PD-AAR-258
ISN: 39256

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Natural Resources Management	517-T-0126	

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 517-85-03

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 81 B. Final Obligation Expected FY 87 C. Final Input Delivery FY 87	A. Total $ 21,200,000 B. U.S. $ 11,000,000	From (month/yr.) Oct. 1982 To (month/yr.) July 1984 Date of Evaluation Review

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Alternative incentives, erosion monitoring, reduced credit lags, agency coordination, output reporting should be studied and strengthened.	Gary S. Kemph Abel Hernandez USAID/PASA and NARMA	Febr. 1985

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☒ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Gary S. Kemph
USAID/DR Project Manager

12. Mission/AID/W Office Director Approval

Signature

Typed Name: Philip R. Schwab, Director

Date: 1 22 85

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OPE:HWelhous ____
ARDO:TFord ____
CRD:PGall (draft)
CONT:GHensley (draft)
DD: GBuck ____

XD-AAR-258-A
ISN:39857

FIRST EVALUATION REPORT

OF

THE DOMINICAN REPUBLIC NATURAL RESOURCES

MANAGEMENT PROJECT - NARMA

Team Members:

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Santo Domingo, Dominican Republic
July 1984

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- Appendix B: Partial List of Contacts.
- Appendix C: Partial List of Materials Reviewed.

LIST OF ACRONYMS AND ABBREVIATIONS

BAGRICOLA	:	Agricultural Bank.
CATIE	:	Center for Tropical Agriculture Research and Education.
CDC	:	Comité de Desarrollo de Cuencas (Watershed Development Committee).
CONARENA	:	Consejo Nacional de Recursos Nacionales (National Council on Natural Resources).
CRIES	:	Comprehensive Resource Inventory and Evaluation System, SEA.
DGF=FORESTA	:	Dirección General Forestal (Directorate General for Forestry).
DTA	:	Departamento de Tierras y Aguas, SEA (Soil and Water Department).
GODR	:	Government of the Dominican Republic.
INDRHI	:	Instituto Nacional de Recursos Hidráulicos (National Hydraulic Resorces Institute).
JDC	:	Junta de Desarrollo de Cuencas (Watershed Development Association).
NRC	:	Natural Resources Council.
NARMA	:	Natural Resource Management Project.
OCPM	:	Oficina de Coordinación Proyecto MARENA (MARENA Project Coordination Office).
OMC	:	Oficina de Manejo de Cuencas (Watershed Management Office).
PLAN SIERRA	:	Plan de Desarrollo Integral "La Sierra", SEA (Plan for Integrated Development "La Sierra").
SCS	:	Soil Conservation Service, USDA.

SEA	:	Secretaría de Estado de Agricultura (Secretariat of State for Agriculture).
SEAPLAN	:	Subsecretaría de Planificación Agropecuaria, SEA (Subsecretariat for Agricultural Planning).
SEICA	:	Subsecretaría de Investigación y Extensión, SEA (Subsecretariat for Research and Extension).
SEOPC	:	Secretaría de Estado de Obras Públicas y Comunicaciones (Secretariat of State for Public Works and Communications).
SIEDRA	:	Sistema de Inventario y Evaluación de Recursos Agrícolas (see CRIES).
STP	:	Secretariado Técnico de la Presidencia.
SURENA	:	Subsecretaría de Estado de Recursos Naturales, SEA (Subsecretariat for Natural Resources).
USAID	:	Agencia de los Estados Unidos para el Desarrollo Internacional (US Agency for International Development).
USDA	:	United States Department of Agriculture.

Conservation activities in April 1983. The CP for the Las Cuevas watershed disbursements is expected to be completed by mid-1984.

Most of the technical assistance for the Institutional Strengthening component was contracted to Michigan State/Ohio State Universities (MSU/OSU) in late 1982. Technical assistance for the field work was contracted to the USDA-Soil Conservation Service/Puerto Rico, except for the farming systems research which was awarded to the University of Kentucky. A resident project advisor, located in Santo Domingo, has been actively involved in the project design and implementation stages from the beginning. The first MSU and OSU short-term advisors arrived in late 1982, while the farming systems advisor, resident in Ocoa, arrived in March 1983. Aerial photography was contracted to Teledyne Geotronics Corporation with the Interamerican Geodetic Survey providing a contract supervisor and a photo inspector.

The Ocoa watershed management office opened in April 1983. The first farmer implemented a conservation plan using credit in November of that same year. The first long-term participant trainee left for the United States in April of 1984.

This first evaluation of three scheduled for the project was carried out during the period July 9-21, 1984. Approximately 38 person/days of work in the Dominican Republic by a team of four professionals was provided. Of course, additional SEA and USAID personnel assisted in preparing some of the advance materials and in providing required data for the evaluation. The team visited the Ocoa

watershed for two days to observe field operations. The rest of the evaluation effort took place in the Capital.

The team's overall impression of the NARMA project is that it is a much needed effort and that very satisfactory progress is being made towards reaching the proposed outputs and purposes. Such progress is especially commendable given the delay in initiating the project and the continued shortage of counterpart funds.

The central project management office and the watershed office in Ocoa are in place and operating well. The project-administration is to be commended for stressing the need for and selecting technically qualified staff. Too often that is not the case for the public sector in many countries. Coordination and communication among the central office, the watershed office, and the local community appears good. Considerable enthusiasm and willingness to work toward project objectives was in evidence for most staff. Of course, continuous work and good management are required to maintain these characteristics over time. Generally, the administrative structure is sufficient to continually improve such communication over time.

The input plan is well designed and realistic as to activity scope. The project is complex and will require a great deal of interagency coordination and astute implementation management. Periodic reports adequately summarize input expenditures by period and date. However, reports do need to provide additional information on outputs (results) of the project. With minor modifications and increased GODR

budgetary support the project inputs should result in achievement of project outputs, purpose and goals.

Significant national capacity to plan and manage natural resource use is resulting from this project. In addition, continual improvement in the country's ability to collect and interpret natural resource information is evident. A 20-year natural resource strategy plan and a 10-year natural resource training plan are in draft form and being revised. A national forestry plan has been completed. Existing natural resource laws, statutes and regulations are being reviewed and legislation affecting such resources has been proposed and is in discussion.

A major part of the funding for natural resource information development is associated with the cartography activities in the project. This effort is national in scope. Aerial photography meeting specified standards is complete for 90% of the country with the remaining areas covered but below standards. Agricultural zoning and land use maps for the project watersheds are being prepared for use in the field activities. Digitized natural resource data are on one of two microcomputers scheduled for this work (an additional micro is located in the project management office). Purchase of the second microcomputer and other cartography equipment has been delayed but this does not seem to have seriously affected the progress of this activity.

Initial marketing and farmer association studies have been completed and additional work is planned. These studies are a small part

of the project in terms of financing but may be very important for the longer-run success of the project.

The Environmental Education component of the project also is making significant progress both at the national as well as watershed levels. Posters, written bulletins, pamphlets, radio programs, T-shirts, bumper stickers and a video tape of the project have been prepared for the mass media program. Curricula for environmental education for grades 1-6 have been designed, although this goes beyond the original activity description. A number of short courses are being designed with different target groups in mind. Construction of the Jimenoa Training Center is almost completed. However, it is unclear whether or not there will be sufficient operating funds in the near future for its use. Nevertheless, most training activities do not appear dependent upon its operation.

The soil, water and forestry conservation activities are some of the important final outputs of the project. In most respects this work is progressing at or close to project and annual plans. About 150 farm conservation plans have been completed and submitted for credit approval. Of these, about 140 farmers have their loans approved and are assumed to be in process or finished with construction of their works. The program appears to be just a little behind schedule but could easily catch up if adequate counterpart funds are made available.

The farm plans and completed practices for diverting and holding water, barriers, and gulley control are judged to be equal to or better than those found in Perú or Guatemala (countries known by the team). Eleven para-technicians are working under the guidance of 11

extension/conservationists. This system is functioning well and should assist the project in reaching farmers in a cost-effective way. The Ocoa mapping activities to support the field work are starting. Although the 17 hectares placed in reforestation is considerably below planned levels, two project and one community tree nurseries are in operation and a large number of seedlings will soon be available for planting.

Even though the NARMA project is progressing well in a general sense, the evaluation team does have a number of major concerns. The most serious current problem is related to the difficulty of the GODR to provide the counterpart funds specified in the project agreement. To date all counterpart funds have come from PL-480 and Caribbean Basin Initiative funds. Given the current economic situation of the country and the on-going discussions with the International Monetary Fund for assistance, it is likely that this lack of counterpart funds will continue, perhaps for much of the life of the project. As a consequence, it is imperative for the future of the project that discussions be held between USAID and NARMA concerning the projected funding needs and the amount of PL-480 and other similar funds which would likely be available to meet those needs. If that source of counterpart funds cannot meet project needs, then it would be prudent to scale down proposed activities, even to the point of delaying the establishment of a second watershed office, if necessary. This is a problem that must be attended to immediately or the project may well grind to a halt.

A second significant concern is that very little erosion/agronomic and economic research is taking place to provide

adequate backstopping for the recommended conservation and cropping practices. Only one of 12 planned erosion monitoring stations is in place but even it is not yet completely in use. No water quality stations exist in the watershed. The farming systems research has carried out a number of cropping and fruit experiments but this work does not yet seem to be integrated into the other field activities of the project. Also, additional human resource information needs to be gathered to help guide future policies affecting the adoption and profitability of the recommended conservation and cultivation practices. Institutional support for this research is virtually non-existent.

3 Another concern which could become a problem in the future is the incentives package and its stress on formal credit. The provision of credit seems to be very directly tied to the implementation of the soil and water conservation activities. Credit may well be important for some farmers, but for others, it may not be necessary. It is the view of the evaluation team that additional alternatives should be made available to the farmers. For example, the present payment for establishing and maintaining conservation practices for five years could still be provided to farmers even if they prefer not to receive the credit package. Perhaps the financial incentive could be channeled through local interested groups and associations, in order to foster the acceptance and carry out the recommended conservation practices. Given the region's very heterogeneous rural population, its land tenure system, and its soil and climatic characteristics, its likely that a more flexible incentive system will attract a larger number of producers willing to use

conservation practices. Furthermore, encouraging farmers to obtain credit may be a disservice to both the farmer and the project in the future if they have difficulty repaying the loans when due. Relatively high delinquency rates are characteristic of BAGRICOLA lending and there is little hard evidence that Ocoa will be any different.

Interagency coordination in most countries is problematical, at best, and the Dominican Republic is no exception. Efforts have been made to establish closer policy and operational ties to public institutions affecting the natural resource area but much remains to be done. The communication and coordination of activities with groups outside NARMA but within the Subsecretariat of Natural Resources has been satisfactory in most respects. The project's relationship with groups outside the Subsecretariat but still within the Secretariat of Agriculture (SEA) are weaker but still functioning. Except for DGF and BAGRICOLA, ties with outside institutions like the Technical Secretariat of the Presidency (TSP), Plan Sierra and INDRHI are very weak. Thus, a continual and concerted effort is needed in this difficult component.

A final concern relates to the manner in which information about the Ocoa watershed is being collected, synthesized and made relevant to the implementation process. The information flow on the technical aspects of the watershed is progressing well but information collection related to human resources must be improved and then related to the natural resource base. Physical and socio-economic baseline data should be systematically collected in Ocoa so that project progress and impacts at the local and farm-household level can be measured over time.

This does not appear to be feasible at present due to a complete lack of agricultural economists and other social scientists in Ocoa.

B. Recommendations

The evaluation team is very cognizant of the limitations of adequately reviewing a complex project like NARMA in a very short period of time. However, the team believes the following recommendations will improve the project so that projected outputs and purposes will be accomplished: (Except for number one, order of presentation does not imply priorities.)

1. NARMA and USAID need to meet as soon as possible to resolve the lack of counterpart funds. Projected financial requirements must be consistent with the financial plan. PL-480 and similar sources of funding should be provided to the project if GODR budgetary allocations are not forthcoming.

2. Implementation of activities in the second watershed (Las Cuevas) should be delayed until adequate funding is assured. If funds continue to be limited, then project management should seriously consider delaying, indefinitely, implementation in Las Cuevas watershed.

3. Additional agronomic and socio-economic research should be initiated so that project progress and impact can be measured. Minimal baseline data relating to farm-households is a high priority. Studies on why farmers adopt conservation practices (profitability,

credit, etc.) should be carried out. Farming systems research needs institutional support and integration into all other activities.

4. Alternative incentive packages besides formal credit should be made available to farmers. Direct subsidies and other strategies for motivating farmers to adopt conservation measures (identified in socio-economic studies) should be analyzed and, if feasible, made available.

5. Water quality and additional soil erosion monitoring stations need to be installed and data should be used to strengthen project implementation.

6. Efforts should be made to protect hillsides from the top of the cultivated area to the bottom. Unprotected areas above protected areas will lead to eventual destruction of areas below. This, again, stresses the need to identify ways for increasing adoption rates under a voluntary system (related to recommendation points 3 and 4).

7. Coordination with BAGRICOLA needs further strengthening to reduce time lags from first contact for conservation plan preparation to credit disbursement. Livestock loans should be permitted if technical supervision is available.

8. The project must continue to develop a close working relationship with all agencies impringing upon the

project, particularly the subsecretaries within SEA. Of course, it is recognized that interagency coordination is difficult to achieve even under the best of circumstances.

9. Project management also needs to establish a systematic procedure for measuring and reporting project outputs (results). Present reporting of inputs (expenditures) is good.

II. EVALUATION METHODOLOGY

This evaluation is the first of three reviews (scheduled approximately every 18 months) as specified in the Project Paper. The Project Paper stipulates that the first evaluation "will be on the performance and adequacy of inputs, the performance of implementing agents, and measure progress towards outputs. Emphasis is to be placed on studying the effectiveness of the various management units that have responsibility for the project activities". The PIO/T specified a similar objective of evaluating the overall project management effectiveness of the project, with particular emphasis on the Ocoa watershed field work and on farmers' response to the incentives package activity. Specified duties involved: evaluation of the management structure of the Project Coordinating Office (OCPM) and the Ocoa Watershed Management Office (OMC); an evaluation of 11 institutional strengthening activities; an evaluation of five Ocoa soil and water conservation activities; the identification of factors impeding reaching project objectives; and, any recommended changes in project design which

might improve the implementation of the project. The Project Paper mentions the need for a survey to provide baseline data to measure progress, but this was not possible in this evaluation due to the shortness of the team's stay in the country. The need for such data collection, however, is discussed in another section of this report.

The evaluation team consisted of Ronald Tinnermeier (Agricultural Economist/Colorado State University) as team leader; Gene Miller (Agricultural Economist/USDA), as institutional economist; Thyrele Robertson (Agricultural Economist/SCS-USDA), as conservation specialist; and Robert Werge (Anthropologist/USDA), as specialist on farmer adoption and behavior. Two of the team members spent one week and two team members spent two weeks in-country during the period July 9-21, 1984.

This evaluation focused on the goals, purposes, and outputs stated in the Project Paper. It was carried out in conjunction with the two-member SEAPLAN team which had begun an evaluation of the project a few weeks before the arrival of the AID funded team. Judgment on the progress of the project was based on personal interviews with key Dominican Government personnel in the Santo Domingo office; with the Ocoa watershed office, with farmers and community leaders, with other Dominican Government employees and with USAID staff (Appendix B). Many reports, studies, and other printed materials provided the quantitative data used in the evaluation (Appendix C). Approximately nine of the total 38 person/days were spent in the Ocoa watershed area. Progress in the project was measured from the dates the Conditions Precedent were met rather than as specified in the Project Paper since the delay in project

initiation was due to factors external to the project. For purposes of the evaluation, the starting dates were assumed to be October, 1982 for the institutional strengthening activities and to be April, 1983 for the soil and water conservation activities.

The evaluation team received excellent cooperation from staff and personnel at all levels in NARMA and USAID. Formal and informal debriefing sessions were held with both institutions during the period of the review to discuss significant issues and to clarify questions which developed during the evaluation. The general organization of the evaluation report is based on Design and Evaluation of AID-Assisted Projects, Training and Development Division, Agency for International Development, Washington, D.C., November 1980.

III. EXTERNAL FACTORS

The implementation plan in the Project Paper assumed a project agreement signing date of August 1981 and all Conditions Precedent met by the first part of 1982. However, disbursements did not begin until the later part of 1982. Implementation of field work was delayed until April 1983. This delay. caused by conditions both in USAID and GODR, shifted all target dates forward but did not significantly affect the project in other respects, except in disbursement levels.

The Dominican Republic confronts, at the present time, one of the most severe economic crises in its history. The gross domestic product has grown little since 1981. The prospects for the immediate future are not bright.

Private sector fiscal performance has been poor. The public sector fiscal performance has also been dismal. Public sector savings in 1982 were a negative 3.3%. Although some improvements have been made since 1982 the level of public sector savings continue to be negative. This "financial bind" is a consequence of several factors --partially to which this project is a contributor and also a victim. Public sector wages and employment have grown sharply during the period 1978 to date, and as a result, central government current expenditures grew by 25% per annum during the period. On the revenue side, receipts have barely kept up with inflation. Public sector current revenues were estimated at 9.4% of GDP in 1982, and have likely fallen since then.

The Jorge Blanco administration has had to enact emergency measures to reduce imports, reduce public sector expenditures, and to increase public sector revenues. Actions taken have impacted negatively upon the NARMA project as well as all other projects currently under implementation. Public sector funds are scarce, import restrictions are extremely stringent (a ban on imports of vehicles is currently in effect), petroleum prices are high, and are projected to go higher in the immediate future. Until, and unless, this situation improves, the project will undoubtedly suffer as a result of reduced counterpart funds.

Obviously, weather and farm input and output prices can significantly affect the profitability of the soil conservation practices and, therefore, the success of the project. Since credit is a part of the incentive package, loan delinquency will likely increase with lower prices or poor production even with increased yields.

IV. PROJECT INPUTS

The project inputs are shown in several differently organized tables in Appendix A, see Tables A-I through A-IV. Appendix Table A-V compares planned expenditures for the project with actual expenditures for the period October 1, 1982 thru March 31, 1984. Appendix Figures A-VI, A-VII, and A-VIII graphically illustrate levels of inputs planned compared with expenditures for major components: information, institutional strengthenings and soil/water conservation.

Progress toward the intermediate annual targets was first assessed on how planned expenditures compared to actual expenditures. USAID files were the primary data sources. Actual field conditions were determined through field trips and conversations with many project personnel. These field observations provided additional insights as to utilization of the project inputs.

A. Project Expenditure Status

Appendix Table A-V, developed from the GODR quarterly report, Oct. 1982 through March 1984, shows total AID expenditures as $848,900; and GODR expenditures as $868,600. The combined expenditures amount to approximately $1.7 million. The Project Paper projection of expenditures (shown in Appendix Table A-I -the AID plan) amounts to an estimated $3.7 million for this same time period. This figure does not include the Las Cuevas financial inputs nor the inflation and contingency factors . Approximately 46 percent of budgeted funds were spent if the AID plan is used as the base. When actual expenditures are compared to the GODR plan of expenditures, which differs some from the AID figures ($3.95 million

vs. $3.7 million), only 43.5 percent of expenditures planned for the October/82-March/84 period were spent. Nevertheless, the GODR's planning is at a level generally consistent with the Project Paper. However, this expenditure level must be increased if the goal of the project is to be reached by the end of the project.

Project progress reflects the general problems that most new projects encounter in start-up; i.e., creation of infrastructure, interagency coordination, contracting delays, etc.

Closer appraisal of Appendix Table A-V shows best performance in the forestry component with about 95 percent of the targets being reached. Apparently, little activity based on expenditure has been initiated in the zoning, watershed planning, roads, legislations and policy, and environmental education components.

It should be pointed out that the soil and water conservation component reflects an acceptable rate of meeting targets inasmuch as this represents field activities which started in April of 1983. It is also significant to note that actual expenditures were somewhat less than planned due to lower costs than expected in several areas.

The aerial photography activity has resulted in a cost overrun of $200,000 ($400,000 planned, vs. $600,000 actual). This has not yet shown up in the accounting system. The cause of this rather large miscalculation is reported to be due to the rather stringent flight specifications stipulated in the contract, and unseasonably heavy cloud cover for extended periods.

First, the Dominican peso has fluctuated widely during the past 18 months, but mostly upward. This has caused two problems: (1) renegotiation due to change in cost (a result of time lag); and, (2) several project vehicles have been received by the local dealer, but delivery has not been made. The dealer refuses to deliver unless he is paid the current market price. This matter is now being contested in the legal system.

E. Long-Term Training ($920,000)

The project plan provides funding for 23 participants for long-term international training. Currently, two participants are undergoing long-term training in the United States and eleven more have been selected for training in their field of speciality.

F. New Staff Employment

Over all, the project plan requires the GODR to fund 87 new hire employees* in the various institutions implementing the project. New hire employees were planned for the following activities:

- Cartography (6);
- Environmental Education (9);
- Interagency Coordination (12);

* NOTE: New hire recurring salary obligations alone for the GODR would be about $750,000 annually for the GODR, if the average salary was only 700 pesos per month.

- Farm Conservation (52 —40 para-technicians and 12 extension agents);
- Research (8).

Excluding the Las Cuevas watershed activities, it appears under the circumstances that adequate new staff has been hired and is in place. For example, 11 para-technicians have been hired and trained for the Ocoa watershed, but at this stage of implementation this number is sufficient to carry out all planned functions.

V. PROJECT OUTPUTS AND NARRATIVE

A. Outputs

The following project outputs are from the Project Paper and show the expected end-of-project status but do not contain intermediate annual targets. Progress toward intermediate goals specified either in attachments to the Project Paper or in GODR plans is discussed in the narrative.

Five-Year Planned Outputs	Actual Progress July, 1984
1. Institutional Strengthening	
a) GODR capacity to provide required natural resource information established: - Cartography equip. in place; - New staff hired and trained; - Aerial photos taken; - Computers operational; - 12 erosion monitoring plots; - 12 water quality stations; - Marketing studies completed; - Small farmer association studies completed.	a) Good progress has been made on the aerial photo and mapping work. Most of the country has been photographed. Mapping is in process and all critical data are on the computer. One soil erosion monitoring plot with 10 treatments is in place but the measuring equipment is not yet in place. The water quality stations are not established. One small marketing TA study done. Two association studies completed.

b) Needed national and watershed level plans developed:
- 20 year National Natural Resource Mgt. strategy completed;
- 5 year action program completed.
- 10 year training plan developed;
- National Environmental Education Plan completed;
- 4 watershed plans completed.

b) A draft paper on the National Natural Resource Strategy has been prepared with MSU and is being reviewed. A draft 10 year training plan has been prepared with MSU. An Environmental Education Strategy is completed. Ocoa five year development plan completed and being implemented.

c) GODR capacity to plan and manage agroforestry development programs established:
- 3 SURENA and 3 DGF technicians received long-term training;
- 10 semiannual short-courses provided DGF field agents.

c) The forestry technician has held one short course for farmers, para-professionals, and MARENA personnel covering agroforestry management. Portions of other short courses also included agroforestry topics. Two long-term trainees approved.

d) GODR capacity for conservation planning in rural road construction established:
- 3 biennial workshops on conservation planning for all SEOPC road construction and maintenance engineers conducted.

d) One seminar on rural and feeder road construction was held for engineers working in the Ocoa watershed area.

e) GODR capacity to develop needed legislation and policy initiatives established:
- Studies and recommendations for improvements in policy-making procedures developed and published;
- Model legislation developed;
- 3 biennial workshops for NRC and NDC personnel conducted;
- Long-term training in policy development, resource economics, and environmental law and policy.

e) Numerous legal copilation studies on land, water, fish, forests, and SEA have been completed. Legislation changes to allow forestry cutting under approved management is being considered. No workshops have yet been held for NRC and NDC personnel. Long-term training has not begun.

f) National Environmental Education program established:
- Mass media program developed and implemented.

f) A video tape on the project is in use for television, public presentations, and workshops. Various phamplets, bulletins, slides, and publicity materials produced and in use. Daily hour radio program on natural resource use implemented in Ocoa. Courses geared to target groups. Jimenoa training center about constructed but operating funds not available.

g) SEA's capacity to administer interagency program established:
- OCPM staff increased and trained;
- Computer in place;
- 5 annual management courses done;
- 2 watershed management offices staffed and equipped.

g) Coordination within MARENA and the subsecretariat good, within SEA a little weak, and coordination with other natural resource institutions in need of improvement. The computer is operating well in OCPM. The Ocoa watershed management office functioning and initial steps being taken to establish one in Las Cuevas watershed.

2. Soil and water conservation activities carried out in the Río Ocoa and Río Las Cuevas watersheds:

a) Three thousand hillside farmers receiving conservation and production loans.

a) Approximately 150 farm conservation plans completed. Of these, 92 loans were executed 48 more loans were approved, and 8 loans are in process. Most farmers appear to be smaller than 5 hectares. Goal for first year close to being reached. Incentives package discussed in narrative.

b) 9,825 hectares treated with soil and water conservation and improved production practices.

b) No estimate readily available but it is felt about 500 hectares have been treated.

c) 800 hectares of hillside area reforested.

c) A total of 42,000 seedlings were planted on 268 tareas or about 17 hectares of mostly public land. The first year was primarily to establish two nurseries. There are presently about 73,000 young plants that will be available for planting in the near

	future. Assistance also has been given to one of the communities to establish their own nursery with about 8,000 plants.
d) 15 hillside farming system packages developed and transmitted to farmers.	d) Not done and may be one of the more critical problems as discussed in the following narrative. Researchers appear to work independently from conservationists Some 50 crop and a few fruit experiments reported but more work needed before packages can be developed and integrated in SCS farmer recommendations.
e) 3,000 hillside farm plans developed.	e) About 150 done. See item 1 in this section.
f) 40 para-technicians and 12 conservationists hired and trained.	f) Eleven para-technicians and 11 conservationists are working in the watershed. Most have received up to 25 days of instruction. Training plans are in place for those recently hired.
g) Eight workshops on conservation methodologies and practices for mid-level field technicians.	g) Three workshops completed.
h) Hillside farming system research stations established in 2 watersheds.	h) Not done. See item B.4
i) 1,470 hectares of fruit trees established.	i) A few fig trees have been established in the nurseries but this output is behind schedule. There also is need to tie the marketing studies to identifying which fruit trees most would be appropriate.
j) 5,000 hectares of pasture land improved.	j) About 500 tareas (32 ha.) in improved pasture to date. BAGRICOLA is very reluctant to give livestock loans which reduces the incentives for planting grasses.

B. Outputs Narrative

In this section comments are organized around general topics specified in the evaluation, scope of work and/or for topics considered important by the evaluation team.

1. Project Management and Organization

The project administration is to be commended for the excellent process whereby staff at all levels of the project have been chosen for their professional skills and training. The investment in time which goes into the selection process when professional criteria are so systematically utilized should have a major payoff in the running of the implementation process over the next four years. In addition, it is commended for the creation of mechanisms which foster communication between Santo Domingo, the project, and the Ocoa community. The willingness to invest in dialogue within the project, across agency lines, and with the community is a long term investment and it will generate benefits for a long time.

However, these mechanisms require maintenance and constant attention and a few potential problem areas require mention:

a. It is not clear whether the staff in Ocoa is a "field staff" of the Santo Domingo office or whether Ocoa is the site of a development project requiring support services from Santo Domingo. Individuals in the project interpret the emphasis differently. There must be a common understanding on this issue or the natural tendencies toward tension within any work structure with two (and now three) locations will cause major complications and demoralization.

Specifically, if available scholarships are given to Santo Domingo staff, if superiors in Santo Domingo demand the presence of subordinates in the Capital or elsewhere but seldom visit Ocoa for more than a few hours, if procedures cannot be devised for giving Ocoa more control over certain expenditures, then the obvious impression is that Ocoa is of secondary importance to the project. And, inevitably, the staff in Ocoa will not produce (except on papers read in Santo Domingo).

b. The project in Ocoa must demonstrate the flexibility in defining its program and clients that it asks of institutions like the BAGRICOLA and others. At a time when the project is asking for flexibility from the BAGRICOLA, it needs to demonstrate that same attitude in relation to the community, its leaders, its supporters and its own goals.

c. There is a tendency on the part of project staff not to remember that the project is built upon previous non-MARENA efforts. For example, the conservation committee in one zone had existed for several years before the project began. The educational program of the project has been able to build upon past efforts as well as the social infrastructure afforded by the "Junta del Desarrollo de Ocoa" and past experience by watershed residents with a number of development projects. The relatively high rate of response to the project by residents is due in large part to these antecedent efforts. It is unfortunate that the evaluation team did not meet formally with Junta leaders to show that the project recognizes their support and is vitally interested in their evaluation because that is the only one in the long-run which counts.

Enough time should be allowed in future evaluations to study Junta attitudes and relationship toward the project.

2. Incentives Package and Adoption

Motivation for implementing conservation practices stems from the manner in which farmers perceive their land as a resource. A change in perception from viewing land as an abundant resource (the farm family could keep on moving and clearing new forest over the next hill) to viewing land as a scarce, limited and deteriorating resource has been occurring in the Ocoa watershed over the past decade. This change in perception is coming about through the presence of the conservation program since 1979, the rapid deterioration of the landscape after hurricanes and heavy rains, and the absence of new forest to cut.

As an element in the project, credit facilitates the process of adapting conservation practices, but credit is not an incentive in and of itself. It is only one tool and over-reliance upon credit and the lending of money by BAGRICOLA as a mechanism for evaluating progress eventually could be detrimental to achieving project goals.

The measurement of project success should be the adoption and maintenance of conservation practices by farmers regardless of whether or not credit is utilized. Two farmers who had utilized credit said that they would have used these conservation practices without credit; one, in fact, had constructed hillside ditches as early as 1979 without credit.

Therefore, the suggestion is made that different strategies be utilized to facilitate adoption since it appears that a large number of farmers may never qualify for credit, or --if given-- will be high credit risks. A straight payment system for practices applied and maintained would probably appeal to a number of farmers. Perhaps the incentive payments could be channeled through local organizations where appropriate. The key is flexibility in strategy and the recognition that credit is a facilitating factor, not an incentive in and of itself.

In those zones of Ocoa where a few owners control large areas of land and where occupying farm families work land which is lent ("prestado"), sharecropped ("aparcería"), or rented ("alquilada"), incentive strategies need to be modified from those strategies used with farmers who have a more stable relationship to the land and who consider themselves "propietarios". For example, large owners must be convinced that it is in their interest to have the occupying farm families innovate with conservation practices. Tenure, then, needs to be introduced as a variable in devising future incentive strategies.

3. Conservation Activities

The farm conservation practices are based on farm plans prepared by the conservationists/para-technicians with the farmer. Those plans reviewed by the team were well done and documentation seemed complete.

The conservation practices in place were judged to be well constructed as compared with known work in Guatemala and Perú.

These structures included hillside ditches, drains, semi-terraces, gulley control, and live and dead barriers.

It is suggested that the project experiment with using live forage barriers. Experiences in Guatemala indicate that income from sale of forage from live barriers can produce as much income as corn. Forage barriers could be tested as part of the farming system research activities. Elephant grass is one possibility because its root structure is vertical and will not interfere with the crops nearby. The team understands that some discussion on using live barriers has taken place and that farmers are interested as well.

The enthusiasm of the Dominicans carrying out the field conservation work is high. Due to this high enthusiasm they have been able to accomplish an exceptional level of results inspite of tight budgetary constraints and long, envolved purchasing processes.

The utilization of the para-technicians under supervision of the conservationsts (extension agents) is working well and is a very cost-effective way to increase the capacity of the program over time. The technical work and specifications still are largely done by the conservationist but more of this responsibility could, and should, be transferred to the para-technicians.

Suggestions relating to conservation activities include:

a. If funds are available, it is suggested that at least two soil conservation field technicians visit Guatemala and Perú to observe variations in the use of contour ditches, drains, and water

conservation practices. Maintenance of hillside ditches is difficult and farmers may not follow through without being reminded.

f. To encourage adoption of new conservation techniques and inputs, a type of country fair could be started where farmers can show their best products. Prizes could be awarded for the highest certified yields. Friendly competition in yields, quality of products, quality of conservation, and other practices should help spread the use of improved technology. Prizes could be awarded for the best maintained farms in each watershed, or other such sub-division. A team of farmers and/or technicians could be the judges.

4. Environmental Education

The educational program appears to be major stimulator of interest in conservation practices period. The program has been very active in organizing courses and in participating in workshops/courses organized by other groups such as the Junta de Desarrollo. Success can be attributed to: (a) use of existing associations and committees to mount courses with farmer groups in different areas: (b) trainers knowledge of local people and ability to relate positively to their production as well as conservation concerns; (c) pre-existing knowledge of conservation methods; (d) availability of transport and adequacy of materials; (e) willingness of personnel from other programs, including military units, to participate; and (f) support from Santo Domingo and knowledge of importance of Ocoa program by those personnel.

There appears to be high demand from farmer groups and associations for this type of activity. In order to improve the delivery

system for educational activities, the following suggestions might be considered:

- Continued intensive visits by national staff in Santo Domingo to Ocoa-based courses and workshops to familiarize themselves with actual implementation situations and farmer/technician response to methods and materials;
- Strengthening of Ocoa educational program by one additional person to handle training logistic so that the current person can handle course content, coordination and evaluation;
- Flexibility in use of vehicles on Saturday and Sunday as many committees and associations meet on those days;
- Ability of training to draw on advance of funds for part of training costs in terms of travel, materials, supplies, etc.;
- Delivery of audiovisual equipment which is to be purchased under the project;
- Certainty of availability of funds to operate Jimenoa Training Center when ready for operation;
- Closer cooperation with the Secretariat of Education on the development and implementation of primary curriculum in environmental education (although this goes beyond original project design);

- Supply any audiovisual materials, such as video casettes, on soil conservation currently available through U.S. SCS or State extension systems; and
- Selection of short-term training in the area of materials development and training methods.

Over the past few months, the educational program in Ocoa has been diluted by the transfer of one person to Padre de las Casas and by increased demand on the trainers' time for activities in other parts of the country. Given the size of the task to be done in Ocoa and given the need to clearly demonstrate the efficiency of an integrated approach between education, technical assistance, and research in Ocoa, this weakening of the effort comes too early in the project.

Knowledge of actual field conditions by national staff is essential so that they can gear their methods and messages to target audiences. Visits from Santo Domingo to Ocoa should be timely and frequent.

The undertaking of a survey of Padre de las Casas by the Environmental Education program in order to define the target audience with greater precision is an excellent idea. It raises the larger issue, however, of how information in the Ocoa watershed and in the other project areas is being collected and, more precisely, <u>integrated</u> with the other project activities. There appears to be a great possibility for duplication and methodological weakness unless data collection on all levels is integrated and made available to all implementation levels' project.

Initial evaluation of farmers' responses to the training programs indicates that there is more interest in specific conservation training than in general exposure to the concepts of environmental protection. Students, on the other hand, are very responsive to those more general concepts and to wildlife protection.

A further advantage of the training effort lies in the ability to relate concern for conservation with concern for production systems. If conservation techniques are treated and presented in isolation, farmers appear to be much less interested in their possible relevance to their situation.

5. Research

In spite of a great deal of effort on the part of the research staff and personal sacrifice to carry out a program, and in spite of the critical importance of research to the project, farming systems research (or just plain old research) has not been integrated into the overall project structure. There are a number of reasons for this: (a) the research agency is outside the Subsecretariat of Natural Resources and might be expected to have little commitment to the project; (b) there has been little counterpart funding, staff, or departmental support available; (c) there has not been a management structure to incorporate the research activities into ongoing priority concerns; (d) there are different definitions of what farming systems research can or should be doing; and (e) there is no data being gathered on impacts of erosion research..

In spite of these obstacles, approximately 50 experiments on farmers' fields have been planted. These can be grouped in the areas of (a) different degrees of tillage; (b) fertilizer applications; (c) limestone application; and (d) trees and fruits. An annual report has been written on these experiments and submitted. Questionnaires for the zonification of farming systems and farm-level registers have been devised. Work on one erosion plot has been carried out, but the necessary equipment for further work is still not forthcoming. Baseline data on soil types have not, according to the researcher, been available to be incorporated into experimental design. Baseline data on farming systems has not been collected.

If questions concerning the most profitable combination of conservation and production strategies are to be addressed, the research effort in Ocoa is critical. At the same time, given a continuing lack of departmental support for the research effort and the continuing lack of an integrative management structure for the research activities, the project may have to reduce research effort in the course of time or make the research effort a sub-activity of another project component.

At the same time, an effort must be made to develop a systematic set of research outputs over the next nine months which can demonstrate the potential of the research contribution. This is a priority for the project. A number of possible outputs can be suggested: (a) the zonification of the Ocoa watershed by farming systems; (b) testing of hillside ditches on different slope, soil and production

systems with systematic followup designed --these tests would be for farmers' who are adopting the conservation practices recommended by the project; or (c) further testing of a single crop, such as guandul, which has shown promise under conditions of no tillage.

6. Information

Improvements can be made in the manner in which information about the Ocoa watershed is being collected, synthesized and made relevant to the implementation process.

One can no more talk about "the small farmer" of Ocoa than one can talk about "the soil" of Ocoa or "the slope" of Ocoa. There are types of slopes; there are types of soils; there are types of farmers. Zonification is a key concept in the description of Ocoa's natural resources and it should be a key concept in the description of its human resources. Information on human resources needs to be gathered in terms of microwatersheds, settlements and communities and then related to the map of natural resources. Methods for this type of overlaying of data exist and should be explored.

The concept of zonification, while essential to the cartographic component in the project, is equally essential to the other project components. The project staff is not yet, but needs to be, speaking a common language when they talk about the watershed. The unification of information can become a key mechanism for developing "a project language" spoken by the researchers, the technicians, the para-technicians, and the administrators alike.

Baseline data should be collected systematically in Ocoa, on the basis of zones, in a collaborative manner. That is, instead of a number of surveys, each with its sample and each with its methodological strengths and weaknesses, being conducted by separate components, a single survey (utilizing both qualitative and quantitative techniques) is required. Before a number of different efforts are made in a second watershed, a single, systematic effort needs to be made in Ocoa. A few intensive, case studies also may be of use in better understanding the farm-household units.

Information gathering needs to involve project personnel in all the components. Analysis of that information needs to be gotten back to Ocoa and utilized in the program with as short of a turn around time as possible. For example, a dissertation on land tenure will not help the project as much as the inclusion of land tenure variables (in qualitative and quantitative terms) on the working maps for the watershed.

Some concern exists that the information gathering process and the development of plans and models in Santo Domingo may be taking precedence over the need to feed back information to Ocoa on zones which is of immediate relevance to project implementation. An opinion was expressed that Ocoa was a "field staff" whose job it was to collect data for Santo Domingo. Unless there is a quick feedback mechanism in place, the task of information collection can come to absorb a disproportionate share of project resources.

7. Marketing

A preliminary work plan for the marketing component has been developed by DEA/SEA with technical assistance provided under the MSU contract. The first important activity is scheduled to begin in December 1984; i.e., the development of national commodity assessments and general diagnostic assessments of production and marketing systems in the Ocoa watershed.

The primary responsibility for marketing is centered in the Department of Agricultural Economics within SEA. Other departments will provide collaborative support as needed, with MARENA working closely with all activities.

The short-run objective is to identify problems and propose improvements in marketing services and infrastructure which will increase producer incomes from existing crop and livestock enterprises. The project is to investigate the approximately" 12 marketing channel studies of the major agricultural products expected to be affected by the project. This effort will include not only agricultural products but also the distribution of inputs and basic consumer goods.

A long-run objective must be to assess the economic potential for new production activities, such as fruit trees, that are consistent with the resource conservation and income generating goals of the project. Inasmuch as the project may well create drastic changes in production patterns, the studies may need to focus on production activities unanticipated at this time. Therefore, close monitoring will

be needed to identify target groups marketing impediments that require adjustments.

8. Cartography

The basic thrust of this activity is to strengthen SURENA's Department of Inventory to carry out on-going mapping activities. Of the total funding ($957,000), approximately 45 percent was budgeted for nationwide aerial photographs. The remaining funds finance short-term technical assistance, short-term training, equipment, salaries, one vehicle and local travel costs.

Progress in this activity has been good, with completion of 1:50,000 land cover/use interpretations and ecological planning units. Long-term planning is currently taking place to produce necessary products for future needs. The major delays have been procurement of the aerial photographs, and the acquisition of the necessary cartographic and final computer equipment. The 18 months of international short-term training has been completed. The aerial photographs have been received, though not yet completely indexed, and the one budgeted vehicle is in place.

Project progress has been materially slowed in only two areas: (a) in operations, due to the shortage of counterpart funds and (b) the delay in delivery of essential equipment (the equipment is now scheduled for delivery in October 1984).

VI. PURPOSE

The project purposes are: (a) to strengthen the GODR capability to effectively promote the development of the country's natural resources; and (b) to establish a soil and water conservation model that can be used to help stop the degradation of the nation's natural resources. It is expected that at the end of this project the essential elements of an effective natural resource management structure will exist to set the stage for a massive national conservation effort by the GODR.

The project is generally making satisfactory progress towards meeting these purposes by the end of the five-year project. This assumes that the now delayed counterpart funds will soon become available and will not be a major constraint in the future. Accomplishing the projected outputs of the project should lead to completion of the project purposes as designed.

VII. PROJECT GOALS

The goal of the project is to increase the income and standard of living of the rural poor. Net income of farmers with less than 20 hectares is expected to increase by 50 percent. A Sub-goal is to produce the field and institutional conditions necessary to adequately protect the country's natural resources. Over time it is expected that there will be natural resource management organizations effectively functioning nationwide as a result of the experience from this more limited project.

The project functioning in two different watersheds should provide an excellent testing ground for soil and water conservation measures and

policies. Considerable interest in natural resource management is being generated in the public and political forums. National natural resource use and management policies are being formulated and discussed as part of this initial effort. Thus, the sub-goal of eventually having a nation-wide natural resource management program is quite reachable.

In contrast reaching the projected outputs of the project at the farm level (installing conservation practices azND providing credit, among others) may not necessarily reach the goal of increasing farmer incomes. Although one can make some logical arguments as to why yields and incomes might go up with conservation practices, few Dominican data are available nor being collected to demonstrate this relationship. In the team's view, reaching the project purposes should not be held "hostage" to the need for the practices to be profitable to the farmer in the short-run.

Two aspects of the farmers' perception of land should be taken into account in formulating the profitability or return from investing in conservation practices.

A. Farmers talk of the benefits of conservation practices in terms of not losing production, either for themselves or for their children. In one case, a woman who had been farming for 14 years said she was convinced that if she had not put in terraces, she would have lost her entire peanut and sweet potato plantings as she had in the previous year due to flooding and mud slides. She did not talk, nor did other farmers talk, of "increased" yields. In another case, a farmer did discuss a new irrigation system as improving yields, but again he saw

conservation efforts on his own part as making possible the maintenance of crop yields.

While it is important to see profitability from conservation practices, the farmers own method of assessing benefits must be considered. Not showing increased profits/hectare/year, but showing what would happen if one does not adopt conservation practices may be the most important point.

B. A second aspect of this perception lies in the fact that farmers, at least those with more secure tenure, appear to evaluate conservation practices in the long-run, not over a season or two.

What is being suggested is that while economic analysis and donors may require that conservation practices be evaluated in terms of short-term increases in yields and income, these factors may not necessarily be those which farm families are using in adopting conservation technology. And, if their criteria area in fact, more long range and more modest than envisioned, the chances for the project to succeed in reaching its purpose of establishing good soil and water conservation practices are greater than may have been thought. The real question is whether the cost to the country of not doing anything is more than the cost of doing something about the serious degradation of the natural resource base.

VIII. BENEFICIARIES

The direct beneficiaries of this project are the hillside small farmers in the upper watershed areas of some of the Dominican Republic's

most important rivers. While the designers contemplated approximately 56% of the benefiting farmers to be 0-5 hectares in size, most of the farmers reached the first year are in this small farm category. The project expects to reach 3,000 farmers with conservation practices and credit by the end of the project. As of July 1984, about 92 farmers had benefited from the program over one crop cycle. Another 48 farmers had their credit approved and were ready to begin the conservation work. An additional 8 conservation loan requests were in process. Although this number is considerably below the yearly average needed to meet project targets much larger numbers of farmers can be serviced now that the central and field structure is in place.

Both farm income and productivity are expected to increase once the conservation practices are in place but no data are presently available to measure the extent to which this is taking place. Some farmers perceive a direct benefit even though their incomes and productivity do not change. This is because their incomes could easily fall without the conservation practices due to serious erosion and soil loss.

Appendix Table A-I

PROJECTION OF EXPENDITURES BY PROJECT YEAR ($000)

ACTIVITY	YEAR 1 US	YEAR 1 GODR	YEAR 2 US	YEAR 2 GODR	YEAR 3 US	YEAR 3 GODR	YEAR 4 US	YEAR 4 GODR	YEAR 5 US	YEAR 5 GODR	TOTAL US	TOTAL GODR	TOTAL
I. INSTITUTIONAL STRENGTHENING													
A. PLANNING CAPACITY													
1. INFORMATION DEVELOPMENT													
(A) CARTOGRAPHY	475.0	75.0	27.0	85.0	31.0	85.0	9.0	85.0	5.0	80.0	547.0	410.0	957.0
(B) EROSION/WATER MONITORING	25.0	31.2	17.0	32.2	24.0	32.2	5.0	32.2	5.0	31.2	76.0	159.0	235.0
(C) AGRIC.ZONING STUDY	31.0	16.0	24.0	7.0	12.0	6.0	20.0	6.0	11.0	6.0	98.0	41.0	139.0
(D) MARKETING STUDIES							22.0	1.0	13.0	1.0	35.0	2.0	37.0
(E) SMALL FARMER ASSN. STUDIES							4.0	1.0	3.0	1.0	7.0	2.0	9.0
2. NATIONAL/WATERSHED PLANS	67.0	8.0	2.0	2.0	22.0	2.0	2.0	1.0	12.0	3.0	105.0	16.0	121.0
3. AGROFORESTRY & FOREST MANAGEMENT	103.0	17.0	102.0	7.0							205.0	24.0	229.0
4. ROAD PLANNING DEVELOP.	6.0	13.0			13.0	6.0			13.0	5.0	32.0	24.0	56.0
5. LEGISLATION & POLICY DEVELOPMENT	31.0	14.2	60.0	13.2	100.0	14.2	82.0	13.2	22.0	14.2	295.0	69.0	364.0
B. ENVIRONMENTAL EDUC. PROGRAM	173.5	241.5	129.5	193.5	62.0	200.5	58.0	195.5	18.0	184.0	441.0	1015.0	1456.0
C. INTERAGENCY ADMINISTRATION	113.0	247.2	95.0	180.2	96.0	181.2	96.0	181.2	73.0	181.2	473.0	971.0	1444.0
GRANT	100.0		100.0		100.0		100.0		100.0		500.0	0	500.0
SUBTOTAL INSTITUT.STRENGTHENING	1124.5	663.1	555.5	520.1	460.0	527.1	398.0	516.1	275.0	506.6	2814.0	2733.0	5547.0
II. SOIL & WATER CONSERVATION													
OCOA:													
A. SOIL SURVEY & INTERPRET.	33.0	35.0	23.0	15.0	9.0	15.0					65.0	65.0	130.0
B. FARM CONSERVATION	104.0	158.0	77.0	137.0	38.0	133.0	37.0	133.0	17.0	133.0	273.0	694.0	967.0
C. INCENTIVE PACKAGE	305.7	235.5	463.1	269.3	1139.3	538.7	710.2	420.2	-		2618.3	1463.7	4082.0
D. WATERSHED PROTECTION	5.0	25.0	20.0	35.0	10.0	45.0	15.0	34.0	10.0	24.0	60.0	163.0	223.0
E. FARMING SYSTEMS RESEARCH	162.0	205.0	201.0	156.0	64.0	93.0	102.0	59.0	43.0	55.0	572.0	568.0	1140.0
SUB-TOTAL OCOA	609.7	658.5	784.1	612.3	1260.3	824.7	864.2	646.2	70.0	212.0	3588.3	2953.7	6542.0
LAS CUEVAS:													
A. SOIL SURVEY & INTERPRETATION					16.0	35.0	2.0	15.0	2.0	15.0	20.0	65.0	85.0
B. FARM CONSERVATION					40.0	148.0	18.0	127.0	18.0	127.0	76.0	402.0	478.0
C. INCENTIVE PACKAGE					120.9	81.9	444.1	173.0	1047.3	564.0	1612.3	818.9	2431.2
D. WATERSHED PROTECTION					12.0	34.0	12.0	32.0	12.0	32.0	36.0	98.0	134.0
E. FARMING SYSTEMS RESEARCH					49.0	181.6	13.0	121.7	7.0	79.7	69.0	383.0	452.0
SUB-TOTAL LAS CUEVAS	0	0	0	0	237.9	480.5	489.1	468.7	1086.3	817.7	1813.3	1766.9	3580.2
SUB TOTAL	1734.2	1321.6	1540.6	1132.4	1958.2	1832.3	1751.3	1631.0	1431.3	1536.3	8215.6	7453.6	15669.2
INFLATION 10% *	84.6	64.5	206.0	174.0	526.9	493.0	693.5	645.8	766.6	822.8	2277.6	2200.1	4477.7
CONTINGENCY 5% **	90.9	69.3	77.3	65.3	124.3	116.3	122.2	113.8	109.9	118.0	524.6	482.7	1007.3
GRAND TOTAL	1909.7	1455.4	1823.9	1371.7	2609.4	2441.6	2567.0	2390.6	2307.8	2477.1	11017.8	10136.4	21154.2
TOTALS (ROUNDED)	1900.0	1475.0	1830.0	1380.0	2600.0	2450.0	2575.0	2400.0	2300.0	2490.0	11000.0	10200.0	21200.0

Inflation is compounded at mid year which is believed to be more realistic than the common convention of compounding at the beginning of the year or the world bank convention of compounding at the end of the year.

Contingency calculated on the inflated cost to take into consideration the common problem of droughts and hurricanes.

Table, A-II AID INPUTS BY ACTIVITY

COMPONENT	TECHNICAL ASSISTANCE				EQUIPMENT		TRAINING		OTHER		TOTAL COST OF COMPONENT
	LONG TERM		SHORT TERM				LONG TERM PARTICIPANT	SHORT TERM PARTICIPANTS AND/OR COURSES	TYPE	COST	
	AMT-P/M	COST	AMT/PY	COST	TYPE	COST					
Cartography	-0-	-	9	81,000	Computers & Cartographic	84,000	-0-	18 participants (12,000)	Aerial photos	400,000	547,000
Erosion/water quality monitoring	-0-	-	4	36,000	Hydrometric	38,000	-0-	-0-	2 motor-cycles	2,000	76,000
Agric. Zoning	-0-	-	5	45,000	Softwave	30,000	-0-	10 participants (13,000)	Operation Cost	10,000	98,000
Marketing	-0-	-	3	27,000	-0-	-	-0-	-0-	Publications	8,000	35,000
Farmers Assoc. Studies	-0-	-	-0-	-	-0-	-	-0-	-0-	Operation	7,000	7,000
Watershed plans	-0-	-	10	90,000	-0-	-	-0-	-0-	Supplies	15,000	105,000
Forestry	24	200,000	-0-	-	-0-	-	-0-	-0-	Tools	5,000	205,000
Road Const.	-0-	-	3	27,000	-0-	-	-0-	-0-	Supplies	5,000	32,000
Legs. & Policy	-0-	-	5	45,000	-0-	-	6-(240,000)	-0-	Supplies	10,000	295,000
Environmental Ed.	-0-	-	3	27,000	Ed. Aids	69,000	4-(160,000)	-0-	Construction	185,000	441,000
Interagency.	*	*	7	63,000	Office & Computer	46,000	9-(360,000)	-0-	4 trail-bikes	4,000	473,000**
Soil Survey 1/	-0-	-	5	45,000	Field	15,000	-0-	-0-	Supplies	5,000	65,000 1/
Farm Conservation 1/	-0-	-	14	126,000	-0-	-	-0-	In-country (100,000)	Supplies Trailbikes	27,000	293,000 1/
Incentives 1/	-0-	-	-0-	-	-0-	-	-0-	-0-	Incentives	2,618,000	2,618,000 1/
Watershed Protection 1/	-0-	-	-0-	-	-0-	-	-0-	-0-	Nursery Supplies	60,000	60,000 1/
Farming System Research 1/	24	200,000	-0-	-	Lab & Field Furniture	57,000	4-(160,000)	130,000	Supplies	25,000	572,000 1/
Total	48	400,000	68	612,000	-	309,000	23-(920,000)	255,000	-	3,426,000	5,922,000

*Does not include $500,000 technical assistance grant for long-term TA.
1/ Does not include $1,813,000 for Las Cuevas Program.
2/ Error in calculations shown on page 10 of annex J of $20,000

Grant	500,000
Las Cuevas	1,813,000
Sub Total	8,235,000 2/
Inflation	2,278,000
Contingency	524,000
Total Project	11,037,000
Rounded	11,000,000

Appendix TAble, A-III CODR Inputs by Activity

Component	Personnel		Vehicle		Training		Operation Costs $	Other		Total
	Staff	Cost	No.	Cost	Short-term	In-country		Type	Cost	
Information Development		266,000	2	20,000	90,000	3,000	235,000	-	-	614,000
Watershed planning	-	-	-	-	-	-	16,000	-	-	16,000
Foresery	-	-	1	10,000	-	-	14,000	-	-	24,000
Road planning	-	-	-	-	-	24,000	-	-	-	24,000
Legs. & Policy		66,000	-	-	-	-	3,000	-	-	69,000
Environmetal Education		357,000	5	50,000	-	300,000	193,000	Media	115,000	1,015,000
Interagency Adm.		595,000	7	70,000	-	40,000	226,000	Furn.	40,000	971,000
Soil Survey 1/		-	2	20,000	-	-	45,000	-	-	65,000 1/
Farm Cons. 1/	*	*	2	20,000	-	-	194,000	-	-	214,000 1/
Incentives 1/	-	-	2	20,000	-	-	69,000	Incentiven	1,375,000	1,464,000 1/
Watershed Protecion 1/	-	-	-	-	-	-	163,000	-	-	163,000 1/
Research 1/		189,000	5	60,000	28,000	-	291,000	-	-	568,000 1/
Totals		1,473,000	27	270,000	118,000	367,000	1,449,000	-	1,530,000	5,207,000

1/ Does not include calculations for Las Cuevas ($1,767,000)

* Error of 480,000 on page 10 of Annex J (most likely funding intended to finance paratechnicians

Las Cuevas	1,767,000
Sub Total	6,974,000
	480,000
Sub Total	7,454,000
Inflation	2,200,000
Contingency	483,000
Total	10,137,000
Rounded	10,200,000

TABLE A-V

Planned Expenditures Compared to Actual Expenditures
for the Period Oct. 1, 1982 to March 31, 1984
($ 000)

Activity	Expenditures AID	Expenditures GODR	Total Combined Expenditures Planned	Total Combined Expenditures Spent	Total Planned Compared to Actual (Percentage)	Operational Costs Planned vs. Actual (Percentage)
- Cartography	343.5	23.8	631.3	367.3	58.2	12.0
- Erosion/Water	26.2	29.0	70.6	55.1	78.0	5.5
- Zoning	2.2	2.3	67.6	4.5	6.7	9.2
- Marketing	a/	a/	a/	a/	a/	a/
- Farm Studies	a/	a/	a/	a/	a/	a/
- Watershed Plans	4.0	7.5	76.4	11.5	15.1	b/
- Forestry	156.2	1.6	165.4	157.8	95.4	b/
- Roads	a/	3.3	18.8	3.3	17.6	a/
- Legs & Policy	a/	5.1	223.7	5.1	2.3	a/
- Envir. Educ.	73.7	78.2	633.4	151.9	2.4	19.5
- Interagency	3.8	374.4	743.0	378.2	50.9	45.8
- Soil Surveys	0.1	39.2	78.5	39.3	50.0	144.1
- Farm Cons.	47.0	187.4	301.6	234.4	77.9	218.7
- Incentives	56.5	57.4	515.6	113.9	22.1	b/
- Watershed Prot.	9.2	18.8	60.2	28.0	46.5	157.5
- Research	126.6	40.6	365.5	167.2	45.7	7.7
Total	848.9	868.6	3,951.6	1,717.5	43.5	55.7

NOTE:
a/ Represents no expenditures planned.
b/ Represents zero operation expenditures vs. that planned.

Appendix Figure A-VI

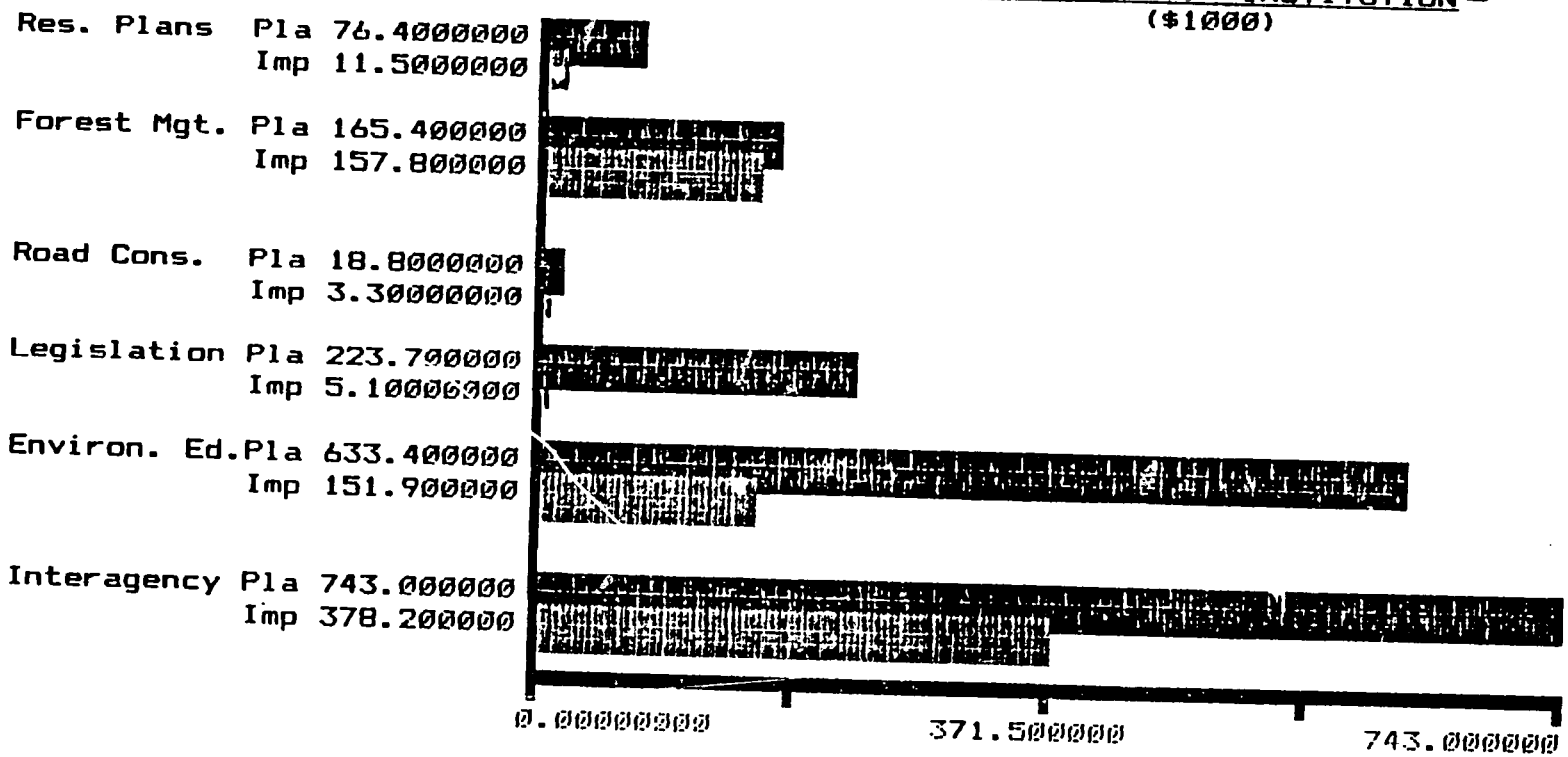
INPUTS PLANNED & IMPLEMENTED--INFORMATION [a]

($1000's)

[a] For the period October 1982 - March 1984.

Appendix Figure A-VII INPUTS PLANNED & IMPLEMENT.--INSTITUTION [a]

($1000)



[a] For the period October 1982 - March 1984

Appendix Figure A-VIII

INPUTS PLANNED & IMPL'D -- CONSERVATION [a]

($1000)

[a] For the period October 1982 - March 1984

APPENDIX B

PARTIAL LIST OF CONTACTS

SURENA:

- Gen. Reading César Kunhardt; Subsecretary, Director MARENA;
- Abel Hernández; Operation's Director, MARENA;
- Carlos Bonilla; Ocoa Watershed Office Manager;
- Máximo Aquino; Assistant Operation's Director, MARENA;
- Horacio Arredondo; Director Environmental Education Department;
- Hernán Hernando Hernández; Ocoa, Director Soil Conservation Service;
- Ramón Martínez; Ocoa, Environmental Education;
- Fernando Campos; Director Land and Water Department;
- Hipólito Basil; Technical Coordination Office.

SEAPLAN:

- Nelson Zambrano; Evaluator;
- Jacinto Reyes Espejo; Evaluator;
- Ofelia de Castro; Agricultural Economics.

BAGRICOLA:

- Juan A. Medina; Ocoa.

DGF:

- Fausto Escarramán; Ocoa, Reforestation;

Subsecretariat for Research and Extension, SEA:

- Tomás Montás; Ocoa, Farming Systems Research;
- Myra de Montes; Ocoa, Research.

USAID

- Philip Schwab, Mission Director;
- Craig G. Buck, Deputy Director;
- Joseph Kwiatkowski, Acting Agricultural Dev. Officer;
- Italo Russo, FORMA Advisor;
- Gary Kemph, MARENA Advisor;
- Henry Welhouse, Office of Program and Evaluation;
- Pirie Gall, Capital Resource Development.

Technical Assistance:

- Grant Thomas (KU); Ocoa, Farming Systems Research (Resident);
- Scott Witter; S.D., Cartography (MSU).

Various Farmers in Ocoa.

APPENDIX C

PARTIAL LIST OF MATERIALS REVIEWED

ANONYMOUS: "Procedures for Preparing a National Forestry Assessment and a National Forestry Plan for the Dominican Republic", revised draft 2/25/83.

BONILLA, Carlos: "Informe General de las Principales Actividades Ejecutadas por el Proyecto MARENA en la Cuenca del Río Ocoa, Durante el Período de Julio 1983-Abril 1984", Oficina de Manejo de Cuenca, Subsecretaría de Recursos Naturales.

_____ and Radhamés Medina: "Informe sobre una Supervisión Técnica Realizada a Principios del Mes de Mayo de 1984, a los Componentes: Conservación Agrícola, Protección de Cuenca e Investigación sobre Sistemas de Laderas", Oficina de Manejo de Cuenca, MARENA.

BRONSTEIN, Daniel and Fernando Gómez: "Environmental and Administration", field trip report May 30, 1984, Michigan State University.

DUVERGE, Domingo: "Nociones de Viveros", MARENA, Subsecretaría de Recursos Naturales, Junio 1984.

ERBAUGH, J. Mark: "Small Farmer Adoption of Soil Conservation Practices in the Ocoa Watershed", Dominican Republic, Ohio State University, 1983.

ESCARRAMAN, Fausto: "Nociones de Reforestación", trabajo presentado en el curso corto sobre técnicas forestales, San José de Ocoa, 1984.

HANSEN, David: "Human Resources for the Management of Renewable Natural Resources: A Progress Report", Ohio State University, December 6-20, 1982.

- "A Social Analysis of the Nautral Resource Management Project -Ocoa River Watershed", the Ohio State University, (no date).

HARTSHORN, Gary, et al: "The Dominican Republic Country Environmental Profile: Problems and Prospects", October 1981.

HERTFORD, Reed: "Human Capital for Agriculture in the Dominican Republic: Problems and Prospects", October 1981.

KEMPH, Gary: "Propuesta para Estudios sobre Pastos Naturales y Cultivados -MARENA, Ocoa", 10 agosto 1983.

OLSON, Karen et al: "A National Forest Management Plan for the Dominican Republic", draft July 1983, MSU.

RUDOLPH, Víctor et al: "Procedures for Evolving a National Forestry Plan for the Dominican Republic", draft, March 28, 1983.

SEOPC: "Influencia de la Erosión en los Caminos Vecinales", Seminario sobre Caminos Vecinales, Hotel Ocoa, 29-30 Noviembre 1983.

SIEDRA: "La Erosión de los Suelos en la República Dominicana", Documento No. 3, 1978.

-"Influencia de la Erosión en el Estudio, Diseño, Construcción, Operación y Mantenimiento de Obras Viales en la Cuenca del Río Ocoa", Seminario sobre Caminos Vecinales, Hotel Ocoa, 29-30 Noviembre 1983.

MARENA: "Control de Escorrencias y Estabilización de Taludes", Subsecretaría de Recursos Naturales (sin fecha).

_____: "Estrategia para el Desarrollo de Actividades de Educación Ambiental", Subsecretaría de Recursos Naturales, Diciembre 1983.

_____: "Informes Mensuales", (varias oficinas).

_____: "Formato Informe Mensual, Junio 1984", Departamento de Tierras y Aguas, Subsecretaría de Recursos Naturales.

_____: "Informe de Progreso MARENA", Subsecretaría de Recursos Naturales, Período Octubre-Diciembre 1983.

_____: "Informe de Progreso MARENA", Subsecretaría de Recursos Naturales, Período Enero-Marzo 1984.

_____: "Manual de Procedimientos -Proyecto MARENA", Subsecretaría de Recursos Naturales, 31 Mayo 1982.

_____: "Natural Resources Strategy Paper", draft, May 4, 1984.

_____: "Nociones sobre Control de Incendios Forestales", (sin fecha).

_____: "Nociones sobre Legislación Forestal", (sin fecha).

_____: "Plan Operacional Componente -Conservación de Suelos y Aguas, 2do. Año", Subsecretaría de Recursos Naturales, Marzo 1984.

_____: "Plan Operacional -Fortalecimiento Institucional- 2do. Año", Subsecretaría de Recursos Naturales, Enero 1984.

_____: "Plan Nacional de Ordenamiento Forestal -Resúmen Ejecutivo", Subsecretaría de Recursos Naturales, Febrero 1984.

_____: "Plan Nacional de Ordenamiento Forestal", Subsecretaría de Recursos Naturales, Febrero 1984.

_____: "Plan de Ejecución -Conservación de Suelos y Aguas", Subsecretaría de Recursos Naturales, Noviembre 1982.

_____: "Resumen o Sinopsis de Leyes, Reglamentos, Decretos y Resoluciones del Subsector Recursos Naturales -Recurso Fauna", Mayo 1984.

_____: "Resumen o Sinopsis de Leyes, Reglamentos, Decretos y Resoluciones del Subsector Recursos Naturales -Contaminación Ambiental", Mayo 1984.

_____: "Resumen o Sinopsis de Leyes, Reglamentos, Decretos y Resoluciones del Subsector Recursos Naturales -Parques Nacionales", Mayo 1984.

_____: "Resumen o Sinopsis de Leyes, Reglamentos, Decretos y Resoluciones del Subsector Recursos Naturales -Recurso Tierras", Mayo 1984.

_____: "Resumen o Sinopsis de Leyes, Reglamentos, Decretos y Resoluciones del Subsector Recursos Naturales -Recurso Agua", Mayo 1984.

_____: "Sondeo Agropecuario", resultados del Cursillo Teórico/Práctico sobre el Sondeo Agropecuario, San José de Ocoa, Mayo 7-18, 1984.

_____: "Zonificación Agrícola", Departamento Inventario de Recursos Naturales, Subsecretaría de Recursos Naturales, (sin fecha).

TAVARES, Clara: "Proyecto de Entrenamiento -1982", Secretaría de Estado de Agricultura.

THULLEN, Manfred: "Recursos Humanos para el Manejamiento de los Recursos Naturales Renovables", reporte de asistencia técnica del 27 de agosto al 3 de septiembre de 1983, Michigan State University.

USAID: "Project Paper -Natural Resource Management", 1979.