the Watersheds subprogram should begin to outline a strategy for procurement of funds that will ensure the ongoing capability at CATIE for providing training, practical research, advisory services and technical assistance to its member countries. This strategizing should be coordinated with CATIE's ongoing institutional development efforts. As part of this strategy, the ARD team believes it is entirely appropriate to begin requesting that host-country agencies and other clients begin to share costs

or fully pay, wherever possible, for technical services rendered by CATIE.

Finding #11: The PP envisioned the use of national and regional advisory committees, and of national coordinators to assist CATIE-based project staff in prioritizing activities. Excellent country coordinators have been hired. Linkages via national and regional advisory committees are lacking because none of the three countries has set up such committees in a workable fashion yet. Country coordinators have invested substantial time and thought into developing these committees with little direction or assistance from CATIE-based RTWMP staff. At the time of this evaluation, the exact role and composition of the committees has not been defined.

Recommendation #11: Country coordinators should continue to place an emphasis on the formation of national committees. As a temporary measure, however, country coordinators, with assistance from CATIE-based staff, should develop an approach to near-term priorities that includes structured interviews of important national agency staff. These interviews should include review, discussion and ranking of activity priorities with each agency on an individual basis. In addition, some other mechanism may be needed to select the priority watershed. The CATIE-based soil and water conservation specialist should assist the country coordinators in performing a country-level priority watershed assessment.

Finding #12: At this time, no action is being taken to formalize agreements between RTWMP and agencies (other than counterpart agencies) because of interagency problems in two of the countries. Such agreements should be of high priority if technical assistance (training support, advisory services and information exchange) is to be performed in any worthwhile and continuing way for institution-building purposes.

Recommendation #12: The decision to stop action on development of formal agreements between agencies and RTWMP should be reconsidered in light of the importance these agreements have in furthering long-term institutional development efforts in agencies whose activities have significant impacts within watersheds.

Finding #13: AID mission representatives from Costa Rica, Honduras and Panama were involved in developing project components during formulation of the PP. Although the PP intimates that the project was designed to complement the numerous bilateral AID projects operating or planned in the region, there are no specific tasks outlined in the PP or RTWMP job descriptions--not even for the project manager or country coordinators. In spite of this, the country coordinators in Panama and Honduras--because of past involvement in AID-supported

projects with the current RTWMP counterpart agencies (RENARE in Panama, and Ministry of Natural Resources in Honduras)--have established good relationships with local AID missions. There appear to be no such contacts established in Costa Rica, probably due to a lower level of interest on the part of the AID mission and RTWMP's limited initiatives in terms of working with non-natural-resource agencies.

Recommendation #13: Problems of watershed resource management can occur because of any and all development activity on that watershed, not only because of the activities of a few projects related to natural resources. First, this concept must be understood by project staff. Then, country coordinators must communicate it to sectoral and donor agencies by means of short courses and seminars and general close contact. For example, the country coordinator in Costa Rica should develop close relationships with non-natural resource projects and AID/Costa Rica mission staff in order to communicate with such agencies.

Finding #14: Even where a strong relationship exists between RTWMP and the local AID mission, there is a potential for project-to-project interference. For example, RTWMP funding is relatively low in Panama, and there is a danger that the large (\$30 million) RENARE II project may overload the capacity of RENARE to effectively act as counterpart to RTWMP or other similar natural resource projects. Further, significant overlap appears in the objectives of training and institutional development. This would seem to be an opportunity for RTWMP activities to bring other non-water, non-natural-resource protection agencies into watershed management programs.

Recommendation #14: RTWMP activities should complement, rather than duplicate, existing AID (or other donor) national-level programs. In particular, country coordinators should focus on drawing agencies not traditionally involved (e.g., road-building agencies) toward watershed management activities. More specifically, it is recommended that RTWMP assistance to Panama be refocused in light of the new RENARE II project. The emphasis on technical advisory services for watershed management planning and on creation of bankable plans should be reduced. Instead, emphasis should be placed on providing advisory services and training to the secondary (i.e., non-water related) agencies of Panama. RENARE should remain the principal counterpart agency if assurances are given that support will continue for RTWMP's efforts to more fully involve secondary agencies in watershed management.

Finding #15: Staff from RTWMP as well as other CATIE departments have made individual gestures toward cooperation on training and research. Cooperation, or even discussion of cooperation, regarding the technical advisory services component of RTWMP has not taken place. Watershed management is a natural common focus

for all CATIE departments, but RTWMP has yet to develop a general strategy for involving the other departments. The initiatives that have taken place have been on an ad hoc basis, which is not necessarily bad. In any educational or research institution, informal linkages often have the most success. However, it would be beneficial to both RTWMP and other departments, and CATIE's reputation, if these linkages were the result of planned and formal interactions indicating a long-term CATIE commitment.

Recommendation #15: The ARD team believes RTWMP should develop a near-term plan for joint activities with other CATIE departments. Such a plan should specify activities, dates and which individuals from RTWMP and the other departments are to be involved. Cooperation on training, advisory services and related research activities should be included. To this end, RTWMP, in cooperation with the office of CATIE's director, should sponsor a day-long workshop on interdepartmental watershed management initiatives. Over the long-term life of RTWMP this intra-CATIE initiative should be the responsibility of the RTWMP project manager and should be incorporated in the preparation of each annual plan and report.

Finding #16: The training strategy report of May 1983, prepared for RTWMP, recommended support for the establishment of an equipped outdoor laboratory that would serve to demonstrate the use of equipment; measurement, collection and evaluation of land response to different practices; and as an area for other studies by students and staff. While the RTWMP scarcely mentions Rio Tuis, it apparently followed up on this suggestion, for it does provide funds for equipment. On the other hand, a DRNR external evaluation team submitted a report in June 1984, recommending that there should not be a further commitment of financial or human resources to the Rio Tuis watershed.

Recommendation #16: The Rio Tuis is an excellent site for teaching, demonstration and extension for the following reasons: its close proximity to CATIE, the lease control over La Selva, the variety of biophysical and land tenure characteristics which are representative of Central America and Panama, past baseline data availability and strong staff interest. The evaluation team supports the expansion of activities on the Rio Tuis watershed under the RTWMP with the emphasis on training and modest student research.

Finding #17: There is a proposal for a multidisciplinary research activity in the Rio Tuis which appears in the final report of the Environmental Management Systems project. Its purpose would be to demonstrate integrated land-use planning by a team which would include CATIE professionals from the areas of forestry, animal production, crop production, soils, engineering, economics and sociology. They would plan for production as well as reducing adverse soil and water impacts of various land uses.

CATIE has 40 years of experience to draw on in some of the sectors that can contribute. Staff in other programs in DRNR and other departments at CATIE have indicated interest in activity in the Rio Tuis if there were the magnet of climatological and/or hydrological instrumentation. It is noted that the RTWMP specialist in natural resource economics (yet to be hired) has a component in the job description for Rio Tuis.

Recommendation #17: This proposal would provide a much needed demonstration and training ground for activities that combine production with protection or rehabilitation and biophysical with economic, social and institutional expertise. The Rio Tuis would be a very strong candidate for a site with regional significance. The groundwork for such a study might be laid under the RTWMP through the development of a formal funding proposal (it is within the stated job descriptions of several staff). However, other funding should be sought by the Watersheds subprogram for the actual field activities. Individuals in CATIE who have expertise in various areas, particularly the social and institutional aspects of rural land use, should be involved in activities on the watershed.

Finding #18: The past and current activities on Rio Tuis are mostly ad hoc and unrelated, and even future proposals have not evolved out of any overview plan for either the whole watershed or even for La Selva. There is an operative plan prepared in advance for the following year for the DDA project, and each individual staff member identifies in his yearly plan those activities that will occur on Rio Tuis. More than this is required if the area is to play an optimum role in training and demonstration.

Recommendation #18: An overall framework for activities on the Rio Tuis watershed must be developed as soon as possible by the Watersheds subprogram. A sub-plan for La Selva is of particular urgency if it is to fulfill its special role in the graduate program. The evaluation team suggests that advisors be sought from other program areas in DRNR and from other departments, in particular social science advisors. Some technical and valuable input might be obtained from ROCAP's environmental management specialist, and the plan should be sent to country coordinators for input. Also, the following steps are imperative:

- procurement procedures must be improved to avoid the delays that have characterized the operational instrumentation of the watershed--besides the equipment already ordered, additional equipment and on-the-ground installation of modest experimental plots are urgently needed if La Selva and Rio Tuis are to be used with the postgraduate students (especially the current group) and in workshops and short courses; and

- the responsibilities of the hydrologist and land-use specialist with regard to planning and direction of activities on Rio Tuis must be clarified, especially in view of the fact that the subprogram in watersheds will continue after the conclusion of RTWMP--alternatively, in view of his interest and involvement, the bioclimatologist might take on principal responsibility for this task, further integrating DRNR staff and RTWMP activities.

Finding #19: There exists some sentiment for engaging in "heavy-duty" research involving stream flow and sediment measurement and small watershed calibration followed by land-use treatments. The PP refers to weirs, and there are statements in several documents about the need for small watershed research, even of the "paired catchment" type, for tropical areas and especially Central America and Panama. While long-term small catchment research is much needed and is seductive when there are funds for equipment, the ARD team feels that such research is beyond the scope of this project. The instrumentation needed to permit students to engage in short-term investigations such as surface erosion studies, or to measure and demonstrate a stream's response to rainfall events, is very important, and project efforts should continue to focus on this goal and that of usefulness in other training activities. Separate funding and a formal link with an experienced catchment research institution should be considered for the future. The project work plan has staff fully committed in other activities for the life of the project.

Recommendation #19: Under this project, no funds or human resources should be used solely for long-term instrumented catchment research. Emphasis should be on training and demonstration. Separate funding and a formal link with an experienced catchment research institution should be pursued by the Watersheds subprogram. Instrumentation of Rio Tuis and La Selva with a meteorological network and a stream gauge should be given high priority if the area is to fill its role as an area for CATIE students and staff to use for demonstration, teaching and extension. Instrumented plots for modest soil erosion/land treatment studies by students and staff should be installed at the La Selva farm as soon as possible.

Finding #20: The course topics and content of the master's program are sound and require only fine tuning. The need for so many remedial courses is realistic, but it reduces the opportunity to take electives. The current students have had essentially no electives in their first three semesters. The course in physical characteristics of soil and its management is a required core course and is taught in the Department of Plant Production. This represents the kind of cross-department activity the ARD team supports.

Recommendation #20: Although a curriculum committee was formed in DRNR to shape the graduate program in conjunction with the "training strategy" and Colorado State University consultants, a continuing curriculum assessment committee has not been formed. The ARD team recommends that such a committee be established and that it be charged with the fine tuning that is required as experience is gained.

Finding #21: The emphasis on the thesis presents a problem in this program, whose rationale is to produce professionals to work in watersheds on immediate short- and medium-term problems. Counseling and supervision by staff will represent a major burden under the current circumstances, in view of all of the staff's other commitments for training and technical assistance. To have 30 students complete master's programs with theses by October 1988 is a formidable venture. Several prestigious universities in the United States (e.g., Cornell and Colorado State universities) have developed special non-thesis degree programs with names such as "master's of professional studies." The objective of these programs--professional upgrading for those who have been working for a number of years, or a redirection of interest--coincide very well with the objectives of RTWMP support for a master's degree in watershed management.

Recommendation #21: The ARD team strongly endorses the PP's emphasis on applied training, rather than on a more academic education, as best meeting the short- and medium-term needs in Central America and Panama as well as other countries in Latin America. Therefore, the team questions the emphasis on the thesis. The ARD team recommends that the option of a non-thesis, master of professional studies program be studied as better meeting regional needs at this time, with students allowed either course of study depending on their career objectives. According to the Office of Postgraduate Studies and Training, this is not an inconceivable development.

Finding #22: The 30 graduate completions called for in the PP is a major problem. The ARD team believes that the targeted output number will severely reduce the quality of the graduate program. Savings to the project by reduced numbers could be used to further enhance the quality of program outputs in training. For example, the quality of library holdings in watershed management could be improved, important watershed reference materials could be translated, and remedial coursework for students before they come to CATIE could be funded.

Recommendation #22: The ARD team feels that one of the indicators of project output, namely 30 graduates from CATIE within the project period, is not only unrealistic, but does not well serve the project output of quality training for developing a cadre of professional leaders. The team suggests a reduction

in verifiable indicators to 20 or 21 master's completions at CATIE.

Finding #23: The need for remedial courses is real, but represents a major drag on the program. It leaves students with virtually no electives.

Recommendation #23: The ARD team suggests an investigation into the possibility of the project funding tutoring or one or two remedial courses for students accepted into the graduate program, before their arrival on campus, so that they can make use of electives at CATIE to increase the quality of their curriculum.

Finding #24: The major time commitment of the instructional staff specified in the job descriptions and the specificity of other RTWMP tasks place an overwhelming load on the staff.

Recommendation #24: The teaching staff overload in terms of the range of duties and the specific target numbers of various activities should be reduced. Innovative ways should be probed of using visiting scholars and short-term consultants and of more effectively using assistants on the staff to meet some of the targets in the PP.

Finding #25: Nothing has yet been initiated in either the non-degree or non-CATIE graduate program activities, although the implementation plan calls for initiation in January 1985. These are valuable and valid components for RTWMP support. The foreign study program should not be a major burden on the professional project staff, but the visiting scholar program may prove to be.

Recommendation #25: RTWMP staff should make realistic plans for implementing both of these activities. These programs are very much behind schedule and need to be put in motion if they are to meet the targeted outputs.

Finding #26: It is difficult to reconcile the topics, scheduling and country exclusivity of these four events with the 24 or 25 specific topics, and the lack of mixing of country participants in three out of the four. They appear to have been developed on an ad hoc basis, without much reference to the PP and without any concrete priority plan developed by staff and country coordinators. The lack of country committees has not permitted this kind of advisory input into the short-course component. On the other hand, the ARD team's examination of course content, the involvement of several staff, and the very positive course evaluations by the participants all lead the team to have a feeling that these are on the right track. A significant and continuing problem is the fact that the two data base staff and the natural resource economist positions have not been filled, since they are responsible for over half of the courses suggested

in the PP. The PP appears too inflexible by spelling out so much detail.

Recommendation #26: If the short-course program is to resemble the PP in topics, scheduling and number of repeat offerings, the data base and resource economist staff need to be aboard and functioning as soon as possible. On the other hand, greater course flexibility should be allowed. Now that some of the staff and country coordinators are in place, representing a considerable pool of varied experience and linkages, the ARD team recommends that they be involved in planning a new set of priority topics and scheduling. It is suggested that the coordinator of the short-course program be the ROCAP-funded land-use specialist, as called for, rather than the project manager, as seems to be the case. The short-course coordinator should be mindful of the suggestion that only half of the participants be from the host country and the balance from other countries, since these are to be regionally interactive events.

Finding #27: No clear process for RTWMP's prioritization of short courses, workshops, seminars and study tours exists.

Recommendation #27: RTWMP staff, including country coordinators, should evaluate short-term training opportunities or requests on a monthly or quarterly basis. The review could include the ranking of each opportunity according to a set of criteria agreed upon by all RTWMP staff. Examples of such criteria are that the training activity:

- link up with an important AID (or other donor) project;
- create contact with a new and/or important agency;
- be a high priority of a country contact or advisory committee;
- address an appropriate audience (e.g., high-level technician, trainers, field technicians); and
- operate with the option of a "buy-in" or cost-sharing.

Finding #28: To date, RTWMP has accumulated little experience in the provision of advisory services. In the future, it is possible that technical assistance will be given in subject areas which are not priorities of overall project objectives. "Free" technical assistance is tempting to institutions on tight budgets. An analysis of the PP, as well as past and current activities, suggests that:

- the advisory services component may not focus sufficiently on the project purpose of institutional development--currently, advisory services can only be offered in the areas of watershed management that do not lead to institutional development;
- because of the PP definition of primary and secondary agencies, other agencies with significant impacts on watershed structure and function may not be reached by the advisory services component, even though they would be amenable to institutional development efforts in terms of watershed management concepts and technology; and
- the advisory services component may be too complex and grandiose, given existing RTWMP personnel resources.

✓ Recommendation #28: The advisory services component of RTWMP should concentrate on improving institutional capacity in Central America and Panama. It is recommended that RTWMP:

- seek to maintain contact with those regional, national and local institutions that work at practical levels and undertake activities that influence watershed behavior;
- reevaluate the concept of primary and secondary institutions to ensure the inclusion of institutions such as public works departments, the military, agrarian reform agencies, agriculture and livestock production associations, municipalities and technical agriculture schools;
- reevaluate project outputs in the logical framework, omitting entirely the consideration of international watersheds and choosing only those watersheds that are relatively simple in terms of variety of resource uses;
- consider the use of more short-term consultants to achieve technical advisory service objectives, including professionals from other CATIE departments and offices, as well as individuals outside of CATIE (e.g., universities, independent consultants, consulting firms, etc.);
- assemble a short-term committee, made up of project staff (including country coordinators) and chaired by the project manager, to establish selection criteria for the advisory services that RTWMP will undertake--criteria to be considered include

geographical context for transferability (regional, national, local), training and institutional development context, services to agencies or institutions that "create" rather than manage watershed "problems," visibility of the project and relative potential for success; and

- ensure that whenever a technical advisory activity takes place, a final consultancy report is produced with an RTWMP logo and circulated to appropriate individuals and national or international agencies-- a copy of each report should reside at the RTWMP publications office.

Finding #29: The PP envisioned that this component would allow CATIE to become a regional center of information and data on watershed management. The major question here is whether the development of such a center at the subprogram level would be an unnecessary duplication of effort at CATIE. To date, little coordination of this effort with other departments has taken place. The delay in hiring the data base management specialist has been given as the main reason for this lack of coordination. INFORAT (Information and Documentation Center for Tropical America) has already established a computerized bibliographic reference service, and RTWMP has contributed resources to the service and plans to use it. At the time of this evaluation, no report was available that clearly explained the justification for the purchase of a geographic information system (GIS) or its link to project purpose or national-level project priorities.

Recommendation #29: With the exception of funds from the data base budget that have been allocated for simulation programs, map and photo collection, training of country personnel in data base acquisition and management, and the project information office, the data base resources assigned to this project should be placed in the fund for development of a centralized capability in data base management at CATIE, with the condition that these resources be used in providing for the data needs of the project as outlined in the PP. Particular emphasis should be placed on expanding technical library holdings in watershed resources management. The project, and the Watersheds subprogram, should also consider funding the translation of important references into Spanish for use in teaching and training activities. Based on GIS experience in other countries, the project should carefully weigh the advantages and disadvantages of purchasing such a system.

Finding #30: Although there is no reference in the logical framework or project information plan to working relationships with international organizations for publication and information dissemination purposes, several related activities are to begin in early to mid-1986, while others were to begin in early to mid-

1985 (annotated bibliographies and reference lists, project technical reports, articles for general conservation magazines, newsletters, bulletins, etc.). A letter of intent has been signed with the natural resources department of the Economic Commission for Latin America (ECLA) proposing publication of project material in an upcoming book. Lack of further progress can be traced to the fact that the PP does not provide specific information regarding how and under what financial arrangements these activities are to take place. There is no publication strategy to treat such problems as:

- a lack of funding for publishing the full range of project-generated material,
- wide qualitative differences in the content and presentation of project documents to date,
- overlap and unclear definition of individual staff responsibilities with regard to publication,
- a potentially large amount of valuable information languishing in the files of individual staff members, and
- an absence of coordination with other CATIE offices in terms of publishing activities.

Recommendation #30: A committee responsible to the project manager and chaired by another project staff member (possibly the project administrative assistant) should be established immediately. The committee should develop a publication strategy to: a) insure the high quality of all documents generated by the project; b) establish cooperative funding mechanisms; c) define responsibilities of project staff and the CATIE publication unit regarding project publications; d) explore ways to cooperate and consolidate these activities with other departments and programs within CATIE; e) assist authors in the review process; and f) help decide on suitable journals, etc., in which the material may be published.

Finding #31: The project information office proposed in the PP has not been organized. The project has prepared a general brochure which is valuable for all project staff, especially national coordinators. However, there has been no systematic effort to publish or distribute other project documents. No consistent report/document format or numbering system has been developed (although some staff have developed their own), and little organized circulation of materials takes place. The quarterly project report is not suitable for wider non-staff circulation, and no annual project evaluation report has been prepared. AID missions and host-country officials are aware of the general project brochure, but little else. The national

coordinators are not responsible for this; information dissemination activities have suffered from lack of attention and designated staff at CATIE. The evaluation team was not able to gauge AID/Washington's awareness of project activities and reports.

Recommendation #31: The project should develop a consistent format and numbering system for its reports and other documents. There should be a designated place in the office for displaying these documents, and national coordinators should have similar displays. A prose-style summary of the quarterly report should be developed for wider circulation to national agencies, AID missions and offices, and international organizations. RTWMP should designate or hire someone immediately to develop the information materials, system and center. This individual might visit the AID-funded WASH (Water and Sanitation for Health) project office and AID's Development Information Unit in Washington, D.C., to gain a better understanding of how such a facility might work.

## II. INTRODUCTION

RTWMP is a five-year project being implemented by CATIE and funded primarily by AID/ROCAP. The goal of the project is to protect the environment and conserve natural resources, with special emphasis on maximizing the contribution of water to the social and economic development of the participating countries. The purpose of the project is to improve the institutional capacity in Central America and Panama for managing the region's watershed resources.

The project agreement for RTWMP was signed on October 15, 1983, with project activities beginning in January 1984. Thus RTWMP has been in operation for only about 22 months. In fact, most of the staff working on the project were hired in the past 12 months.

The project consists of three components, each of which includes a number of proposed activities:

- Component One--Training:
  - M.S. degree and visiting scholar programs
  - foreign study program
  - short courses
  - workshops and seminars
  - study tours
- Component Two--Advisory Services:
  - short and long-term technical assistance
- Component Three--Support Services at CATIE:
  - regional data base
  - instructional design and materials office
  - project information office

As of September 1985, RTWMP is being implemented by eight staff members based at CATIE in Turrialba, Costa Rica, and three country coordinators based in Costa Rica, Honduras and Panama. The project paper (PP) envisioned that over the life of the project, country coordinators would also be hired in El Salvador and Guatemala, and that six additional staff would be hired to work out of the project offices at CATIE in Turrialba. Others participating in project activities include national agencies and training institutions in each of the three countries, representatives of bilateral AID missions in those countries, and the AID/ROCAP regional environmental specialist based in San Jose, Costa Rica.

## Evaluation Methodology

This mid-project evaluation was requested for the purpose of providing guidance to CATIE and ROCAP on ways in which RTWMP technical and administrative management might be improved for the remainder of the five-year project period (approximately three years). The evaluation focuses on an assessment of project progress to date and development of a series of options for improving the project. Wherever possible, the evaluation team has attempted to clearly identify what it believes to be the best option to be pursued by CATIE and/or ROCAP.

The ARD team focused on evaluating the progress and success of the project in terms of the project purpose given in the logical framework of the PP. This included a review of the timeliness, quality and appropriateness of the inputs and outputs (and their indicators) as proposed in the PP. Based on interviews, discussions among evaluation team members and analysis of project documents, the team has suggested changes in the magnitude of outputs for each project component and relevant activities. Due to time limitations, ARD was not able to rewrite scopes of work, completely revise the logical framework, or perform a financial/administrative audit. In fact, none of these were requested in the evaluation team's scope of work as developed and approved by CATIE and ROCAP. In the main body of this report, it is suggested that an immediate and complete revision of the PP's logical framework be undertaken at upcoming project planning meetings with assistance from ROCAP.

The ARD team discussed with AID/ROCAP whether this evaluation should focus on revising project outputs and indicators for the project's five-year life, or whether the team should consider recommending a project extension. Based on discussions with ROCAP, it was decided that the team should not consider an extension of the project at this time. Rather, it was expected that the ARD team would recommend necessary changes in outputs (and magnitude of outputs) for a five-year project to make them more realistic.

The ARD team was often asked during its evaluation to assess the quality of personnel, including a review and revision of each staff member's scope of work. Strictly speaking, however, this was to be a project evaluation. Therefore, the team reviewed all project activities, as the scope of work, agreed upon by CATIE and ROCAP, directed. For a short-term (three weeks in the field) external evaluation, ARD does not believe in taking over management functions (i.e., personnel evaluations) which reside within CATIE, ROCAP or RTWMP. In this case, the ARD team believes the correct approach was to provide relevant parties with the advantages and disadvantages of certain options that

will subsequently allow them to make better-informed management decisions.

The evaluation itself was structured in the following way:

- the ARD team leader assigned to each team member certain evaluation tasks (from the scope of work) and project components;
- overall and component- or activity-specific assumptions were noted, and specific issues and questions were identified through review of project documents and preliminary discussions with ROCAP and CATIE;
- structured interviews were held with relevant individuals in Costa Rica, Honduras and Panama;
- findings and recommendations were developed through analysis of the interviews and project documents and through group consultation;
- on an individual basis, team members wrote up both background information and draft findings and recommendations to present for review to ROCAP and CATIE in Costa Rica and Guatemala;
- ARD's team leader edited draft materials written by each team member, put them into a full draft report, and sent them to team members for final comments and revisions; and
- with comments from ROCAP and CATIE based on the draft findings and recommendations, and comments from ARD team members, ARD home office staff and outside consultants based on the complete draft report, the ARD team leader produced the final report.

The comments received from ROCAP and CATIE were used to correct factual errors and identify information gaps and/or inconsistencies. Although there was pressure to change certain recommendations, this was not done. Rather, findings and recommendations were made more specific in order to clarify misconceptions and be more helpful.

The end product represents the opinions of the ARD evaluation team, not CATIE or ROCAP staff.

### III. EVALUATION

In the following sections, issues relevant to RTWMP's progress are discussed. A review of the scope of work for this evaluation (Appendix A) shows that most of the specific tasks for the evaluation team fall under sections III.B (Project Management and Decision Making), III.C (Project Linkages) and III.D (Training Programs). However, in order to address the general evaluation tasks, the ARD team has added several sections: III.A (Relationship of Activities to Project Purpose), III.E (Technical Assistance) and III.F (Data Base and Information Systems).

The ARD team has one overall finding and one overall recommendation. These will be substantiated in the report sections that follow.

Overall Finding: RTWMP's staff are well-qualified technically, the project approach utilizing national coordinators is sound, and the project has a wide variety of resources and activities. In short, RTWMP has great potential for achieving project purpose, i.e., improving the institutional capacity in Central America and Panama for managing the region's watershed resources. However, this potential is being wasted due to poor project management, including administrative and technical decision making, within RTWMP and the DRNR.

Overall Recommendation: The following steps must be taken if RTWMP is to achieve its purpose:

- the technical competence of the RTWMP staff must be complemented by management capabilities, especially in the position of project manager, which are currently lacking;
- a complete RTWMP staff must be hired as soon as possible;
- all RTWMP staff must realize that elements of the PP can and should be changed--staff should not use the PP as a guide that must be followed literally, word by word;
- with substantial input from country coordinators, an internal process for prioritizing all RTWMP activities must be determined and clarified; and
- a number of project outputs must be scaled down or changed, according RTWMP staff greater flexibility, and a complete revision of the RTWMP logical framework must be undertaken, with assistance from ROCAP.

## A. Relationship of Activities to Project Purpose

A brief discussion of the relationship between project activities and project purpose is important for two reasons:

- there are a number of inconsistencies and a lack of information within the PP which make focusing the activities of project implementation very difficult; and
- significantly, the project purpose, which should guide all project implementation, is the only part of the PP that cannot be changed.

This project purpose, as given in both the data sheet of the acting assistant administrator's project authorization memorandum and in the logical framework of the PP, is:

"To improve the institutional capacity in Central America and Panama for managing the region's watershed resources."

Throughout the period that the ARD team spent in-country, a recurring theme from nearly all project staff interviewed was that the one issue blocking efficient project implementation was the lack of a common definition of "watershed management."

In this context, the question, "What is watershed management?" is irrelevant. It is unfortunate that so much time and energy have been spent and so much exasperation and ill will created in discussing something having so little to do with the project purpose, i.e., to improve institutional capacities to manage watershed resources.

Three other questions, however, are important. These are:

- What are "watershed resources"?
- Why choose a "watershed" over any other land unit as a point of interest?
- Which are the institutions that are to be improved?

The answer to the first question is that watershed resources are any features of a watershed's structure and function that are thought to be important and of value. They include much more than "water and soil" and refer to processes as well as matter. They include space and nutrients for agriculture and grazing, as much as they include the control of erosion and the provision of water for hydroelectric generation or for recreation. It is important to note, however, that also included in watershed

resources are roads, settlements, waste treatment facilities and other resources which are often called "infrastructure." Obviously then, the term "watershed resources" can be applied to a wide range of elements within the watershed.

A watershed is distinct from other land ecosystems in that water and gravity dominate in tying it together as an integrated system. Water is the unifying element, and it is the value of water which has created the need for special management of watershed resources. Using a watershed for planning or management also assists greatly in internalizing "externalities" associated with activities in watershed resource use. By extending the boundary of analysis beyond the individual farm, forest unit, stream, reservoir or other units of traditional concern, upstream, where many impacts are generated, is linked with downstream, where they are made manifest. Although both the management techniques and the appropriate technology are available to provide for integrated watershed management, the management of the watershed resources is seldom possible by any one sector--even the one called "watershed management." There are just too many resources available and too many concerns extant in a watershed. The institutional arrangements necessary for that kind of undertaking are often impossible to make. However, if the sectoral interests responsible for using the watershed resources, as defined above, understand the role that water and gravity play in tying watershed structure and function together, managing watershed resources with minimum conflict among alternatives will be a great deal easier. Hence, the ARD team believes that the role of RTWMP is to work with national agencies and bilaterally funded projects in attempting to show how these different sectors can plan and implement projects in a way that enhances sound socioeconomic development.

Most watershed resources are typically assigned to an institution. Certainly, there is something to be said for efforts to develop institutions that are specifically responsible for management of water, soil or forest resources. But the effort will be shortsighted if it does not reach other institutions that in some way appropriate watershed resources (services), be they from watersheds that are forest, shrub, grass, agricultural or urban. Thus, it is incumbent that the activities of this project--whether in training, advisory or support services--include such institutions.

Finding #1: The activities proposed in this project do address project purpose and are appropriate in relation to the PP. However, the PP did not provide enough guidance to RTWMP staff on how project activities should be focused. Valuable RTWMP staff time has been spent on attempting to find a definition for "watershed management" rather than clarifying which institutions should be assisted in managing watershed resources--the purpose of this project according to the PP.

Recommendation #1: All project-related staff should work toward ensuring that RTWMP activities address all types of agencies involved in managing watershed resources, not just water- or natural resource-related agencies.

## B. Project Management and Decision Making

The issues discussed here correspond to Tasks 5, 6, 8\* and 9 from the scope of work:

"Evaluate methodologies and procedures used by the project manager, the professional staff at CATIE, and the country coordinators to make and carry out technical and administrative decisions. Assess how project decisions are made and implemented at different levels in CATIE and between CATIE and ROCAP, and suggest ways of improving it to insure that individual decisions are consistent with the overall objectives of the project."

"Assess (a) the organization and effectiveness of the RTWMP within the current structure of CATIE, and specifically its location within the Wildlands and Watershed Program (WWP) of the Department of Renewable Natural Resources (DRNR); is this organizational scheme effective and if not, how should it be changed?; (b) the implementation of individual work plans and operation planning, and suggest ways to increase their effectiveness; (c) the mechanisms currently employed to prioritize project actions to avoid overextension of project resources."

"Review reports and project documents to determine (a) whether they are prepared in a fashion that makes clear what CATIE and national agencies are doing, and whether they are used internally in an appropriate and efficient manner; ... (c) the status of annual evaluation reports to be prepared by CATIE in accordance with the project paper; (d) how information management can be improved."

"Examine presently planned levels of financial contributions by CATIE, national agencies, and ROCAP and assess whether they are sufficient to achieve the project purpose. If the availability of human and/or financial resources is a constraint, make recommendations on what can and should be done to relieve the situation. Assess present CATIE relationships with other donors and possible future ones as a mechanism to promote RTWMP self-sustainability in the future."

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\*Task 8b is discussed in Section III.F.

The following sections discuss these issues as they relate to the questions below:

- Does the project currently have the necessary resources (inputs) to fulfill its objectives (outputs)? -- Task 9
- Does RTWMP's existence as part of a subprogram within CATIE limit the project's effectiveness and efficiency? -- Task 6a
- Are project documents and reports prepared and used within RTWMP in a way that is effective for management purposes? -- Tasks 6b and 8
- How are decisions made and priorities determined by the RTWMP project manager and staff at CATIE, and by RTWMP country coordinators, with input from other CATIE offices, ROCAP and bilateral AID missions? -- Tasks 5, 6b, 6c and 8
- Are measures being taken to ensure that, after the project is completed and AID support ends, CATIE will be able to continue providing the watershed management-related services expected of RTWMP? -- Task 9

#### 1. Ample Resources

- Does the project currently have the necessary resources (inputs) to fulfill its objectives (outputs)?

In order to accomplish the project purpose, a range of project inputs are proposed in the PP. These include human resources (e.g., technical and administrative staff), material resources (e.g., vehicles, audiovisual materials and data processing equipment) and financial resources.

#### Human Resources

Human resource questions deserving attention include:

- status and issues relating to existing RTWMP long-term staff (e.g., staffing and technical gaps, quality of technical personnel, use of short-term consultants);
- CATIE's counterpart hiring practices and limitations; and

- personnel limitations of national agencies.

The following table illustrates a comparison of the long-term staff composition envisioned in the PP and the current configuration.

<u>Staffing Proposed in Project Paper</u>	<u>Actual Staffing, September 1985</u>
1. Project manager	expatriate, in place
2. Land use specialist	CATIE,* 2 <u>expatriates</u> in place
3. Land use technical assistant	CATIE, in place
4. Soil/water conservation specialist	expatriate, in place
5. Hydrologist	CATIE,* in place
6. Hydro/soil technical assistant	CATIE,* not in place
7. Natural resource economist	expatriate, not in place
8. Natural resource economist	CATIE, not in place
9. Data base/information specialist	expatriate, not in place
10. Data base/information technician	CATIE, not in place
11. Instructional design specialist	expatriate, in place
12. Instructional design technician	CATIE, in place
13. Costa Rica country coordinator	CATIE, in place
14. El Salvador country coordinator	CATIE, not in place
15. Honduras country coordinator	CATIE, in place
16. Guatemala country coordinator	CATIE, not in place
17. Panama country coordinator	CATIE, in place
18. Administrative assistant	CATIE, in place

\*These positions are paid for out of CATIE's basic operating budget (all of the other positions are paid for with RTWMP funds, except for one of the expatriate land-use specialists, who is funded partially by CATIE, but mostly by the government of the Netherlands).

As envisioned in the PP, this project is an institution-building effort. At CATIE, it is expected that over the life of the project the junior-level staff (positions 3, 6, 8, 10 and 12 above) will become permanent CATIE staff. With this in mind, the fact that many of the important project staff are not yet hired is crucial. Almost two years of the project have passed already.

Another way of assessing the adequacy of current staff is to identify gaps in technical or administrative staffing which have

limited the ability of the project to provide services envisioned in the project paper. Generally speaking, the ARD evaluation team believes that if the staffing envisioned in the PP were complete at this time, it would be appropriate and sufficient to run this project. In addition, the team feels that the quality of technical people hired by RTWMP to date has been very good. The weakest skill area of the RTWMP staff is that of project management, which will be discussed in detail in Section III.B.4.

The fact that RTWMP does not yet have a full staff has created a number of problems. This is particularly important in relation to two project components. First, few staff members have been able to deliver technical assistance or advisory services due to the pressures of developing the master's and short-term training programs. Emphasis should, therefore, be placed on hiring expatriate or local staff (e.g., natural resource economist or data base specialist) who have the capabilities, reputations and experience necessary to provide advisory or technical assistance services. Second, the information/data base component of RTWMP (discussed in detail in Section III.F) has no full-time staff devoted to it. Visits to RTWMP country programs indicated that information flow has been poor and that, in general, the data base-related activities in the project have suffered from a lack of staff to implement them. While weaknesses in project management (discussed later in this report) are part of the reason for these problems, the data base and information services would receive greater attention if the data base specialist and technical assistant were on the project staff.

Another possible way of addressing the staffing shortage in both of the above components would be a pool of short-term consultants. Unfortunately, RTWMP has not utilized its available resources (e.g., CATIE personnel, consultants known through other program activities, AID contacts, etc.) to develop such a pool.

As central as institution-building is to this project, why haven't all the long-term staff been hired? The evaluation team's review indicates three major issues:

- slow project start-up,
- the recruitment/job advertising process, and
- the hiring and selection process within CATIE and RTWMP.

In terms of slow project start-up, it is important to note RTWMP was preceded by a two-year contract with CATIE (the Environmental Management Systems project). The contract supported a watershed scientist at CATIE to assist CATIE in developing a capability to provide watershed management advisory

and training services. In fact, a major emphasis of that contract was to assist in developing a longer-term, much larger effort, which is now RTWMP. Given the earlier contract, it is hard to understand many of the RTWMP start-up difficulties, including delays in hiring staff, equipment procurement and the absence of better-developed priorities for country programs.

With regard to recruitment and/or job advertising, the PP envisioned recruitment of the expatriate project staff through CATIE's traditional channels, including newspaper advertisements in all countries affiliated with the Instituto Interamericano de Ciencias Agrícolas (IICA) and at IICA-affiliated institutions. Obviously, the CATIE process also includes word-of-mouth advertising. CATIE was also expected to use technical publications, contacts in other international institutions and AID missions. The recruitment was to place an emphasis on experience in Central America and, secondarily, in South America. However, for some technical areas, e.g., data base management or instructional materials design, it was expected that most qualified candidates would come from the United States.

In practice, CATIE has recruited through IICA contacts, word of mouth, some assistance from U.S. universities (especially Colorado State University) and AID contacts. At least two technical publications (the "Bulletin of the International Society of Tropical Foresters" and the "Journal of Forestry") have been used to advertise, and through AID/ROCAP, RTWMP has had access to two large personnel rosters in Washington, D.C.--the AID/U.S. Forest Service's Forestry Support Program and the International Institute for Environment and Development. Although it can always be improved, the recruitment process is not a major deficiency in the project and is viewed quite favorably by the evaluation team. If recruitment has not been effective, the main reason may be that it has not always been the highest priority of RTWMP staff. Given the staff shortages within the project, the question of priority should be addressed.

The selection and hiring process within CATIE and RTWMP is only mentioned in one short, very general reference (page 48 of PP) which states that scopes of work will be sent to candidates, and that after each application is made, the most qualified individual will be hired. RTWMP has attempted a more systematic approach to staff recruitment. Terms of reference are used as the basis for developing the selection matrix and scoring system used during the first step of candidate screening. The matrix and scoring system are used for each position, with RTWMP, DRNR, ROCAP's environmental management specialist and other CATIE office staff having input on selection criteria and scoring weights assigned to each criterion. This system is used to select appropriate candidates for interviews with various CATIE staff and--usually in the case of this project--the ROCAP environmental management specialist. Candidate evaluations are

provided to the RTWMP project manager who then recommends that CATIE hire the person for the project. Final approval must be given by the DRNR head and director of CATIE.

In general, this overall process appears to be appropriate. However, the process is also time-consuming. In some cases, the actual hiring of a project staff member has been as long as a year behind schedule. As mentioned already, many important staff have not been hired yet. A number of reasons for the delays have been given. First, and probably most important, the selection criteria, scoring system and selected candidate all have to be approved at a number of different levels within CATIE, including the selection committee, subprogram director, program director, DRNR head, and office of the CATIE director. This process is slow and frustrating. It would be faster if the selection committee were composed so that it had sufficient authority to make all decisions regarding selection criteria, scoring and selection, pending final approval of the CATIE director. The selection committee now includes a technician with experience in the area of the open position, the RTWMP project manager, subprogram head, program head and DRNR head. Absent from the committee is a representative from the CATIE director's office. Thus, it does not appear that this committee has sufficient authority to complete the selection process. Representation from the director's office would ensure that potential problems could be identified early on and resolved.

At times, a problem has arisen when a good candidate has been identified, but the business office has refused to sign off because the salary level was too high. CATIE has justifiable long-term concerns in this regard. Hence, salary demands should be screened at the beginning of the process so that candidates and the selection committee are aware of any problems that may exist.

Another critical issue is that selection committees have not always included someone from the same discipline as the position being filled, e.g., no economist on the selection committee for the natural resource economist. It might be difficult at times to find a suitable individual from the same discipline for the committee, but it is very important that, wherever possible, CATIE and the DRNR ensure that this representation occurs. This is standard operating procedure in most institutions and should be at CATIE as well.

In terms of personnel limitations at CATIE and national agencies, the PP envisioned a high level of input into RTWMP activities from personnel at both CATIE and relevant national agencies. One of the major institution-building questions for this project will be CATIE's ability to maintain a watershed management staff using the core CATIE budget after RTWMP is over (discussed in greater detail in Section III.B.5). However, it

should be stressed that this is not just a problem for the future. Although the ARD team did not conduct a financial audit, interviews with ROCAP and RTWMP staff indicate that at this time, CATIE may not be able to support or hire the counterpart staff envisioned in the PP. This situation should be assessed immediately by CATIE and ROCAP to determine whether CATIE is in fact unable to do the hiring expected in the PP (see page 6 of Annex IID). As mentioned above, the hiring of both expatriate and counterpart staff is extremely important to the institution-building nature of RTWMP, and the implications of a limit to counterpart staff are great.

At the level of national agencies, the PP's numbers of expected host-country contributions are very high, and the ARD team saw no evidence of their being met. While it may be too early in the project to assess this, the team feels it would be remiss if it did not point out that the levels of inputs expected from host-country agencies are extremely optimistic, if not impossible, given the other projects the agencies are working on. RTWMP should consider whether a drastic change in requests for support from the host-country agencies is necessary. To date, RTWMP requests for agency support have been minimal. Country coordinators, uncertain as to the exact RTWMP resources they can call upon, have been appropriately cautious in their discussions with agencies. In this case, the ARD team recommends that, as part of the RTWMP staff's review of the logical framework (suggested by the team), the estimated inputs in the PP (page 9 of Annex IID) be reviewed and discussed so that country coordinators are more secure in discussions with national agencies.

Finding #2: RTWMP faces a serious staff shortage. This has been an important factor in the limited progress of both the technical assistance and data base components of the project. RTWMP's recruiting process is working, although it is not always as high a priority as it should be. The RTWMP staff have very good technical qualifications and experience for performing their tasks. Delays in acquiring staff have been caused largely by poor composition of staff selection committees, inadequate representation within the committee from the CATIE director's office, and the absence of early screening of salary demands. The PP includes very high estimated inputs into the project from personnel from both CATIE and national cooperating agencies that have not been met to date.

Recommendation #2: Staff recruitment should be top priority for the RTWMP project manager, CATIE and AID. The CATIE director, DRNR head and RTWMP project manager should consider the following changes in the staff selection process:

- place a representative from the office of the CATIE director on each selection committee in order to enhance the authority of the committee;
- ensure that, wherever possible, each selection committee has at least one member with training in the discipline of the position being filled; and
- screen salary limitations/requirements of applicants at the earliest stage possible.

The ARD team also suggests that as part of the recommended RTWMP staff review of the project's logical framework, estimated inputs from CATIE and host-country participating agencies listed in the PP (pages 6 and 9 of Annex IID) should be reviewed. Such a review could result in a greater emphasis on more substantial and timely host-country and CATIE personnel contributions to RTWMP activities.

#### Financial and Material Resources

Based on interviews, the evaluation team found that the major financial and material resource problems RTWMP faces are procurement delays based on:

- limited knowledge or understanding of the AID procurement system within CATIE and/or RTWMP,
- lack of administrative support to RTWMP and bureaucratic delays by CATIE,
- limitations within CATIE on the timely availability of local funds for supporting project costs, and
- poor project planning.

The first concern has now been addressed, as the RTWMP project administrator received training in AID procurement procedures at ROCAP/Guatemala. However, delays will continue because AID procurement procedures, when followed appropriately, are generally time-consuming. Planning, which has not been a strength of RTWMP so far, is required if the problems caused by procurement delays are to be minimized.

The second problem, lack of administrative support and bureaucratic delays within CATIE, is more difficult to address.

In general, interviews with project staff suggest that the process of administering RTWMP has been by trial and error. Support from CATIE administrative offices to RTWMP administrative staff in setting up management systems has been weak, and past CATIE experience administering other large projects funded by AID (and other donors) seems to have been of little value for RTWMP.

Within CATIE, administrative procedures are time-consuming. For example, in order for project staff to leave Costa Rica on a project activity, at least seven separate signatures are required at different levels in CATIE. This usually requires at least 30 days. Obviously such a process requires that RTWMP staff plan ahead; however, planning alone is not the answer. If CATIE wishes to be in a position to provide technical advisory services, a more rapid-response capability must exist. This requires that a more streamlined system for authorization of RTWMP expenditures be developed.

A third problem apparently relates to CATIE's abilities to provide counterpart staff and materials. When disbursements are made by AID to CATIE for this project, the overhead portion of the disbursement apparently goes into a general CATIE account that does not earmark funds for RTWMP. If major expenses are incurred by CATIE for other projects or activities, this money is used, sometimes creating a shortfall of available counterpart funds for the project. Though shortfalls are understandable, given the many demands for funds at CATIE, it would appear that RTWMP might not be receiving an appropriate share of overhead funds. A detailed discussion of this among ROCAP, CATIE director's office, and relevant RTWMP staff might clarify what limitations CATIE has and how to better plan project expenditures to compensate for them.

Some of the hardship caused by the above concerns could be alleviated by more efficient project planning. Project staff, and other observers or participants at CATIE, note that because RTWMP's activities are not well planned, the project is often attempting to get authorization for expenditures at the last minute.

Finding #3: Consistent delays in acquisition of financial and material resources have been caused by poor project and activity planning by RTWMP staff, weak administrative support from CATIE, and poor orientation of project administrative staff on AID procedures. Of particular note are the bureaucratic delays within CATIE for authorizing project expenditures and limits on the availability of financial resources for CATIE counterpart contributions. Project administrative staff have been forced into a trial-and-error situation, which seems quite curious given the long history of AID/ROCAP and CATIE cooperation.

Recommendation #3: Planning procedures should be improved so that resource needs are better anticipated. This is part of the overall need for better management throughout the project. CATIE, ROCAP and RTWMP administrative staff should meet to review weaknesses in budgetary, recruiting and hiring practices, with particular emphasis on streamlining administrative procedures for authorizing project expenditures.

## 2. RTWMP As a Subprogram

- Does RTWMP's existence as part of a subprogram within CATIE limit the project's effectiveness and efficiency?

As proposed in the PP, RTWMP was placed within the existing DRNR Wildlands and Watersheds Program. The figure on the following page shows the current organizational configuration at CATIE. RTWMP is located in the Watersheds subprogram, with the other subprogram being Wildlands.

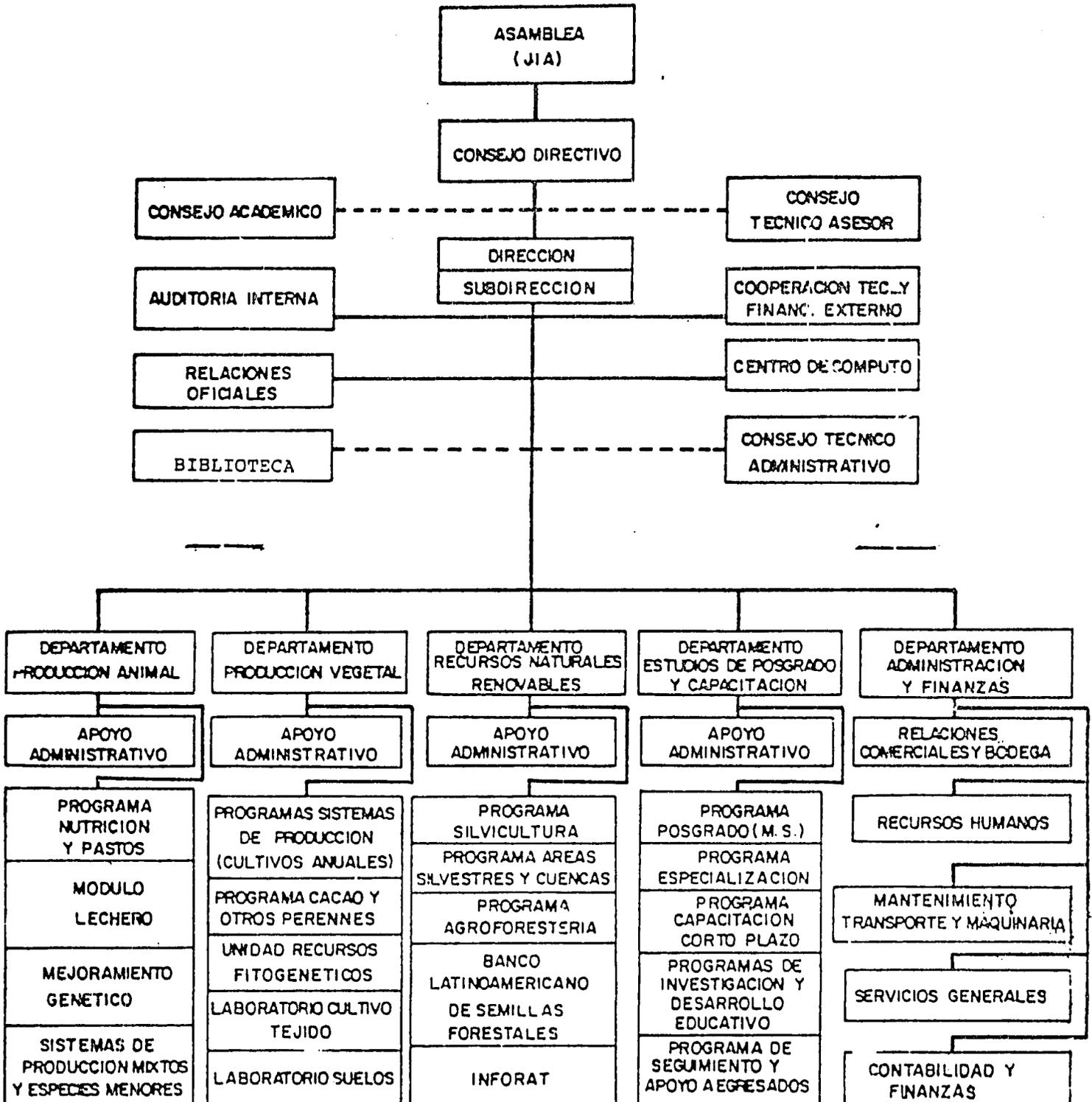
According to the PP (page 45), a reorganization plan was to be presented by CATIE prior to submission of the work plan for the first year. The intended focus or goal of the reorganization plan is not discussed in the PP, nor is the rationale behind it. Whatever the rationale, no reorganization plan has been presented by CATIE. However, some structural management changes have taken place, and CATIE is now in the process of preparing a 10-year plan which has included discussion of a new organizational plan or structure within CATIE.

The change in management structure now requires that the RTWMP project manager report to the head of Watersheds subprogram. Previously the RTWMP project manager reported directly to the head of DRNR, which left the subprogram head out of the information/management flow. More important, the sheer size of RTWMP, and the resultant power of the project manager, placed the head of the subprogram in a de facto inferior position. The recent change has more clearly defined the hierarchy within and around the project. However, residual effects from problems with the previous structure remain.

The original affiliation with the Wildlands subprogram was sought because of the strong presence it had established throughout Central America, principally by providing advisory services on a fee basis in topics such as national parks planning, conservation and protected areas management. This has included work with a number of different international, national and regional institutions. From the ARD team's viewpoint, the affiliation with Wildlands at the beginning of the Watersheds subprogram was a valid approach. However, from a content point of view, the affiliation with the Wildlands subprogram has the

# ORGANIGRAMA DEL CATIE

(Junio 85)



potential to seriously affect the impression that outsiders have of the current direction of the Watersheds subprogram and RTWMP. Specifically, this refers to a preservationist, protectionist or national parks approach to watershed management. While this approach may have validity within Wildlands, it is inappropriate to suggest that CATIE's watershed activities do the same.

The ARD evaluation team made an effort to determine the present and past effects on RTWMP of the Watersheds subprogram in terms of technical and managerial problems for RTWMP. On an administrative level, its existence only adds one layer of administration to the project. Thus, while unnecessary now, it has not had an adverse impact on RTWMP. In fact, the consistent previous leadership of and strong initiatives taken by WWP were probably two of the major reasons that RTWMP is at CATIE. Certainly WWP's past cohesiveness has had a positive overall effect on the Watersheds subprogram. On a technical level, ARD did not find that the Watersheds subprogram or RTWMP was taking a preservationist approach to watershed work. A preservationist approach is not present either in the staff's work or in written publications, although there appears to be a tendency to emphasize rural and upland watershed areas.

Over the long term, however, there is a distinct possibility that when new leadership takes over the existing WWP, the impact will be more adverse. Also, as a separate program, it would seem that Watersheds would be in a stronger position to lobby for resources both within and outside of CATIE. The more important issue here is that from a technical standpoint the inclusion of Watersheds in tandem with Wildlands may suggest to many that a preservationist ethic predominates in the program. This is not true.

Finally, in association with the 10-year plan now being developed by CATIE, new ideas about the structure of CATIE programs and departments are being considered. These were discussed by the ARD team and CATIE's director. Without going into great detail here, the point is to develop a structure that encourages more truly multidisciplinary activities, less duplication of training and extension activities, and centralization of basic support services such as computer, bibliographic references, etc. Although still under discussion, it appears that, at a minimum, the Watersheds subprogram will be established as a separate program from Wildlands. A new cross-sectoral, interdepartmental program is being considered which would provide leadership within CATIE to ensure that projects truly draw on all the distinct departments of CATIE. This would counter the evident tendency of projects to remain insular within their departments and, contrary to the expectations of many donor agencies, fail to put into practice the multidisciplinary approach expected at CATIE.

In general, based on the CATIE director's presentation to the ARD team, this represents a step forward for CATIE as an institution. In terms of RTWMP, this might mean that certain project staff become part of other cross-departmental programs. Over the long term, this seems advantageous and more efficient. However, for the purposes of this project, it would be destructive if project staff were asked to take on activities not directly related to RTWMP. The project is still experiencing growth pains, and switching resources around could prove damaging. It would seem logical for the new structure to affect primarily new projects coming to CATIE.

Finding #4: To date, the inclusion of watersheds as a subprogram within WWP has not affected RTWMP's efficiency or effectiveness. In fact, during the early years of the Watersheds subprogram, this association has been extremely important in terms of bringing RTWMP to CATIE. However, for technical and management reasons, the continuing association of Watersheds with Wildlands in WWP now presents two basic problems. First, the development approaches of each subprogram are distinct and may, in fact, be in direct conflict in certain situations. Second, as a separate program, Watersheds (Wildlands also, in fact) will be somewhat easier to manage through a clearer, more direct line of authority to the DRNR head, have greater identity within CATIE, and may be easier to fund.

Recommendation #4: CATIE should set up a separate program entitled "Watershed Management" within DRNR. Both the head of DRNR and the director of CATIE should carefully consider who should be the head of this new program.

Finding #5: The new CATIE structure proposed in the draft 10-year plan may provide needed centralization of key support services. It may also lead to more of the multidisciplinary work that donor organizations and national agencies expect of CATIE. However, if RTWMP staff are diverted to other programs or offices within CATIE and given new responsibilities, the project will suffer. DRNR's staff has one of the strongest commitments at CATIE to the sound management of watershed resources. As such, the evaluation team believes that DRNR is the appropriate department for this project.

Recommendation #5: RTWMP staff should remain 100 percent focused on and responsible for implementing RTWMP-related activities. While departments clearly need to improve coordination on this project, RTWMP should continue to reside within DRNR for the purpose of long-term institution-building.

### 3. Decision Making

- Are project documents and reports prepared and used within RTWMP in a way that is effective for management purposes?

During the course of this evaluation, RTWMP's reports, plans and general information system were reviewed. This included review and analysis of management-oriented project documents such as the annual project implementation (or work) plans, individual work plans and quarterly project reports.

The annual implementation plan is to provide a foundation for all project activities. As proposed in the PP, the annual plan is to include both overall and country-specific work plans. RTWMP's annual implementation plan is organized by project component according to the structure of the PP. The annual implementation plan is used by RTWMP staff as the basis for building individual work plans as well as quarterly project reports. Theoretically, the annual plan would also be used as the basis for analysis in the production of the annual evaluation report.

RTWMP is producing annual work plans (both project and individual) and quarterly reports which could be useful for project management purposes. Both the annual plan and quarterly reports are presented in a format agreed upon with ROCAP. However, there are problems in the write-up and presentation of these documents which make them very difficult to use.

First, these documents, as currently produced, are not very readable. Both the work plans and quarterly report require an in-depth reading of 25 to 30 pages of very small print in order to get at project issues. Neither document has summary sections. In other words, for management or decision-making purposes, neither is "user-friendly." Also, as will be discussed in Section III.F, neither is particularly usable for informational purposes.

Second, the level of detail presented is inconsistent. Expected inputs and outputs are presented in appropriate detail. Unfortunately, results are then treated very simplistically. For example, in the April-June 1985 quarterly report, only two problems are mentioned in 25 pages. Even a cursory review of the project yields far more problems than one would expect upon reading the quarterly report. Thus it is difficult to have much confidence in the quality of information presented. Neither CATIE nor ROCAP can depend on these documents for management purposes.

Finally, contrary to PP expectations, at no time are country programs presented as a unit for either planning or reporting.

No overall country strategy or approach is evident. Rather, country activities are presented in a piecemeal fashion throughout both the plans and reports. A unified, country-specific presentation showing inputs, outputs, problems, etc., could be used to give country coordinators, AID bilateral missions and national agencies a better idea of RTWMP accomplishments and plans.

In terms of individual work plans, it is also important to note that they are based on the PP's terms of reference for each specialist. Project staff are not at fault for using PP guidelines for planning. However, it should be remembered that terms of reference should be modified to reflect changes since preparation of the PP. In this case, the RTWMP project manager and staff are relying on a literal translation of the PP terms of reference. The problem is that neither the PP nor current work plans specify the percentage of time staff are to spend on particular items in their terms of reference or work plans. Hence, some staff typically have unrealistic task objectives.

Annual evaluation reports, as proposed in the PP, were to be provided to ROCAP by CATIE. They were to include a review of all project activities and accomplishments (including actual versus planned progress), discussion of factors affecting implementation and financial status, and based on these, recommendations for the next year's activities. To date, the project has not produced an annual evaluation report.

The ARD team believes that the PP's presentation of the type of evaluation report CATIE is to prepare is unclear. Sometimes it is discussed as a document meant for information purposes and in other cases for management. To clarify this, RTWMP and ROCAP should perform an internal project review or evaluation together annually. Responsibility for conducting this evaluation is primarily CATIE's, not ROCAP's. If a formal report is produced, and ARD believes it should be, the evaluation report should be in the form of a memorandum and should not be widely circulated among CATIE departments, national agencies, etc. Rather, it should be an internal document for RTWMP staff and other CATIE staff as determined by CATIE's director or the head of DRNR. If RTWMP staff, CATIE or ROCAP want an annual project report for wider circulation, then the ARD team believes a separate document should be produced. Such an annual report would serve an important management function by providing, in a readable form, more detailed information to national and international agencies and other interested parties. The annual report should not be oriented toward the process of making internal project management decisions.

Finding #6: The quarterly reports and individual and annual work plans are written in a potentially useful format. However, they are not nearly as useful as they could be because:

- plans and reports (particularly annual work plans) are not readable, and summaries pointing out major issues, achievements or problems are not included;
- the level of detail in the quarterly reports is inconsistent, if not misleading--it is very difficult to have confidence in the contents' quality, and neither CATIE nor ROCAP can depend on these documents for management purposes;
- contrary to PP expectations, country programs are presented in a piecemeal fashion, reducing the value of the work plans or quarterly reports for developing a unified country program and/or strategy.

No annual evaluation report has been produced by RTWMP.

Recommendation #6: Annual plans should contain a summary section and a separate, unified section on country-specific activities. Word-processing capabilities at RTWMP would facilitate this. Quarterly reports should present project issues, especially problems, more openly and in greater detail. Avoiding full detail in these reports has contributed to the project management difficulties confronted by RTWMP. In addition, the director of CATIE and head of DRNR should conduct an annual internal project review for management purposes. The results of this review should be presented in a memorandum for internal project circulation only, including ROCAP.

Finding #7: Individual work plans, while helpful on a general level, are based on terms of reference which do not indicate how much time is to be devoted to specific tasks (technical advisory services, teaching, etc.) and output indicators from the PP which are unrealistic.

Recommendation #7: Task responsibility within the project needs to be defined more clearly, including percentages of time to be devoted to each task. The RTWMP project manager, or the AID-funded land-use planner, should review, and revise as needed, staff scopes of work and individual work plans based on more realistic project outputs. With assistance from ROCAP, and based on the findings and recommendations of this evaluation, a complete revision of the RTWMP logical framework should be undertaken by RTWMP staff.

#### 4. RTWMP Management System

- How are decisions made and priorities determined by the RTWMP project manager and staff at CATIE, and by RTWMP country coordinators, with input from other CATIE offices, ROCAP and bilateral AID missions?

In the PP, the technical and management decision-making structure envisioned the RTWMP project manager reporting to the director of the DRNR. For decision-making purposes, it was expected that the RTWMP project manager would have input from:

- the head of DRNR,
- ROCAP,
- RTWMP staff based at CATIE,
- RTWMP country coordinators,
- RTWMP national advisory committees,
- the RTWMP regional advisory committee, and
- AID bilateral missions.

Three CATIE offices with important roles were not mentioned in the decision-making structure proposed in the PP. First, the director of CATIE has an important role to play in management decision making. Second, although the role of the head of WWP is unclear, RTWMP would be under his or her management hierarchically. Third, the newly designated Watersheds subprogram head has been important in terms of both technical and managerial decisions.

The specific role that each of the other organizations and individuals is to play in project decision making was not defined in the PP. More importantly, the project itself has not succeeded in defining these roles either. The major problem facing RTWMP is the way in which it deals with internal project decisions and priorities, be they managerial or technical. Although these issues are recognized to be intertwined, the following discussion is divided into two subsections: a) prioritization of technical activities and b) management decision making.

#### Prioritization of Technical Activities

Country programs have been started up in Honduras, Costa Rica and Panama. In Honduras and Panama, the AID bilateral missions have been consulted on general terms. In Costa Rica, this has not occurred because of staff changes within AID. Neither national nor regional advisory committees have been established. As of the date of this evaluation, country coordinators have been hired in Panama, Costa Rica and Honduras. Country coordinators are expected to be hired for Guatemala and El Salvador during the next year. In Costa Rica, Panama and

Honduras the country coordinators have been spending substantial time discussing, planning and organizing start-up of national advisory committees, and have begun to perform technical advisory and training services. ROCAP, or principally its regional environmental management specialist, has been consulted and involved in almost all cases, though generally in a limited advisory role. Meetings of RTWMP project staff and with the DRNR head have been held to plan and prioritize activities.

RTWMP's general strategy at the country level is to have country coordinators work as liaisons to national agencies and AID bilateral missions. The country advisory committees were to be formed for assisting in defining training and technical advisory priorities for each country. On a general level, this is a logical and potentially effective approach. RTWMP staff have attempted to more specifically define the responsibilities of project committees, but no formal notes have been written up, and no detailed strategy for their role exists. Organization of the advisory committees has been a high priority for the project and has taken a lot of the country coordinators' time. Unfortunately, they have had little help from project staff at CATIE. To date, although coordinators have attempted to form national committees, they are doing so without a clear idea of intended committee responsibilities.

Without these national committees and their help in prioritizing project activities, RTWMP has focused almost completely on short-term training activities for which the project manager and staff believe there is a clear demand. Although it appears that activities are often discussed in detail at project meetings, they are not systematically reviewed based on any criteria, and decisions to go forward with them are made on an ad hoc basis. Furthermore, the project has placed a low priority on clarifying and systematically approaching this process.

Finding #8: The PP envisioned the use of national and regional advisory committees, with national coordinators working with CATIE-based project staff to prioritize activities. Excellent country coordinators have been hired. Project advisory committees have not been formed, but national coordinators are making a concerted effort to do so. Their efforts have taken place with little assistance or substantive direction from RTWMP staff at CATIE. The role of the committees has not been defined, and country coordinators, project staff and host-country agencies lack a common understanding of responsibilities. The priority placed on training activities during the past year was an ad hoc decision by project staff that has detracted from overall project progress.

Recommendation #8: The role of the advisory committees and their relationship to the country coordinators should be clarified, written down and distributed to all parties as at the RTWMP retreat. Based on this agreed-upon role, CATIE-based project staff should visit the countries as soon as possible and assist coordinators in organizing the committees. The evaluation team does not believe that the advisory committees should decide on project priorities. Rather, they should be given a complete list of options for different activities in each component, discuss them, and rank or recommend activities to be implemented. At quarterly meetings, the national coordinator (sometimes with CATIE-based staff in attendance) should provide a short written and oral presentation on project activities. With assistance from ROCAP, RTWMP staff should come up with a list of technical (including institution-building) criteria by which to assess and prioritize project opportunities.

### Management Decision Making

The PP contains little discussion of management decision-making processes. Job descriptions appear to be the principal method in the PP for defining responsibilities and staff interaction. The RTWMP project manager has responsibility for managing the project, with support from all staff (particularly the RTWMP-funded land use planner) and under the direction of the DRNR head.

As mentioned previously, it was expected that soon after project start-up, CATIE would submit a reorganization plan to AID/ROCAP. This reorganization was to have established the Watersheds subprogram (with RTWMP as a subset) as a separate management unit within the department. No reorganization plan has been submitted, but a Watersheds subprogram director has been named by the DRNR head, and, unofficially, a separate Watersheds subprogram has been established. It is expected that all project communications must now include the subprogram head. Also, although the previous WWP director was one of the architects of RTWMP, the WWP director position is currently vacant. The management role for this position, when it is filled, is uncertain.

The constant shuffling of positions and authority has created unnecessary confusion and ill will within the project. In fact, the PP is quite clear in stating that the RTWMP project manager reports to the head of DRNR. The fact that the head of DRNR has not effectively used this authority to improve project management is one of the reasons that ineffective decision making exists within RTWMP.

Finding #9: The PP offers no definition of methodologies or procedures for management decision making. To date, RTWMP's decision-making methodology has been ad hoc, performed through mechanical and literal implementation of the overambitious PP. Reliance on the PP has led to an overload for some project staff at CATIE. Poor personnel management has meant that others are not being fully utilized. As ambitious and difficult as the project is, it is further complicated by inefficient planning and an absence of effective leadership at both the departmental (DRNR) and project levels. The ARD team believes that the magnitudes of outputs suggested in the PP are too ambitious. The current RTWMP project manager does not agree and, as such, has not attempted to revise the magnitudes of output. The combination of the overambitious PP objectives and the project manager's "hard-line" attitude of emphasizing, rather than modifying, the PP outputs has had an extremely negative effect on the overall progress of this young project. In addition, based on what is outlined in the PP, the head of the DRNR has been seriously remiss in not addressing the project's management problems in a timely manner. This lack of effort raises the question of whether it is necessary for CATIE's director to have more direct involvement in making the necessary changes. At present, the management atmosphere within RTWMP is decidedly negative.

Recommendation #9: Personnel changes in terms of decision making must be made immediately to rectify the situation. CATIE--both the director and the head of DRNR, specifically--should take the lead in making these changes in consultation with ROCAP. The following options should be considered:

- During a three-month trial period, a concerted effort should be made by the project manager to delegate authority, establish a decision-making procedure that more appropriately addresses the needs of the project and meets the approval of the department chairman and subprogram head. A review should then take place under the joint direction of the CATIE director and DRNR head, with input from the subprogram head and regional environmental specialist from ROCAP, to assess whether actual positive changes have taken place and whether a staffing change is necessary. During this three-month period, the project manager will meet weekly with the DRNR head and subprogram head in order to discuss and subsequently implement measures for improving project management and decision making.
- A project management consultant should be brought in to assist the project manager in improving project management and decision-making processes.

- An immediate change should be made in the project manager position, and the current project manager should assume a technical support role.
- An immediate change should be made in the project manager position, and the current project manager should leave the project.

It should be noted that each of the above options has advantages and disadvantages. The first provides the current project manager with an opportunity for improvement. However, a number of RTWMP, CATIE and ROCAP staff believe that this opportunity has already been given and no change has occurred. If that is true, then the first option would be a waste of resources. The second option could be used in combination with all of the others. Having such an individual to assist in revising the logical framework, individual scopes of work and other tasks would be invaluable. The third option would allow for continued benefits from the current project manager's substantial technical expertise. The fourth would clearly put the project on hold while a new project manager comes on and would not take advantage of the current manager's knowledge of RTWMP activities. It would, however, offer the benefit of eliminating completely the very negative project management atmosphere observed within RTWMP by the ARD evaluation team.

##### 5. Long-Term Viability of Watersheds Program

- Are measures being taken to ensure that, after the project is completed and AID support ends, CATIE will be able to continue providing the watershed management-related services expected of RTWMP?

The PP envisioned that RTWMP would begin to develop, by the fourth and fifth project years, a strategy for developing long-term funding mechanisms so that CATIE could continue to provide technical advisory and training services in watershed management. In this regard, the PP was faulty in recommending such a late start for development of the strategy. Strictly speaking, it is too early to evaluate RTWMP's efforts at long-term fund-raising. However, a number of CATIE and RTWMP staff have begun to think about such a strategy, and it is an opportune time to begin planning for the day when AID project funds run out. There are a number of reasons for this.

First, to date, RTWMP has not placed an emphasis on clients "buying into" technical advisory or training services. As there is still relatively little project experience in the host countries, it would be an opportune time for country coordinators and RTWMP staff to begin to notify national agencies and other project clients that sooner or later they will be asked, at a

minimum, to share costs for RTWMP activities. This is an area where the CATIE Wildlands office's previous experience in providing technical assistance might prove valuable.

In addition, the CATIE Office of External Finances and Technical Cooperation is embarking on an aggressive fund-raising campaign to strengthen CATIE in terms of both basic operation and project-specific funds. The problem facing CATIE is that its member countries are having an increasingly difficult time meeting their quotas for financial contributions. These and other long-term funding issues are being considered as part of the 10-year development plan that CATIE is now writing.

For the above reasons, now is an especially opportune time for RTWMP, DRNR and other CATIE staff to begin developing a plan to ensure the long-term survival of the Watersheds program and RTWMP-type activities. Whether CATIE plans to continue to provide technical assistance to clients on a fee basis is a critical issue.

Finding #10: The PP mentions the need to develop plans for long-term self-sustainability of RTWMP-type activities. However, this is not scheduled to occur until the fourth and fifth years of the project. Within both the Watersheds subprogram and CATIE in general, a number of people are already concerned about long-term sustainability. Project staff, particularly the Watersheds subprogram head, believe that planning for this should start earlier. In addition, other CATIE staff are now developing an aggressive strategy for long-term fund-raising.

Recommendation #10: In 1985, the heads of DRNR and the Watersheds subprogram should begin to outline a strategy for procurement of funds that will ensure the ongoing capability at CATIE for providing training, practical research, advisory services and technical assistance to its member countries. This strategizing should be coordinated with CATIE's ongoing institutional development efforts. As part of this strategy, the ARD team believes it is entirely appropriate to begin requesting that host-country agencies and other clients begin to share costs or fully pay, wherever possible, for technical services rendered by CATIE.

## C. Linkages

Tasks 4, 10 and 11 from the scope of work are discussed in this section:

"Examine regional linkages and information gathering and exchange mechanisms between CATIE [RTWMP] and counterpart national agencies. Suggest possible areas and ways in which information exchange, and the provision of support services and technical [advisory] services could be improved."

"Analyze the relationship of this project to other AID-funded watershed/natural resources projects at the country level in Costa Rica, Panama and Honduras and recommend how relationships could be fortified."

"Evaluate current practices relating to cooperation and the sharing of resources by RTWMP with other programs, projects or activities within CATIE. Comment on their effectiveness and, if necessary, suggest how this cooperation can be improved (e.g., hiring of personnel, use of vehicles, etc.). Suggest mechanisms to increase interdisciplinary work to strengthen future integrated watershed management actions of the project."

Task 7, which deals with linkages to international organizations for the publication and dissemination of watershed information, is covered in Section III.F.

### 1. National Agencies

According to the PP, linkages are to be made through:

- an RTWMP national coordinator who lives in a project country but may not be a citizen of that country, and many of whose duties relate to areas for intended linkages;
- visits to agencies within a project country by CATIE-based RTWMP staff to provide technical assistance, define specific training needs and responses, and manage and implement training activities;
- establishment of national and regional advisory committees; and

- development of formal agreements between national agencies and RTWMP.

The country coordinators for Costa Rica, Honduras and Panama have all been hired over the past 12 months. The country coordinator for Costa Rica started working on RTWMP in November 1984, although his work during the first several months focused on the other project countries as well. Thus, the start-up of activities specific to Costa Rica occurred in February 1985. The country coordinator in Honduras began work on March 15, 1985, and in Panama, the coordinator started on June 1, 1985.

All three coordinators have made contacts with both primary and secondary agencies in their countries. Through these contacts, RTWMP is able to ensure that appropriate people attend the project's training activities (e.g., the master's program, short courses, seminars and workshops).

Time spent in each of the project countries by CATIE-based RTWMP staff has been minimal to date. Visits to individual countries by project staff from CATIE have been in conjunction with course preparation and presentation. Interviews with representatives of the various agencies suggest, however, that more and longer visits should be made for the purpose of course preparation. Most technical assistance on the part of project staff has taken place in Costa Rica--in part because the country coordinator has been in place longer and had acquired familiarity with RTWMP and its activities through an earlier contract.

Due to the country coordinators' relatively recent introduction to RTWMP and the project's emphasis on training activities thus far, neither national nor regional committees have been established. However, the PP proposed that CATIE-based RTWMP staff and country coordinators hold quarterly meetings with national and regional advisory committees.

Establishment of the national committees has been one of the highest priorities for the country coordinators in Honduras, Costa Rica and Panama. In each country, there have been three options. The first option is to take advantage of existing national committees set up to focus on inter-institutional issues relating to water resources management (recursos hidricos). These committees have small budgets for annual activities and are usually made up of the national electric company, local natural resources ministry and other ministries which have demonstrated interest in this area. They have legal standing (personeria juridica) and, as such, bylaws. The individuals representing each institution do have some authority to develop policy options, recommendations, etc., which can be formally submitted for consideration by the national government. The second option is to form subcommittees that focus on watershed resources management but report to the committee on water resources.

Obviously, a subcommittee has less authority than a committee. It might, however, be somewhat less political than the committee, hence potentially more useful and appropriate for technical discussions. The third option is to form new committees to focus specifically on what RTWMP hopes to accomplish in the area of watershed resources management. The advantage of this third option is that RTWMP can more easily draw in agencies with a broader focus than just water resources, e.g., agricultural and education ministries. The disadvantage is that establishing a new committee takes a great deal of time.

For any of the above options, important issues need to be addressed, including:

- proposed objectives of the committee, e.g., to make decisions about training or technical advisory priorities, to make priority recommendations only, to share information only, to identify or select candidates for long-term training, to identify or select priority watersheds, etc.;
- level of agency staff who should attend committee meetings--whether they should be high-level political appointees, agency management staff, central office technical staff, or important technical field staff; and
- what should not be done at committee meetings, but rather through direct interaction between RTWMP and national agencies.

As discussed in Section III.B, some of these issues have been reviewed at RTWMP staff meetings at CATIE, but no written strategy has been developed and circulated. An obvious alternative which has been mentioned, but not seriously discussed, is not to have national committees at all. The ARD team believes that the national committees can be very helpful if used for information sharing and helping to arrive at country priorities. Hence, RTWMP should use national committees, and their formation should continue to be a high priority. In the meantime, however, country coordinators should use individual, agency-by-agency meetings to pose structured questions in order to arrive at country priorities. To do this, a list of short- and long-term options should be developed with assistance from CATIE-based RTWMP staff. The list should be discussed and prioritized by different agencies in meetings with the country coordinators. Analysis should be made and activities prioritized and planned by the country coordinator and RTWMP staff at quarterly meetings at CATIE.

There is some thought that one of the first tasks of these committees should be that of choosing the priority watershed. If

so, the absence of such committees will have an increasingly negative influence on the implementation of important project activities (development of watershed management plans, development of projects for financing, hands-on training of agency personnel, and the sensitization of agencies to the value and means of working together in integrated projects).

The PP suggests that the role of these committees should be that of review and advice rather than decision making. The ARD team strongly endorses this approach. There is some thought that one of the tasks of such committees is that of choosing the priority watershed. If so, the lack of such committees will have an increasingly negative influence on the implementation of important project activities (development of resource management plans that deal with watersheds, development of projects for financing, hands-on training of agency personnel and the sensitization of agencies to the value and means of working together in integrated projects). Although some advancement toward establishment of these committees may be noted, there is still no assurance that they will become active any time soon. The alternatives are that the priority watershed be selected through an ad hoc meeting of interested agencies, or through compromise if disagreements occur as to which watershed in a country has priority in terms of RTWMP activities.

In this case, the ARD team believes that a CATIE-based staff person--perhaps the soil and water conservation specialist--and the country coordinator should determine the watershed(s) upon which each country program should focus. This should include writing a country-level priority watershed assessment report. This report should include a plan that shows the emphasis within each watershed (e.g., education/training, development of technical assistance packages, socioeconomic or biophysical applied research), an activity schedule, CATIE and host-country roles and inputs, and how the work within the watershed has both national and regional significance.

Finding #11: The PP envisioned the use of national and regional advisory committees, and of national coordinators to assist CATIE-based project staff in prioritizing activities. Excellent country coordinators have been hired. Linkages via national and regional advisory committees are lacking because none of the three countries has set up such committees in a workable fashion yet. Country coordinators have invested substantial time and thought into developing these committees with little direction or assistance from CATIE-based RTWMP staff. At the time of this evaluation, the exact role and composition of the committees has not been defined.

Recommendation #11: Country coordinators should continue to place an emphasis on the formation of national committees. As a temporary measure, however, country coordinators, with assistance

from CATIE-based staff, should develop an approach to near-term priorities that includes structured interviews of important national agency staff. These interviews should include review, discussion and ranking of activity priorities with each agency on an individual basis. In addition, some other mechanism may be needed to select the priority watershed. The CATIE-based soil and water conservation specialist should assist the country coordinators in performing a country-level priority watershed assessment.

Development of formal agreements between national agencies and RTWMP is to include the following steps:

- visit primary and secondary agencies to explain the project;
- establish memoranda of agreements with principal counterpart agencies; and
- establish agreements with additional participating agencies.

The country coordinators have made contact with a wide range of government agencies, but particularly those with responsibility for protecting natural resources (e.g., Ministry of Natural Resources) or managing hydroelectric facilities. In Costa Rica, Panama and Honduras, principal counterpart agencies have been selected and agreements signed (Ministry of Natural Resources in Honduras and Panama, and the General Forestry Office in Costa Rica). Temporarily, the country coordinators and RTWMP staff have stopped attempting to develop agreements with secondary agencies because of interagency squabbles in two countries.

The ARD team believes greater emphasis should be placed on contacts with agencies and organizations which affect all watershed resources including, for example, public works or road-building agencies, livestock or logging agencies and companies, and agricultural cooperatives. Too often, watershed management specialists spend most of their time working with agencies or individuals who are already "advocates for the cause." Rather, RTWMP should focus on developing methods of interacting with entities that degrade major watershed resources.

Finding #12: At this time, no action is being taken to formalize agreements between RTWMP and agencies (other than counterpart agencies) because of inter-agency problems in two of the countries. Such agreements should be of high priority if technical assistance (training support, advisory services and information exchange) is to be performed in any worthwhile and continuing way for institution-building purposes.

Recommendation #12: The decision to stop action on development of formal agreements between agencies and RTWMP should be reconsidered in light of the importance these agreements have in furthering long-term institutional development efforts in agencies whose activities have significant impacts within watersheds.

## 2. AID Bilateral Missions and Projects

Early in the formulation of RTWMP, representatives from AID missions in Costa Rica, Honduras and Panama were involved in the original analysis of the appropriateness and importance of project components. While the PP intimates that the project was designed to complement the numerous bilateral AID projects operating or planned in the region, there are no specific tasks outlined in the PP or in the job descriptions of any of the project staff--not even those of the project manager and country coordinators.

In spite of this, the country coordinators in Panama and Honduras--perhaps because they were previously involved in AID-supported projects of the current project counterpart agencies (RENARE in Panama, and Ministry of Natural Resources in Honduras)--have established good relationships with counterpart-level personnel in the local AID missions. The project has had less success in Costa Rica. Apparently contacts have been discontinued there for two reasons. First, no current AID/Costa Rica staff are particularly involved in the AID-sponsored natural resources project there, so a low level of interest exists within the mission. Second, RTWMP has not yet placed much emphasis on working with the other sectors. Hence, local AID-funded projects in agriculture, infrastructure development, etc., have not been the focus of coordination efforts. It is important to remember that problems in managing watershed resources can occur because of any and all development activity on that watershed, not only because of the activities of a few projects that are related to natural resources. Country coordinators, through design and presentation of short courses and seminars as well as through close general contact, should communicate this concept to the other sectoral and donor or non-profit agencies supporting field activities in the country. For example, the country coordinator in Costa Rica should develop close relationships with non-natural resource projects and AID/Costa Rica mission staff in order to communicate with such agencies.

Even where strong relationships exist between RTWMP and the local AID mission, there is a potential for project-to-project interference. For example, AID mission personnel working on the new RENARE II project for Panama are fully aware of the existence and nature of RTWMP, including the fact that the in-country counterpart agency is RENARE. The new project will include

support services for watershed management as well as for national parks and wildland management, management of natural forests, and for private industrial plantations and woodlots. Proposed funding is on the order of \$30 million in loans and grants, with an additional \$10 million in counterpart support for annual average of an additional \$4 million. Nearly \$10 million are allocated for watershed management, much of which will go toward creation of management plans, training and institutional development in water-use related agencies. Funding for RTWMP is comparatively low, and there is a danger that the larger RENARE II project may overload the capacity of RENARE to effectively act as counterpart to other natural resource projects--in this case, RTWMP. Further, significant overlap appears in the objectives for training and institutional development. In this case, the role of RTWMP might be to work with RENARE in developing greater sensitivity regarding watershed management on the part of non-natural-resource agencies and/or to provide advisory services on the design of research activities.

Finding #13: AID mission representatives from Costa Rica, Honduras and Panama were involved in developing project components during formulation of the PP. Although the PP intimates that the project was designed to complement the numerous bilateral AID projects operating or planned in the region, there are no specific tasks outlined in the PP or RTWMP job descriptions--not even for the project manager or country coordinators. In spite of this, the country coordinators in Panama and Honduras--because of past involvement in AID-supported projects with the current RTWMP counterpart agencies (RENARE in Panama, and Ministry of Natural Resources in Honduras)--have established good relationships with local AID missions. There appear to be no such contacts established in Costa Rica, probably due to a lower level of interest on the part of the AID mission and RTWMP's limited initiatives in terms of working with non-natural-resource agencies.

Recommendation #13: Problems of watershed resource management can occur because of any and all development activity on that watershed, not only because of the activities of a few projects related to natural resources. First, this concept must be understood by project staff. Then, country coordinators must communicate it to sectoral and donor agencies by means of short courses and seminars and general close contact. For example, the country coordinator in Costa Rica should develop close relationships with non-natural resource projects and AID/Costa Rica mission staff in order to communicate with such agencies.

Finding #14: Even where a strong relationship exists between RTWMP and the local AID mission, there is a potential for project-to-project interference. For example, RTWMP funding is relatively low in Panama, and there is a danger that the large (\$30 million) RENARE II project may overload the capacity of

RENARE to effectively act as counterpart to RTWMP or other similar natural resource projects. Further, significant overlap appears in the objectives of training and institutional development. This would seem to be an opportunity for RTWMP activities to bring other non-water, non-natural-resource protection agencies into watershed management programs.

Recommendation #14: RTWMP activities should complement, rather than duplicate, existing AID (or other donor) national-level programs. In particular, country coordinators should focus on drawing agencies not traditionally involved (e.g., road-building agencies) toward watershed management activities. More specifically, it is recommended that RTWMP assistance to Panama be refocused in light of the new RENARE II project. The emphasis on technical advisory services for watershed management planning and on creation of bankable plans should be reduced. Instead, emphasis should be placed on providing advisory services and training to the secondary (i.e., non-water related) agencies of Panama. RENARE should remain the principal counterpart agency if assurances are given that support will continue for RTWMP's efforts to more fully involve secondary agencies in watershed management.

### 3. Other CATIE Offices

There are a number of areas in which RTWMP should cooperate with other departments and offices of CATIE. Recommendations for some of these (related to Rio Tuis, the master's degree program, data base and information systems, and project management and decision making) are covered in other sections of this report. This section focuses on development of technical interactions with the following CATIE departments:

- Department of Animal Production -- Although it is currently undergoing extensive change, the importance of livestock enterprise to watershed resource management demands that cooperative arrangements be entered into between RTWMP and this department. Some informal discussions have occurred, but no joint activities have been developed yet. Work in the Rio Tuis watershed and cooperation on training efforts would appear to be the most likely near-term joint activities.
- Department of Plant Production -- Several of this department's graduate-level courses could be used by students supported by RTWMP. Likewise, courses from the watershed management curriculum could and should be offered to students in the Plant Production department. Certain applied research projects from this department could profitably be undertaken

cooperatively with watershed management, possibly in the Rio Tuis watershed.

- Department of Post-Graduate Studies and Training --  
By definition, watershed resource management integrates all sectors and disciplines that influence the characteristics of a watershed. RTWMP should cooperate with this department in the design of all curricula, courses and projects offered or sponsored by CATIE so that necessary integration will occur. To date, the RTWMP instructional design and materials specialist has not focused sufficiently on this relationship.
- Department of Renewable Natural Resources --  
Virtually all programs, subprograms and projects within DRNR are closely related to RTWMP. By virtue of RTWMP's location within the department, a fair amount of interaction has already occurred.

Finding #15: Staff from RTWMP as well as other CATIE departments have made individual gestures toward cooperation on training and research. Cooperation, or even discussion of cooperation, regarding the technical advisory services component of RTWMP has not taken place. Watershed management is a natural common focus for all CATIE departments, but RTWMP has yet to develop a general strategy for involving the other departments. The initiatives that have taken place have been on an ad hoc basis, which is not necessarily bad. In any educational or research institution, informal linkages often have the most success. However, it would be beneficial to both RTWMP and other departments, and CATIE's reputation, if these linkages were the result of planned and formal interactions indicating a long-term CATIE commitment.

Recommendation #15: The ARD team believes RTWMP should develop a near-term plan for joint activities with other CATIE departments. Such a plan should specify activities, dates and which individuals from RTWMP and the other departments are to be involved. Cooperation on training, advisory services and related research activities should be included. To this end, RTWMP, in cooperation with the office of CATIE's director, should sponsor a day-long workshop on interdepartmental watershed management initiatives. Over the long-term life of RTWMP this intra-CATIE initiative should be the responsibility of the RTWMP project manager and should be incorporated in the preparation of each annual plan and report.

## D. Training Programs

This section focuses on Tasks 2 and 3 from the scope of work:

"Conduct a technical review of the Rio Tuis Watershed/Hydrological Laboratory activity and its role in meeting the objectives of the project. Assess current plans for its development and the level of effort required. Suggest improvements if necessary."

"Conduct a technical review of the new watershed management graduate curriculum as it relates to the RTWMP project, its content and quality, and where problems exist suggest corrective actions."

Also covered in this section are training activities separate from either the Rio Tuis watershed or the CATIE graduate program, such as the non-degree or non-CATIE graduate program, short-term training courses, regional workshops and seminars, and study tours.

### 1. Rio Tuis Watershed

The Rio Tuis watershed is identified in the PP as an outdoor laboratory/experimental area that will play an important role in student training and serve as a demonstration area in other project activities. The 76-square-kilometer watershed is located within six kilometers of CATIE. It exhibits an array of land uses: undisturbed forest (including some cloud forest), coffee plantations, grazing lands, annual cropping, agroforestry, small settlements and roads. It has land under private, public and questionable ownership. The topography, climate and soils also show marked variation. The number and variety of water resource uses are somewhat limited (i.e., there are no reservoirs for hydropower or irrigation, no major drainage schemes and no important fishery). Nonetheless, there are problems of low flow, high flow (flooding) and substantial sediment transport that have effects downstream. There are plans for a dam and reservoir just downstream of the watershed.

The 14-hectare finca "La Selva" has been obtained as an experimental and demonstration area under a 10-year agreement (1983-1993). It is mostly forested and has a perennial stream.

A number of past activities have enhanced the selection of this watershed for AID support as an outdoor laboratory/experimental area. A brief summary of those the ARD team discovered follows:

- The Swiss government's technical assistance agency has already made an investment of \$60,000 for the period 1983 through 1986 which permitted its execution of a number of studies and actions that complement the development foreseen in the RTWMP.
- A previous AID project (#598-0605) on environmental management systems has also helped to lay a foundation for productive activity on Rio Tuis.
- There have been at least two student research projects within the watershed having to do with agroforestry and erosion.
- Staff members Quesada, Stadtmuller and Luche have made strong commitments to work in this watershed, and other staff are becoming involved.
- A 1984 master's thesis presented a preliminary general survey as a basis for initiating management demonstrations.
- A semi-detailed soil survey has been prepared for the lower, southern portion of the watershed.
- A bibliographic compilation and some field checking have been carried out on the geology.
- A proposal for a "forest reserve" in the upper watershed has been made and approved up to the very last level of government action as of this evaluation.
- At La Selva, an access road has been extended and improved, a storage facility developed, the area fenced, a few demonstration terraces installed, and an area has been cleared and is currently being planted to coffee.

Funding of \$75,000 is provided for equipment to get the area functional as a teaching/demonstration area. In addition, some of the annual support of \$10,000 for field research and \$6,000 for laboratory inputs could probably be used in the Rio Tuis. Six staff have job descriptions that specify activity on Rio Tuis. The only specific mention of Rio Tuis in the PP is the following statement under the master's-level graduate program: "An outdoor laboratory/experimental watershed in the Rio Tuis watershed near CATIE will provide students with real on-the-ground applications of their coursework."

Almost all of the activity on the watershed and at La Selva has been generated by funding from other projects. No equipment

is in place for instrumenting the watershed with a meteorological network or for student studies at La Selva including stream-measuring devices. Equipment has been on order under both the Swiss government's project and RTWMP, but the procurement process has not functioned well, and no equipment has yet been received. Of the six individual staff identified for activity on Rio Tuis, two have not yet been hired, two have been active, and two have not yet become involved. There is some duplication and potential for problems in that the PP specifies that the hydrologist and land-use specialist are both supposed to design, plan and manage operations.

In their first trimester, the first group of master's students under RTWMP did team field studies as the practical part of their course on management of watersheds.

Finding #16: The training strategy report of May 1983, prepared for RTWMP, recommended support for the establishment of an equipped outdoor laboratory that would serve to demonstrate the use of equipment; measurement, collection and evaluation of land response to different practices; and as an area for other studies by students and staff. While the RTWMP scarcely mentions Rio Tuis, it apparently followed up on this suggestion, for it does provide funds for equipment. On the other hand, a DRNR external evaluation team submitted a report in June 1984, recommending that there should not be a further commitment of financial or human resources to the Rio Tuis watershed.

Recommendation #16: The Rio Tuis is an excellent site for teaching, demonstration and extension for the following reasons: its close proximity to CATIE, the lease control over La Selva, the variety of biophysical and land tenure characteristics which are representative of Central America and Panama, past baseline data availability and strong staff interest. The evaluation team supports the expansion of activities on the Rio Tuis watershed under the RTWMP with the emphasis on training and modest student research.

Finding #17: There is a proposal for a multidisciplinary research activity in the Rio Tuis which appears in the final report of the Environmental Management Systems project. Its purpose would be to demonstrate integrated land-use planning by a team which would include CATIE professionals from the areas of forestry, animal production, crop production, soils, engineering, economics and sociology. They would plan for production as well as reducing adverse soil and water impacts of various land uses. CATIE has 40 years of experience to draw on in some of the sectors that can contribute. Staff in other programs in DRNR and other departments at CATIE have indicated interest in activity in the Rio Tuis if there were the magnet of climatological and/or hydrological instrumentation. It is noted that the RTWMP

specialist in natural resource economics (yet to be hired) has a component in the job description for Rio Tuis.

Recommendation #17: This proposal would provide a much needed demonstration and training ground for activities that combine production with protection or rehabilitation and biophysical with economic, social and institutional expertise. The Rio Tuis would be a very strong candidate for a site with regional significance. The groundwork for such a study might be laid under the RTWMP through the development of a formal funding proposal (it is within the stated job descriptions of several staff). However, other funding should be sought by the Watersheds subprogram for the actual field activities. Individuals in CATIE who have expertise in various areas, particularly the social and institutional aspects of rural land use, should be involved in activities on the watershed.

Finding #18: The past and current activities on Rio Tuis are mostly ad hoc and unrelated, and even future proposals have not evolved out of any overview plan for either the whole watershed or even for La Selva. There is an operative plan prepared in advance for the following year for the DDA project, and each individual staff member identifies in his yearly plan those activities that will occur on Rio Tuis. More than this is required if the area is to play an optimum role in training and demonstration.

Recommendation #18: An overall framework for activities on the Rio Tuis watershed must be developed as soon as possible by the Watersheds subprogram. A sub-plan for La Selva is of particular urgency if it is to fulfill its special role in the graduate program. The evaluation team suggests that advisors be sought from other program areas in DRNR and from other departments, in particular social science advisors. Some technical and valuable input might be obtained from ROCAP's environmental management specialist, and the plan should be sent to country coordinators for input. Also, the following steps are imperative:

- procurement procedures must be improved to avoid the delays that have characterized the operational instrumentation of the watershed--besides the equipment already ordered, additional equipment and on-the-ground installation of modest experimental plots are urgently needed if La Selva and Rio Tuis are to be used with the postgraduate students (especially the current group) and in workshops and short courses; and
- the responsibilities of the hydrologist and land-use specialist with regard to planning and direction of activities on Rio Tuis must be clarified, especially in view of the fact that the subprogram in

watersheds will continue after the conclusion of RTWMP--alternatively, in view of his interest and involvement, the bioclimatologist might take on principal responsibility for this task, further integrating DRNR staff and RTWMP activities.

Finding #19: There exists some sentiment for engaging in "heavy-duty" research involving stream flow and sediment measurement and small watershed calibration followed by land-use treatments. The PP refers to weirs, and there are statements in several documents about the need for small watershed research, even of the "paired catchment" type, for tropical areas and especially Central America and Panama. While long-term small catchment research is much needed and is seductive when there are funds for equipment, the ARD team feels that such research is beyond the scope of this project. The instrumentation needed to permit students to engage in short-term investigations such as surface erosion studies, or to measure and demonstrate a stream's response to rainfall events, is very important, and project efforts should continue to focus on this goal and that of usefulness in other training activities. Separate funding and a formal link with an experienced catchment research institution should be considered for the future. The project work plan has staff fully committed in other activities for the life of the project.

Recommendation #19: Under this project, no funds or human resources should be used solely for long-term instrumented catchment research. Emphasis should be on training and demonstration. Separate funding and a formal link with an experienced catchment research institution should be pursued by the Watersheds subprogram. Instrumentation of Rio Tuis and La Selva with a meteorological network and a stream gauge should be given high priority if the area is to fill its role as an area for CATIE students and staff to use for demonstration, teaching and extension. Instrumented plots for modest soil erosion/land treatment studies by students and staff should be installed at the La Selva farm as soon as possible.

## 2. CATIE Graduate Degree Program

The purpose of the master of science specialization in watershed management is to develop a cadre of professional leaders in the region, who are trained in a tropical setting and will remain in the region after graduation.

The PP calls for the development of a curriculum in watershed management and its initiatives as a specialization within the master's program at CATIE. Suggestions for courses and sequencing were provided in a training strategy report to ROCAP, and these were incorporated into the project document. An output of 30 master's graduates is called for by the project

termination date (October 1988). Staff have been given specific course assignments in their job descriptions.

As called for, the master's specialization has been designed and installed as part of the CATIE graduate program and within the DRNR. The first seven students were admitted to the two-year program and are to be graduated in February 1987. Their program consists of four-and-a-half trimesters of coursework and three-and-a-half trimesters devoted to a thesis. The backgrounds of the first students in the program appear to coincide with those visualized by the program planners. The students represent civil engineering, general agriculture, agricultural engineering and forestry, are of both sexes, and come from six countries. Conversations with staff and students confirm the quality and indicate that selection and admission processes are working well.

There was a delay of approximately one year in the actual initiation of the program due to the need for a critical mass of staff and for laying the foundation prior to accepting the first students. Even now, not all of the staff with teaching and advising responsibilities have been hired. Some courses (e.g., hydraulics) are being taught by temporary staff.

A large number of remedial or "leveling" courses such as statistics, physics, mathematics, technical writing and English language, are required because of the diverse and uneven backgrounds of the students. This has the effect of greatly reducing the option to take important electives. The core required courses are appropriately oriented toward management and planning, emphasizing the practical aspects. The ARD team foresees that many students in other DRNR programs and other CATIE departments may elect courses from the watersheds curriculum. While this will add a burden to the overloaded faculty, but will be very beneficial for agricultural and forestry professionals in the region.

In terms of the actual course curriculum, it is very easy for an evaluator to study a curriculum, pick flaws and identify a number of his or her pet courses as being "gaps" if they have not been included. The ARD team resisted this temptation. In general, the team found that the course topics and content of the master's program are sound and require only fine tuning. The need for so many remedial courses is realistic, but it reduces the opportunity to take more core courses to fill gaps and to elect important courses in other departments to meet professional deficiencies of students with the most common backgrounds (e.g., forestry, general agriculture and engineering). Among the gaps that have been identified in the ARD team's interactions with country coordinators, other country professionals, CATIE staff and the results of the ROCAP watershed management survey, are courses in: air photo interpretation, map interpretation and remote sensing; overview of water resources use and planning;

watershed modeling as a system; geomorphology, erosion (including mass movement) and sedimentation; sociology, institutions, land tenure and organizational behavior. The current students have had essentially no electives in their first three trimesters. Several offerings in other departments (e.g., economics of production, production and utilization of pastures, and agro-ecosystems) would appear useful to those concerned with rural land use in watersheds. The course in physical characteristics of soil and its management is a required core course and is taught in the Department of Plant Production, representing the kind of cross-department activity the ARD team supports.

Finding #20: The course topics and content of the master's program are sound and require only fine tuning. The need for so many remedial courses is realistic, but it reduces the opportunity to take electives. The current students have had essentially no electives in their first three semesters. The course in physical characteristics of soil and its management is a required core course and is taught in the Department of Plant Production. This represents the kind of cross-department activity the ARD team supports.

Recommendation #20: Although a curriculum committee was formed in DRNR to shape the graduate program in conjunction with the "training strategy" and Colorado State University consultants, a continuing curriculum assessment committee has not been formed. The ARD team recommends that such a committee be established and that it be charged with the fine tuning that is required as experience is gained.

The emphasis on the thesis, which is a requirement of academic graduate programs, may present something of a problem in this program, whose rationale in the PP and training strategy paper is to produce professionals who can apply themselves to the immediate short- and medium-term problems in watersheds in Central America and Panama as well as other countries of Latin America. Students are to carry out their theses research in their home countries on real world problems. Three and a half trimesters out of eight are devoted to the thesis. Counseling and supervision by staff will represent a major burden under these circumstances, in view of all of the staff's other commitments for training and technical assistance. Students winding up programs at the master's level are already experiencing problems of completion within two years. To have 30 students complete master's programs with theses by October 1988 is a formidable venture. Several prestigious universities in the United States (e.g., Cornell and Colorado State universities) have developed special non-thesis degree programs with names such as "master's of professional studies." These involve a substantial special project of investigation on an applied topic, but not a formal thesis. The objective of these programs-- professional upgrading for those who have been working for a

number of years, or a redirection of interest, usually from one discipline to a more general, integrative training--coincide very well with the objectives of RTWMP support for a master's degree in watershed management.

In addition, the emphasis on the thesis is seen as a major obstacle to achieving several of the specified outputs in the PP, such as numbers of students graduated and staff outputs in other training and advisory service areas, in view of the major student advising job that will be required.

Finding #21: The emphasis on the thesis presents a problem in this program, whose rationale is to produce professionals to work in watersheds on immediate short- and medium-term problems. Counseling and supervision by staff will represent a major burden under the current circumstances, in view of all of the staff's other commitments for training and technical assistance. To have 30 students complete master's programs with theses by October 1988 is a formidable venture. Several prestigious universities in the United States (e.g., Cornell and Colorado State universities) have developed special non-thesis degree programs with names such as "master's of professional studies." The objective of these programs--professional upgrading for those who have been working for a number of years, or a redirection of interest--coincide very well with the objectives of RTWMP support for a master's degree in watershed management.

Recommendation #21: The ARD team strongly endorses the PP's emphasis on applied training, rather than on a more academic education, as best meeting the short- and medium-term needs in Central America and Panama as well as other countries in Latin America. Therefore, the team questions the emphasis on the thesis. The ARD team recommends that the option of a non-thesis, master of professional studies program be studied as better meeting regional needs at this time, with students allowed either course of study depending on their career objectives. According to the Office of Postgraduate Studies and Training, this is not an inconceivable development.

The number of graduate completions (30) by October 1988 called for in the PP is a major problem. By February 1987 there will be at most seven completions. While it would be physically possible to admit and turn out 23 students, this seems to the ARD team to be an unrealistic target. The overlap in classes creates an advising and thesis supervision load that is excessive in view of all of the other duties of the staff specified in the job descriptions for verifiable indicators of outputs. Moreover, four of the staff with teaching commitments have not yet been hired. The ARD team believes that the targeted output number will severely reduce the quality of the graduate program. The training strategy report to ROCAP, which was obviously of considerable influence in shaping the graduate program,

recommended 11 completions at CATIE and five in the United States. This was changed to 30 completions at CATIE somewhere along the line. Even if the number of completions were to be reduced to 20 or 21, it would still be the largest specialization within DRNR and would still represent a major portion of the entire CATIE graduation student numbers (30 to 40 admissions per year). Savings to the project by reduced numbers could be used to further enhance the quality of program outputs in training by: increasing and improving the quality of library holdings in watershed management (now very inadequate); translating into Spanish the important watershed reference materials; and funding remedial coursework for students accepted into the graduate program before they come to the CATIE campus (see next finding).

Finding #22: The 30 graduate completions called for in the PP is a major problem. The ARD team believes that the targeted output number will severely reduce the quality of the graduate program. Savings to the project by reduced numbers could be used to further enhance the quality of program outputs in training. For example, the quality of library holdings in watershed management could be improved, important watershed reference materials could be translated, and remedial coursework for students before they come to CATIE could be funded.

Recommendation #22: The ARD team feels that one of the indicators of project output, namely 30 graduates from CATIE within the project period, is not only unrealistic, but does not well serve the project output of quality training for developing a cadre of professional leaders. The team suggests a reduction in verifiable indicators to 20 or 21 master's completions at CATIE.

In many cases, the need for many remedial or leveling courses is real, but it represents a major drag on the program. It effectively leaves the students with no electives in their first three trimesters. The ARD team feels that it is important for the students to be able to take electives in other program areas in DRNR, and particularly in other departments at CATIE, and has suggested some appropriate courses in Section D.1. The new CATIE linkage with many universities in the region may offer an innovative way to handle some of this remedial work at institutions in the student's home country after admission to, but prior to entering the master's program at, CATIE.

Finding #23: The need for remedial courses is real, but represents a major drag on the program. It leaves students with virtually no electives.

Recommendation #23: The ARD team suggests an investigation into the possibility of the project funding tutoring or one or two remedial courses for students accepted into the graduate program, before their arrival on campus, so that they can make use of electives at CATIE to increase the quality of their curriculum.

The requirement for at least four years of teaching experience on the part of professors, the obvious competence seen by the ARD team in the individuals with teaching responsibilities, and the students' reactions to their courses all indicate a potential for high-quality instruction and faculty-student interaction. The content of the courses (the ARD team was able to examine most of these) was mostly good, and in some cases excellent, in the team's opinion. The potential for a quality postgraduate program of technical training exists. There are some countervailing problems. The sheer number of students has already been discussed. The major time commitment of the instructional staff specified in the job descriptions and the specificity of numbers of short courses, workshops, seminars, technical service assignments, training manuals and teaching modules, and tailor-made programs of study for visiting scholars and non-degree students, all place an overwhelming load on the staff.

Finding #24: The major time commitment of the instructional staff specified in the job descriptions and the specificity of other RTWMP tasks place an overwhelming load on the staff.

Recommendation #24: The teaching staff overload in terms of the range of duties and the specific target numbers of various activities should be reduced. Innovative ways should be probed of using visiting scholars and short-term consultants and of more effectively using assistants on the staff to meet some of the targets in the PP.

### 3. Non-Degree or Non-CATIE Graduate Program

Within this category of training, there are provisions in the PP for a visiting scholar program and a foreign study program. The visiting scholar component provides support for up to 10 recent master's graduates to spend up to six months at CATIE. Each is to pursue a tailor-made program with some staff member to orient them to tropical watershed management issues since many of them have obtained their degrees at institutions in the United States or other non-tropical countries.

The foreign study program has two components, one to provide 15 professionals (with or without master's degrees) with up to one year of graduate-level training at U.S. or Latin American universities, and one to provide two scholarships for complete master's programs at U.S. universities.

Nothing has yet been initiated in either of these components even though the implementation plan calls for initiation in January 1985. These are valuable and valid components for RTWMP support. Generally, the level of output seems realistic and manageable by the staff. The foreign study program should not be a major burden on the professional project staff. Their input and that of the country coordinator is needed for the selection process, but the bulk of the workload falls in the administrative and financial areas. In contrast, the visiting scholar program will require more time investment by the staff, who are already overloaded--especially the senior professional staff, who are called upon specifically to plan and supervise the individually designed programs.

Finding #25: Nothing has yet been initiated in either the non-degree or non-CATIE graduate program activities, although the implementation plan calls for initiation in January 1985. These are valuable and valid components for RTWMP support. The foreign study program should not be a major burden on the professional project staff, but the visiting scholar program may prove to be.

Recommendation #25: RTWMP staff should make realistic plans for implementing both of these activities. These programs are very much behind schedule and need to be put in motion if they are to meet the targeted outputs.

#### 4. Short Courses

According to the PP, the short course program is "the project's most important outreach effort." The courses are designed to improve the technical skills of national personnel (technicians and professionals). The short courses are also to be a vehicle for identifying candidates for other training activities and especially for the graduate program.

The PP is amazingly specific. It requires the courses to have a heavy practical emphasis and be divided as follows: 25 percent on basic concepts and principles; 25 percent on basic techniques for treating the problems; and 50 percent on application with hands-on exercises. Titles, content outlines, and targeted participants (one-half from host country, one-half from other countries) are spelled out for nine different suggested short courses (Table 4, p. 30 of PP). Each course is to have approximately 20 participants and be held an average of twice over the project life. Moreover, the implementation plan gives the target number of times each course will be offered (e.g., data base enumeration, 10 courses; curriculum development, one course) and suggests the timing in each of the years. This accounts for 24 to 25 of the 27 or 28 total courses. From these, 10 short-course modules are to be developed, tested and improved, and a total of 380 nationals trained. The job descriptions of

the staff include specific responsibilities for short courses. Supervision over the short-course component is expressly given to the senior land-use specialist funded by ROCAP.

Four of the required 27 or 28 courses have been held. A brief summary follows:

- Fundamentals of Watershed Management--22  
participants, all from Panama, upper level; held in Panama; five days; six staff.
- Soil Conservation and Technology Transfer--31  
participants, all from Panama, middle and upper level; held in Panama; four days; two staff.
- Basis for Management of Watersheds--21 participants,  
all from Costa Rica, lower level; held in Costa Rica; four days; seven staff.
- Hydrologic Basis for Watershed Management--27  
participants from seven countries, upper level; held at CATIE; 10 days; 10 staff.

No "modules" have been formally developed, tested and improved.

Finding #26: It is difficult to reconcile the topics, scheduling and country exclusivity of these four events with the 24 or 25 specific topics, and the lack of mixing of country participants in three out of the four. They appear to have been developed on an ad hoc basis, without much reference to the PP and without any concrete priority plan developed by staff and country coordinators. The lack of country committees has not permitted this kind of advisory input into the short-course component. On the other hand, the ARD team's examination of course content, the involvement of several staff, and the very positive course evaluations by the participants all lead the team to have a feeling that these are on the right track. A significant and continuing problem is the fact that the two data base staff and the natural resource economist positions have not been filled, since they are responsible for over half of the courses suggested in the PP. The PP appears too inflexible by spelling out so much detail.

Recommendation #26: If the short-course program is to resemble the PP in topics, scheduling and number of repeat offerings, the data base and resource economist staff need to be aboard and functioning as soon as possible. On the other hand, greater course flexibility should be allowed. Now that some of the staff and country coordinators are in place, representing a considerable pool of varied experience and linkages, the ARD team recommends that they be involved in planning a new set of

priority topics and scheduling. It is suggested that the coordinator of the short-course program be the ROCAP-funded land-use specialist, as called for, rather than the project manager, as seems to be the case. The short-course coordinator should be mindful of the suggestion that only half of the participants be from the host country and the balance from other countries, since these are to be regionally interactive events.

#### 5. Regional Workshops and Seminars

The PP calls for two specific seminars and one workshop, all to be region wide, held two or three times over the life of the project, and to involve approximately 200 participants. These are:

- Natural Resources Policy Seminar for Decision Makers,
- Senior Professional Basic Management Seminar, and
- Central American Watershed Management Workshop.

The content and clientele are spelled out in the PP, which calls for the workshop to be scheduled the last year of the project. One seminar has been held at CATIE with 38 participants from seven countries, and including 17 CATIE staff, on the topic of "Systems Dynamics of Sustainable Resources Management." Evaluation was favorable, although interviews with course participants indicated that it was not of practical use in their jobs. Rather, it was perceived as a personally enlightening course.

The project objectives seem attainable in all ways. The ARD team has no recommendations.

#### 6. Study Tours

Thirty national professional, senior professional or technical personnel are to be provided with the opportunity to travel and study applied watershed management in Central America, the Caribbean and in some cases, the United States, for up to two weeks. One study tour to Colombia has been held, involving the three country coordinators and 11 others, including any country counterparts. The five-day site visit was to the integrated CVC project. The ARD team feels that even though this study tour was not in an "authorized" country, CVC was a sound choice, and this kind of flexibility is warranted.

Finding #27: No clear process for RTWMP's prioritization of short courses, workshops, seminars and study tours exists.

Recommendation #27: RTWMP staff, including country coordinators, should evaluate short-term training opportunities or requests on a monthly or quarterly basis. The review could include the ranking of each opportunity according to a set of criteria agreed upon by all RTWMP staff. Examples of such criteria are that the training activity:

- link up with an important AID (or other donor) project;
- create contact with a new and/or important agency;
- be a high priority of a country contact or advisory committee;
- address an appropriate audience (e.g., high-level technician, trainers, field technicians); and
- operate with the option of "buy-in" or cost-sharing.

## E. Advisory Services

This section addresses the general requirements, rather than a specific task, of the Scope of Work.

According to the PP, the advisory services component is to:

"...provide both short and long-term technical assistance in areas requested by the national institutions, USAID and other donors and build an in-house capacity at CATIE to offer such assistance after the project ends. [Further, this assistance will]...improve watershed planning methodologies, assist in the elaboration of watershed plans, and provide computerized information including statistics, geophysical descriptions and maps needed for planning and policy decisions."

This component addresses CATIE's stated technical cooperation objective, which is to:

"...give technical cooperation to...member states and, eventually, to others [states] in the region, in order to fortify national institutions in higher education, research, and forestry, agriculture, and livestock development."

The PP envisions a very ambitious advisory services component for RTWMP. According to the PP, this project component is expected to include:

- establishment of one watershed management methodology at each of four levels--national, priority watershed, smaller watershed and operational;
- development of and preparation of funding proposals for five bankable watershed management plans, including international watersheds;
- evaluation of on-the-ground, improved, integrated watershed management practices in at least two projects;
- design and establishment of research programs in at least two projects;
- completion of 60 technical advisory assignments (average of two weeks each);

- establishment and/or improvement of one national data base system; and
- provision of information through simple request forms.

Due to RTWMP's emphasis on training activities thus far, and the relatively recent hiring of the country coordinators, staff have spent little time on the advisory services component of the project. Country coordinators have initiated some technical advisory work in relation to the identification and reconnaissance of priority watersheds. Thus, RTWMP is really just beginning work on its advisory services component.

In general, the ARD evaluation team noted that the logical framework lists several outputs that at times are unclear, overly ambitious and/or insufficiently focused. In response, the team believes it is timely to note a series of issues that RTWMP staff should address:

- the need to focus advisory services on institutional development;
- clarification of the actual outputs and practicality of the magnitude of outputs proposed in the PP; and
- the potential to develop a longer-term capability for providing technical advisory services, including the need for emphasizing cost-sharing and/or "buy-ins," and the use of short-term consultants.

The institutional development element of the project appears to be aimed at national and regional institutions responsible for watershed management, by mandate, tradition or name. Such institutions tend to be understood as those working in forestry and natural resources, planning agencies, electric companies, ministries of agriculture and national universities. Disciplines often described as applicable are land-use planning, resource inventory and land classification, forest management, agro-forestry, soil and water conservation, water resource engineering, wildlands and wildlife management and protection, and pollution control.

In the PP, institutions to be assisted have been divided into primary and secondary categories depending on the degree of their responsibility for watershed management. Apparently, there is a third category having nothing to do with watershed management. However, any and all physical development activity by humans takes place on a watershed and influences the soil and water conditions of a watershed. Even the areas of finance and marketing influence physical activities on watersheds, and it is often this third category that is the cause of the watershed

"problems." To the extent possible, RTWMP needs to focus on this third category of institutions to provide their personnel with an understanding of the concepts and technology of watershed resources management. If RTWMP is to meet its objectives, it must seek to maintain contact with those regional, national and local institutions working at practical levels. To do this, RTWMP may have to reevaluate the PP concept of primary and secondary institutions to ensure the inclusion of such organizations as public works departments, the military, agrarian reform agencies, agriculture and livestock production associations, municipalities and technical agriculture schools.

The outputs proposed in the PP need some clarification, both in terms of content and the expected magnitude of the output. For example, tested watershed management planning methodologies already exist for the various levels of interest. The development and testing of new methodologies is time-consuming and expensive. At most, RTWMP should investigate the possibility of adapting existing planning methodologies to conditions in the region.

With regard to bankable watershed management plans it should be said that banks generally fund sectoral projects rather than integrated plans. Further, depending on watershed size, development anticipated and the area's complexity, the formulation of such plans (even at the most rudimentary levels) can take hundreds of thousands of dollars and several years to complete, with little or no assurance of implementation. This is no less true for international watersheds--indeed, this type of effort will be even more complex and time-consuming. The ARD team believes that the outputs should be scaled down considerably, choosing only those watersheds that are relatively simple in terms of variety of resource uses, and reducing the emphasis on international watersheds.

The PP mentions as an output the evaluation of on-the-ground, improved, integrated watershed management practices for at least two projects. This may be difficult to accomplish in a two- or three-year period since it usually requires long-term data collection, particularly on biophysical measures. It is, however, a very appropriate activity for RTWMP and one that might be accomplished through coordination with either of the AID-funded bilateral projects in Panama or Honduras. In fact, in Honduras, technical staff have indicated an interest in collaborating with RTWMP in this area. This may also be a way of accomplishing another output mentioned in the PP, the design and establishment of research programs in at least two projects.

Probably the most ambitious of the proposed outputs is to have 60 technical advisory assignments completed (at an average of two weeks each) by the end of the project. The evaluation team believes that RTWMP can only achieve this objective if two

conditions are met--all project staff proposed in the PP must be hired as soon as possible, and RTWMP must develop a roster of qualified and trusted consultants to assist in the completion of advisory service tasks.

The PP also mentions having one national data base system established and/or improved. There is ample opportunity for RTWMP to achieve this goal. However, it is very important that a data base specialist be hired if this service is to be provided. Discussions with country-level officials made it clear that substantial efforts have been made in terms of data base development. The problem is that the data bases developed have not proven very practical. Hence, the ARD team believes that the project should focus on identifying what past work has taken place and where the best opportunity is for creating a useful data base capability from existing material resources. RTWMP should be very careful not to attempt complete funding of a data base facility since that would be beyond the project's resources.

Tied to the development of the RTWMP project information center is the capability to provide information through simple request forms. This objective is realistic and should have been achieved already. The fact that it has not been achieved is due to the instructional design and materials specialist's involvement in training activities and lack of focus on the information center. The specialist should focus on achieving this objective during the next quarter. A related issue, not discussed in the PP, but perceived as necessary by the ARD team, is the production of final consultancy reports. There should be an accepted practice within RTWMP that all staff or consultants working on an advisory services activity prepare a final consultancy report. Such reports should be produced on RTWMP letterhead that includes a project logo on the cover, and circulated to specialists at AID central and bilateral offices, UN-related organizations, OAS and national agencies.

Finding #28: To date, RTWMP has accumulated little experience in the provision of advisory services. In the future, it is possible that technical assistance will be given in subject areas which are not priorities of overall project objectives. "Free" technical assistance is tempting to institutions on tight budgets. An analysis of the PP, as well as past and current activities, suggests that:

- the advisory services component may not focus sufficiently on the project purpose of institutional development--currently, advisory services can only be offered in the areas of watershed management that do not lead to institutional development;

- because of the PP definition of primary and secondary agencies, other agencies with significant impacts on watershed structure and function may not be reached by the advisory services component, even though they would be amenable to institutional development efforts in terms of watershed management concepts and technology; and
- the advisory services component may be too complex and grandiose, given existing RTWMP personnel resources.

Recommendation #28: The advisory services component of RTWMP should concentrate on improving institutional capacity in Central America and Panama. It is recommended that RTWMP:

- seek to maintain contact with those regional, national and local institutions that work at practical levels and undertake activities that influence watershed behavior;
- reevaluate the concept of primary and secondary institutions to ensure the inclusion of institutions such as public works departments, the military, agrarian reform agencies, agriculture and livestock production associations, municipalities and technical agriculture schools;
- reevaluate project outputs in the logical framework, omitting entirely the consideration of international watersheds and choosing only those watersheds that are relatively simple in terms of variety of resource uses;
- consider the use of more short-term consultants to achieve technical advisory service objectives, including professionals from other CATIE departments and offices, as well as individuals outside of CATIE (e.g., universities, independent consultants, consulting firms, etc.);
- assemble a short-term committee, made up of project staff (including country coordinators) and chaired by the project manager, to establish selection criteria for the advisory services that RTWMP will undertake--criteria to be considered include geographical context for transferability (regional, national, local), training and institutional development context, services to agencies or institutions that "create" rather than manage watershed "problems," visibility of the project and relative potential for success; and

- ensure that whenever a technical advisory activity takes place, a final consultancy report is produced with an RTWMP logo and circulated to appropriate individuals and national or international agencies-- a copy of each report should reside at the RTWMP publications office.

## F. Data Base and Information Systems

This section focuses on two major elements of RTWMP's support services component: the data base and the project information office. In addition, Tasks 7, 8a and 8b of the scope of work are covered in this section. They are:

"Determine whether relationships between CATIE and international public and private organizations such as the Food and Agriculture Organization (FAO) and the United Nations Environment Program (UNEP) are being developed for joint collaboration in publication and dissemination of watershed information."

"Review reports and project documents to determine (a) whether they are prepared in a fashion which makes clear what CATIE and national agencies are doing, and whether they are used internally in an appropriate and efficient manner; (b) whether the bilateral USAID missions, host-country officials and AID/W are sufficiently aware of project activities and reports."

### 1. Data Base

Development of a data base at CATIE is proposed in the PP. This is to include:

- a computerized reference library,
- a map and photo collection/geographic data base system,
- watershed-management descriptive tables, and
- simulation programs.

In order to implement these activities, a data base specialist was to be hired to work with RTWMP country coordinators, their national counterparts, CATIE computer center staff and RTWMP staff.

The PP envisions organization of a computerized reference library to house a collection of all known documentation relating to watershed management in Central America, Panama and other tropical areas, as well as principal texts and journals relevant to watershed management in general. Computerization of the library is intended to enable rapid information retrieval,

literature searches and regular distribution to national institutions.

To date, this library has not been set up. Books and other reference materials have been purchased by the project, but are not organized systematically. This lack of organization is largely due to the fact that the data base specialist has not been hired, nor has the needed computer equipment been acquired. In general, the organization of the library is perceived by RTWMP staff as a major responsibility of the data base specialist. Given the other responsibilities of the RTWMP staff, this seems appropriate.

A larger question facing the project is how this reference library is to be organized and what its relationship should be with the main CATIE library and INFORAT (Information and Documentation for Tropical America). Although the main CATIE library contains many references related to watershed management, the collections specifically treating this subject are dated and do not include a number of important or recent reference works. This library is not yet computerized. INFORAT, a computerized service developed with funding from the Swiss government, was established at CATIE as a publications service. Much of its emphasis thus far has been on agroforestry.

In terms of RTWMP, both INFORAT and the main CATIE library could be valuable resources for the project. INFORAT's computer capabilities serve as an important model for RTWMP's planned computerized library. In fact, RTWMP might simply add its resources to INFORAT instead of setting up a separate system. The main CATIE library should ultimately contain all the important references acquired by the project.

The map and photo collection/geographic data base system discussed in the PP is intended to improve the existing geographic information system capabilities at CATIE. This is to involve:

- purchasing a digitizer so that existing maps can be codified and added to the existing CATIE data base;
- purchasing and installing a multicolor plotter to improve the quality of maps produced at CATIE for planning purposes; and
- hiring a data base system specialist to assist the CATIE computer center and RTWMP staff in improving the utility of the existing CRIES geographic information system by helping to produce user guides and updated maps, and facilitating the link between CATIE services and country-level activities.

To date, the only progress on the above activities is that recruitment of the data base system specialist for RTWMP has begun, and a list of equipment on which procurement firms can bid, including the digitizer and plotter, has been developed. This is another area in which RTWMP staff are relying on the data base management specialist to implement almost all activities.

ARD's team leader attempted to assess how this activity and the equipment to be acquired are intended to contribute to achievement of the project purpose. RTWMP and ROCAP staff emphasized repeatedly that the primary value is for training at CATIE and, secondarily, providing services to country-specific agencies. However, review of the PP and a background paper by Dietmar Rose, which contributed to development of the PP, shows that a primary emphasis of this activity is provision of services to planners and agency staff in project countries, not training at CATIE. After this review and discussions with a number of specialists, it is not clear that establishing this capability at CATIE will provide a needed service for country-level programs. It may be possible, but a more detailed analysis of country-level needs seems appropriate. The following issues should be considered:

- Is the level of technology appropriate and necessary for addressing high-priority planning and mapping problems related to watershed management in RTWMP project countries?
- What amount of time should be spent on developing a large inventory of maps and a regional-level mapping capability (at CATIE) versus improving the utility of existing maps at the national level?
- If the equipment envisioned in the PP is purchased and installed, what is its value for training when such equipment is virtually nonexistent at the country level?
- Given RTWMP's limited resources and the fact that only three years remain of the project, what can it realistically be expected to accomplish in this regard?

ROCAP has requested assistance from a remote-sensing organization in the United States to clarify these issues, particularly the first. The ARD team did not have sufficient time or experience to provide a detailed analysis. Undoubtedly, clarification of the purpose of this activity is necessary. Also, ROCAP and CATIE should use caution to ensure that analysis of this activity focuses on real problems and needs in RTWMP countries and at CATIE, not just on advocating more modern technology.

Watershed-related descriptive tables are included in the support services component of the PP. This element involves development of a wide range of tables, including indices for maps and photos, watershed-management inventory techniques, and follow-up and evaluation of training participants. The simulation programs are mentioned in the PP in name only--their expected contribution to the project is not clear. A number of simulation programs have been gathered by the project (through contacts with Dartmouth College) and are being used primarily for training.

Both the watershed-management descriptive tables and the simulation programs suffer from the same general problem confronting RTWMP as a whole: what should the project focus on in collecting these tables or programs? Clearly, the development of a large information resource at CATIE, including descriptive tables and simulation programs, could be rationalized for either training or country-specific technical assistance purposes. However, priorities must be set for these activities. For example, in the PP the primary emphasis of descriptive tables appears to be their use in providing technical assistance to project countries. In contrast, although the PP contains no detailed discussion of the value of the simulation programs, their best use appears to be for training. In each case, priority needs should be assessed in terms of training or technical assistance, and the focus of the data base management specialist should reflect these priorities.

Finding #29: The PP envisioned that this component would allow CATIE to become a regional center of information and data on watershed management. The major question here is whether the development of such a center at the subprogram level would be an unnecessary duplication of effort at CATIE. To date, little coordination of this effort with other departments has taken place. The delay in hiring the data base management specialist has been given as the main reason for this lack of coordination. INFORAT has already established a computerized bibliographic reference service, and RTWMP has contributed resources to the service and plans to use it. At the time of this evaluation, no report was available that clearly explained the justification for the purchase of a geographic information system (GIS) or its link to project purpose or national-level project priorities.

Recommendation #29: With the exception of funds from the data base budget that have been allocated for simulation programs, map and photo collection, training of country personnel in data base acquisition and management, and the project information office, the data base resources assigned to this project should be placed in the fund for development of a centralized capability in data base management at CATIE, with the condition that these resources be used in providing for the data needs of the project as outlined in the PP. Particular emphasis should be placed on

expanding technical library holdings in watershed resources management. The project, and the Watersheds subprogram, should also consider funding the translation of important references into Spanish for use in teaching and training activities. Based on GIS experience in other countries, the project should carefully weigh the advantages and disadvantages of purchasing such a system.

## 2. Project Information Office

As of mid-1985, the project information office (PIO) is to work with RTWMP staff and national coordinators in developing:

- press releases,
- a regional newsletter,
- articles and letters for professional journals, and
- displays and demonstrations.

It is intended that the PIO, under direction of the instructional design and materials specialist, be a central point for responding to information inquiries and carrying out activities that promote awareness of watershed resources management. It is also expected to relieve pressure on technical specialists during production of both technical and layman-oriented documents. Beginning in January 1986, the PIO is expected to publish and distribute training modules to the region, the rest of Latin America, and to international/bilateral agencies. As part of its advisory services component, in July 1986, RTWMP is to begin preparing case studies and other publications (manuals, plans, etc.) for distribution.

The PIO proposed in the PP has not been organized. However, the project has prepared a general brochure which effectively describes the general purpose, components and potential activities of the project. Apparently, this brochure is proving to be of value to all project staff, especially national coordinators who constantly need such a document in their activities. Unfortunately, there has been no systematic effort to publish or distribute other project documents. No consistent report/document format or numbering system has been developed (although some staff have developed their own), and little organized circulation of materials takes place outside of the RTWMP offices at CATIE.

The PP envisioned the quarterly project report being used to explain the progress of RTWMP to interested parties (e.g., project advisory committees, AID missions and host-country agencies). Unfortunately, the quarterly project report is

presented in a format responsive to AID reporting procedures. As such it is not suitable for wider non-staff circulation. Also, contrary to the PP, no annual project evaluation report has been prepared. As discussed previously, the ARD team is not sure that an annual evaluation report, prepared for project management purposes, should be used by RTWMP as a general information source on project progress or activities. If such an annual report is necessary, and the ARD team believes it could be valuable, then it should be descriptive in nature, not evaluative. Such a document would go into fuller detail on how the project has helped relevant countries, what training activities have taken place, what is expected to happen and, ultimately, the type of continuing services that CATIE will provide.

One problem that RTWMP will have to face soon is the lack of specificity in project documents regarding how, and under what financial arrangements, these activities are to occur. One result of this omission is easily seen--the publication and dissemination of 20 course modules at a cost of \$10,000 each would exhaust project funding under this item without treating in any way the remaining four activities. Obviously, some outside funding will be needed if the entire range of publication activities is to be accomplished.

In the scope of work for this evaluation, the ARD team was also asked to gauge the awareness of AID missions, host-country officials and AID/Washington of RTWMP activities and reports. AID missions and host-country officials are aware of the general project brochure but of little, if anything, else in terms of project documents or information. This is not the fault of the national coordinators. Rather, the information activities of the CATIE-based project staff have been too dispersed. Through telephone interviews, the evaluation team tried to gauge AID/Washington's awareness of project activities and reports. While some staff were aware of the project, they had received little or no information about RTWMP.

The ARD team was also asked to look for evidence of working relationships with international organizations, such as UNEP and FAO, with regard to publication and dissemination of watershed information. However, there is no reference in the PP to the need to create such relationships for these purposes. Nevertheless, a letter of intent has been signed with the natural resources department of the Economic Commission for Latin America (ECLA) which proposes that RTWMP be responsible for one or two chapters in an upcoming watershed management book to be published by ECLA.

Finding #30: Although there is no reference in the logical framework or project information plan to working relationships with international organizations for publication and information dissemination purposes, several related activities are to begin

in early to mid-1986, while others were to begin in early to mid-1985 (annotated bibliographies and reference lists, project technical reports, articles for general conservation magazines, newsletters, bulletins, etc.). A letter of intent has been signed with the natural resources department of ECLA proposing publication of project material in an upcoming book. Lack of further progress can be traced to the fact that the PP does not provide specific information regarding how and under what financial arrangements these activities are to take place. There is no publication strategy to treat such problems as:

- a lack of funding for publishing the full range of project-generated material,
- wide qualitative differences in the content and presentation of project documents to date,
- overlap and unclear definition of individual staff responsibilities with regard to publication,
- a potentially large amount of valuable information languishing in the files of individual staff members, and
- an absence of coordination with other CATIE offices in terms of publishing activities.

Recommendation #30: A committee responsible to the project manager and chaired by another project staff member (possibly the project administrative assistant) should be established immediately. The committee should develop a publication strategy to: a) insure the high quality of all documents generated by the project; b) establish cooperative funding mechanisms; c) define responsibilities of project staff and the CATIE publication unit regarding project publications; d) explore ways to cooperate and consolidate these activities with other departments and programs within CATIE; e) assist authors in the review process; and f) help decide on suitable journals, etc., in which the material may be published.

Finding #31: The project information office proposed in the PP has not been organized. The project has prepared a general brochure which is valuable for all project staff, especially national coordinators. However, there has been no systematic effort to publish or distribute other project documents. No consistent report/document format or numbering system has been developed (although some staff have developed their own), and little organized circulation of materials takes place. The quarterly project report is not suitable for wider non-staff circulation, and no annual project evaluation report has been prepared. AID missions and host-country officials are aware of the general project brochure, but little else. The national

coordinators are not responsible for this; information dissemination activities have suffered from lack of attention and designated staff at CATIE. The evaluation team was not able to gauge AID/Washington's awareness of project activities and reports.

Recommendation #31: The project should develop a consistent format and numbering system for its reports and other documents. There should be a designated place in the office for displaying these documents, and national coordinators should have similar displays. A prose-style summary of the quarterly report should be developed for wider circulation to national agencies, AID missions and offices, and international organizations. RTWMP should designate or hire someone immediately to develop the information materials, system and center. This individual might visit the AID-funded WASH (Water and Sanitation for Health) project office and AID's Development Information Unit in Washington, D.C., to gain a better understanding of how such a facility might work.

## APPENDIX A

### Statement of Work

The contractor shall provide the following short-term evaluation services to ROCAP and CATIE.

#### A. General

1. The contractor should conduct an initial evaluation of the Regional Tropical Watershed Management (RTWM) project, 596-0106.
2. The evaluation will ascertain CATIE's present and projected capabilities to carry out training, support services and advisory services in accord with the project purpose of improving institutional capacity in Central America and Panama for managing the region's watershed resources. The effectiveness of CATIE's liaison and cooperation with national agencies and networking with other organizations active in watershed management will similarly be assessed.
3. The evaluation will represent an in-depth review of the administrative, technical, organizational, planning, and operational aspects of the project to determine whether flaws exist that could impede achievement of the project purpose by the end of the project. The evaluation will review the project's organizational structure, staffing pattern and the specific project management techniques being employed and where necessary will suggest possible reorientation or corrective measures. Also, the degree of success in initiating the project as planned in the project paper and in implementing the project according to the 1984 and 1985 work plans will be assessed.
4. The evaluation should assess the effects of any external and unanticipated actions and/or events on project performance and suggest, corrective measures, if any.

## B. Specific

The evaluation team will:

1. Work closely with the Director of CATIE and his staff, the head of the Renewable Natural Resources Department, the head of the Wildlands and Watershed Program, the head of the Postgraduate Studies and Training Department, and the RTWM project staff in evaluating this project. The principal target audience for the recommendations of the evaluation is CATIE and primarily the RTWM project staff. Recommendations should be formulated in such a way as to allow CATIE to make readjustments and refinements in project design and procedures.
2. Conduct a technical review of the Rio Tuis Watershed/Hydrological pilot demonstration activity in Costa Rica and its role in meeting the objectives of the project. Assess current plans for its development and level of effort required. Suggest improvements, if needed.
3. Conduct a technical review of the new watershed management graduate curriculum as it relates to the RTWM Project, its content and quality, and where problems exist suggest corrective actions.
4. Examine regional linkages and information gathering and exchange mechanisms between CATIE and counterpart national agencies. Suggest possible areas and ways in which information exchange, and the provision of support services and technical services could be improved.
5. Evaluate methodologies and procedures used by the project manager, the professional staff at CATIE, and the country coordinators to make and carry out technical and administrative decisions. Assess how project decisions are made and implemented at different levels in CATIE and between CATIE and ROCAP, and suggest ways of improving it to insure that individual decisions are consistent with the overall objectives of the project.

6. Assess: (a.) The organization and effectiveness of the RTWM within the current structure of CATIE, and specifically its location within the Wildlands and Watershed Program Programa de Areas Silvestres y Cuencas (PASC) of the Departamento de Recursos Naturales y Renovables (DRNR); is this organizational scheme effective and if not, how should it be changed?; (b.) The implementation of individual workplans and operational planning, and suggest ways to increase their effectiveness; (c.) The mechanisms currently employed to prioritize project actions to avoid overextension of project resources.
7. Determine whether relationships between CATIE and international public and private organizations such as the Food and Agriculture Organization (FAO) and the United Nations Environmental Program (UNEP) are being developed for joint collaboration in publication and dissemination of watershed information.
8. Review reports and project documents to determine: (a) whether they are prepared in a fashion that makes clear what CATIE and national agencies are doing, and whether they are used internally in an appropriate and efficient manner; (b) whether the bilateral USAID missions, host country officials and AID/W are sufficiently aware of project activities and reports; (c) the status of annual evaluation reports to be prepared by CATIE in accordance with the project paper; (d) how information management can be improved.
9. Examine presently planned levels of financial contributions by CATIE, national agencies, and ROCAP and assess whether they are sufficient to achieve the project purpose. If the availability of human and/or financial resources is a constraint, make recommendations on what can and should be done to relieve the situation. Assess present CATIE relationships with other donors and possible future ones as a mechanism to promote RTWM self-sustainability in the future.
10. Analyze the relationship of this project to other AID-funded watershed/natural resources projects at the country level in Costa Rica, Panama and Honduras and recommend how relationships could be fortified.
11. Evaluate current practices relating to cooperation and the sharing of resources by RTWM with other programs, projects or activities within CATIE. Comment on their effectiveness and, if necessary, suggest how this cooperation can be improved (e.g. hiring of personnel, use of vehicles, etc.). Suggest mechanisms to increase interdisciplinary work to strengthen future integrated watershed management actions of the project.

## APPENDIX B

### Individuals Interviewed

Francisco Abarca	CATASTRO, Honduras natural resources department chief
Noe Aguilar	CATIE, master's student
Carmen Atencio	RENARE/Panama
David Arauz	IDAAN/Panama
Eugenio Azofeifa	IICA/Costa Rica
James Barborak	CATIE, acting chief of Wildlands subprogram
Dionisio Batista	IRHE/Panama
Gino Brizzio	CATASTRO, Honduras natural resources chief
Rolain Borel	CATIE, chief of agro-forestry program
Gerardo Budowski	CATIE, chairman of DRNR
Jaime Bustillo P.	AHE/Honduras, director
Maria Cass	CATIE, animal production specialist
Ronnie de Camino	CATIE, silviculture program chief
Rudy Cebrera	CATIE, master's student
Carlos Cedeno	IDAAN/Panama
Aguilar Chavez	CURLA, watershed management instructor
Sergio Chavez	ENEE, Honduras civil engineer department
Arnaldo Chibbaro E.	CATIE, chief of technical cooperation and external finances
Carlos Corrales	SENARA/Costa Rica
Virgilio Cosi	CATIE, postgraduate studies and training
Gabriel Despaigne	RENARE/Panama
Paul Dulin	Chemonics, Honduras, watershed specialist
Leonarda Espaillet	CATIE, master's student
Herbert Farrer	IICA/Costa Rica
Jorge Faustino	CATIE/RTWMP, soil and water conservation specialist
Antonieta Gutierrez	CATIE, master's student
Claudio Gutierrez	CATIE/RTWMP, Costa Rica country coordinator
Mario Gutierrez	CATIE/INFORAT coordinator
Rosa Ma. Gutierrez	CATIE/RTWMP, administrative assistant
Denis Hernandez B.	IRHE/Panama
Cezar Isaza	RENARE/Panama
Rodolfo Jaen S.	MIDA/Panama
Jaime Johnson O.	MIDA/Panama
Robert Komives	CATIE/RTWMP, land-use specialist
Sadi Laporte M.	ICE/Costa Rica
Oscar Lucke	CATIE/RTWMP, soil and water conservation and hydrology technical assistant
Victor Mares	CATIE, animal production specialist
Romeo Martinez	CATIE, chief of plant production
John McMahon	ROCAP project officer
Carl Maxwell	AID/Honduras, engineer
Jorge Mendieta	RENARE/Panama
Ileana Mora	CATIE, master's student
Roger Morales	CATIE, wildlands specialist

Matthew O'Calahan	CATIE, animal production chemist
Domingo Omar Oyuela	CATIE, master's student
Armado Palma	RENARE/Panama
Carlos Palacio	MIDA-PLANIF/Panama
Carlos Pedrechi	IDAAH/Panama
Ricardo Perez	CATIE/RTWMP, Honduras country coordinator
Carlos Quesada	CATIE, watershed subprogram chief
Gerardo Ramirez	IICA/Costa Rica
Eric Richters	CATIE/RTWMP, land-use specialist
Carlos Rivas J.	RENARE, Honduras natural resources management project director
Nimia Rivera P.	DGF/Costa Rica
Jorge Rodriguez	DGF/Costa Rica
Ivanor Ruiz	CATIE/RTWMP, Panama country coordinator
Alcides Salas	IRHE/Panama
Eduardo Seminario	CATIE/RTWMP project manager
Cristiana Smith	AID/Panama
Thomas Stadtmuller	CATIE, bio-climatologist
Rodrigo Tarte	CATIE, director
Luis Torrez P.	consultant, Honduras irrigation and drainage specialist
Luis Ugalde	CATIE, fuelwood production specialist
Carlos Vargas	CATIE, master's student
Ronald Vargas	DGF/Costa Rica, director as of Oct. 1, 1985
Victor Villalobos	DGF/Costa Rica
Marco Walimim	ENEE, Honduras civil engineering chief
George Wallace	CATIE/RTWMP, curriculum design specialist
John Warren	AID/Honduras, agricultural project officer
Juan Blas Zapata	COHDEFOR, Honduras forestry chief
Frank Zadroga	ROCAP, environmental management specialist
Julio Zuniga B.	IDAAN/Panama