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**FIRST FORMULATIVE EVALUATION
OF THE
NATURAL RESOURCES MANAGEMENT
PROJECT IN HONDURAS**

AID Project NO. 522-0168

EVALUATION PERFORMED UNDER IQC

WITH

WINROCK INTERNATIONAL

FOR

OET/AID/HONDURAS

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by

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TABLE OF CONTENTS

	<u>Page</u>
I. PROJECT EVALUATION SUMMARY	1
II. INTRODUCTION	8
A. Purpose of Evaluation and Evaluation Team	8
B. Background and History of Project 522-0168	9
C. Environmental Quality Concerns	14
III. METHODOLOGY	17
IV. CURRENT ADMINISTRATIVE STATUS OF PROJECT	19
A. Policy and Planning Accomplishments and Current Status	20
B. Data Collection and Analysis and Current Status	23
C. Watershed Management and Current Status	27
D. CHEMONICS Technical Assistance Accomplishments and Current Status	30
E. Problems and Administrative Matters to be Resolved	33
V. RESULTS OF INTERVIEWS AND VISITS WITH FIELD PERSONNEL AND COMMITTEE MEMBERS	43
A. Reforestation Tree Nurseries, and Fuelwood Projects	43
B. Conservation of Soils, Including Increased Fertility	56
C. Improvement of Agricultural and Livestock Practices	60
D. Activities for Improving the Quality of Life	64
E. Summary of Data Collected From Field	65

	<u>Page</u>
VI. RECOMMENDATIONS	74
A. Administrative	74
B. Technical	77
LITERATURE REVIEWED	82
APPENDICES	84
Appendix 1: People Interviewed	84
Appendix 2: Evaluation Questionnaire	86
Appendix 3: Trip Report	90
Appendix 4: NRMP Resolution of Subsidies	123

ABBREVIATIONS USED IN EVALUATION REPORT

BANADESA	National Agricultural Development Bank
CAL	Local Agricultural Committees of Small Farmers
CATIE	Tropical Agricultural Center for Research and Education (in Costa Rica)
CDI	Center of Industrial Development
CEDEN	Evangelical Church Emergency Committee
COHAAT	West German Food for Work Assistance Program
CNA	National Agricultural (Advisory) Committee
COHDEFOR	Honduran Forestry Development Corporation
CONSUPLANE	Superior Council for Economic Planning
CPA	Agricultural Policy Commission
DRH	Direction of Hydrological Resources in MNR
ESNACIFOR	National School for Forest Sciences
GOH	Government of Honduras
INA	Agrarian Reform Institute
IQC	Indefinite Quantity Contract
MNR	Ministry of Natural Resources (Also referred to as MRN in many documents)
NRMP	Natural Resources Management Project (Also referred to as MRN in many documents)
PCN	National Cadaster Program
SANAA	National Water and Sewer Service
WMU	Watershed Management Unit (also referred to as UOC)

I. PROJECT EVALUATION SUMMARY

Summary

After a delay of almost two years in the implementation of the Natural Resources Management Project (NRMP) in Honduras (A.I.D. 522-0168), the Project is now making excellent progress. As designed in 1980, the five-year Project had three major components: policy and planning; data collection and analysis; and watershed management, the latter component focusing on the Choluteca River Watershed.

Essentially, no progress has been made in the first component. Progress has been slow in the data collection and analysis component, which is primarily the responsibility of the National Cadaster (PCN) and the Direction of Hydrology Resources. Lack of needed equipment and lack of adequately trained personnel have been primarily responsible for the delay; however, PCN is providing needed cartographical and land use data to the NRMP Office for use in selecting locations for the Watershed Management Units in the other subwatersheds. The remainder of these data will be forthcoming by September 1984.

The Watershed Management Component has been implemented in two subwatersheds: Cabaceras and Sampile. Plans are to implement the NRMP in the Texiguat and Orocuina subwatersheds later in 1984. A total of 31 local agricultural committees with 679 small farmers as members have been organized. The Project will not be able to completely accomplish all the goals set for this third objective by July 30, 1985. However, since the project is accomplishing its primary objectives of reducing the problems of soil erosion and deforestation and improving small farmer income, we recommend an extension of Project life for three years to July 30, 1988.

Evaluation Methodology

This first formulative evaluation of the Project had four main objectives, the key objective being to determine whether or not the Project should be extended. The Evaluation team reviewed all appropriate documents, project papers, contracts, and monthly quarterly, and annual reports of the various agencies. We visited with OET/AID personnel responsible for managing the Project; with the NRMP Executive Director and other Project Office personnel; all the team members of the Watershed Management Units (WMUs); with the Chief of Party and other four members of the CHEMONICS Technical Assistance team; with the Minister of Natural Resources and his principal adviser; with the Executive Director of the National Cadaster and two Department Heads of that Agency; and with the Forestry Department Head of COHDEFOR. We prepared a questionnaire and interviewed one or more officers and several local agricultural committees of eight of the nine WMUs in the field on their farms and in their homes. We summarized our observations and findings after analyzing many types of data on loans, subsidies, trees planted, types of soil conservation works constructed, etc. We prepared a written report, including several appendices, one of which was a detailed trip report. We presented a briefing seminar to A.I.D. personnel at the end of the four week Project Evaluation period.

External Factors

The worldwide economic recession in 1980-83, the resulting economic crisis due to loss of export earnings, and high unemployment have resulted in a severe budget crunch, which may adversely affect GOH counterpart funding for this Project. The Project Agreement was signed by the Provisional Military Government in 1980. Due to economic and political problems during the era of the transitional government (1980-1982), this Project was not assigned a high priority; thus, little progress was made towards accomplishment of the Project objectives. The current government has assigned a high priority to the NRMP, and it is looked upon with favor by the Ministry of Natural Resources.

Hopefully, the budget crisis will be resolved within the next year; however, the immediate future is bleak for sufficient counterpart funding to initiate the WMUs in the two new subwatersheds. Some way must be found to obtain the funds to continue this Project, so as not to lose the momentum gained in the last 1 1/2 years.

Inputs

Lack of trained personnel to handle all the data collection and analysis activities in PCN and DRH has hampered progress of that component. Failure to properly identify computer equipment needs has caused a delay in requesting some major equipment items for those two agencies. However, many vehicles and related field equipment have been ordered and received for the Project. The NRMP central office should initiate similar requests for field equipment and vehicles for implementation of the Project into two new subwatersheds in 1984.

There was no time in the beginning of this Project to implement a long-term training component (to complete B.S. degrees and/or M.S. degrees) for the Project personnel. This training component should be incorporated into the extension of the Project as an incentive for career MNR employees to seek additional professional training, so as to provide in the future even greater service in the management of the nation's critical natural resource base.

Additional young professionals need to be employed and trained to staff the new WMUs in the Texiquat and Cabeceras subwatershed; additional home extension specialists also need to be hired and trained to help improve the living conditions and quality of life of the small farm families living on the hillsides.

Outputs

As indicated in the summary, progress in implementing the policy and planning objective and the data collection and analysis objective of the Project has not kept on the time schedule originally envisioned. Problems in obtaining

inputs (vehicles and equipment), in hiring and training key personnel, and the economic and political uncertainties for much of the life of the Project, all have delayed the meeting of the goals for establishing Watershed Management Unit teams in five subwatersheds by 1984, of working with many more local agricultural committees, of serving the needs of small farm families, and of installing nurseries, planting trees, installing soil conservation projects, and adopting improved crop production techniques. The fertilizer grant and loan program, the small farmer loan program, and the incentives program have not been fully implemented as scheduled.

The lack of property ownership papers (titles) by over 80% of the small farmers (most of whom have less than 5 hectares) has created a problem in making loans to these small farmers.

The output goals for number of WMUs to be established, number of CALs to be established, and number of small farmers and their families to be directly impacted by this Project are too high, and need to be revised. To date, 31 CALs are functioning in nine WMUs, with a total of 679 small farmers. Seven nurseries have been established, which is not even one per WMU, much less than the one per CAL as specified in the Project. On the other hand, the soil conservation and reforestation activities are gaining momentum and the members are eager to expand these activities.

Purpose

The approved Project purpose was to implement natural resource conservation activities in the Rio Choluteca Watershed: (1) to strengthen the institutional mechanisms through which the GOH manages the country's natural resources; (2) to undertake an action program in selected watersheds to increase farmers' incomes; and (3) to conserve the natural resources of soil and water through the introduction of modified agricultural and forestry activities.

Little progress has been made in the aspect of strengthening the institutional mechanisms through which the GOH manages the country's natural resources. This is a broad and long-term task, and will require much cooperation of many government agencies now involved in the management of the nation's natural resources in developing proposed legislation. It is not normal to expect any of these agencies to willingly give up some of the management functions they now perform. The Evaluation team recommends that this aspect of the Project purpose be de-emphasized, and that the NRMP central office devote its limited professional resources to the more critical aspects of parts (2) and (3) above. If the recommended extension is approved, the NRMP should be able to complete the majority of the activities scheduled in the five subwatersheds in the Rio Choluteca (first two years of the extension) and to implement similar WMU activities in soil and water conservation, reforestation, etc., in new subwatersheds in another major river basin (watershed) by the third year of the extension.

Goal/Subgoal

The goal of the NRMP is to reduce the massive destruction of the major watersheds of Honduras. Thousands of "campesino" families have been forced further and further up the steep hillsides to find a parcel of land to produce some basic grains and other crops to support their families. Slash and burn agriculture and the massive cuttings of trees for fuelwood and lumber have led to deforestation of those vital land areas that were the source of water supply for Tegucigalpa and other towns and cities. Rains have caused erosion of soil from the steep hillsides, resulting in not only loss of valuable top soil, but also loss of the soil nutrients. Streams have been clogged with silt, and increased flooding has resulted.

The subgoal of this Project is to encourage small farm families to work together through local agricultural committees to protect their parcels of land by building soil conservation projects such as terraces, rock walls, living fences and living barriers, and parabolic canals to slow the flow of

water and reduce soil loss. Improved crop production practices on the protected land through the use of improved seeds, proper spacing, both chemical and organic fertilizers, pesticides, and other technologies are key components of this Project. Also, agroforestry and reforestation projects to plant trees for fuelwood and timber will protect the watershed and increase its water producing capacity. Practices to improve the family living conditions, such as planting small horticultural gardens, fruit trees around the home, and the construction of LORENA stoves, which reduce fuelwood consumption by 50% or more, also are incorporated into this Project.

Technology transfer is an overall goal as well, as indicated by the above subgoals. Developing methods and procedures for managing the vital soil, forest, and water resources in a major watershed such as the Rio Choluteca and using that methodology in other major watersheds is another subgoal.

Beneficiaries

The direct beneficiaries of the Project are those small farm families in the hillsides of the subwatersheds of the Choluteca River Basin who are receiving technical assistance, loans, and grants (incentives) that are helping improve the family income and welfare. Improved living conditions and the reduction in use of fuelwood are also benefits being achieved by the Project.

To date nine WU teams have been established and 31 local committees are functioning with 679 committee members. Using an average family of 6 persons, the direct impact thus far has been on 4,074 individuals. Given the fact that there are over 20,000 small farm families in the watershed and the population of the region is over 750,000, the number of people directly impacted thus far is small. However, as more WU teams begin to function in the other three subwatersheds, and as more local committees are organized, the number of families impacted and the amount of land protected should greatly increase.

- 7 -

The improvements in the natural resource base through construction of soil conservation works and through reforestation also is providing benefits to the entire nation in more effective management of the natural resource base. Certainly, the residents of Tegucigalpa and Choluteca will continue receiving benefits for many years by more adequate protection of the watersheds which are sources of water supply for those cities.

The methodology being developed in the Choluteca River Watershed will be applied to other major watersheds in the near future; from that standpoint, many people living in other regions of the country will be indirect beneficiaries of this Project.

Unplanned Effects

Not pertinent at this time. The Project has not progressed to the extent that any such effects can be evaluated.

Lessons Learned

The key lesson to be learned from the development and implementation of this Project is that it was too broad, involved too many agencies where coordination and mutual support actions were required, and established too many goals. No start up time was provided, no time allowed to train professionals, etc. The KISS principle in writing and implementing a Natural Resource Management Project might apply here: Keep It Simple, Señor! Projects need to be kept simple, have a specific focus, and establish realistic goals, realizing the difficulty of working in an environment of political and economic uncertainty.

Special Comments or Remarks

We recommend that the NRMP be narrowed in scope and that the NRMP central office concentrate its efforts on the Watershed Management Component of this Project.

The main evaluation report and four appendices are included with this Project Evaluation Summary.

II. INTRODUCTION

A. Purpose of Evaluation and Evaluation Team

This report represents the first formative evaluation of the Natural Resources Management Project in Honduras. The Evaluation Team included Dr. Daniel D. Badger, Professor of Natural Resource Economics, Department of Agricultural Economics, Oklahoma State University, Stillwater; Ing. Forestal Nelson Agudelo, Assistant Professor of Forestry, Pan American Agricultural School, Zamorano, Honduras; and Ms. Dana Fisher, Graduate Research Assistant in International Development/Trade, Department of Agricultural Economics, Oklahoma State University. The Evaluation Team arrived on site in Honduras on December 27, 1983 and departed on January 23, 1984. The Evaluation Team was contracted through Winrock International as part of the USAID/Honduras IQC.

There were four main objectives of the evaluation, specified in Work Order No. 4:

1. To determine the institutional development that has occurred to date as a consequence of project activities. This should include, but not be limited to, an assessment/analysis of: (a) the political support manifested for the project, (b) the effort made to organize and adequately staff the planned implementation units, (c) the effort made to establish the inter-institutional links needed for project implementation and (e) the impact of TA in developing necessary technical expertise for project implementation.
2. To determine the level of effort made to organize and implement field activities, including: (a) the appropriateness of procedures established for the selection of sites and beneficiaries, and (b) the usefulness of economic incentives established to obtain project involvement.
3. To determine extent of project coverage as well as acceptability and adequate use of technologies proposed and disseminated.

- 9 -
4. To determine whether or not the Project should be extended, based on: (a) initial external implementation problems, (b) need for project outputs, and (c) current project implementation status/outlook.

B. Background and History of Project 0168

The Convenio for the Natural Resources Management Project (NRMP) in Honduras between the Ministry of Natural Resources (MNR) of the Government of Honduras (GOH) and A.I.D. was signed on July 31, 1980. The Project life is five years, or until July 30, 1985. The Executive Directorate of Cadaster also is one of the executing agencies for GOH. The original amount authorized by A.I.D. was \$ 12,252,000 loan and \$ 2,743,000 grant. The GOH committed \$ 6,967,000 for a grand total of \$ 21,962,000. The GOH contribution as originally specified greatly exceeded the 25% of project costs as specified by Section 110 of the Foreign Assistance Act. The project was assigned to the Office of Environment and Technology (OET) of AID for administration.

Three key elements of the NRMP are:

- (1) Natural resource and land use policy and planning;
- (2) Natural resource data collection and analysis; and
- (3) Watershed management of the Choluteca River Basin.

Three major objectives or goals of the NRMP are:

- (1) to strengthen the institutional mechanisms through which the GOH manages the country's natural resources;
- (2) to undertake an action program in selected watersheds to increase farmers' incomes; and
- (3) to conserve the natural resources of soil and water through the introduction of modified agricultural and forestry activities.

Several precedent conditions were required by AID of the executing agencies to establish eligibility for funding: (1) establishment of a Natural Resources Executive Committee; (2) establishment of a Project Office in MNR; (3)

revision of existing laws so that the trees planted by the Project will belong to the beneficiarios; and (4) establishment of a Choluteca Watershed Management Fiduciary Credit Fund with adequate procedures to supervise the fund. Credit and incentive components of the fund are to be administered by Banco Nacional de Desarrollo Agrícola (BANADESA).

The three principal agencies involved in the Project are MNR, the Dirección Ejecutiva de Catastro (DEC) which is the National Cadaster Program or PCN, and the Honduran Forestry Development Corporation (COHDEFOR). The DEC or PCN is responsible for collecting and analyzing soils data, cartographic data, land use data, related ecological data and property delineations (survey) for the five subwatersheds in the NRMP. COHDEFOR has the responsibility for managing the country's forests and its watersheds.

A subagency of MNR, the Direction of Hydrology Resources (DRH), has responsibility for collecting and analyzing meteorological (climatological) and hydrological data through a series of measuring stations; funds were allocated in the Project budget to add 65 meteorological stations and 38 hydrological stations. The data from both existing and planned stations will be fed into the PCN computer for data analysis.

A critical technical assistance component to the NRMP involved the selection of a team of advisers to help train in-country personnel of the NRMP. After a lengthy negotiation and bid process, an AID contract was signed in April 1983 with CHEMONICS International. The first technical advisers arrived in May 1983, and as of the date of this evaluation, five members of the team are working in the NRMP central office with counterpart personnel.

Another critical component to the gaining of momentum of the NRMP was the arrival and assignment by AID of a full time Project Manager for the Project (John Warren) in May 1982. An AID person assigned to oversee the project was vital to assist in expediting equipment requests, provide moral support, and help resolve problems of coordination among the various government agencies involved in the NRMP.

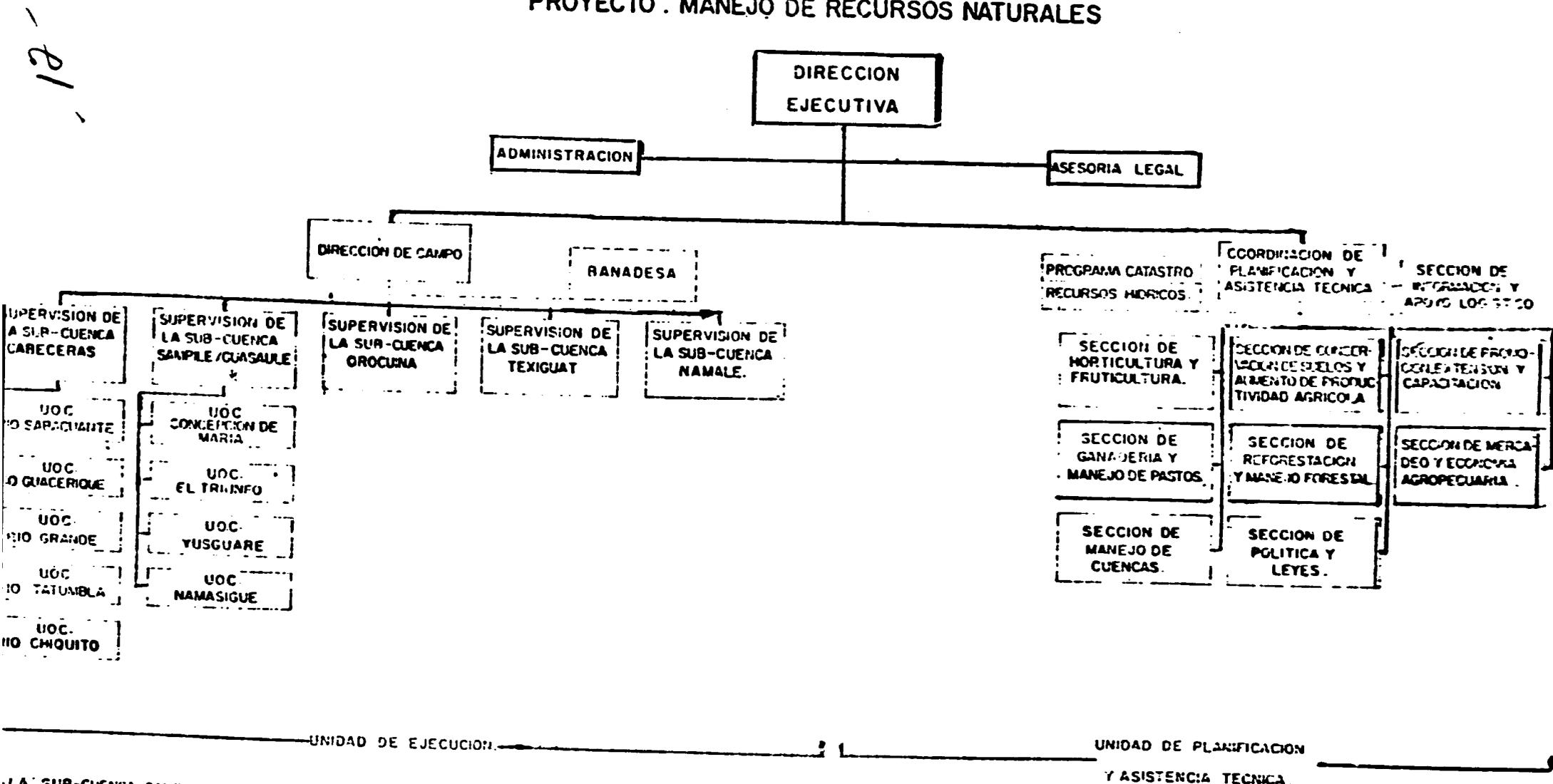
Justification for the Project

The southern region of Honduras is one of the most densely populated areas of the country, and the average family income is the lowest. Despite efforts by the Agrarian Reform Agency (INA) to redistribute some of the more productive valley land in the extreme southern part of the Choluteca River Basin (See Figure 1), a large majority of the small farmers are cultivating land on the steep hillsides in the watershed. Another critical factor affecting selection of this watershed is its geographic location in a politically sensitive area of Central America, with Nicaragua on the south and east and El Salvador on the west.

Serious natural resource and environmental quality problems have resulted from the slash and burn tactics of the campesinos on the steep hillsides, in their efforts to cultivate a small part of land to obtain a meager income to support their families. In addition, cutting of trees for both fuelwood and lumber has led to serious deforestation of the watershed, resulting in increased flooding, increased soil erosion and loss of soil fertility, loss of water holding capacity, and the loss of productive forests. Increased silting of the rivers and streams has reduced their water bearing load. The increased dust contaminating the air from wind erosion of the denuded hillsides has serious environmental consequences for the health and sanitary conditions of the small farm families, as well as people living in nearby towns and cities.

The NRMP is a strongly directed effort to emphasize environmental protection of the watershed. This is particularly critical in the headwaters (cabeceras) subwatershed where protection of the hillsides through reforestation is necessary to maintain the water supply needs of Tegucigalpa. The Project is focused on reducing the adverse effects of slash and burn agriculture and to reducing the adverse effects of cattle grazing high up on hillsides in the Choluteca River Watershed.

SECRETARIA DE RECURSOS NATURALES
 PROYECTO : MANEJO DE RECURSOS NATURALES



LA SUB-CUENCA SAMPLE/GUASAULE DEPENDE ADMINISTRATIVAMENTE A LA DIRECCION AGRICOLA REGIONAL SUR.

Figure 3: THE ORGANIZATION OF THE NATURAL RESOURCES MANAGEMENT PROJECT

The Delineation of the Watershed

Five subwatersheds were selected in the Rio Choluteca Watershed as the major zones to implement the NRMP: Cabeceras, Texiguat, Orocuina, Sampile/Guasaule, and Namale (Figure 1). As of the date of this evaluation, Watershed Management Units (WMUs) have been established and soil conservation and reforestation projects begun in only two of these subwatersheds: Cabeceras and Sampile/Guasaule. The NRMP Central office has selected field coordinators for these two subwatersheds and has employed professionals to establish five WMUs in Cabeceras and four WMUs in Sampile/Guasaule.

Each of the WMUs was originally planned to have an Agronomist, a Forestry Specialist, a male Social Promoter, a Cooperative Extension Specialist, and an Accountant. The current plan is to have a Woman Social Promoter to work with the wives and children of the committee members, and not to have an Extension Specialist and Accountant as such. The Social Promoter, as well as the other members are expected to develop extension activities in their areas of expertise.

The Project Paper (Green Book) and the Convenic set five year targets or goals of four WMUs in each subwatershed, and the establishment of up to 264 local community organizations (Comités Agrícolas Locales or C.A.L.); each with an average of 25 members. Obviously, with the delay in implementing the Project, the geographical barriers, and lack of personnel, attainment of these goals over the original Project life will not be possible.

Some Problems in Implementation of the Project

The NRMP was approved by the Military Transition Government. The years of 1980 and 1981 were turbulent years for the Honduran economy due to the political changes occurring, and probably more important due to the worldwide recession which greatly hampered Honduras' economic development due to loss of foreign exchange earnings and the reduced budgets available to operate the government.

Essentially the NRMP made little progress in field implementation of the Project during the first two years of the Project life, even though a Project Coordinator had been appointed, efforts had been made to select other key personnel for the Project Central Office, and to establish WUs. Equipment and furniture were purchased and vehicles were ordered. The appointment of the current Executive Director, Carlos Rivas, in July 1982, essentially marks the beginning of substantial progress for the NRMP. Thus, this evaluation is occurring actually after about one and one-half years of Project activity.

C. Environmental Quality Concerns

The National Resources Management Project cannot be separated from environmental quality issues. Destruction of natural habitat and loss of wildlife; whether by fire, (accidental or arson), by slash and burn agriculture, and by indiscriminate cutting of trees for fuelwood and lumber, are vital issues that must be addressed by GOH. As already specified in this report, destruction of major watersheds and subwatersheds through deforestation and soil erosion is a major environmental issue.

Equally important environmental quality issue as they affect the quality of life of the small farm families living on the steep hillsides are the loss of productive soils, the loss of fuelwood supply, the dust and smoke (from both fires and use of old type stoves) contaminating the house and living environment of the family members, the contamination of water supplies, and the clogging with soil of small streams and rivers, causing increased flooding in the rainy season.

Particularly in the Sampire subwatershed, which is in an extremely low rainfall area, fire is a big problem which not only destroys the dry grass in the hillside pastures, and the new tree seedlings which have been planted, but also the homes and fruit orchards of the small farm family. The efforts of the WU technical team members and the hard work of the local committee members in reforestation can be wiped out in an instant, causing not only

physical and economic loss, but loss of morale and lack of willingness to continue participating in the soil conservation and reforestation projects of the NRMP.

The Choluteca River watershed contains over one-fourth of the national population and over 20,000 small farm families. "The small hillside farmer has been forced by population pressures and low productivity to farm even steeper slopes and to clear and cultivate higher up the hillsides. Thus erosion has increased and productivity substantially decreased" (Project Paper, p. 5). There is a need to emphasize environmental protection of the watershed through a rational and coordinated natural resources management policy. The Project Paper estimates that soil erosion in the Choluteca watershed is estimated to occur at an average net rate of 20 tons of soil per hectare per year in agricultural land on the hillsides (Project Paper, p. 31). The evaluation team believes this rate (of 8 tons per acre per year) is too low, and in many areas of the Choluteca River watershed, soil erosion has likely occurred at a rate exceeding 50 tons per hectare per year (or 20 tons/acre per year). Thus, the benefits of accomplishing the project objectives in soil conservation and reforestation will be higher than those estimated in the Project Paper.

In a talk given by the AID Administrator in March 1982, he stated that AID now is giving much emphasis to environmental quality concerns in all its projects. Some of the nine categories of assistance in the general area of Environment and Natural Resources are: (1) Environmental Institution Building; (2) Vegetative Cover; (3) Conservation and Land Management; (4) Agricultural Water; (5) Drinking Water and Sanitation; and (6) Pollution Control and Statement. (McPherson, Appendix E). Accomplishment of the objectives of the Natural Resources Management Project will bring about improvements in all of the above areas, as well as in related environmental quality parameters (e.g., improvement in quality of life of the small farm families).

Some of the environmental quality benefits, that are difficult to measure, but which are tackled by the NIMP are: (1) reduced sedimentation in the water supply; (2) greater ground water absorption and a more regular water supply; (3) decreased flooding; (4) decreased soil erosion; (5) increased technical training for natural resource management (and improved environmental protection) both in the public and private sector; (6) better natural resources and environmental quality laws and policies; and, (7) related environmental improvements in the Project area and in surrounding areas (Project Paper, p. 30).

III. METHODOLOGY

Two members of the Evaluation Team (Fisher and Badger) arrived in Honduras on December 27, 1983, and immediately began a series of meetings with the Executive Director and other personnel in the NRMP Central Office, with the Executive Director and others in the DEC, and with personnel in the Office of Environment and Technology (OET), USAID/Honduras. After the arrival of Nelson Agudelo on January 3, 1984, and particularly after we completed the field interviews, we continued the series of visits with personnel in COHDEFOR; with the Minister of Agriculture, Miguel A. Bonilla; and with personnel of the CHEMONICS Technical assistance team to the project and their counterparts. A list of agencies and personnel visited is in Appendix 1.

We also reviewed many documents including the Project Paper (Green Book), the "Convenio" between AID, MNR and DEC, and agreements between MNR and COHDEFOR, and MNR and DEC. A list of the documents reviewed is in the Literature Reviewed section of this Evaluation Report.

A survey form or questionnaire was developed and translated into Spanish for use in interviewing members of the Local Agricultural Committees (C.A.L.s) organized by the WMU teams in each zone. During the course of two weeks of field visits to each of the nine WMUs (five in Cabeceras and four in Sampile/Guasaule) we made a deliberate effort to formally interview at least one C.A.L. president or other official of the C.A.L. Board of Directors and at least two other members of a C.A.L. in each WMU. We also visited with at least three other members of the C.A.L.s on their farms in each WMU and made written notes of their impressions of the technical assistance received from the NRMP personnel, subsidies and loans received, if any, types of soil conservation and reforestation projects implemented and planned, and the type of technical assistance needed in the near future. We also visited in the homes of the family and inspected the LORENA stoves, if the family had built one. A copy of the survey form used is in Appendix 2 of this Evaluation Report.

As indicated earlier, we visited with the NRMP field supervisors (Carlos Meléndez and Eduardo Canales) for each of the two subwatersheds in operation and traveled with them to their respective areas to visit each of the team members of the nine WMUs. We spent one to one and one-half hours in each Technical Team headquarters office, obtaining detailed data on the soil conservation and reforestation projects, functioning of the C.A.L.s, problems encountered, and plans for 1984. A detailed account of our visits to these WMUs is in the field trip report in Appendix 3.

Three Peace Corps Volunteers were working with three WMUs in the field (Sabacuante, Yusguare and Tatumbra), but we were not able to interview these volunteers as they were on vacation at the time of our visits.

The Evaluation Team members interacted about our observations and findings. We attempted to filter out most of the minor start-up problems, at both the NRMP Central Office level and in each of the WMU team headquarters; we have tried to focus our recommendations on the basis of tendencies, trends and directions taken by the NRMP personnel. Our recommendations are based on years of experience dealing with natural resource and environmental quality issues in several Latin American countries as well as in the United States.

IV. CURRENT ADMINISTRATIVE STATUS OF PROJECT

There is no need in this Evaluation Report to dwell on the administrative and other problems caused by the overly-ambitious goals established by the Project Paper (Green Book) for the NRMP, and further described in the Convenio or Contract between MNR, DEC and AID, and also in the Preliminary Plan for Reactivation of the Project. In general, the Project as originally developed is too general and too idealistic. It did not provide any start up time, such as training personnel before the project began. It evidently assumed there would be no jealousy among the different natural resources management agencies, or competition relative to areas of responsibility in forestry and watershed management. Needless to say, there has been a lack of communication and coordination among the different agencies involved in the Project. However, many of the cases involving misunderstanding have been resolved.

An example of a well meaning, but overgeneralized statement follows:

"The Project will improve the natural resource data base, policy, planning, management and implementation of projects which will strengthen current and future programs to improve utilization and conservation of Honduras' land, water, soils and forest resources. The Watershed Management Program, the largest element of the Project, will build the GOH manpower and organization base to deliver improved conservation and agricultural technologies to hillside farmers. It will result in halting or reversing severe erosion in one-half of the farm lands at risk in the Choluteca Basin" (Project Paper, p. 1).

There have been delays in developing needed land use and soil data caused by problems in PCN in obtaining vehicles, hiring trained people for surveying, from frustrations in breakdowns of computer equipment, and delay in receiving per diem expenses. Similarly, the first Executive Director hired for the NRIP seemed to have no sense of direction and a lack of willingness to move the project forward. But these problems mostly have been resolved. The

employment of a new Executive Director in July, 1982, and the signing of the A.I.D. contract for technical assistance for the project and the subsequent arrival of the Chemonics team have provided a significant impetus to the Project and the NRMP continues to gain momentum day by day.

A. Policy and Planning Accomplishments and Current Status

"The Project's strategy consists of three elements. The first is to establish an effective forum within the government of Honduras (GOH) to give direction to the natural resource effort; to bring together the various agencies involved in natural resource programs; to study and synthesize existing land use and natural resource laws and policies into a comprehensive and effective package; to propose new and needed laws and policies; and to direct or oversee the strengthening of the key institutions in the natural resource area.

"The second element is to build a land use classification system and to increase significantly the capability of the GOH in natural resources data collection and analysis.

"The third element is to start activities to improve a watershed to give practical expression to the overall policy, to test approaches before moving to a full national effort and to achieve practical impact on the watershed problem in the near future." (Project Paper, p. 9).

CPA

The first element required the effective functioning of the Agricultural Policy Commission (CPA) and for it to consider natural resources and land use policy. The CPA consists of the Minister of Natural Resources, the General Manager of CONDEFOR, the Executive Director of INA, the Minister of Economy, the Minister of Finance and the Minister of CONSUPLANE.

"The CPA's initial priorities will be to oversee the establishment of a system of land use classification, to take decisions on land zoning, and to review proposed new development projects from the point of view of their appropriate use of land and other natural resources. The CPA also will develop and propose new laws and regulations designed to codify and rationalize existing natural resource legislation, and develop institutional mechanisms to carry out these new policies. A Land Use Classification Technical Committee is to be established under the direction of the CPA" (Project Paper, p. 11).

As of the date of this evaluation, the CPA has not functioned effectively in providing supervision to the NRMP. It did meet regularly in earlier years, (1978-80) but the CPA was not able to fulfill its responsibility to NRMP in the last three years, since it was abolished by CONSUPLANE on November 26, 1980. Thus, the NRMP has had no higher level supervisory council to oversee its activities and to help the NRMP resolve interinstitutional agency problems.

The Natural Resources Executive Committee, which includes representatives of MNR, CONSUPLANE, INA and COHDEFOR, with the Executive Director of the NRMP as Secretary, has not met regularly (only 6 meetings since the beginning of the project), so has not provided much executive direction to the Project. Thus, there has been an increased need for the CHEMONICS Chief of Party and the AID Project Manager to serve as a sounding board and advisory team to the Executive Director in administrative and budgetary matters affecting the NRMP. However, AID should insist that the Executive Committee meet and function as it was intended an advisory agency.

CNA

The President of the Republic of Honduras has recently implement a law to create the Comité Nacional Agropecuario (CNA) (National Agricultural Committee). The Document was signed by President Suazo on January 19, 1984, and the Committee should begin functioning soon. The Committee is composed of the Secretary (Minister) of Natural Resources, who will serve as Chairman; the

Secretary of Economy and Finance, the President of BANADESA, the Executive Director of INA, and two representatives of the agricultural and livestock sector. The CNA is required by law to meet every 15 days. It is interesting to note that CONSUPLANE is not represented on CNA.

CNA is an interinstitutional agricultural committee that can serve in the supervisory and policy making role for NRMP that was originally specified in the project agreement for CPA. Every International Technical Assistance Project such as the NRMP needs an expediting agency to help it resolve bottlenecks, roadblocks, and inter-agency conflicts.

We recommend that the NRMP Executive Committee Director vigorously pursue the use of the CNA as its supervisory agency. One example of a way CNA could assist the NRMP is to request INA through CNA support to provide a waiver or a way to bypass the Agrarian Reform Law roadblocks that no small farm with less than 5 hectares can be titled. Certainly, if loans are to be provided to the small farmers of the CALs in the NRMP, some way must be found to provide provisional titles. Possibly BANADESA could help resolve this dilemma as well.

An alternative to removing this roadblock for securing loans is to amend Project 0168 to state that small farmers who have been farming on their small tract(s) of land for years, and who are stable in the community, are eligible for loans without a need for a title of ownership.

Policy and Planning

The NRMP Central Office has recently obtained the services of a lawyer who also has an MS degree in rural development. He is reviewing the history of NRMP's in other Latin American countries, as well as reviewing all laws and policies of the different institutions in the GOH relating to natural resources policy and management, and, also environmental quality. Many of the old laws of the country are out-of-date, in conflict with other laws, and/or are not being enforced. This review includes an analysis of what laws are

still valid, which are no longer appropriate, and which agencies should be responsible for specific areas of natural resources and environmental quality management.

The ultimate objective of this part of the NRMP is to write proposed legislation to send to the President to be introduced in Congress. Such a new law would codify and update the natural resources laws of the country and streamline the policy and management of the country's natural resources, hopefully in fewer agencies than are currently involved in such management.

The Evaluation team believes that this component of the Project Agreement needs to be de-emphasized as a major function of the NRMP central office. There are other agencies in GOH better suited to dealing with this issue. The major component of the NRMP is and should continue to be watershed management. The services of the specialist hired to work in this area can be utilized more efficiently in helping to handle some of the legal and related administrative aspects of the project. Also, this specialist could help develop training materials on agricultural economic issues for the in-service short courses for WMU team members. He also could collect, analyze, and distribute needed price and other marketing data for use by the field personnel.

B. Data Collection and Analysis and Current Status

As mentioned earlier, there have been delays in implementing this objective caused by the economic conditions affecting the country, and by an earlier period of political uncertainty. Two Departments in PCN (Natural Resources and Engineering) have the primary responsibility for providing the data needed by the NRMP. (Figure 2) PCN had difficulty in obtaining vehicles and trained personnel for field survey parties, and in obtaining equipment for map making and data analysis purposes. To date, DRH still has not received the measuring equipment needed to establish the new climatological and hydrological stations specified in the contract.

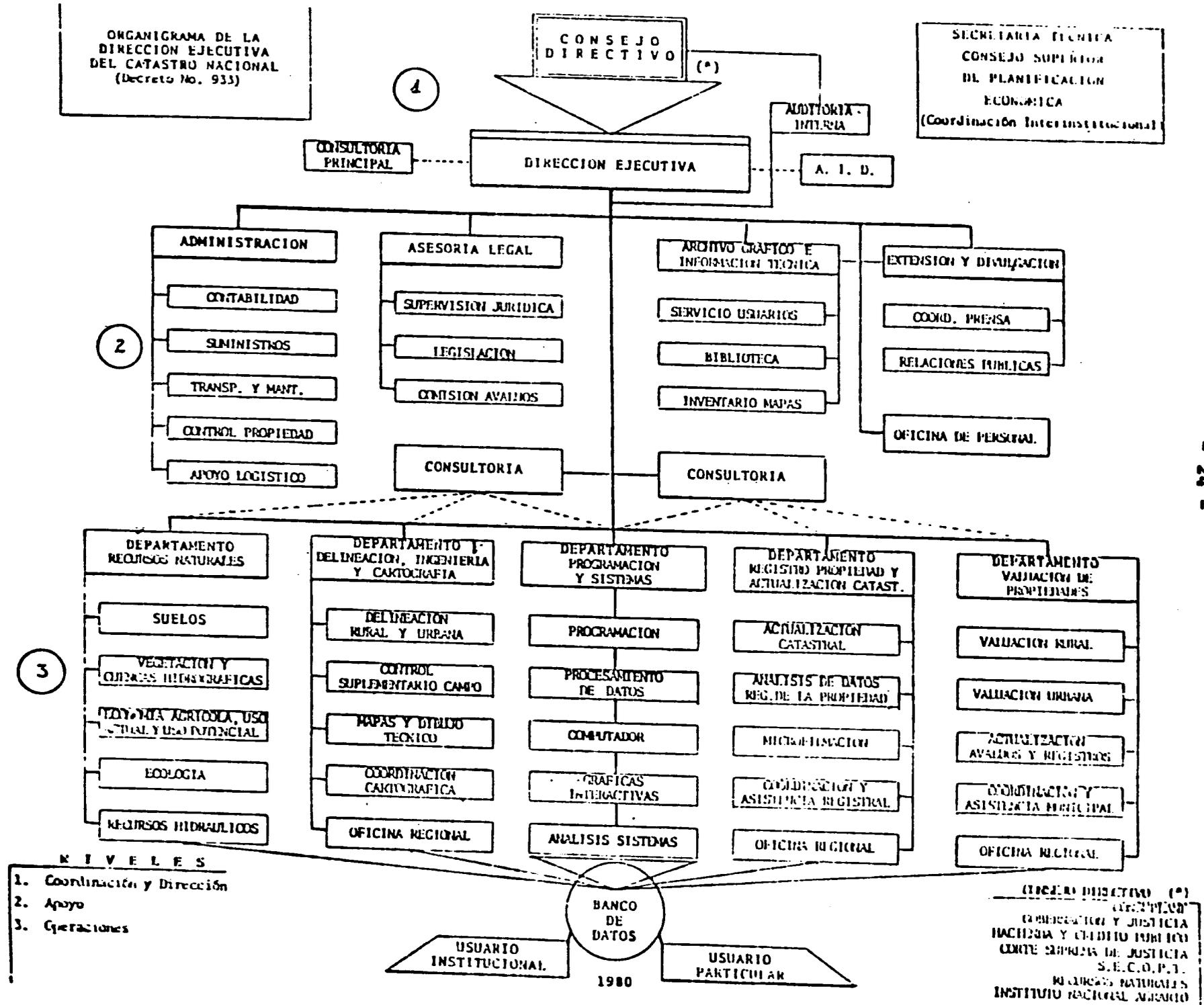


Fig. 2: Diagram showing various entities of the National Cadaster Program (PCN)

Nevertheless, much useful soils, cartographical and land use data for the Cabeceras and Sampile subwatersheds have been provided to the NRMP office by PCN. Additional data are being generated and will be provided by September 1984 for the Texiguat, Orocuina and Namale watersheds. In a contract study prepared for AID in February 1982, Scott Lovern outlined the accomplishments, work still to be done and timetables for completion of the work by PCN on the five subwatersheds of the Rio Choluteca Watershed for the NRMP (Lovern).

While the timetables for completion of the work have continued to slip since that study, PCN has responded to NRMP requests in 1983, and significant amounts of data for the Cabeceras and Sampile subwatersheds have been provided to the NRMP office. We were shown copies of requests, dates of completion of requests and reviewed timetables.

Although some actual and potential land use data have not been developed and provided to NRMP as rapidly as desired, general soil survey and topographical data have been available for the subwatershed areas in the Rio Choluteca Watershed. The Evaluation Team believes the major thrust of both the Methodology Design for other watersheds and the actual field work in the WMUs of the subwatersheds should be extension oriented through use of applied techniques, rather than developing sophisticated statistical and/or computer oriented techniques that may need highly skilled personnel to analyze and implement. Use of criteria or guidelines already developed by the NRMP for selection of WMU locations, and field visits by the NRMP central office personnel with CHEMONICS team input could determine accessibility, willingness of the local people to accept technical assistance, rainfall patterns, stream flow patterns, general soil types, cropping patterns and techniques being used, pasture and livestock conditions, and forestry use patterns.

We realize that Project 0168 has the goals of developing land use data, delineation of properties and titling of land. Also we realize that equipment and trained personnel are needed to accomplish these tasks, and changes must be made in existing legislation to allow titling (development of ownership

papers) for small farmers with less than 5 ha. We also recognize the goal established for DRH in establishing additional meteorological (rainfall, temperature, etc.), and hydrological (stream flow) measuring stations in the country. This latter goal of Project 0168 also requires counterpart funds, equipment, and trained personnel. Many of the measuring stations to be added are not in the five subwatersheds of the Rio Choluteca Watershed, which is the major thrust of the NRMP. Also, a key point worth mentioning is that at least some of the measuring stations in the Rio Choluteca watershed have antiquated equipment which malfunctions occasionally (frequently?) and that these stations are being staffed by inadequately trained personnel in some cases.

Thus a point that needs to be considered by AID is not only to develop new measuring stations through DRH, but to provide funding for equipment and training to update existing stations in all watersheds of the country.

The Evaluation Team does recognize that the data collection and analysis component of project 0168 is a useful objective to accomplish, since the data provided could be used to support more advanced natural resource management techniques and policies to improve the environmental quality and economic conditions for both the natural resource base and the low income small farm families predominant in this country. Hence, the Team recommends that the AID Project Manager for 0168 spend more time working in PCN and DRH to determine the bottlenecks, reasons for delays, the need for additional trained personnel and equipment, other than those provided in the initial contract. It is likely that additional technical assistance in natural resource data analysis and computer modeling (for PCN) and in meteorological and hydrological data collection and analysis (for DRH) is needed to allow the successful completion of this component of the NRMP. If so, then AID should direct hire the technical people needed to work with personnel in those agencies.

C. Watershed Management and Current Status

The Evaluation Team has read the quarterly reports of the NRMP central office. All of these reports have been prepared by Ing. Francisco Lupiac, Field Director of the NRMP, and forwarded to Lic. Roberto Ruiz Pineda, the first Project Coordinator of NRMP until June 1982, and subsequently to Ing. Carlos Rivas, current Executive Director of the NRMP. We also have reviewed the NRMP Annual Report for December 1982 - November 1983, which was submitted by Carlos Rivas to Ing. Regino Quezada, Vice-Minister of MNR on December 14, 1983. In addition, we have talked extensively with personnel in the NRMP office and with the AID Project Manager and AID Program Officer for the NRMP. The organization of the NRMP is shown in Figure 3. The following observations are based on our synthesis of all the information available from these sources.

It is a statement of fact that the execution of the NRMP was hampered by the political uncertainties, changes in Ministers of the coordinating agencies (PCN, MNR, COHDEFOR, Finance, CONSUPLANE, etc.) for the Project, from the time of signing the AID contract by the Provisional Government on July 31, 1980 until installation of the elected President on January 27, 1982. Thus, for approximately one and one-half years, very little direction and encouragement and counterpart financial support was provided to this project. Few, if any, of the precedent conditions were accomplished during that period.

As has already been mentioned, the worldwide economic recession from 1980-1983, and the serious financial status of the GOH, due to lack of foreign exchange earnings, loss of trade and high unemployment, all have had an adverse impact on the NRMP in its formative stages. Because of counterpart budget constraints and typically low salaries for field professionals, (even those with three year agricultural and forestry degrees from in-country Universities), it has been difficult to hire the personnel needed to staff the WMUs in the subwatersheds.

THE NATURAL RESOURCES MANAGEMENT PROJECT



Figure 1 THE FIVE SELECTED SUBWATERSHEDS OF THE CHOLUTECA WATERSHED

Despite all the drawbacks mentioned above, the NRMP has made significant progress in the last one and one-half years (July 1982 - December 1983). Competent young professionals have been hired and training courses have been held to upgrade the subject matter knowledge of the WMU team members.

The central office staff appears to be functioning well, and no major recommendations are needed concerning this aspect of the project. Vehicles and equipment have been received and the central office staff appears to be supporting the WMUs in most aspects. Certainly, the central office personnel need to increase the training component and provide more technical supervision for the WMU team members. The Central office staff including the CHEMONICS team need to develop more on farm demonstrations, help provide more field days, and provide technical advice and inputs (seeds, fertilizers, pesticides, management) for some small plot experiments with basic grains, horticultural crops, fruit trees and different species of trees (forest resources).

Despite the inactivity of the CPA, the irregularity of meetings of the NRMP Executive Committee, the other priorities of the MNR and current budget problems, the NRMP is functioning well at the present time. As will be discussed in other sections, there is still much more to be done and problems do need to be resolved. However, with the technical and administrative support of the CHEMONICS team, with increased involvement by the AID Project Manager, and with sufficient funding available from the AID loan and grant funds, the NRMP should be able to gain increased momentum in the remaining life of the project (18 months). Certainly, adequate resources and equipment should be available in 1984 to expand the extension work on soil and water conservation, reforestation, pasture management, etc., to new WMUs in the Texiguat and Orocuina subwatersheds.

D. CHEMONICS Technical Assistance Team Accomplishments and Current Status

The technical assistance team was delayed in incorporation with the NRMP due to changes in contract bidding processes and other administrative procedural problems at the AID/Washington level. Thus, the CHEMONICS International contract with AID was not signed until April 1983, and the first members of the team reported in May 1983, almost two years after Project 0168 was initiated. We have read the monthly progress reports of the CHEMONICS team, have visited with the Chief of Party of the team in several sessions and have interviewed the other four members of the team with their counterparts.

In general, we are very impressed with the quality of personnel employed by CHEMONICS as technical advisers to the team. Three members began work in the NRMP office in May 1983, one in June, and the fifth person arrived on November 2, 1983. The one remaining position called for in the project in agricultural policy and planning has not been filled to date.

It is the understanding of the Evaluation Team that the NRMP personnel in conjunction with AID personnel made the decision on the most critical areas in which technical assistance was needed. Our observation is that given the importance of reforestation and related timber activities, and the great dependence of the small farmers involved in the NRMP on basic grains (corn, beans, grain sorghum) for family consumption, there appears to be a need for technical expertise on the CHEMONICS team in these two areas. We do recommend that the short term technical assistance component of the CHEMONICS-AID contract definitely include qualified personnel in these two areas to help strengthen the field activities (experimental plots, demonstrations, field days, training of WIU team members, etc.) in the NRMP. It is possible that the support of CIAT and/or CIMMYT (in personnel, improved seeds, training component) could be obtained by the CHEMONICS personnel to strengthen the basic grains area particularly. Also, the NRMP personnel and the CHEMONICS team should utilize the expertise of personnel of the AID supported INSORMIL

project who have corn and grain sorghum experiments underway at the MNR La Lujosa station. Use of some of these improved seed in test plots on hillside farms would be useful to the INSORMIL project as well as to the NRMP.

We recognize that the CHEMONICS team members are working closely with their NRMP central office counterparts, and we certainly realize that training key personnel to carry on the NRMP activities that hopefully will be integrated into MNR at the end of the project is critical. We do emphasize, however, that there needs to be a visible presence in the field of these counterpart teams, providing technical assistance and moral support to the WMU teams, helping them establish some on-farm experiments, with improved varieties, as well as some applied field trials using improved management techniques with existing native varieties. While the central office staff and the CHEMONICS team should not bypass the WMU team in dealing with the small farm families, these NRMP central office personnel do need to visit with, and provide technical assistance to, these committee members (and not just the recognized leaders of the committee or community.)

The high majority of these small farm families have been neglected by government agencies, and typically have received little or no financial support, technical assistance via extension, or moral support in their efforts to provide for the food and other welfare needs of their families. Thus, an important contribution of the NRMP would be to interact on a frequent basis with these small farm hillside families in their environment, giving them a pat-on-the back for their hard work in developing soil conservation and reforestation projects, and otherwise showing them that they are important, and that the NRMP is trying to help them not only improve the natural resources in their area, but is concerned about them as individuals. Instilling these human relation activities in the WMU team members and in the NRMP national personnel should be a key objective of the CHEMONICS technical assistance team.

We are well aware of the problems CHEMONICS has had in obtaining needed audio-visual and related communications equipment for utilization in meetings at the WMU and local committee level. We understand the equipment acquisition problems are slowly being resolved. We do recommend that the CHEMONICS team with their counterparts develop wall posters, flyers, leaflets and related type "propaganda materials, using cartoon type drawings and pictures to demonstrate some of the practices that are being recommended as well as demonstrating the benefits of the changes. Recognizing that generally some members of the family unit can read (spouse, children), simple, printed explanations could be incorporated into the drawings. No lengthy wording is needed. Wholesale distribution of these materials so the committee members can post these in their homes should help make the NRMP more visible and help spread the word to non-participants about the need for soil conservation, reforestation, pasture improvement and related projects.

Another form or medium of exchange would be for the CHEMONICS team members and their counterparts to develop a monthly newsletter of two to four pages for distribution to all WMU team members and possibly even to the local committee presidents, as well as to some of the educated independent farmers in the local areas. This newsletter could provide as a forum for exchange of innovative ideas that have worked in a particular WMU; in addition, tips on watershed management, dates of upcoming training courses, etc., could be put in the newsletter. Selection of a specific WMU team or even an individual (recognition of the month idea) and focussing on their accomplishments may encourage other team members to strive to do a better job in hopes of being recognized. Certainly, the newsletter should serve to increase esprit de corps or morale of the WMU teams.

We recognize also that the NRMP office, with the burden possibly falling on the CHEMONICS team, has the responsibility of developing a methodology or design procedure to implement the NRMP concept in other watersheds. This methodology would incorporate land use and natural resources data, climatology data, etc. and the field activities of the WMUs.

A critical area of need in the field is for more technical assistance to the family members in food preparation, health care, food preservation and processing, the building of LORENA stoves to reduce fuelwood consumption, and the building of latrines. Many or all of these activities are incorporated into the on-going AID Rural Technologies Program being administered by the Center for Industrial Development (CDI). Val de Beausset, OET/AID/Honduras is the AID Project Manager. Although the CHEMONICS team has no member specifically assigned to this area of responsibility, one or more of these team members and their counterparts should coordinate with CDI and the AID Project Manager on how the WMU teams can capitalize on these on-going activities. For example, the Rural Technologies Program has funds to establish experiments with some small farm families on food processing, including drying and glazing. Demonstration projects could be developed in one or more WMUs in each subwatershed. The Rural Technologies Program is active in all Departments of the country.

Since there is a limited number of Promotoras Sociales in the WMU teams, the ability to incorporate some activities funded through another AID program should be mutually beneficial to both the NRMP and CDI accomplishments in helping improve the well being of small farm families.

E. Problems and Administrative Matters to be Resolved

Financial or budgetary situation

As indicated earlier, there have been budgetary problems in the NRMP. There have been some delays in obtaining AID funds. In the beginning of the Project, the executing agency could request an advance through AID for 90 days.

After AID approved that request, the Minister of Finance issued the check. Now AID can only give advances for 30 days, which has caused some delays or bottlenecks. As an alternative, the use of rotating funds through the Economic Support Funds (ESF) has helped alleviate part of this problem.

Most of the current budgetary problems center on the deficit crisis of the GOH, and the reduction of previously approved MNR funding for the Project. Such recurring financial crisis can cause the Project to stall, and/or for the momentum of the Project's progress in watershed management to be lost. Unfortunately, AID has been forced to cover a portion of the counterpart costs with ESF monies. However, this is neither a satisfactory nor desirable alternative for financing the NRMP. Hopefully, economic conditions in the country will improve and the GOH and MNR budgets will allow full counterpart support for the remaining life of the NRMP.

The current Program Officer for the NRMP assumed this responsibility in June 1983. Every procurement request for this project since that date has been on an emergency basis, and all these requests have been approved. This type of request is understandable due to the late integration of the technical advisory team into the NRMP. However, it is expected that the NRMP office and the Advisory Team will develop a yearly procurement plan for one year in advance. More orderly requests now, such as submission of vehicle and field equipment needs for 1985, would be easier to fulfill by the date the equipment is needed.

The current budget situation, as of the date of the evaluation, is presented in Table 1. Sufficient AID loan funds and grant funds are available to continue the project past the July 30, 1985 life of project date, so as to accomplish more of the goals originally established for the project. Whether GOH counterpart funding will be forthcoming is another matter. The AID Project Manager, the NRMP Executive Director and the CHEMONICS Chief of Party should stress continually to MRN the necessity of adequate funding for this project as it now has the momentum to make a significant contribution to improving the income of many small farm families living on steep hillsides, as well as providing improved management for the nation's vital natural resource base.

TABLE 1

FUNDS OBLIGATED FOR PERIOD July 31, 1980 - July 30, 1985

Project 522-0168

	<u>ACTIVITY</u>	<u>GRANT</u>	<u>LOAN</u>	<u>TOTAL</u>
1.	Policy/Planning	\$ 180,000	\$ 250,000	\$ 430,000
2.	Data/DEC	272,000	2,700,000	2,972,000
3.	DnLs/RH	56,000	400,000	456,000
4.	Watershed Management	<u>1,492,000</u>	<u>3,650,000</u>	<u>5,142,000</u>
	Obligated thru PACD	2,000,000	7,000,000	9,000,000
	Authorized	<u>\$2,743,000</u>	<u>\$12,252,000</u>	<u>\$14,995,000</u>
	Available <u>a/</u>	743,000	5,252,000	5,995,000
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a/ (plus unexpended portion of current \$9,000,000)

Equipment Situation and Maintenance of Equipment

As indicated earlier, the measuring station equipment requests for DRH are still being processed by A.I.D. The deadline for bids is January 31, 1984. Similarly, the computer equipment requests and other equipment requests of PCN are still being evaluated; an intense effort is being made by the AID Project Manager to expedite this request. Also, some of the equipment requests of the CHEMONICS team have been delayed due to the necessity of obtaining a waiver since the equipment requested is not U.S. made and is not within the 941 designation (developing country).

The NRMP Project office received several CJ-7 jeeps and a heavy duty pick-up in 1981. In 1982, 15 CJ-5s, 1 Cherokee wagon, and 1 jeep pick-up were delivered. In 1983, 40 CJ-8s were delivered to PCN for field surveying as part of Project 0108; also 5 CJ-8s were delivered to the NRMP office. There are no vehicle requests pending.

The NRMP office needs to submit vehicle and field equipment requests now for the WMUs being considered in the Texiguat and Orocuina subwatersheds, to be established later this year. The jeep pick-ups have versatility; they can carry three people in the cab and can be used in hauling tree seedlings from the forestry nurseries, in hauling fertilizer to the committee members (a component of the project which needs to be implemented), and possibly in hauling some products to market from isolated areas where there is no bus or other form of transportation. Thus, the Evaluation team recommends that the NRMP Director consider the purchase of several more jeep pick-ups.

As is normal in a developing country where a high proportion of the travel is over rocky, dirt roads, the maintenance and repairs of vehicles becomes a critical issue. Lack of repair parts when needed, the non-durability of some vehicles under harsh conditions (cracked or broken frames on jeeps) and the malfunctioning of even new jeeps causes frustrating loss of time in accomplishing objectives. We saw one Project jeep in a Cabaceras WMU which

had been out of action for several weeks due to a broken frame. Increased emphasis needs to be given to maintenance and upkeep of the vehicles, a reserve or backlog of repair parts and maintenance items needs to be kept on hand.

A specific administrator needs to be assigned to this aspect of the NRMP to help break bottlenecks to keep the vehicles in a good state of repair. Also, the AID Project Manager and CHEMONICS personnel need to be more actively involved in insuring that needed vehicles are ordered, and maintained, and that insofar as possible, the accomplishment of the objectives of this project is not delayed because of lack of vehicles, inoperable vehicles, lack of repair parts, and/or lack of funding to purchase combustibles (fuel).

Personnel

Generally, most of the immediate personnel needs for staffing the WU teams have been fulfilled. However, only three of the nine WU's have promotoras sociales (women home education and family extension specialists) and one of those has been away from the team for a few months because of sickness. Since AID loan funds can be used to pay first year salaries of new NRMP employees, we recommend that additional promotoras sociales be provided for the other teams. We realize that the MNR budget is restricted to cover the salaries in subsequent years; however, in view of the importance of this Project, and due to the desire for such services by the small farm families in the local committees (see extensive mention of this in Field Trip Report in Appendix 3), it is critical that this activity of the project be moved forward.

Also, because of geographic dispersion of some of the committee members, difficult road conditions and the need to work closely with more committee members in implementing soil conservation and reforestation projects, an additional agronomist and an additional forestry specialist should be added to some of the WU teams in both of the subwatersheds. These additions will help

get more small farmers actually involved in the NRMP in an earlier time frame, and will create a bigger impact in reducing soil erosion and problems caused by deforestation.

The NRMP has indicated it's plans to begin operating in Texiguat and Orocuina in September, 1984. It is critical to employ in the next one or two months some trained agronomists, forestry specialists, social promoters (community organization specialists) and home extension specialists and place them with some of the functioning WMU teams in the Cabeceras and Sampile subwatersheds to learn what is being done in the different project activities. Training sessions offered by the Chemonics personnel and their counterparts should also be provided in the next few months to these new personnel. In this way there will be some momentum gained and these personnel can "hit the ground running" when the new team headquarters are established later this year.

Based on our visits with WMU team members in the field, and from reading the quarterly reports of the NRMP office, it is evident that there has been much shifting of personnel from one WMU to another, both within the same subwatershed and between subwatersheds, after only a short period of time with the original team. We are not certain of all the reasons for the turnover of personnel (some have resigned and others have been fired) and the transfer of personnel. However, it is important to note that it takes some time for a young professional to "get his feet on the ground", gain some confidence in his own activities, and to gain the confidence of the local committee members. Each time one of the team members is transferred, some continuity is lost and some momentum is lost.

More careful selection of the young professionals for the WMU is needed. Also intensive training should be provided through short courses and through provision of educational materials, handbooks (manuals) so that these new team members not only gain new knowledge, but confidence in their abilities, and a sense of esprit de corps.

Changes in System of Subsidies and Loans

The MNR/AID contract for the NRMP specified that a system of incentives or subsidies would be provided for soil conservation projects (tool grants), for reforestation projects, and for establishment of tree nurseries in each local committee area. Due to delays in obtaining approval of the precedent conditions, particularly in establishing the Fiduciary Fund in BANADESA for project 0168, incentives or subsidies were not paid until 1983.

Also, in the agreement between MNR and AID, an incentive system was established for the construction of water storage tanks (pilas) as part of pasture management and improvement loans, for livestock water. If the water storage tank is only for the use of one committee member, the project will pay 25% of the cost of the tank and the member pays the other 75% through the loan. If the tank is for the use of five or more committee members, the project will pay 50% of the cost and the members pay the other 50% through the five year medium term loan.

In reforestation projects, a local committee member can secure the incentive for planting and maintaining the seedling trees even if he does not have title to the land he is farming, as long as the junta directiva of the C.A.L. certifies he has been living on the land for many years and approves the subsidy.

However, for soil conservation projects, the small farmer cannot receive a subsidy or incentive for constructing terraces, living barriers, living fences, etc., unless he has a certificate of title to the land (or at least a dominio pleno, which is a temporary ownership title). However, if his father owns the land, and both the son and father are members of the local committee, then the son can receive incentives for soil conservation projects on the land he is farming.

For committee members of selected local committees who owned their land, the members could receive 100% of the subsidy (for the days worked to construct the project) in cash until this arrangement was changed by the NRM Technical Committee on November 29, 1983. Now the member receives 50% of the subsidy in cash and the other 50% in inputs such as fertilizer and pesticides. The maximum area for which the incentive will be paid to any one member is one hectare. The Evaluation Team believes this change is valid, and will encourage the small farmer to begin using improved management technologies.

However, the Technical Committee has approved a further change in the subsidy that will be paid in cash to 33% of the base year. We are not certain of this impact on the attitude of the small farmer and on his ability to provide necessities for his family. The incentive is basically being paid for the small farmers manual labor in constructing the soil conservation works. If he receives little or no cash for this work, he may decide not to participate in this project activity. Alternatively, unless the actual application of the inputs received is closely supervised by the WMU team members, the small farmer who is desperate for cash, and/or who is afraid to use the technological inputs, may sell or trade these inputs to other farmers and to coyotes for cash.

Initially the incentives for the planting of trees were based on a total payment of 40 centavos (20 cents U.S.) for each tree planted, if that tree survived for three years. The incentive was paid in cash at the rate of 10 centavos when the seedling was planted, 10 centavos at the end of the first year if still alive, 10 centavos at the end of the second year, and 10 centavos at the end of the third year. As of the November 29, 1983 changes, there is a loss of incentive or initiative for the same small farmer to continue planting trees in succeeding years since the incentive paid reduces by 10 centavos for each subsequent year trees are planted until in the fourth year of participation, the committee member will receive a total of only 10 centavos for each tree planted. Also, at the direction of the Project, the total incentive can be paid in food, rather than in cash.

There apparently are some reasons why the changes have been made in the incentive system, but we were unable to determine the rationale behind the changes. Incentives were only paid in 1983, so there has been no time to evaluate the impact of the incentives paid last year. AID has established grant funds to pay these incentives; the incentives are not being paid from counterpart funds. The total amount of incentives programmed to be paid are the life of the project (including costs of tree nurseries) is small (\$1.5 million) compared to the \$21.9 million (U.S.) LOP budget in the original MNR/AID contract. That \$1.5 million includes \$492,000 for fertilizer subsidies for planting crops, which is a separate incentive practice than being discussed here.

Historically in Honduras, as in most other developing countries, the government has been able to pay little attention to the welfare needs of the small hillside farmers. These small farm families have received little or no subsidies or incentives compared to people living in cities where at least some semblance of infrastructure (streets, water, sewer, electricity, other public services) are provided at little or no capital cost to the user. Perhaps it is time for the small hillside farmer and his family to "taste the honey" of incentives, as an example that someone cares for them. Obviously, there will be some families who will exploit the situation, and who will take the subsidy and run, so to speak, by not maintaining the trees or soil conservation works for which they received the subsidy.

However, the evaluation team prefers to look on the positive side and assume that through proper training and supervision of the small farmer by the WMU team (and central office personnel), the small farmer will recognize the benefits of these resource conservation projects and will be inspired to properly manage those activities. At least we feel it is worth a try. The incentives should be continued at a higher level and the small farmer should receive at least one-half of the incentive in cash, for the remainder of this project.

Fertilizer Grants and Loans

A useful component of the MNR/AID contract for the NRMP is the provision of fertilizer as an incentive for soil conservation projects. This fertilizer would be used for crop production and/or pasture improvement under the supervision of the WMU teams. Another aspect of the fertilizer activity is the provision of loans for fertilizer to the small hillside farmers in the C.A.Ls of the NRMP.

To date, neither of these parts of the fertilizer component have been implemented. The evaluation team believes that the NRMP needs to initiate this component, and the WMU teams need to promote and implement this component of the NRMP for this cropping season.

V. RESULTS OF INTERVIEWS AND VISITS WITH FIELD PERSONNEL AND COMMITTEE MEMBERS

Many of our observations, including some recommendations, are presented in detail in the Field Trip Report in Appendix 3 (particularly see the two week period January 3-6 and January 9-13, 1983). Thus, we will only summarize some major highlights in this section of the Evaluation Report.

A. Reforestation, Tree Nurseries, and Fuelwood Projects

Personnel

The forestry components of the project during 1983 was constituted by four professionals, the reforestation specialist, two subwatershed supervisors (Cabeceras and Guasaule), the Watershed Management Coordinator in Concepción de María, and seven technicians who worked as Foresters in seven other Watershed Management Units. Of the nine WMUs (five in the Cabeceras subwatershed and four in the Sampire-Guasaule subwatershed) only Namasigue did not have a forester. In this component Ing. Ramón Aguilar (professional forester) is not included, since he is part of the technical group of the Project in watershed management.

Nurseries and Plant Production

As noted in Table No. 2 the project has constructed seven forestry nurseries, six located in the Cabeceras subwatershed. The production capacity of these nurseries varies between 35,000 plants (Tatumbia) and 60,000 plants (Rio Grande). Apparently more than 200,000 trees were produced in these nurseries.

The production of plants for the Sampire-Guasaule subwatershed was concentrated in the Experiment Station La Lujosa of the Ministry of Natural Resources. Approximately 220,000 plants were obtained and distributed in WMUs El Triunfo, Yusguare and Concepción de María WMUs (Table No. 2). In all the nurseries without exception, plants were produced in plastic bags at an average cost of approximately L 0.11 per plant.

TABLE 2: SUMMARY OF FORESTRY AND NURSERY PROJECTS IN THE URUP, INTHE WIVE IN 1983

WU	LOCATION OF VIVEPO	TOTAL PLANTS PRODUCED	SPECIES UTILIZED	AREA PLANTED NO. OF PLANTS	SUBSIDY PAID (LPS)	NO. OF SOCIOS BENEFITTED
El Triunfo (Subcuenca Sampile/ Guasaule	Estación Experi- mental La Lujosa	104,750	<u>Leucaena leucocephala</u> , <u>Gliricidia sepium</u> , <u>Lysiloma sp.</u> , <u>Cordia</u> <u>alladora</u> , <u>Swietenia</u> <u>macrophylla</u> , <u>Enterolobium</u> <u>cyclocarpum</u> , <u>Albizzia</u> <u>caribaea</u> , <u>Pithecolobium</u> <u>saman</u> y <u>Alvaradoa</u> <u>amorphoides</u>	111.3 has.	10,475.00	63
Yusguare (Subcuenca Sampile/ Guasaule	Estación Experi- mental La Lujosa	81,812	<u>C. alladora</u> , p. <u>saman</u> , <u>L. leucocephala</u> , <u>G. sepium</u> <u>S. macrophylla</u>	78.71 has.	8,181.20	52
Concepción de María (Subcuenca Sampile/ Guasaule	Estación Experi- mental La Lujosa	30,419	The same species that are shown for El Triunfo	30.00 has.	3,041.9	23

WMU	LOCATION OF VIVERO	TOTAL PLANTS PRODUCED	SPECIES UTILIZED	AREA PLANTED NO. OF PLANTS	SUBSIDY PAID (LPS)	NO. OF SOCIOS BENEFITTED
Guacerique (Subcuenca Cabecera)	La Brea	47,000 1/	<u>Pinus oocarpa</u> , <u>Casuarina</u>	7,928 m.	396.4	34
			<u>equisetifolia</u> , <u>Eucalyptus</u>	9.91 has.	1,650.0	
			<u>spp.</u> , <u>Cupressus lusitanica</u>	4,425 m.	without subsidy	
			<u>P. maximinoi</u>	2.09 has.	without subsidy	
Sabacuante (Subcuenca Cabecera)	Aguacate Arriba	46,000 2/	<u>E. camaldulensis</u> , <u>C. lusitanica</u> , <u>P. oocarpa</u> , <u>P. maximinoi</u> , <u>cassia guatemalensis</u>	19,000 plants were planted as windbreaks and living barriers; 3 has. pure plantations	2,700	40
Río Grande (Subcuenca Cabecera)	El Círculo Surcos de Cana El Aguacatal	60,000 50,000 40,000	<u>P. oocarpa</u> , <u>C. equisetifolia</u> , <u>C. guatemalensis</u> ,	26.3 has.	4,574.40	33
			<u>C. lusitanica</u> and <u>L. leucocéphala</u>	28.5 has.	4,519.00	
				23.5 has.	3,663.50	
Tatumbia (Subcuenca Cabecera)	Tatumbia	35,000	<u>Eucalyptus spp.</u> , <u>G. sepium</u> , <u>P. oocarpa</u> , <u>L. leucocéphala</u> , <u>Guazuma ulmifolia</u> , <u>C. guatemalensis</u>	17.7 has.	3,500.00	7

WMU	LOCATION OF VIVERO	TOTAL PLANTS PRODUCED	SPECIES UTILIZED	AREA PLANTED NO. OF PLANTS	SUBSIDY PAID (LPS)	NO. OF SOCIOS BENEFITTED
Río Chiquito (Subcuenca Cabecera)	La Brea	11,807	The same species as above	10.0 has.	without subsidy	-0-
TOTAL				341.00 has.	42,701.40	252

1/ Of the 47,000 plants produced in the La Brea vivero, 28,453 were planted in the Guacerique WMU. The other plants were sent to Valle de Angeles and Southern Honduras (Subcuencas Sampile/Guasaule).

2/ Of the 46,000 plants produced, 27,000 were planted in other WMUs. The other 19,000 were planted on private lands not in the NRMF.

Not included in the table is the Namasique WMU since that WMU had no forestry activity in 1983.

NOTE: The data presented in this table were obtained from the WMUs and differ a little from the data in the NRMF Central Office.

Reforestation Subsidies Granted and Number of Beneficiaries

A total of 341 has. was reforested in seven WNU's. Of this total, 32.6 % was in the El Triunfo WNU. Also 12,353 lineal meters of windbreaks were planted (Guacerique WNU), and 19,000 seedlings planted for windbreaks in the Sabacuante WNU. Of the 341 has., 12.89 has. were reforested without subsidy (3.5%) in the Guacerique and Rio Chiquito WNU's. Of the 12,353 meters, 4,425 meters were planted without subsidy in the Guacerique WNU.

In subsidies, L 42,701.40 were paid to 253 participants, with an average subsidy of L 169.45 per participant.

Species utilized

The species that were used in the different nurseries also are shown in Table 2. In the Cabeceras subwatershed the species could be used for wood production (pine), firewood, live barriers and windbreaks. In Sampire/Guasaule, the planted species could be used principally for the production of firewood, lumber (small plantations and agroforestry systems) and protection of water sources.

Management of Secondary Forests for Production of Water, Lumber, Resin and Firewood

To date activities in this important area have not been initiated, especially in the Cabeceras subwatershed, where there currently exists a natural forest resource with potential for management within the context of sustained forest yield. Basic preliminary information with respect to pine forests is lacking and we do not yet have sufficient experience to locate secondary oak forests for management (Quercus peduncularis) and evergreen oak (Q. oleoides). On a national scale, very little is known also, concerning management of certain lumber species, particularly white laurel (Cordia alliodora) in combinations with agricultural production.

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With respect to current production, in some forestry aspects the following can be mentioned: In the Rio Grande WMU where principal use of the land is forestry (73 %), they produce about 2,500 barrels per year of resin, with primitive resination techniques which are highly destructive to the pine resource. It is estimated that some 500 trees (average per campesino), during a period of 10 to 15 days can produce up to 6 to 8 lineal inches of resin. The sale price for the campesino is L 2 per lineal inch. 1/ In this same WMU are extracted annually some 100,000 "cargas" of oak, evergreen oak, and pine firewood which represents about 17,000 cubic meters, primarily for the Tegucigalpa market. This volume of wood is transported in trucks with average capacity of 40 "cargas". The carga is composed of 120 pieces, with length between 50 and 70 cms. The average price per carga at the local level varies between L 2.50 and L 3.00 for pine and between L 3.00 and L 3.50 for oak and evergreen oak; in the Tegucigalpa market the price varies between L 7.00 and L 10.00. Hence, the estimated annual production of firewood represents a gross income that fluctuates between L 700,000 and L 1,000,000 per year.

The Guacerique WMU team indicated that each day 10 to 12 trucks loaded with firewood leave that zone for Tegucigalpa. This exploitation of the forestry resource and the gross income for the beneficiaries in the Guacerique WMU is equal to or greater to that attained in the WMU Rio Grande^{2/}.

1/ Information provided by Technical personnel of the Rio Grande WMU in the Cabeceras subwatershed.

2/ Information provided by Technical personnel of the Guacerique WMU.

From the Sabacuante WMU about 200 "cargas" per day of firewood are transported to the Tegucigalpa market. In conservative terms, this quantity is equivalent to some 50,000 "cargas" per year whose price would be between L 350,000 and L 500,000 annually. 3/

In comparison with the preceding data weekly consumption per family (5 to 6 people), is about 2 "cargas". In the Sampire/Guasaule subwatershed, WMU Concepción de María, some species are sawn locally by handsaw. These are white laurel (C. alliodora), Royal Cedar (Cedrela odorata), Spiny Cedar (Bombacopsis quinatum), (Pithecolobium saman), and Anacardium excelsum. Annual production in cubic meters or board feet cannot be estimated. 4/

Forest protection

Activities of protection against fire, plagues, diseases, uncontrolled cutting and resination are the responsibility of the Honduran Forestry Development Corporation (COHDEFOR), as executing agency of the forestry policy of the State. However, in Articles 7 and 8, chapter III of the Agreement for Technical collaboration between The Ministry of Natural Resources and COHDEFOR, it is manifested that the NRMP would cooperate with COHDEFOR in the campaign of fire prevention.

With respect to the protection of the forest against indiscriminate cutting of firewood and destructive resination practices, the WMU technicians are concerned about the lack of vigilance and control on the part of personnel of COHDEFOR. Apparently, COHDEFOR does not have a clearly defined policy for this. 5/ However, based on the MNR/COHDEFOR agreement and the fact that the WMU team members are public officials, they also have a responsibility to protect the forestry resources in their zone from indiscriminate use.

3/ Information provided by technical personnel of WMU Sabacuante

4/ Information provided by technical personnel of WMU Concepción de María

5/ Comments of the technicians of the WMUs of the two subwatersheds

Interinstitutional Agency Support

As was mentioned previously, in the agreement of technical collaboration between the NRMP and CONDEFOR, several aspects of reforestation, forestry management, forestry protection and forest exploitation are treated. Furthermore, the Fuelwood and Alternate Sources of Energy Project of CATIE/CONDEFOR has been cooperating with the NRMP in the exchange of information, and gathering and donation of seeds and/or plants. It also has contributed training of WMU foresters in the nursery and forestry areas.

The National School of Forestry Science (ESNACIFOR) has provided support mainly in the provision of forest seeds. In this same area the Pan American Agricultural School has also been active.

Guidelines Established for the Forestry Component for 1984

The technical assistance team for the WMU Namasigue will be completed with the contracting of a forester. The number of nurseries and seedlings to be produced in both subwatersheds for planting for 1984 are presented in Table 3. The project will continue paying subsidies for reforestation as provided for in Memorandum PMRN-M-615-83, dated November 30, 1983 (this document is Appendix 4 to this Report). The project will continue working with the same species utilized in 1983. Following field experiments, as shown in the list presented in Table No. 2, new species will be included: in Concepción de María, "Flor amarilla" (Poeppigia procera) and "guacimo" (Guazuma ulmifolia).

The listing of priorities of NRMP activities for 1984 indicates that some parts of the natural forests of all the WMUs in the Cabeceras subwatershed will be used for management (Table 4). It was determined that around 300 has. of pine forest will receive silviculture treatment at WMU Río Grande.

Although Table 4 doesn't indicate any forestry activities for the Sample Guassule subwatershed, the specialist in reforestation plans to initiate

TABLE 3: DEVELOPMENT OF NURSERIES FOR PRODUCING PLANTS FOR FORESTRY
ACTIVITIES IN 1984

SUB-WATERSHED	WMU	LOCATION OF NURSERY	PLANNED PRODUCTION OF PLANTS
Sampile/Guasaule	El Triunfo	Las Bateas Matapalo No. 4	85,000 50,000
	Yusguare	Tablones Arriba	100,000
	Namasigue	La Montana	160,000
	Concepción de María	Charco Verde	75,000
Cabeceras	Sabacuante	Aguacate Arriba	35,000
	Guacerique	La Brea	30,000
	Tatumbia	Tatumbia	30,000
	Río Chiquito	Valle de Angeles	30,000 10,000 <u>a/</u>
	Río Grande	Surcos de Cana	60,000 - 100,000
TOTAL		10	665,000 - 705,000

a/ Produced in the Adventist Nursery

TABLE 4: 1984 PRIORITIES OF THE ACTIVITIES OF THE
NRMP IN THE WUUs, BY RELATIVE IMPORTANCE (in %)

SUB-WATERSHED	MANAGEMENT OF FORESTS	REFORESTATION	CONSERVATION OF SOILS	INCREASE IN AG. PRODUCTION	FRUIT TREES	PASTURE MGMT
CABECERAS						
Tatumbia	10	15	25	35	10	5
Río Grande	35	25	10	20	5	5
Sahacuante	10	5	20	40	5	20
Río Chiquito	20	5	25	35	10	5
Guacerique	20	15	20	35	5	5
SAMPILÉ/GUASAULE						
Yusguare	-	25	25	40	5	5
El Triunfo	-	20	25	30	5	20
Concepción de María	-	20	25	30	5	20
Namasigue	-	2-	3-	3-	5	15

SOURCE: Reactivation Plan Paper for NRMP.

in 1984 some surveys in agroforestry, specifically the combination of corn or sorghum with laurel (C. alliodora), in the El Triunfo WMU.

Observations and Recommendations

It is necessary to complete the team of technicians for the Namasigue WMU as soon as possible by adding a forestry specialist. It is also necessary that the subwatershed Supervisors (Canales and Meléndez) as well as the NRMF reforestation specialist in Tegucigalpa involve the WMU forestry technicians in more planning aspects. Apparently the activities of the foresters is very limited (nurseries, reforestation and protection), and it is convenient to involve them in other activities which will require no investment of money, time and dedication, such as technological and dendrology surveys, utilization of forest seeds, development of basic maps of types of trees and forest lands for each WMU, management of secondary forests for logging systems for firewood production (specially homogeneous areas or areas of mixed oak and encino) and management of conifer forests for production of wood, posts, firewood and resin.

Better training is required in the area of nurseries and forest management in accordance with observations made by some of the WMU technical foresters. Equally, it is apparent that it is necessary for the reforestation specialist to visit more frequently the different WMUs.

Apparently there has been some difficulties with the appropriate selection of species for reforestation in the Cabeceras subwatershed. It is recommended that more studies involving ecology, climate and soils be undertaken to determine the requirements for the introduction of foreign species. Such studies must be complemented with field experiments of species and procedures established simultaneously with the plantations. In both aspects, the CATIE/COHDEFOR firewood and alternative energy project could provide some of the needed technical assistance.

The use of native species for all uses has not received the attention that it deserves in the Cabeceras subwatershed. The lack of knowledge of the ecological and forestry characteristics limits but does not exclude consideration of these species in reforestation plans. As a complement to the above, we recommend that more priority be given to the management of natural secondary forests of oak and evergreen oak that are present in the Cabeceras subwatershed.

Concerning the Sampire/Guasaule subwatershed, we must increase the number of species employed in reforestation based on the potentials of the uses of these species, their adaptability and development. Many farmers in this subwatershed show an interest in planting a greater variety of species.

To date the production of plants in all nurseries has been in plastic bags. It would be a good idea to promote, via the reforestation specialist, other methods of plant production to reduce costs. By the same token, it would be a useful, not only for the project but for all institutions that work in this area, to require adequate registries of species in the nurseries (date of planting, seed treatment, germination capacity, optimal growth period, plant protection problems, etc.).

The project must analyze, in a realistic form, the protection of the established plantations and those it intends to establish. The NP:IP personnel should recognize that success of the plantations does not depend on the number of trees planted, but on the vigor and development that take place up to harvesting.

The Guanacaure Mountain, located in the Sampire/Guasaule subwatershed, possesses the greatest area of latifoliate forests within the WMU in virgin conditions and constitutes the principal zone of protection of water for the city of Choluteca. Therefore, the Executive Director of the Project should take whatever actions are necessary to have this area declared for protection within one of the categories of classification of wilderness areas.

In virtue of the heavy destruction of the forestry resource in all the WMUs of the project by fuelwood and resin producers in Cabeceras and by fuelwood producers in Sampire/Guasule, the NRMP personnel must analyze and discuss with COHDEFOR the effectiveness of measures of protection in these areas. The NRMP must take the leadership and involve the Executive Committee in developing policies for more effective implementation of the forestry laws of the country in the NRMP subwatershed areas.

The project should initiate negotiations pertaining to the creation of new incentives, such as exemption from taxes, to increase the number of committee members involved in reforestation activities. At present, this condition does not appear to be necessary, but in the future when the rural Cadaster begins to collect taxes it will be of great importance for the campesinos.

Almost all the coordinators of the WMUs indicated the importance of obtaining more forest technicians with the purpose of more efficiently attending to their respective areas of work. Nevertheless, contracting of new personnel for the existing WMUs should be done only after a careful examination of the scope of work and actual forest production and potential of each WMU zone.

B. Conservation of Soils, Including Increased Fertility.

The soils component includes two central staff specialists in conservation (one acting as external counterpart and the other as national counterpart), three professionals and six agronomist technicians and three practical technicians (located in Cabeceras, WMU Sabacuante, Tatumbia and Guacerique).

The results that have been attained in soil conservation by the WMUs are presented in Table 5.

Sufficient time has not passed since implementation of many of the soil conservation practices to determine if the goal of increasing agricultural production is being achieved. Soil conservation projects have been implemented and some of the committee members are utilizing improved agronomic

TABLE 5: 1983 SUMMARY OF ACREAGE TREATED WITH SOIL CONSERVATION

WNU	AREA TREATED (HAS)*	SUBSIDY PAID IN I.P.S.	NO. OF MEMBERS BENEFITTED
Sabacuante	8.13	1,831.00	17
Tatumbia	20.01	4,515.00	27
Guacerique	9.07	1,762.44	18
	4.90	Without Subsidy	6
Río Grande	14.50	2,572.16	18
Río Chiquito	14.47	3,715.15	14
El Triunfo	32.92	17,133.62	57
Yusguare	38.70	8,133.00	65
Concepción de María	3.09	800.65	7
Namsigue	3.96	Without Subsidy	
TOTAL	149.75	40,463.02	229

* In the Cabeceras subwatershed, the principal soil conservation works were: acequias de ladera, terrazas de banco y canales parabólicos. In the Saapile/Guasaule subwatershed, the most common practices were: acequias de ladera, zanjas de ladera y muros de piedra.

practices adaptable to local conditions and existing crops. In only a few units have there been some results to support the merit of the techniques utilized. Many of the soil conservation works cannot be judged on their success at this time; particularly many of the retention walls still lack plant material to protect the vertical wall.

There exists an increasing acceptance of soil conservation works on the part of the members of the CALs, as indicated in the interviews we had with some members of the committees (see Trip Report). It is necessary to reinforce this component of the project through the expansion of the area of action which will require more field personnel in agriculture. To extend these soil conservation practices in the zones of influence and to promote their use in other locations of the country with similar or greater problems of erosion and sedimentation as in the watershed of the Choluteca River, demonstration sites should be established and results obtained on the production differences, erosion control and improvement of site quality from the hydrological point of view for different soil conservation practices.

The activities of soil conservation must be expanded using employment of other techniques wherever physical conditions of the land permit it, such as much residue, minimum tillage, and others.

Related to the construction of organic composts (aboneras), it is obvious that during the field trips we only observed a few (less than 5) in the WMU Yusguare and Concepción de María. In the subwatershed Cabeceras we did not see any. In this aspect, there are differences between information from the field and data in the annual report of the NRM activities (December 1982-November 1983). Possibly many of the composts had already completed their functions (been used) in the different areas by the time of the evaluation. The proposed goals for soil conservation practices for 1984 are shown in Table 6.

TABLE 6: PROPOSED AREA TO BE TREATED WITH SOIL CONSERVATION WORKS
AND THE NUMBER OF SMALL FARMERS TO BE BENEFITTED IN 1984

W.H.U.	AREA TO BE TREATED (HAS)	NUMBER OF MEMBERS TO BE BENEFITTED
Tatumbia	25.0	37
Sabacuante	25.2	58
Guacerique	36.0	36
Río Chiquito	30.0	31
Río Grande	21.0	40
<hr/>		
TOTAL SUB-WATERSHED CABECERAS	137.2	202
<hr/>		
Yusguare	51.0	126
Concepción de María	70.0	155
Namasigue	29.0	124
El Triunfo	69.0	139
<hr/>		
TOTAL SUB-WATERSHED SANPILÉ/GUASALE	219.0	354
<hr/>		
TOTAL	356.2	756

C. Improvement of Agricultural and Livestock Practices.

In all WMUs the basic grains crops, principally corn, beans and sorghum, have very low yields. This situation can be generalized to vegetables and root crops (potato, cassava) also. According to the agricultural technicians with the Project, this unfortunate situation is due to a combination of the following factors: reduced natural fertility of the sites, inadequate methods and densities of seeding, low seed quality, absence of chemical fertilizers and organic composts, accelerated decreases in site quality by erosion and loss of soil nutrients (in high-runoff areas), scarce availability of water and of irrigation infrastructure, lack of control of plagues and diseases, and finally, the negative influence of adverse climatic conditions.

In the area of basic grains, the Project has recently initiated some activities, such as technical assistance during the planting periods, establishment of small demonstration plots for corn and beans of improved varieties. For example, the following trials can be mentioned: "Esperanza-4", "Acacia-4" and "Aescia-4" beans in Sabacuante and Concepcion de Maria respectively, and Honduran "short plant" and HE-30d corn in Yuaguare and El Triunfo.

With respect to vegetables, a large portion of the farmers make use of certified seeds which are obtained from distributors in Tegucigalpa. Regarding root crops, especially potatoes, farmers are continuing to use seed types which they have been using for at least 10 or 12 years, in the Sabacuante WMU. Nevertheless, in April 1983, Project technicians in this WMU introduced improved potato seed from the Department of Intibuca (approximately 10 quintales), material with which demonstration units were established with very positive results.

Following the comments of the horticulture and fruiticulture specialists, the Project WMU teams in 1984 will emphasize improvement of existing varieties. In basic grains, the following activities are anticipated: selection of better seeds by crop and area, control of planting densities and fertilization; and

for vegetables, better control of plagues and diseases, fertilization, planting density, and production registry.

In fruits it is expected that the improvement of existing varieties, including especially the rehabilitation of an orchard of 5.5 hectares located in Guacerique, will be emphasized in 1984. Also programmed is the production of 5,000 to 6,000 fruit trees for distribution to different WMUs. Also, the Agronomy Section, along with the field technicians, will provide technical assistance in other crops such as cotton, sisal, and sugar.

The Agronomy section also will establish demonstration plots in 1984 with both exotic and native species of fruits, whose selection will have been made for each specific WMU. Trials for improved varieties of corn, bean and potato have not been planned for this year.

During the field study it could be observed that livestock is in as precarious a state as crops in the field. Although progress in this area has been slow, there has been some success. A study of livestock production systems in all WMUs was carried out. Based on analysis of this study, work began in those WMUs that had significant livestock production. Thus, major emphasis was placed in the WMU Concepcion de Maria and to date 14 producers in six committees have received credit for livestock/range management purposes for quantities between Lps. 4,000 and 5,000. It is estimated that 30% of these loans are to be utilized for pasture improvement.

According to information made available by Dr. Rafael Ledesma, Range Management Specialist, there are approximately 340 hectares under improved range management practices, with some 24 producers cooperating, 10 of whom are receiving technical assistance only (no loan). One of the major problems in the integration of range management activities has been locating small farmers with livestock production activities.

The livestock section of the Project indicates that there will be no problem in meeting the targets programmed for 1984 in the Preliminary Plan for

Reactivation of the Project 1982-1985. According to this document, the extent of pasture management and pasture improvement activities are as follows: 192 hectares in the Cabeceras subwatershed and 498 in the Sample/Guasaula subwatershed.

The field investigations have made it clear that the concentration of efforts in the agricultural component of the Project is in soil conservation, relegating to secondary status the very necessary technical assistance in agronomy for the traditional small farm sector. It is very probable that this aspect, especially when it integrates and involves traditional farm technology, would be one of the most useful tools for the success of the project. It is evident that the farmer of today (and his ancestors) has been feeding himself and will continue to do so for a long time, utilizing his traditional methods of cultivation. It is expected that an effective mix, making use of the best of the rudimentary technology and appropriate technologies can result in, together with an improved quality of life, the development of a more stable agriculture with higher productivity and with the integral development of the traditional farmer.

Due to the deteriorated state of the Choluteca watershed and also by virtue of the fact that the watershed has exceeded its agricultural/livestock capacities from the environmental viewpoint, special care must be taken regarding the opening up of new areas to be dedicated to such land use practices. If that occurs, we would be sacrificing an irreplaceable forest resource needed for the economic well-being of the nation, in terms of conservation and protection of waters, soils, and forests. If at all possible, we must opt for diversification and rotation of crops on existing cropland as one possible method of biological control and to provide higher returns for investments made by farmers.

Although it has not been contemplated for this year to execute trials with improved varieties of corn, sorghum, bean, and potato, it would be advisable to establish pilot or field trials in areas representing each WMU, to support the programming of guidelines for 1985 and subsequent years. Demonstration

plots for fruit species that will be established by the Agronomy Section of the Project must have the character of experimental trials as a precondition to the establishment of plantations for small and medium size farms. It must be remembered that a vegetal specie must be treated as an exotic whenever it is planted outside its natural area.

The cultivation of flowers, for domestic consumption, or for external markets, especially in the Cabeceras subwatershed, merits some attention by the Project. This activity is certainly lucrative in many higher altitude zones of many tropical and subtropical countries.

Given that the major portion of livestock activities are carried out on soils best suited for forestry, with grave risks of erosion, compaction, and detrimental effects on hydrologic conditions of the watershed, it is absolutely necessary to determine the carrying capacity of the land. The proposed use of the land must be in accordance with conditions at the specific site, and with future uses of the water resources in lower and/or drier areas especially.

Together with the forestry component of the Project, the livestock section must consider the possibility of establishing trials with forestry species of multiple use: fuelwood, forage, soil and watershed protection, etc. This could be one adequate alternative as a feeding supplement for livestock during the difficult dry seasons.

Considerable areas of pine forest in Honduras are appropriate for extensive agro-forestry management. In this context agreements could be established with CONDEFOR granting wider utilization by farmers in determined areas of forest in the Choluteca Watershed. This could become an appropriate method for reducing the number of forest fires in the pine forests.

The project should initiate implementation of other livestock activities such as small scale exploitation on hogs, poultry and bees. Field interviews indicate that there is an increase acceptance from farmers concerning these

activities. Also, the fiduciary agreement between BANADESA and the Ministry of Finance and Public Credit includes these activities in section 4.02, Article IV (Utilization of funds)

D: Activities for Improving the Quality of Life

Concerning the improvement of the quality of life of rural dwellers, the NRMP has been able to do very little with only three home extension specialists for all the WMUs. Adequate preparation of foods, techniques for preserving fruits and vegetables and for making soap, home improvements, health improvements, etc. are all aspects almost unknown within the Project. It is worth mentioning that mechanical constructions for soil conservation and planting of trees may be secondary activities for farmers, since they are not considered immediate necessities for them and their families. The implementation of these family oriented activities depends on subsidy and loan assistance. However, continuity of these activities in the future, once this initial assistance is finished, is a situation that deserves considerable attention.

Based on the above, the NRMP should immediately take the appropriate actions to employ more home extension specialists, and to implement many of these activities. Perhaps a channelization of efforts is required, as much of an economic character as technical, with the purpose of expanding the integrated development of the Honduran farmer.

The importance of the LORENA stove as a method to reduce fuelwood consumptions and for improving the quality of life of the small farm family needs to be recognized by all WMU personnel. An intense effort should be made to implement training sessions so more small farm families can build these stoves. It is hoped that assistance will be sought from the Rural Technologies Program (CDI) in this activity. The reduction in use of fuelwood by 50% has beneficial effects in reducing the requirement for small trees for fuelwood and should greatly enhance the efforts of the WMU teams in their reforestation activities to protect the watershed. As indicated in Table 7, the WMU teams have been responsible for the construction of 43 LORENA stoves, all in two WMU areas (Tatumbla and Yusguare).

TABLE 7: LORENA STOVES BUILT BY MEMBERS OF LOCAL COMMITTEES WITH ASSISTANCE OF WATERSHED MANAGEMENT UNIT TEAMS

WATERSHED MANAGEMENT UNIT	
Río Chiquito	18 <u>a/</u>
Sabacuante	0
Río Grande	0
Guacerique	0
Yusguare	25
El Triunfo	0
Concepción de María	0
Namasigue	0
	—
TOTAL	43

a/ 17 Working or functional.

E. Summary of Data Collected From Field

In interviews with the WMU team personnel, we obtained information on the local agricultural committees (CALs) currently active, the number of members, those with loans, and those committees receiving either soil conservation or reforestation (tree planting) subsidies. Some of the CALs were organized by MRN extension specialists earlier and passed on to the WMUs after they began functioning.

In the Cabeceras subwatershed, there are currently 12 CALs with 228 members in the 5 different WMU zones (Table 8). The average number of members per committee is 18, less than the 25 "socios" per committee, projected in the Project Contract. However, the number is not as critical as the number of small farmers actively participating in the group decision-making process.

In the Sampile/Guasaule subwatershed, four WMUs are working with 19 CALs with 451 small farmers as members. The average number of members per committee is 24, but this average is inflated somewhat by the 47 members in the Unidos de la Paz CAL and the 34 members in the La Montana CAL.

Probably one-half or more of the committee members have crop (basic grains and horticultural crops) loans in the Cabeceras subwatershed. We were unable to obtain complete information on some of the statistics needed. However, some interesting data on members with loans and amount of loans are presented in Table 8. Very few loans have been made for pasture improvement in this subwatershed.

In the Sampile subwatershed, only 11 of the 451 committee members had loans in 1983; all those were in the CALs in the Concepción de María WMU team area, and these three loans were for pasture improvement and for purchasing livestock. There have been no crop loans made in the Sampile subwatershed area. The WMU team members told us this was because over 80% of the small farmers in the committees did not have title to the land they were cultivating. This problem needs to be resolved as AID loan funds for the Project specified that loans could be made for crop production and that fertilizer loans and grants also could be made. A key component to increase agricultural productivity and thus to increase the income of the small farm family is the availability of loans to purchase technological inputs such as improved varieties of seeds, fertilizers, and pesticides, as well as the basic tools needed to properly plant, cultivate and harvest the crop.

We saw very little evidence that the small farmers in these two subwatershed were using pesticides to control insects, diseases, etc., on either basic grains, horticultural crops, and on fruit trees. In a couple of cases, herbicides evidently had been used mistakenly (or perhaps residue was left in the tank sprayer) and/or too heavy and application of insecticide was used, as we saw damaged sweet pepper plants (they died) caused by improper application of pesticides. Also, we found out that none of the small farmers were using protective masks when applying the pesticides. The WMU team members need to have training sessions with the committee members on the benefits of using pesticides, but also should provide precautions or warnings about the consequences to the plant, the product (fruit, etc.), and to the environment (contaminated water supply, loss of wildlife, etc.).

In the Cabeceras area, where some of the committee members are planting strawberries, and others want to begin planting them, there is a critical factor in waiting the required number of days after spraying the plants (and fruits) before harvesting the fruit for market.

TABLE 2: ACTUAL MEMBERS OF LOCAL COMMITTEES, NUMBER WITH LOANS, AND INDICATION OF INCENTIVES OR SUBSIDIES PAID IN 1983, FOR THE CABECERAS SUBWATERSHED, RIO CHOLUTECA WATERSHED

WATERSHED MANAGEMENT UNIT	MEMBERS	MEMBERS WITH LOANS	QUANTITY OF LOANS	SUBSIDIES
<u>Río Chiquito (Valle de Angeles)</u>				
C.A. Santa Lucia	24	10	Repaid	NO
C.A. Liquidambar	<u>19</u>	<u>16</u>	Repaid	NO
I.C.A.L. Planned in '84	43	26		
<u>Río Tatumbla (Tatumbla)</u>				
C.A. Tatumbla	15	N.A.	36,587	YES
C.A. Cofradía	<u>23</u>	N.A.		YES
	38			
<u>Río Sabacuante (Aguacate Arriba)</u>				
C.A. Aguacate Arriba	29	25	10,600	YES
C.A. El Rincón	<u>20</u>	<u>17</u>	13,800	YES
2 more CALs planned in '84	49	42		
<u>Río Grande (Ojojona)</u>				
C.A. El Círculo	20	N.A.	8,848	YES
C.A. Surcos de Cana	21	N.A.	7,662	YES
C.A. El Aguacate	15	N.A.	7,332	YES
C.A. Guarisne	<u>(12)^{a/}</u>	N.A.	-	-
plan 2 more CALs in '84	56			
<u>Río Guacerique (La Brea)</u>				
C.A. La Brea/Monte Redondo	15	9	c/	YES
C.A. Tierra Colorada	11	7	c/	YES
C.A. Escarbadero	16	9	c/	YES
C.A. Las Tablas <u>b/</u>	<u>(17)</u>	-	-	-
1 more CAL planned in '84	42	25	-	-
	228			

a/ This committee is no longer functioning.

b/ This committee is no longer functioning; however, the WMU plans to reorganize it in 1984.

c) Data not obtained and/or not available.

Continuation

Table 8

67

WATERSHED MANAGEMENT UNIT	MEMBERS		QUANTITY	
	MEMBERS	WITH LOANS	OF LOANS	SUBSIDIES
<u>Yusguare</u>				
C.A. Apinto	28	N.A. <u>d/</u>	N.A.	YES
C.A. Tablones Arriba	28	N.A.	N.A.	YES
C.A. La Montana	34	N.A.	N.A.	YES
C.A. La Fortuna	27	N.A.	N.A.	YES
	<u>117</u>			
<u>El Triunfo</u>				
C.A. Las Bateas	21	N.A.	N.A.	YES
C.A. El Llano	26	N.A.	N.A.	YES
C.A. Las Chacaras	12	N.A.	N.A.	YES
C.A. Las Uvas	21	N.A.	N.A.	YES
C.A. Matapolos No. 4	22	N.A.	N.A.	YES
C.A. El Chorro	19	N.A.	N.A.	YES
C.A. Poza Grande/Yorocán	30	N.A.	N.A.	YES
C.A. Palo de Agua	30 (new)	N.A.	N.A.	YES
	<u>181</u>			
<u>Concepción de María</u>				
C.A. Los Espabeles	19	2	7,545 <u>e/</u>	YES
C.A. Unidos de Cofradía	19	3	12,613 <u>e/</u>	YES
C.A. El Jicarito	17	6	24,467 <u>e/</u>	YES
C.A. El Tejar	17	0	0	YES
	<u>72</u>			
<u>Namasigue</u>				
C.A. Buen Agricultor	16	N.A.	N.A.	NO
C.A. Agricultor en Marcha	18	N.A.	N.A.	NO
C.A. Unidos por La Paz	47	N.A.	N.A.	NO
	<u>81</u>			
	<u>451</u>			

d/ N.A. means Loan not Available.

e/ Livestock Improvement Loans of 5 years; no crop loans.

With reference to subsidies, it is interesting to note that the NRMP has not authorized any subsidies to be paid for soil conservation projects or for reforestation projects in the Rio Chiquito WMU in the Cabeceras sub-watershed. Due to the late 1983 start in working with the CALs in the Namasigue WMU, no subsidies have been paid to those committee members either. Another interesting point is that there appear to be inconsistencies in the paying of subsidies; some members appear to qualify for their soil conservation projects and others do not. Based on the Project Agreement, it is important to emphasize that a just and uniform policy of subsidies needs to be followed by all WMU teams for all activities and projects where subsidies are authorized (water storage tanks, soil conservation works, reforestation activities, fertilizer, etc.)

It is very difficult to summarize in tabular form and with numbers, the interviews with the small farm families. We visited with committee members in almost all the CALs except Namasigue, where the CALs have just begun functioning. In total, we interviewed over 45 small farmers, either formally with the questionnaire, or informally, but in detail, asking many of the same questions as on the questionnaire. Details of these interviews are presented in the field trip report (see the January 3-6, 1984 and January 9-12, 1984 days). In addition, we talked to many of the wives, sons and daughters, and "inspected" (visited in the homes) the LORENA stoves and some conventional stoves. We saw a lot of family gardens and fruit orchards by the homes and talked to the family members (usually the ama de casa) about their efforts in these activities.

We have presented in a general highlights table (Table 9) some of the comments or observations by the small farmers we interviewed. It should be emphasized that the specific topics listed under the general headings (conservation of soils, etc.) were volunteered by the small farmer. In other words, we had no checklist of activities to which he could respond yes or no. Had we used such a checklist, undoubtedly the number of affirmative responsive would have been much higher. One other point to be emphasized about interpretation of the

numbers in Table 9, is that these are only responses of the CAL members actually interviewed. In the case of the officers of the committee, he generally indicated that most or all of his socios needed the similar types of technical assistance, needed subsidies, loans, etc., just as he did. This was particularly true in the case of the LORENA stove. There seems to be intense interest in having that stove built in their homes.

TABLE 9: SUMMARY OF THE LOCAL COMMITTEE MEMBERS RESPONSES
CONCERNING THE TYPE OF TECHNICAL ASSISTANCE AND OTHER PROGRAMS
THAT ARE NEEDED BY THE SMALL FARM FAMILIES THROUGH THE NRMF
(January 1984 Interviews)

ACTIVITY	NO. OF SOCIOS WHO RESPONDED THAT MORE ASSISTANCE WAS NEEDED <u>a</u>
1. <u>Conservation of Soils</u>	
- Construction of more soil conservation works	20 <u>a/</u>
- Provide more demonstration tours to other WMUs	22
- Increase and broaden the technical assistance provided	23
- Construction of aboneras orgánicas (organic fertilizer)	11
2. <u>Agricultural, Forestry and Forest Tree Aspects</u>	
- Diversification of crops	7
- Increase in reforestation for fuelwood	11
- Increase in reforestation for lumber	5
- Introduction or broader use of fruit trees	12
- Problems with storage of crops	13
- Problems with marketing (intermediaries and transport)	18
3. <u>Subsidies and Loans</u>	
- Increase in/or continued use of subsidies	19
- Increase in credit (loans)	21
- Lengthen the period of payment (particularly for horticultural crops)	7
- Introduction of other types of subsidies (fertilizers)	7

Continuation
Table 9

ACTIVITY	NO. OF SOCIOS THAT MORE ASSISTANCE WAS NEEDED
4. <u>Establishment of Enterprises of Lesser Species</u>	
- Hogs	4
- Poultry	5
- Goats	1
- Bees	7
5. <u>Activities Related to Improvement of Quality of Life of Family</u>	
- Construction of LORENA stove	23
- Construction of Latrines	10
- Construction of storage tanks and wells for potable water	7
- Construction of water storage tanks for irrigation	5
- Need for Promotora Social	15

a/ We interviewed formally (with the questionnaire) and informally by detailed questioning over 45 committee members; 13 of these were Presidents or other officers of local agricultural committees. The responses shown only include the actual number interviewed; however, for most of these forestry and crop technical assistance, loan, and subsidy, and home improvement aspects, the officer of the committee would state that most or all of his committee needed that aspect, such as LORENA stoves.

VI. RECOMMENDATIONS

A. Administrative.

1. Extend the NRMP for three (3) additional years from July 31, 1985 to July 30, 1988. Two of these years can be justified on the basis that due to economic and political conditions in the country the project was delayed two years in implementation. The first two years extension is justified on the basis that the project has made progress in the last 1 1/2 years, has gained some momentum and should provide many more visible impacts in improved watershed management (soil conservation, reforestation) and improved environmental quality, as well as in improved incomes and living conditions of hundreds (hopefully thousands) of small farm hillside families by 1987. The third year extension to 1988 is on the basis that the NRMP should be implemented in several subwatersheds in at least one other major watershed of the country, where deforestation and advanced soil erosion are critical problems. In addition, A.I.D. should strongly consider the possibility of a follow-on NRMP that would intensify the watershed management activities in the Rio Choluteca watershed (where the very high population density on hillside farms requires a renewed effort to extend the activities of the NRMP), but equally important, to provide assistance to the GOH to fully implement the NRMP to all major river basins of the country.
2. Existing AID grant and loan fund commitments should cover the first two years of the project extension for operations of the NRMP central office and field staff. Additional AID funds will be needed to extend the CHEMONICS technical assistance contract to support no more than three members of the team for the project extension. The three critical technical assistance components are: watershed management, soil conservation, and forestry and silviculture.
3. Provide additional AID project funding to support an AID project manager full time for the extended life of the project. The AID project manager needs to be more actively involved in the implementation of the project, serving as an expediter between the different agencies in the project concerning requesting of and proper utilization of equipment, adequate training of

personnel involved in key components of the project, and recommending additional technical assistance to improve the performance of the project, particularly in the data collection and analysis component through PCN. The AID project manager should be more visible in the on-going operations of the project, and make more frequent visits to the various subwatersheds to visit the WMU teams and the field experiments of the technical assistance specialists from the central office.

4. The NRMP should be completely integrated into the Ministry of Natural Resources as a full scale component. To insure that this occurs, a Natural Resources Institute could be established in MNR to administer the NRMP components, and particularly to insure that watershed management activities are implemented through the nine (9) MNR regional offices (including the two new offices being established) in major watersheds of the country where severe soil erosion and deforestation problems exist.

5. Streamline the NRMP to focus primarily on watershed management activities that will lead to improvement in management of the nation's natural resources and an improved living standard for thousands of small farm families living on hillside farms in the major watersheds of the country. Reduce emphasis on the policy making and data collection and analysis components of project 0168 on the part of the NRMP central office management staff.

6. We realize that neither the CPA nor the NRMP Executive Committee have functioned in an advisory and technical assistance capacity for this project. However, the NRMP central office management team should rely more on the experience and technical expertise of advisory personnel to provide guidance and direction in specific policy management issues of the project. This should help increase the visibility of the project and to establish its importance among the other agencies involved in natural resources planning and management. The management team of the NRMP is relatively young and inexperienced, and needs the input of technical support personnel to discuss proposed policy actions and their likely impacts on the primary beneficiaries of this project (small hillside farm families) before any proposed policy is

implemented in the field. The AID project manager should follow up on this to insure that an Advisory Committee does function as required by the MNR/AID contract for the NRMP.

7. As soon as CNA (the new super agency for agricultural policy matters) begins functioning, the NRMP should look to that Committee for overall policy guidance and supervision in natural resource policy matters, and should request the services of members of CNA in resolving interagency issues and conflicts on natural resources policy matters (broad issues) that cannot be resolved by the NRMP management team.

8. The AID project manager should coordinate with the NRMP Executive Director and his staff to insure that the intent of the loan and incentive (subsidy) components for small farm hillside families is completely and fully implemented immediately, including the fertilizer component, tool component and soil conservation and reforestation component. These activities are funded by AID loan and grant funds and not by GOH counterpart funding. The goal of these loans for the small farm families and of the subsidies is to try something different for the life of this project, primarily to stimulate implementation of soil conservation and reforestation projects and to improve the family income. These activities are not to be construed as future commitments of the GOH, MNR or the NRMP (or National Resources Institute) after the life of this project. Therefore the current budgetary crisis affecting GOH and its agencies should not be used as an excuse to reduce the project incentives since the Government has no funds to continue them in the future. The AID project manager should work closely with the NRMP staff to secure changes in procedures or regulations requiring title to property by the small farm families before they can receive loans through the funds of this project.

9. The NRMP central office should expedite field equipment and vehicle requests through A.I.D. to support the implementation of WU teams into two new subwatersheds this year (1984).

-77-

10. The NRMP should reduce its emphasis on the policy and planning component or the project. There are other agencies within the GOH, and especially the newly formed CNA, which have the capacity to summarize existing natural resources laws, to analyze conflicts in policies and laws relating to management of the nation's natural resource base, and to write proposed legislation for a codified law to greatly improve the management of these natural resources. The time of Ramon Serna in the NRMP could be better spent dealing with agricultural economics issues of the NRMP, particularly in developing information on input and output prices in the major markets (Tegucigalpa and Choluteca) in the NRMP area and providing this information and related economic information to the WMU team members and to the local committees.

11. In view of the above recommendation, the sixth position of the CHEMONICS technical assistance team should not be filled with a professional in the political science, law and agricultural policy area. Instead, the NRMP would be greatly strengthened if CHEMONICS hired a forestry professional with significant Latin American experience in many forest species acclimated to Honduras. It must be emphasized that this full time technical adviser should not be a traditional, or old line forestry management technician, but someone who is innovative and willing to experiment with species that are adaptable to the ecological, climatic, and soil conditions of the hillside farms in the major river basins (watersheds) of Honduras. This forestry specialist should have broad experience in nursery production, selection of species for each site, and management of both natural forests and man-made plantations.

B. Technical

1. The NRMP central office specialists need to be more visible in the subwatersheds and work more closely with the WMU teams. Most of the team members are young and inexperienced and need more guidance and moral support. The central office specialists (and their CHEMONICS technical assistance team counterparts) should become more active in helping establish applied field

trials of improved varieties of basic grains, of horticultural crops, fruit trees and new forest species, to include improved management techniques (fertilization, pesticides, seed spacing, etc.) in each of the WMUs. More field days and farm tours should be planned for the committee members to see these trials and also to inspect good examples of soil conservation activities (different types of terraces, living barriers, etc.) and reforestation activities. The committee members (small farmers) need more practical ideas on various soil conservation, reforestation and livestock and crop management practices.

2. The Central office specialists and their CHEMONICS counterparts should take advantage of every opportunity to integrate ongoing activities of other A.I.D. in-country projects and programs into the NRIP. Examples are the varied food preparation and processing and storage activities, the building of latrines, LORENA stoves, etc., that are ongoing activities in all regions of the country through the A.I.D. sponsored Rural Technologies Program with CDI. These NRIP specialists could work with CDI and the WMU team members to select pilot families in each committee for implementation of some of these activities. Similarly, the activities of FOOD PRO and the Small Watershed Project should be explored to see how those program components could complement and strengthen the NRIP. It is particularly important for such coordination and interaction to occur to prevent duplication of effort and to avoid conflicts among the different ongoing in-country programs oriented towards improving the welfare of small farm families and low income groups.

3. The system of subsidies and grants and small farm loans should be completely implemented immediately, using the AID loan and grant funds. This project is an experiment to determine if small loans and subsidies (incentives) will work to encourage improved natural resource management practices. Reducing these incentives, changing the incentives to mostly in kind, and failing to provide incentives in some WMU areas are examples of what should not be happening during the life of this Project. It takes time to judge the impact of these incentives. They are designated to supplement

family income. They are a time-honored and established method of implementing desired soil conservation and family improvements in the United States through the various USDA agencies such as the Soil Conservation Service (cost-sharing for terraces, grassed waterways, windbreaks, pasture establishment, etc.), the Agricultural Stabilization and Conservation Service (cost-sharing for environmental protection practices such as minimum tillage, taking eroded land out of production, and building waste collection ponds) and the farmer's Home Administration (grants for rural water and sewer projects and subsidized loans for housing projects). The NRMP central staff could benefit by having some of these USDA personnel come to Honduras to help develop a more organized set of incentives that are complementary and meaningful in the sense of providing a worthwhile incentive to the small farm families. Perhaps the A.I.D. Project Manager could expedite this type of assistance.

4. The WMU teams, with NRMP central office assistance, should strive to develop local committees that are closer-knit, in the sense of the committee members having compatible activities, being willing to meet regularly with each other, and being physically able to meet regularly. Some of the existing committees have members living several miles from each other with no transportation. Development of committees whose members are close together would also allow the WMU team members and the Specialists from the Central Office to function more efficiently by being able to make more frequent visits to the member farms and by having centralized field tests (demonstration plots) that all the members could observe frequently.

5. More field staff professionals (agronomists, forestry specialists, and home economists) are needed in several of the WMUs to provide more effective assistance to the committee members in their subwatershed areas. In addition, to expedite the establishment of teams in the two new subwatersheds (Texiguat and Orocuina), the NRMP central office should begin hiring new personnel now, training them through in service courses, and placing these new members with on-going WMU teams to develop their applied skills and to gain confidence in their abilities to function in a new subwatershed.

6. There is a need for short-term technical assistance in the areas of small storage facilities for basic grains, and in agricultural marketing. The "coyotes" historically have been a necessary evil in many rural areas in that they provide a marketing link, but at a significant cost or loss of income to the small farmer. If the small farmer had some storage facilities to protect their crops against insect, rain, and other damage, they could not only have more production to sell, but could sell their crops in a more orderly manner to obtain higher prices. Similarly, if the small farmers had more information on harvest patterns (periods) and production of the same crops in other nearby areas, and of both input and output prices and marketing conditions (surplus, scarcity, etc.), they could be able to increase the family income by being able to negotiate prices, deciding when to plant and harvest, etc. Perhaps, CHEMONICS can provide such short-term assistance in the near future.

7. Since a key component of this and other A.I.D. projects is to develop a capacity for the transfer of technology, a major thrust of the Watershed Management Project should be to convince the campesinos that adopting the soil conservation practices and reforestation practices and maintaining these practices in the long run is a benefit to their families. Guiding these small farmers in the proper use of fertilizers and pesticides, the use of improved varieties, proper seed spacing, etc., and obtaining some beneficial results of these practices will do much to instill new technology into the mentality (and thinking) of these small farmers. The use of demonstration plots, and field days, and the close supervision and coordination of the technical specialists and WMU team members with the on-going activities of the small hillside farmer are critical factors to induce this technology transfer.

8. The improvement in and protection of the environmental quality in rural areas in the Rio Choluteca Watershed is a critical area of responsibility, and should be a high priority and permanent activity of the NRRM. Every technical specialist and every WMU team member needs to be trained in this area and accept responsibility to make improvements in this area. The contamination of water and soil, for example, through the improper use of pesticides, and/or

the improper disposal of both chemical, industrial, and organic wastes (such as cattle manure, crop residues, and human excrement due to lack of latrines in rural areas), must be prevented through corrective actions. Similarly the destruction of natural habitats by slash and burn agriculture and the subsequent elimination of many plant and animal species, particularly in the higher elevations of the watershed, are aspects that must be addressed by the NMMP. Preventive actions must be taken to eliminate these destructive actions and to improve the quality of life of the rural families in all the country. The NMMP should implement promotion and development activities relating to this important issue.

9. The activities of land use planning, determination of the capacity of land use, and potential land use, should be one of the principal objectives of the NMMP central office personnel (including the technical specialists). These activities are required for the development of a proper management plan for the Rio Choluteca Watershed. The high diversity of bioclimates, and their related ecological factors, within all areas of the subwatersheds, are the elements which determine the adaptability of the land for a specific use. As soon as the necessary data are forthcoming from PCN, this land use planning task should be implemented for all subwatersheds of the Rio Choluteca Watershed.

10. Other technical and miscellaneous recommendations are specified in various sections of the report, for example, the need to implement an incentive program for the young WNU professionals, and central office personnel, possibly with the implementation of scholarships. Also, we mention the development of a monthly newsletter, the development of posters and other "propaganda" materials for the promotion of improved soil and water conservation and reforestation pastures and other activities of the NMMP. Time does not permit a listing of these recommendations in this section of the Evaluation Report.

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APPENDIX 1

PEOPLE INTERVIEWED FOR EVALUATION OF NRIP
NATURAL RESOURCES MANAGEMENT PROJECT CENTRAL OFFICE

Carlos Rivas, Executive Director

Francisco Lupiac, Field Director

Ramon Serna, Lawyer

Carlos Melendez, Supervisor for all watershed management units in Cabeceras

Eduardo Canales, Supervisor for all watershed management units in Sample

Humberto Gaekel, Pasture Specialist and Counterpart to Rafael Ledesma

Ricardo Pérez, Soil Conservation Specialist and counterpart to Fred Tracy

Isaac Abastida, Pasture Management

Ramón Aguilar, Watershed Management

Mario Pineda, Extension

Armando Barahona, Horticulture and Fruit Culture

NATIONAL CADASTER OFFICE

Jorge Rodríguez, Executive Director

Francisco Alberto Fúnez, Head of Natural Resources Department

José Francisco Abarca, Head of Engineering Department

CHEMONICS TECHNICAL ASSISTANCE TEAM

Paul Dulin, Chief of Party and Watershed Management

Fred Tracy, Soil Conservation and Water Conservation

David Spiro, Horticulture and Fruit Culture

Rafael Ledesma, Range and Pasture Management

Peter Hughes-Hallet, Extension and Rural Development

AID, OFFICE OF ENVIRONMENT AND TECHNOLOGY

Marc S. Scott, Director

John P. Warren, Manager, Natural Resources Management Project

Julio Zepeda, Evaluation Coordinator

Val de Beausset, Manager Rural Technologies Program

AID, PROGRAM AND CAPITAL RESOURCES OFFICE

Ray Baum, Program Manager for NRMP

COHDEFOR

Juan Blas Zapata, General Manager of Department of Forests

Arnulfo Messen, Assistant in Watershed Management

Rolando Ordonez, Coordinator Proyecto de Leña of CATIE-COHDEFOR

MINISTRY OF NATURAL RESOURCES

Miguel A. Bonilla, Minister

Roberto Villeda Toledo, Advisor to MNR

APPENDIX 2

EVALUACION
PROYECTO MANEJO DE RECURSOS NATURALES
Tegucigalpa, Honduras

FECHA: _____

I. GENERALES

Nombre: _____

Municipio: _____

Sede del Equipo: _____

Estado Civil: _____

Edad: _____

No. de hijos y edades _____

No. de parcelas cultivadas y total en
manzanas: _____

Pendiente de la Tierra: _____ %

Tipo de Suelos: _____

Dueno de la tierra: _____

Tierra alquilada: SI _____ NO _____

Otro arreglo de tenencia: _____

Cultivos producidos y Producción por ms:

Cultivo Sencillo: _____

Cultivo Intercalado: _____

Ganado: Tipo y números: _____

Buey: SI _____ NO _____ CUANTOS _____

Tierra de pasturas: Has. o Mzs y
tipo de pastos _____

II. PRACTICAS DE CONSERVACION ADOPTADAS

Cuándo comenó la cooperación con el Proyecto Manejo de Recursos
Naturales? _____

Quién fue el contacto inicial o colaborador? _____

Quién es el colaborador actualmente? _____

Cuáles prácticas han sido implementadas y cuándo?

Terrazas: SI _____ NO _____ Cuando _____

Barreras Vivas: SI _____ NO _____ Cuando _____

Acequias de Ladera: SI _____ NO _____ Cuando _____

Muros de Retención: SI _____ NO _____ Cuando _____

Siembra de Arboles: SI _____ NO _____ Cuando _____

Manejo de Pastos Mejorado: SI _____ NO _____ Cuando _____

Estufa LORENA: SI _____ NO _____ Cuando _____

Cuáles prácticas planea (o quisiera) implementar en el futuro?

III. PRACTICAS RELACIONADAS IMPLEMENTADAS

Uso de Semilla Mejorada SI _____ NO _____

Uso de Fertilizantes SI _____ NO _____

Uso de Pesticidas e Instrucciones sobre su uso SI _____ NO _____

Uso de "Mulches" SI _____ NO _____

Uso de Irrigación SI _____ NO _____

Uso de Cultivos Intercalados SI _____ NO _____

Animales Comprados SI _____ NO _____

IV. FUERZA DE TRABAJO Y OTROS COSTOS PARA IMPLEMENTAR LAS RECOMENDACIONES DEL PMRN

Cuántos metros lineales de terrazas han sido construidos? _____

Cuántos días o meses para construirlos? _____

No. de personas _____ No. de días (total) _____

Recibió usted créditos por su trabajo? SI _____ NO _____

Cuántos? _____

Tipo de herramientas y equipo utilizado _____

Quién las facilitó? _____

Quién pagó por estas herramientas? _____

Otros aportes o servicios recibidos por la familia? _____

Quién pagó? _____

V. ASISTENCIA TECNICA PROPORCIONADA

Qué tipo(s) de asistencia técnica ha recibido del grupo del FMRN?

Por cuánto tiempo (periodo de tiempo en meses o años) _____

Ha sido beneficiosa la asistencia técnica proporcionada: SI _____ NO _____

Porqué sí o no? _____

VI RESULTADOS DE CONSERVACION

Algún cambio notable en la fertilidad en su suelo?

SI _____ NO _____

EXPLIQUE _____

Algún cambio notable en los rendimientos? SI _____ NO _____

EXPLIQUE _____

Algún cambio notable en la capacidad de retención de agua de la tierra?

SI _____ NO _____

Algún cambio notable en el mejoramiento del pasto?

SI _____ NO _____

Algún cambio en el ingreso familiar como resultado del FMRN?

SI _____ NO _____

EXPLIQUE _____

Algún cambio en la habilidad de pagar préstamos?

SI _____ NO _____

EXPLIQUE _____

VII. SUGERENCIAS PARA HACER QUE EL PMRN SEA MAS BENEFICIOSO A LAS PEQUENAS FAMILIAS CAMPESINAS

Maneras de mejorar la asistencia técnica?

Adecuación de los Incentivos Económicos

Qué otras recomendaciones tiene para mejorar la asistencia técnica proporcionada a través del PMRN?

Algún otro comentario sobre el PMRN

VIII. MERCADEO

Dónde se venden sus cultivos (o productos)?

Hay algún problema en el transporte?

Está recibiendo buenos precios?

APPENDIX 3

**EVALUATION OF THE
NATURAL RESOURCES MANAGEMENT PROJECT
IN HONDURAS**

TRIP REPORT

December 27, 1983

to

January 23, 1984

**Daniel D. Badger and Dana J. Fisher
Dept. of Agricultural Economics
Oklahoma State University
Stillwater, Oklahoma**

and

**Nelson Agudelo
Ingeniero Forestal
Escuela Agrícola Panamericana
Zamorano, Francisco Morazán, Honduras**

**Work performed under
Indefinite Quantity Contract
between
AID/HONDURAS AND WINROCK INTERNATIONAL**

**Work Request
by
Office of Environment and Technology, OET
USAID/Honduras**

Monday, December 26, 1983

Due to the icy roads, snow and other extreme conditions caused by the cold, we decided to travel to Tulsa Monday afternoon to avoid driving to Tulsa Airport early on Tuesday morning. Dana Fisher, Betty Jo and Dan Badger left Stillwater at 1:30 p.m. and arrived at the Sheraton Inn in Tulsa at 3:00 p.m. The temperature was -3°F.

Tuesday, December 27, 1983

Betty Jo took us to the Tulsa Airport at 6:45 a.m. Despite much congestion due to travel during the Christmas season, we left close to the 7:30 a.m. schedule for Dallas via Delta Airlines. We were delayed more than one hour in Dallas due to snow and sleet on the runways. We had another half-hour delay in the Delta flight from Dallas to Baton Rouge caused by fog and rain. We arrived in New Orleans at 11:30 a.m. We were met at the airport by Laila Nasralla McNab, a former OSU student with a M.S. in Ag Econ. (1979). She is originally from Tegucigalpa and is currently seeking employment with development agencies such as Winrock. We took the SAHSA flight departing at 1:00 p.m., and arrived in Tegucigalpa at 5:00 p.m. (with stops in Belize and San Pedro Sula). Julio Zepeda of OET/AID/Honduras met us at the airport and took us to the Winrock International residence. Located in Colonia Rubén Darío, the residence was formerly a Swiss Mission. We reached the residence at 6:00 p.m. and met the administrator Bianca Suyapa Reina and the maid, Angelita. Julio gave us a large packet of reading material on the Natural Resources Management Project for bedtime reading --- and after such a tiring trip!

Wednesday, December 28, 1983

Julio Zepeda came to the Winrock residence at 8:00 a.m. and took us to the AID office. We visited with John Warren and Julio Zepeda about the evaluation of the Natural Resources Management Project. The local counterpart for the Evaluation Team, Ing. Nelson Agudelo, is in Colombia and will return on Monday, January 2, 1984. We were given many documents and progress reports on the project to review. Dan developed a rough draft copy of the survey form to be used in interviewing the small farmers involved in the Natural Resources Management Project. The evening was spent reviewing project documents.

Thursday, December 29, 1983

We walked to the AID office at 8:00 a.m. John Warren took us to the Natural Resources Management Project office to meet with Francisco Lupiac, Field Director of the Project. Carlos Rivas, Executive Director, is on vacation until next week. John returned to AID while we visited most of the day with Francisco, Paul Dulin, Chief of Party of the CHEMONICS International team which is providing technical assistance to the NRMP, and Lic. Ramón Serna, a lawyer who also has a Masters in Rural Development.

Francisco discussed the history of the NRMP from the signing of the contract on July 30, 1980. Due to the transitional phase of the government and other priorities, the NRMP did not begin to function effectively until the summer of 1982. Paul Dulin discussed the role of the five technical advisors from CHEMONICS. He and Francisco showed us color slides of some of the problem areas of deforestation, denuded hillsides and erosion in the project area.

They also showed us slides of some of the soil conservation efforts and the crops being produced. Ramon Serna discussed some of his plans in summarizing similar conservation projects in other Central American countries. He also discussed his plans to analyze ways to prevent duplication of effort among the different Government Agencies (COHDEFOR, INA, MNR, SANAA) and ways to improve coordination with these agencies.

At 4:00 p.m. we returned to AID and visited with John Warren about the questionnaire (survey form) we will use to interview the small farmers in the Cabeceras and Sample subwatersheds. John and Dan will make revisions in the survey form tonight, and have it retyped in Spanish tomorrow.

We returned to the Winrock Residence at 6:00 p.m. After supper, we reviewed NRMP documents and annual reports from the NRMP Project office until 10:00 p.m.

Friday, December 30, 1983

Julio Zepeda came to the Winrock Residence at 8:00 a.m. He took us to the National Cadaster office and introduced us to Lic. Jorge Rodriguez, Executive Director. After a brief introduction by Julio concerning the purpose of our Evaluation Team visit, Julio left us to return to AID. He took the revised survey form to be retyped. We discussed with Jorge the role of the National Cadaster in providing needed land use classification and related data to the NRMP office as part of AID Project 0168. Jorge explained that the major role of the National Cadaster office was to develop topographic maps (1 to 50,000 scale) and related land use data for the valleys and sloping land up to 15% slope, all under AID Project 024. The secondary responsibility was to do the soil and land use delineations for mountainous terrain above 15% slope which is what the AID Project 0168 specifies is the area of responsibility of the NRMP.

Jorge Rodriguez introduced us to Francisco Alberto Fúnez, Head of the Natural Resources Department and José Francisco Aparca, Head of the Engineering Department of the National Cadaster. After a tour of the cartographic facilities in that building, we went with Francisco and José to their offices in another location. They discussed all the requests made by the NRMP office from the beginning of the Project, and the status of those requests. There was a lack of coordination and some misunderstanding between the National Cadaster office and NRMP Project personnel in the earlier stages of the project. However, it appears most of these misunderstandings have been resolved.

Francisco and José showed us timetables when the various data requests for soils and climatological data have been met for the Cabeceras and Sampile subwatersheds, and the projected timetables for completing the compilation of these data for the Crocuina, Namale and Texiguat subwatersheds. The final projected date for completion of all needed data for NRMP is September 15, 1984. They gave us samples of the type data being provided to the NRMP office.

We went to the Hotel La Ronda for lunch and returned to the AID office at 1:00 p.m. We obtained more documents for review from Julio Zepeda and discussed the status of the processing of the survey form with John Warren. All the electricity went off in the AID complex so the work processing equipment and reproduction equipment would not function. We stayed until 5:00 p.m., but the equipment never returned to service. We made arrangements with one of the secretaries to come to the AID office on Monday, January 2, 1984 to make 40 copies of the survey form since we need it on Tuesday, January 3, for interviewing. AID offices will be closed Monday due to the holiday.

We returned to the Winrock Residence and read documents and worked on the trip report most of the evening.

Saturday, December 31, 1983

Ing. Reynerio Barahona, Chief of the Credit Department at BANADESA, picked us up at 8:00 a.m. for a trip to the Valley of the Angels and Santa Lucia. We traveled by car through part of the National Forest and visited the National Park at Valley of the Angels. Severe erosion was visible on some of the hillsides and denuded areas could also be seen. We returned to the Winrock Residence at 12:00 p.m. and worked on NRMP documents and reports during the afternoon. At 7:00 p.m. Marc Scott, Director of OET, AID/Honduras, and his wife Penne, arrived and took us to the John and Joyce Warren residence for a dinner. We met Bill Ashley, an employee of the State Department in Communications, and his wife, Sonya, at the residence. As is tradition in Honduras, a large amount of fireworks were being set off to celebrate the end of the year, to which we listened and watched during the course of the evening. We arrived at the Winrock residence at 12:30 p.m.

Sunday, January 1, 1984

Penne Scott picked us up at 10:00 a.m. for the religious service at the Union Church of Tegucigalpa. The service lasted until 11:30 a.m. After the service we went to the Restaurante Roma for lunch. After lunch we went to the Hotel Maya to exchange dollars for lempiras. We returned to the Winrock residence at 2:00 p.m. and worked on the project by reviewing documents and reports for the remainder of the afternoon and throughout the evening. We worked on the trip report and Dana typed what was completed.

Monday, January 2, 1984

We left the Winrock residence at 8:00 a.m. heading toward the downtown area. After buying groceries and other needed items we returned to the house around noon. René Cruz, Director of INGINES (Organization of Sugar Refineries), came by for one hour and a half. His son, Ricky, is attending OSU majoring in Business Administration. The rest of the afternoon and evening were spent reviewing project documents and preparing for the interviews commencing Tuesday morning.

Tuesday, January 3, 1984

We left the Residence at 7:00 a.m. with Francisco Lupiac and Carlos Meléndez to go to the Rio Chiquito Watershed management unit office in Valle de Angeles. After a flying low trip, courtesy of Carlos driving the Jeep Wagoneer, we arrived at the Team project office at 7:30 a.m. There we met Julio Paz, Forestry member of the Team. Carlos Castro, Agronomist and Team leader was taking an exam to determine if he qualified to go the Monterrey Institute of Technology to study for his degree. We also met Saúl Calidonio, Promotor Social. The Promotor Social, Juana Maldonado, has been sick and was not at the office.

We visited in the Team office for about one hour. Julio discussed the two Comités Agrícolas currently in operation. Comité Agrícola Santa Lucia has 24 beneficiaries (members) and Comité Agrícola Liquidambar which has 19 beneficiaries. Only 10 of the 24 members of the Santa Lucia group have loans with BANADESA (which is a group loan); however, 16 of the 19 members of the Liquidambar group are involved in a BANADESA loan. Three of these members are in arrears in repaying their loan. Until this is straightened out (the entire committee is responsible for the loan), the group cannot obtain a new loan from BANADESA.

The local technical assistance team is in the process of organizing a third local agricultural committee of a group farming in the national park, high up on the side of the mountain. This committee is not functioning yet.

The primary crops being financed by BANADESA in this zone are cabbage, beets, carrots and lettuce. The campesinos also are producing beans, corn, strawberries (a fairly new crop) and have planted some fruit trees (peach, pear and orange). We also saw some eucalyptus trees that had been planted as a live barrier, primarily for protection from erosion.

We visited several small farmers who were associates or members of the Liquidambar Agricultural Committee. We spoke with two farmers who had constructed terraces, or were in the process of constructing terraces, but who had not received either subsidies for construction, nor loans through the group. We also visited with Cristóbal Nelson, President of the Liquidambar Committee. He had land on about 45% slope, and had corn and cabbage for harvest now. He also had planted beans previously in the same field. He had 38 peach trees. A second farmer had beans on terraced land with a 50% slope and was planning to plant strawberries also. A third farmer we visited had constructed terraces as a first step in planting trees. We talked with Eugenio Salgado, a farmer who had 2/3 of a manzana of land. He had planted carrots 6 days ago and was watering them by hand this morning.

We also visited an independent farmer, Fernando Gurdian, who has 5 manzanas of land with about 2 manzanas in vegetables and strawberries. He had cabbage, lettuce, and beets. He buys the strawberry plants from California (Tuft variety) and plants them in August. He begins harvesting them in November and the harvest season lasts until February. Then he has to replant the strawberry plants because the next crop of berries will be very small. The reason given is that there is no dormancy period to break the production cycle. This farmer had received technical assistance in building terraces and planting live barriers from the NRMP team in Rio Chiquito.

We went to the Santa Lucia Agricultural Committee zone to visit some members there, but none of the farmers were available. We tried to find several members of the junta directiva of this committee, but they were not around either. We left Santa Lucia and stopped at a local restaurant for lunch. We returned to Tegucigalpa to the Project Office at 12:40 p.m. At 1:00 p.m. Francisco Lupiac and Humberto Gaekel took us to visit the Tatumbla Technical Team. All members of the team were present at the headquarters. They were: Ricardo Galeano, Agronomist and Coordinator; Cándido Rufz, Forester, Miguel González, Promotor Social, Adela Valescka Duarte, Promotora Social; and Emilio Alvarado, Technician. We obtained information from the team on two local Agricultural Committees, Tatumbla and Cofradía. The Tatumbla group has 15 members and the Cofradía group has 23 members. There have been 36,587 lempiras in loans for both short term production loans and intermediate term loans (storage tanks for holding irrigation water, fences and corrals). Currently, none of the members are in default on their loans.

The land in this zone is very rocky and the primary crops being produced are beans, corn, potatoes, and horticultural crops such as peppers and tomatoes. Pole beans are planted with corn in one period and bush beans are grown separately in the second crop. Some producers also have planted fruit trees and trees for wood.

We went to the field and visited several fincas, mostly covered with rocks. We talked with José Trujillo, one of the members of the Tatumbla Committee. He was very supportive of the work of the technical team. He was producing beans and corn and horticultural crops and had received subsidies for building terraces. Next we stopped in the town of Tatumbla and visited with Domingo Velásquez, President of the Tatumbla Agricultural Committee. He made many favorable comments about the efforts of the technical team. He indicated that the soil conservation efforts were very worthwhile, that soil fertility had increased, and that the members were better able to repay loans than before their involvement in the project. He indicated that members of the committee were receiving excellent technical assistance from the NRMP team.

We also visited two homes where Lorena stoves were being utilized. The women were very enthusiastic about their stoves and indicated that they were only using about one-half as much wood for cooking as they had used previously with their old stove. The Promotora Social told us that 18 Lorena stoves had been constructed by members of the two committees, and that 17 were in operation at the current time.

We left the Tatumbla team office at 4:00 p.m. and arrived at the AID office at 4:45 p.m. We met Nelson Agudelo, our counterpart on the Evaluation Project. He had arrived from Colombia at 9:00 a.m. this morning, and had been reading documents on the Project during the day. We visited briefly with John Warren and Marc Scott about our interviews with the campesino families and the difficulty in obtaining formal written interviews. We are making a lot of notes about our talks with the Committee members. We left AID at 5:15 p.m. with Marc Scott to return to the Winrok residence.

We visited with Juan Montoya, BANADESA employee, who is leaving tomorrow for Oklahoma State University to study English and complete his B.S. degree in Agricultural Economics. He has an OAS Scholarship. At 7:00 p.m. we went to the home of René Cruz Uclés, former president of BANADESA (BANAFQM), for dinner. We returned to the residence at 10:00 p.m. and worked on the notes from our visits until 11:30 p.m.

Wednesday, January 4, 1984

Francisco Lupiac, Carlos Meléndez and Nelson Agudelo met Dana Fisher and Dan Badger at the El Cenáculo (near the Winrock residence) at 7:30 a.m. We traveled over a dirt road south-east of Tegucigalpa for over one hour before we arrived at the Sabacuante watershed management unit team office in Aguacate Arriba. There we met Luis Morcillo, Coordinator for the technical team and an agronomist; Juan Carlos Borjas, Forestry specialist; Eduardo Discua, Promotor Social; and Rubén Fajardo, Technician. Actually we had picked up Rubén along the way up the mountain. The headquarters office is located at about 1,800 meters altitude, in the clouds literally, as it is very cloudy and almost no sun shines until noon everyday. It also is very cold! We later visited some farms at an altitude of 2,000 meters, with strong January winds blowing.

This team was organized in January 1982 with 3 technicians and one Peace Corps Volunteer, who is still working with the team, but who is on vacation at the moment. He lives in the headquarters building of the team. The other team members have changed in the last six months or so; one of the team members lives in Tegucigalpa and commutes back and forth each day by motorcycle; the others live in rather spartan conditions in the team office building.

The first local committee in the zone, Aguacate Arriba, was organized in June 1982 and the second, Comité Agrícola El Rincón, was organized in September 1982. There are 29 socios in the Aguacate Arriba group and the team hopes to add 5 others soon. The El Rincón group has 20 socios and hopes to acquire additional members. There have been some dropouts by small farmers who could not work with the others, and/or who were disappointed in the way the program was working.

The first soil conservation projects started in January 1983; terraces were installed on 2 hectares. Terrazas con huerto are used on slopes up to 45% and terrazas de banco are used on more gentle slopes where clean crops such asortalizas will be planted. Maintenance of the terraces is critical, particularly on the steep slopes. The technical team plans to have some

courses for the committee members during the year on some of the theoretical aspects of soil conservation. They also will present some information during regular committee meetings (every 15 days) on how to survey the slopes and how to construct the different kinds of terraces. The current level of knowledge on many of the soil conservation practices is very backward. Most (80%) of the committee members cannot read and write; therefore, most of the information presented must be practical and easy to understand.

Because of the cold climate in this sub-watershed zone, it is very difficult to show any beneficial results of reforestation in the short run. The team has not been able to demonstrate to the members the benefits of planting trees. The team does plan to present some courses on management of trees this year, concentrating on the aspects of producing fuel wood (lena). Many of the campesinos have been cutting wood in the zone (not necessarily on their own land) and selling it locally to "coyotes". There are 60 sticks in a bulto or 120 sticks in a carga (a burro can carry one carga).

The campesino sells the fuel wood (mostly oak) for 3-4 lempiras per carga; the going price in Tegucigalpa is 7-8 lempiras. Much is sold to bakeries and some to homes. The coyotes get the benefits mostly-- the campesino receives very little for his work in cutting the wood, so really sees no advantages to plant trees on his own land.

Despite the above pessimism, the team has established a vivero (tree nursery) by the headquarters where they are producing pine, eucalyptus and other trees. Approximately 46,000 seedlings have been produced; 19,000 of these were planted outside the zone. The incentive subsidy is being paid up to a limit of 40 centavos for each tree that lives through three years. The team members estimate it costs 8 centavos to produce each seedling; however, many die before planting, as well as the loss on the farm itself. Some of the small farmers are planting pine and eucalyptus as live barriers.

In the El Rincon committee, 17 of the 20 members have 13,900 lempiras in short and medium term loans; in the Aguacate Arriba committee, 25 of the 29 members have Lps. 10,600 in short and medium term loans for production. The medium term loans are for storage tanks which hold water for irrigation.

Combined, the two committee groups have planted 63 hectares of corn, 5 hectares of potatoes, and 7 hectares of horticultural crops (cabbage, carrots, beets, tomato, onion, etc.)

A U.S. based firm, Food Pro has an AID contract to stimulate production of broccoli and cauliflower in this area for export by plane to U.S. markets. The technical team thinks these crops have potential for the zone.

Corn takes 9-10 months from planting to harvest because of the 2,000 meter elevation. The corn is a criolla or locally produced variety. Usually it is planted in late April or May and harvested in January or February. Some of the farmers were harvesting when we were there. Storage of corn is continually a problem.

The team plans to offer a course on horticultural production practices to the committee members this spring. Currently there are problems with fungi on the different crops, problems in controlling weeds and insects, and lack of good management practices on seeding rates, fertilization, etc. The Tegucigalpa and other local markets have been saturated with cabbage; it is currently selling for 2 lempiras per carga (2 bultos). There are 18-20 large heads and 25-28 small heads in a bulto.

There are no good varieties of beans adapted to this altitude. The technical assistance team has obtained some Esperanza 4 variety beans from the MRN experiment station in Esperanza, and planted some plot experiments in December. We saw one of those plots, and the beans looked good.

There are problems in marketing all the crops due to the isolated location (more than 1 hour from Tegucigalpa by dirt road) and the lack of transport. A bus makes one round trip a day to Aguacate Arriba. Historically, the "coyotes" came to the area and brought inputs, lent money to the farmers for production costs, and then came and purchased the products at very low prices. Only two of the socios from both committees take their product to Tegucigalpa for the Feria por Agricultores (market) every Friday and Saturday. However, they cannot sell a large volume there at one time.

In the reforestation project, if the junta directiva of the Committee certifies that the small farmer member has been on the plot of land for many years, and is properly using the land, they can approve a subsidy for him for tree plantings, even if he does not have title to the land. However, in the case of soil conservation practices, the small farmer cannot receive a subsidy incentive if he does not have title to the land. Yet, if he is a member of the Committee and his father has title to the property, he is eligible for a loan for soil conservation practices (terraces, etc.).

Some of the terraces have been damaged by cattle grazing in the corn fields after the corn is harvested. There is a need to install fences to protect the terraces. In the Aguacate Arriba Committee, 17 of the 29 members have constructed soil conservation practices: in the El Rincón group, 11 of 20 members have installed these practices.

In the Aguacate Arriba Committee, the members are not homogeneous--they live far apart and do not interact much. In the El Rincón group, the members live closer together, so communication is better. The Technical team plans to organize two more committees this year; one in agriculture (crops) and one group for forestry purposes only. The existing committees are in the eastern part of the zone-- the two new ones will be in the western part.

For both committees, 63 hectares are being fertilized, mostly with 12-24-12 fertilizer. But many of the members don't follow recommendations on the use of the fertilizer. Some try to spread the fertilizer over too much area, so they do not obtain good results.

Up to now, there are no Lorena stoves in this zone. The Technical team hopes to arrange a tour this year for some of the wives to visit Tatumbula to see the Lorena stove in operation. They hope to construct some of these stoves later this year. Currently, the national government does not have sufficient funds to hire more promotoras sociales for the NRMP, so there is not one for each technical team.

In this zone, almost all the members have one or two cows for milk production; a few have up to 5 cows. Almost all the members also have a pair of oxen,

We went to the field to see some of the soil and water conservation practices. We visited one sub-group of 15 members who were constructing a pila (water storage tank) for use in irrigating crops. The tank was 3 X 3 meters and 2 meters deep. The construction materials cost 7,000 lempiras; 50% of this cost would be paid to the members as a subsidy (incentive); and the other part, 3,500 lempiras was a medium term loan. The members provide all the labor to construct the storage tank.

We visited with Roger Medardo Durón Goday, President of the Aguacate Arriba committee, and toured his farm. He has a water storage tank which 11 socios use. He also has a truck and transports inputs (fertilizer, etc.) for the committee members for a small fee. He has several soil conservation and reforestation practices on his land. Speaking on behalf of his committee, he had many favorable comments about the NRMP.

Similarly, the second farmer we interviewed, Medardo López, also had favorable comments about the NRMP. Both of these leaders, and several other members did suggest more field days, demonstration plots, and the need for more assistance in obtaining improved seed. We walked about 4 miles on a one and a half hour tour of several farms, where soil conservation practices (terraces) and reforestation practices (live barriers and live fences of pine and eucalyptus trees) had been implemented.

We returned to the jeep at 1:00 p.m., ate our lunch, and returned to Tegucigalpa at 2:30 p.m. We went to the AID offices and visited with some of the personnel for a while, then walked back to the Winrock residence at 5:00 p.m., after stopping at the store. After supper, we worked on the trip report, read some documents, and visited with Paul Dulin of Chemonics about two hours on different facets of the NRMP.

Thursday, January 5, 1983

Carlos Meléndez, Isaac Abastida, and Nelson Agudelo came to the Winrock residence at 7:30 a.m. We left for the Rio Grande Watershed Management Unit Team headquarters in Ojojona, arriving there at 8:30 a.m. Over 1/2 of the trip was by a rocky dirt road. We visited with Mario Padilla, Agronomist and Coordinator of the Technical Team; Roberto Avila, Forester; and Jaime Nunez, Social Promotor. There are three local agricultural committees: El Círculo, formed on September 16, 1982 with 20 members; Surcos de Cana, organized on May 26, 1982 with 21 members; and El Aguacatal, organized on June 23, 1982 with 15 members.

El Circulo had 8,848 lempiras in loans in 1983; Surcos de Cana had 7,662 lempiras in loans in 1983; and El Aguacatal had 7,332 lempiras in loans in 1983. None of the members are in arrears on repayment since the loans have not come due yet. The largest part of the loans were for pasture improvement or to buy fencing materials.

Forestry related activities dominate this zone. It is high, about 1,400 - 1,500 meters, but not as cold as Sabacuante. Extraction of resin from the pine trees is a major activity. The old method which did great harm to the trees was to make a large slash (2 feet long and 6-8 inches wide) to collect the resin. This made the tree susceptible to diseases and fires, and could only be done about 4 years. The new method is much more efficient, leaves only a small cut on the tree, and the trees can be tapped for resin for approximately 16 years.

The small farmers extracting resin generally belong to a cooperative, but are still at the mercy of the resin processing plant. One farmer can handle about 500 trees at a time. He makes the cuts, and then takes about 12-15 days to extract 8 or 10 inches (vertical measure of resin in a 54 gallon drum). The value of this is about 16 lempiras, or slightly over a lempira a day for his work. About 2,500 barrels or drums are produced per year in this zone.

The production of fuelwood (lena) is another major activity in this area. About 2,500 truck loads of 40 cargas each or 100,000 cargas are produced each year. This is about 17,000 cubic meters of fuelwood. The small farmer receives 2.50 to 3.50 lempiras per carga, depending on the species of wood (pine is priced the lowest and oak the highest). The wood sells in Tegucigalpa for 7.50 to 10 lempiras per carga. Most generally, the extraction of resin and cutting of fuelwood is done in the national forest lands managed by CONDEFOR.

Some work has been done on conservation of soils. The El Circulo group members have built terraces on 5 hectares (acequias de ladera) and also some drainage canals (canales parabolicos); the Surcos de Cana group has constructed the same practices on 4.6 ha.; the El Aguacatal group has constructed terraces on 1.25 ha.; and the now defunct Guarisne group constructed terraces on 3.5 ha. The total subsidies received by all groups for these works was 2,572 lempiras.

The technical team provides equipment on loan (pick axes, hoes, etc.) to the group members to construct the terraces and canals.

Three viveros (tree nurseries) were established in 1983, one in the area of each group. Approximately 60,000 plants were grown in El Circulo, 50,000 plants in Surcos de Cana, and 40,000 plants in El Aguacatal. The construction of the tree nurseries cost 20,462 lempiras for materials, purchase of seed, and the labor. This cost was paid by the NRMP office. The average cost per tree produced was 14 centavos in 1983, but is calculated to be 11 centavos per tree in 1984, since some of the material costs for construction will be eliminated. No fruit trees have been planted yet by the group members;

However, some avocado seeds have been planted and a few seedlings are ready for transplant from the Surcos de Cana vivero. In 1983, 45,744 tree seedlings were planted by El Círculo farmers with a subsidy received of 4,574 lempiras; 45,190 seedlings were planted by Surcos de Cana group members with a subsidy of 4,519 lempiras; and 36,365 seedlings were planted by El Aguacatal farmers with a subsidy of 3,663 lempiras. The total subsidy for tree plantings for the three groups was 12,756 lempiras in 1983.

The reason no oak tree seedlings have been produced is that at higher altitudes and in poor (very!) soil, oak trees grow quite slowly. Thus, it takes a long time for these trees to become sufficient size to use for fuelwood. So the small farmers don't like to plant oak trees.

Only one family in the zone has a Lorena stove. The technical team has no female member and up to now, has had no time to work with the wives of the group members to demonstrate the advantages of these stoves. With so much wood freely available in the zone, it may be difficult to convince these group members that a more efficient stove is important. The team does plan to arrange visits in 1984 to other zones such as La Brea and Tatumbula for some of the group leaders, so they can see some of the Lorena stoves in action, and also see some of the soil conservation projects in other zones.

The technical team plans to organize two other local agricultural committees in this sub-watershed in 1984.

We left the team headquarters office in Ojojona at 9:40 a.m. to view some of the soil conservation projects and talk with small farmers. We traveled about 1/2 hour over a dirt road to the first horticultural farm. We interviewed Ernesto Martínez Espinoza, the first president of the El Círculo committee. He had about 1/4 manzana in several vegetable crops (tomatoes, bell peppers, beans, onion, cabbage, lettuce). He has installed drainage canals, and small terraces to control the flow of water. He also has planted living fences and live barriers (for wind protection), using pine and eucalyptus. He also has a small field planted with pines for fuelwood and lumber production. He was very happy with the benefits of these different programs. He suggested that the technical team spend more time in visiting the group members and interacting with them and also set up some días del campo and possible tours to other zones for the group members. We interviewed one other Committee officer and talked to four other small farmers in this zone also.

We left Ojojona at 2:00 p.m. and arrived at the NRMP office at 3:00 p.m. We met with Carlos Rivas, Executive Director of the project for 1 hour. Then Paul Dulin took us to the Winrock residence. We visited at the residence with Nelson Agudelo for one hour. We went to dinner at the Hungry Fisherman Restaurant with John and Joyce Warren at 6:00 p.m. We returned at 7:30 p.m. and worked on the report.

Friday, January 6, 1984

Carlos Rivas, Executive Director of the NRMP, Carlos Meléndez, and Nelson Agudelo came by the Winrock residence at 7:30 a.m. We left for the Guacerique

zone to visit the Technical Assistance team. We arrived at the team headquarters in La Brea at 8:30 a.m. and met Luis Chavarría, Agronomist and team coordinator; Jorge Romero Ortez, Forester; Fernando Navas, Promotor Social; and Pedro Armando Ríos, Auxiliary. This team is fairly new to the zone, having worked there about six months (since July 18, 1983). The old team including a promotora social was replaced.

The Technical team is working with three agricultural committees: La Brea/Monte Redondo with 15 members, of which 9 have credit; Tierra Colorado with 11 members, of which 7 have credit; and Escarbadero with 16 members, of which 9 have credit. Thus, there are 42 members in the three committees of which 25 have credit. Most of the loans are for four months and are for horticultural crops. Some of the small farmers are having problems with loan repayment because if they have one poor harvest, or receive low prices, they don't have enough money to repay the short term loan, so they cannot borrow again until it is repaid. Also, the president of one of the committees indicated that some of the members are irresponsible and don't care about repayment.

Some of the loan funds are for medium term (2 years) to buy pumps for irrigation. Only one of the medium term loans is for pasture improvement in this zone up to now.

Cabbage is the most important horticultural crop grown, followed by lettuce, carrots, beets, broccoli, cauliflower, radishes, green beans and other crops. Some basic grains (corn and beans) are grown, but not to any great extent (primarily for home consumption). A few of the members have two or three cows for milk, but the milk production is very low.

This technical team is providing technical assistance for six types of mechanical works for soil conservation: acequias de ladera, terrazas de ladera, canales parabólicos, cajas de dispersión (deep hole in the canals to trap water and slow the flow-these holes are also used for irrigation by hand, terrazas de banco, and terrazas individuales for planting fruit trees.

The following acreages and subsidies were reported for soil conservation practices established in 1983.

La Brea/Monte Redondo	3.54 ha.	- 4	socios received 654 Lps.
Escarbadero	2.28 ha.	- 7	socios received 517 Lps.
Tierra Colorado	2.55 ha.	- 5	socios received 504 Lps.
A Defunct Group	.70 ha.	- 2	socios received 96 Lps.
Totals	<u>9.07 ha.</u>	<u>18</u>	<u>1,762 Lps.</u>

The technical assistance team also has provided assistance to individual farmers and committee members who did not receive subsidies. There were 6 beneficiaries in this area with 4.9 ha. So the grand total of socios on soil conservation projects is 24 with 13.97 ha. of land protected.

In forestry activities, there have been 7,928 linear meters of live barriers (for wind protection) and live fences planted to trees with 396 lempiras of subsidies. For pure reforestation activities, 20 beneficiaries have planted 9.91 ha. of trees and received 1,650 lempiras in subsidies, for a grand total of 2,046 lempiras in subsidies. The team has provided technical assistance without subsidies to 14 beneficiarios who have planted 4,425 linear meters of live fences and live barriers and 2.09 ha. of reforestation (planted trees for fuelwood and for lumber). The grand total for both subsidy and non-subsidy is 12,353 linear meters of live barriers and live fences with 15 beneficiaries and 12 ha. of pure reforestation with 19 beneficiaries. They are planting two species of pines, cypress and eucalyptus; and thus are not very diversified in the species being planted. Certainly, other species of trees are adapted to this zone.

The technical team established one vivero on an independent farmer's land (trading off for some technical assistance on building terraces) and produced 46,000 seedlings; 28,000 seedlings were planted in the zone and the remaining seedlings were planted in the Valley of Angels and in the area south of this zone. The team does not have a vivero in each local committee area because of lack of water when needed, and also because of the inaccessibility to the area. They have only planted four species of trees because the committee members only know those species and don't want to plant any species they are unfamiliar with at this time--the team has no plans to plant other species now. The team members feel it takes too long for other species to produce visible results.

Nelson Agudelo suggested to the team members that they establish some ensayos (test plots) for some of the other species to use as demonstrations for the committee members on management techniques, benefits of those species, etc. Dan suggested that they also do this for several species of fruit trees. The climate and altitude appear to be ideal for citrus, avocado, and other fruit trees.

The team members took a survey of the committee members to determine how many of them wanted trees to plant in 1984, and received some requests for 15,000 seedlings for live fences and live barriers. The team plans to plant 30,000 seedlings, and will begin planting the seed next week.

Currently, the committee members are cutting fuelwood on the national forest lands owned by CONDEFOR. Some of these areas already have been deforested too much near the river (Rio Guacerique) and erosion is occurring, and clogging up the river with silt. There does not seem to be much management or supervision of this area by CONDEFOR personnel. The team members need the assistance of CONDEFOR personnel in controlling the indiscriminate cutting of trees.

The fuelwood is sold for 2.50 to 3.00 lempiras per carga locally. Pine brings the lowest price and oak the highest price. About 10 to 12 trucks come daily from Tegucigalpa to buy fuelwood. Some of them travel back at night to avoid showing permit papers (which they don't have) to take the wood from the national forest.

The current team members have no activities in working with the amas de casa on Lorena stoves, nutrition, etc. However, we visited several homes of committee members in the zone who have Lorena stoves. These had been built under another government agency subsidy program.

The team plans to reorganize the defunct local committee (Las Tablas) and to organize one new local committee in this zone in 1984. The team has made a survey of the committee members to determine what aspects to emphasize in 1984. The socios have estimated they want to construct soil conservation practices on 3.6 ha. of land. The team members indicate they may not be able to handle this many construction projects.

Some of the problems not being addressed in the zone relate to trying to diversify away from traditional crops and traditional types of trees for reforestation. To improve family income of many of the committee members will require more technical assistance in crop management (proper use of fertilizers, insecticides, seed spacing, use of improved seeds, etc.) and marketing management. Many of the socios are still at the mercy of "coyotes" in selling their products, although some have carnets and take their products to the feria in Tegucigalpa on Fridays and Saturdays. Transportation is a big problem--possibly the technical assistance team could help resolve this problem.

The marketing problems need to be addressed more specifically in all the zones in the Cabaceras subwatershed. Also for those socios who do not want to assume full responsibility for their loans, they should be made aware of the consequences through some system of penalties, and/or elimination from the local committee. More emphasis is needed on cash flow management for repayment and the need to better plan the loans (maybe arrange loans for one year rather than 3-4 months for horticultural crops) to overcome the problems of one bad cropping season. Also more work should be done with the spouses and children of the committee members. Many times, the wives are more responsive to learning new concepts, preparing more nutritious meals, learning to prepare the new crops being introduced (e.g. cauliflower and broccoli) and will take more pride or interest in learning how to properly produce new crops such as strawberries, than the male members of the committees. Certainly more education and technical assistance is needed on the importance of the Lorena stove, not only in saving fuelwood, but in providing more healthful conditions in the home (less smoke and air pollution inside the house).

Another problem facing many of the members is the production and sale of corn. Most of them use a criolla or native variety, which does not produce high yields of good quality and everyone sells at the same time, receiving low prices (by flooding the market). What they want to do is build a silo for storing the corn and selling it in the non-harvest season when market prices are higher.

We inspected one of the jeeps of the team members, which was out of service. The main frame was cracked or broken in two places, and had not been repaired. The damage was caused by all the bouncing on the rocky, rough, steeply inclined trails to one of the local committee areas. There seems to be a problem in obtaining repair parts for some of the jeeps.

Luis Chavarria and Jorge Romero Ortez went with us in the jeep to visit with some of the members and committee officers. We stopped at a finca with several horticultural crops and interviewed Ramon Martinez, the president of the Comite Agricola La Brea/Monte Redondo. He is 28 years old and has 2 manzanas of land in 6 different parcels. He is farming with his father and brother. An uncle was also farming nearby. All four of them were members of the committee. We talked to three of the four. Ramon is producing lettuce, carrots, cabbage, beets, broccoli and other horticultural crops, plus a little corn. He has installed terraces and drainage canals and has planted trees in both live barriers and live fences. He has received some subsidies for these practices.

He and other members of the committee seem to be pleased with the technical assistance received from both the old team and the new team in the organizational aspects of the committees, in soil conservation and in some tree planting projects (mostly live fences and live barriers). The members feel there have been benefits of soil conservation practices in reducing soil erosion, improving soil fertility, and slightly increasing production (yields). There have been some problems among members of the group in repaying loans due to the last crop disaster with cabbage (too much production in the region and too low prices). Ramon believes the number of people in the technical assistance team should be expanded to include a promotora social, and that the team needs to begin providing more technical assistance in other areas through more visits with committee members. More help is needed in the area of marketing to eliminate some of the problems caused by having to deal with the "coyotes" (intermediarios). It would help tremendously if the technical team had funds to buy a small truck to import insumos (inputs) and to transport products to market.

We next went to the Tierra Colorado area and interviewed Jose Gonzalez Martinez, president of that local committee. He is 26 years old, and personally is producing cabbage, beets, lettuce, cauliflower, broccoli, and a few other horticultural crops. He also produces a little corn, beans, and potatoes on his land; he has planted trees for live barriers and also a small forest area, and has built terraces for soil conservation purposes. He told us the technical assistance team had helped in soil conservation projects and in obtaining credit from BANADESA. However, the team had provided little or no technical assistance in soil preparation for planting crops, in fertilization, and in planting the seed. He felt the members of his committee needed more help in these areas. His members have seen benefits from the soil conservation projects. There have been some loan repayment problems, mostly caused by irresponsibility of some members. Jose believes that the technical team should make more visits and provide more practical information to the committee members. More educational tours should be arranged. The short term credit extended should be for longer periods (possibly up to one year). He also felt the wives of his committee members wanted the services of a promotora social.

We also visited informally with several members of his committee who were bringing in bultos of cabbage to the assembly shed alongside the road and hauling back chicken manure on horses. The chicken manure costs 2 Lempiras per quintal. They had similar observations as the president. We next went back to another small area where several committee members had constructed terraces and irrigation canals, and were growing horticultural crops and corn. We visited with three small farmers there, and their sentiments were essentially the same as the other members.

We ate lunch in the field, dropped off the team members at their headquarters and returned to Tegucigalpa to the project office at 2:30 p.m., tired and dusty. However, we visited with Carlos Rivas and Paul Dulin on the rest of the project office outline of points they wanted to cover with us on the evaluation. They emphasized that there are two distinct problems: in the Cabeceras subwatershed the critical problem is the protection of the production of water for the city of Tegucigalpa; in the Sampile subwatershed the critical problem is soil erosion.

Carlos Rivas made the point that some of the problems with the lack of practical experience of the technical team members in hillside farming methods is that all the agricultural and forestry schools are in the valleys or on fairly level land, and all their field work is under those conditions. There is a need for these schools to develop hillside farm experiments so the students can gain the experience needed to help the country solve the soil erosion and forest destruction problems.

Both Paul and Carlos indicated that on Monday, January 9, in Choluteca, all the technical team members from the Sampile subwatershed, the Chemonics technical assistance team, and the NRIP headquarters personnel will discuss future action plans for that subwatershed in five areas: soil conservation measures (construction projects), reforestation, pasture management and improvement, production of fruit trees, and technical assistance to improve productivity.

A strong attempt has been made in the Choluteca region to integrate the NRMP subwatershed personnel directly into the other ongoing programs of the MRN Regional Office in Choluteca for administration. This is a hoped-for objective of the AID/MRN convenio, so that the watershed management project will continue with GOH funding as an integrated entity of MRN when the AID support expires.

Some of the administrative problems relate to the difficulty in hiring trained personnel for the teams to function in the other three subwatersheds (Texiguat, Namale, and Orocuina). Because of the difficult working conditions in Texiguat particularly, it is almost impossible to find qualified professionals who are willing to live there and work, particularly with the low salaries being paid by the MRN.

A related problem is the lack of continuity of the personnel on the technical teams in the zones of the two subwatersheds now in operation. Some of the team members have not worked out in a particular zone, so have been transferred to other zones; some were incompetent and have been discharged and replaced. Also, even the competent professionals do not like to stay in one place more than two years. They feel that the only way to receive a higher salary and to progress professionally is to change jobs. This is a difficult cycle to break.

It takes a long time to process requests for equipment and to receive such equipment. Requests for equipment through AID must be formally advertised for bids, which takes time. All requests for equipment and vehicles must essentially clear both the AID and MRN bureaucracy, so delays of four to six months or even longer are common.

Currently, the GOH has insufficient revenues to fund all agencies, so the NRMF is having a difficult time in funding through MRN. The MRN approved counterpart budget for the current year (CY 1984) was about 1,300,000 lempiras (\$650,000 U.S.); however to date only 400,000 Lempiras were approved by the GOH Treasury, and Carlos does not know whether more counterpart funds will be approved by the GOH this year.

Another administrative problem has to do with the training component and scholarships. There was no time to get people trained in other countries before the project got underway.

Similarly, if the top people are sent off for training during the project life, they are lost for two years at least. There needs to be a modification of this training component. There also needs to be a provision for scholarships for short courses of 2-3 weeks in other countries. Also there could be funds provided to take specialists from one region of Honduras to another for short courses on special techniques or practices.

Several other procedural points were discussed relating to communication problem with the Ministry of Hacienda (Finance) and the role of AID in the project. These points will be covered in more detail in the Evaluation Report. Delays of over one year in receiving requested equipment for Dirección de Recursos Hídricos to establish new meteorological station in the five subwatersheds has hampered the project to some extent.

We left the Project office at 4:00 p.m. Paul Dulin took us to the Winrock residence and took Nelson to get his car. Nelson took Dana and me to the Airport to meet Betty Jo Badger, Dan's wife who arrived at 4:40 p.m. We returned to the house. Dana went to Marc and Penne Scott's for dinner. Dan worked on the report.

Saturday, January 7, 1984

Nelson Agudelo, John Warren, and Marc Scott came to the Winrock residence at 9:00 a.m. to discuss various components of the Evaluation Report with us. We visited about which objectives in the original project paper (Green Book) should be emphasized most. John and Marc left at 10:00 a.m. Dan, Dana and Nelson discussed more details about the trip report, and how Nelson can incorporate his notes and ideas into that report. In turn, the detailed trip report can be used as a basis for preparing the evaluation report. After Nelson left, Dan wrote on the trip report and Dana typed the report for several hours. At 7:00 p.m. we went with John Gillies and Ron Tinnermeier to the Kloster Restaurant for dinner. Ron is here as part of an AID Evaluation team of a coffee tree replanting project with small farmers. The project has a credit component. John Gillies is working with Winrock in developing an AID Forestry Project. We returned to the Winrock residence at 9:00 p.m. and worked on the report for a couple of hours.

Sunday, January 8, 1984

René and Martha Cruz came by the residence at 9:45 a.m. to take Betty Jo, Dan and Dana to the Union Church of Tegucigalpa for service. Afterward, the Cruz family (including a son, John) invited us to lunch. After some sightseeing we returned to the residence at 5:00 p.m. and began working on the report. Preparations were made for the 5-day sojourn in Choluteca as the final component of interviews and tours connected with the NRMP project evaluation.

Monday, January 9, 1984

Carlos Rivas came by the Winrock residence at 6:20 a.m. to pick up Betty Jo, Dana and Dan to travel to Choluteca. We arrived at the Hotel Pierre and checked in at 8:45 a.m. Nelson Agudelo traveled to Choluteca with Paul Dulin and other members of the CHEMONICS team, who left Tegucigalpa at 5:20 a.m. That group arrived at 7:30 a.m. and the meeting with all the technical team members from the Sample subwatershed began at 8:10 a.m. Carlos, Dana and Dan arrived at the meeting at 9:00 a.m. in the regional headquarters office of MRN.

Each team coordinator discussed the accomplishments of each local committee in their zone in soil conservation, reforestation, pasture management and pasture improvement, and increase in soil productivity.

Much detail was presented on the number of hectares, forecasts of soil conservation and reforestation for the coming year, etc., but we believe it will be best to obtain this information from the teams at their local headquarters based upon one-on-one discussions. The morning's discourse yielded some interesting points and indeed, the meeting of 30 people gave us impressions of some of the problems and potentials for agricultural producers in this subwatershed. The first part of this meeting ended at 11:30 a.m. We visited briefly with Federico Trece Ramos, Regional Director of MRN about the incorporation of the NRMP into the ongoing program of MRN. Some of the local committees organized by MRN Extension Specialists have been transferred to the NRMP technical teams for supervision and technical assistance, etc.

The Evaluation Team went to lunch at the Camino Real with Carlos Rivas, where we discussed several problem areas in management of the project, such as delay in receiving needed equipment. After lunch, we returned to the MRN Regional office to meet José Ricardo Fasquelle, subdirector of the MRN Regional office in Choluteca. He went with us as a guide on a tour of the area agriculture so we might become familiar with various practices used. We eventually traveled to Marcovia where we toured a sugar cane refinery being managed by Ing. Antonio Gullén. This plant is named Azucarera Choluteca. We had a very interesting tour of the entire production process. The finished product is crude sugar that is packaged in 100 Lb. bags and transported to various cities for domestic consumption and to the seaports for export. We left the refinery at 3:30 p.m.

On the return trip to Choluteca, we stopped in Marcovia for a soft drink. Potable water is a scarce commodity in the Choluteca Region. Anyway, the diesel jeep would not start after our stop. Something happened to the vacuum which controls the solenoid. We quickly found out that none of us were mechanics. José Fasquelle got a ride back to Choluteca to the MRN office and came back with a mechanic. After a 2 hour delay, we had the jeep repaired and were on our way back to town. Most of the CHEMONICS team members and the NRIP office personnel left at 5:30 p.m. for Tegucigalpa. Isaac Abastida of the NRMP central office stayed in Choluteca to travel to the field with us during the week.

Nelson Agudelo, Betty Jo Badger, Dana Fisher and Dan Badger ate dinner in the Hotel Pierre Restaurant. We visited about the Project Evaluation, and made plans for the visits to the various teams in the Sample subwatershed.

Tuesday, January 10, 1984

The Evaluation Team ate breakfast at the Hotel Restaurant at 6:15 a.m. Eduardo Canales, José Ricardo Fasquelle and Isaac Abastida met us at the Hotel and we left at 7:00 a.m. to see the Yusguare Watershed Management Unit. We arrived at the Technical Team Headquarters at 7:30 a.m. and visited with Olman Rivera, Agronomist and Team Coordinator; Hector Sánchez, Forester; Juan Ortiz, Promotor Social; and Dixia Mejía, Promotora Social. The original team was organized in Yusguare in September 1982. There have been wholesale changes in the team: the current coordinator arrived in July 1983. There is a Peace Corps volunteer working with this team also, but he is on vacation.

There are four local committees in this watershed management unit: La Fortuna was established in January 1983 with 27 socios and still has 27; Apinto was established on January 7, 1983 with 30 socios and currently has 28; Tablones Arriba was established on January 19, 1983 with 25 socios and has 28 now; and la Montana was established on January 4, 1983 with 36 socios and now has 34. The Apinto committee was organized by the MRN Extension Specialists before the NRMP was integrated into the regional office of MRN. The other three committees were organized by the Technical team.

There have been a few demonstrations in basic grain production. The key problem in this zone is lack of water for irrigation, so it is difficult to produce horticultural crops in many parts of this zone. In 1983, the team only had one vivero for the entire zone; they plan to have two viveros in 1984. Some data on 1983 reforestation projects is shown in the Table below. Generally, 1,000 seedlings are planted per hectare.

<u>C.A.L.</u>	<u>Hectares Planted</u>	<u>Trees Planted</u>	<u>Socios Benefitted</u>	<u>Subsidy in Lempiras</u>
La Fortuna	30.11	30,111	7	3,123
La Montana	30.90	30,900	11	3,670
Apinto	3.70	3,700	12	370
Tablones Arriba	<u>10.10</u>	<u>10,100</u>	<u>1</u>	<u>1,617</u>
T o t a l s	74.81 -----	74,800 -----	31 -----	8,180 -----

For 1984, 160,000 plants have been planted in a vivero in the Namasigue area at a total construction (and other) cost of 15,289 lempiras. The average cost is 9 centavos per plant. Most of these will be planted in C.A.L. La Montana. The other vivero has been planted with 100,000 seedlings at a total cost of 11,493 lempiras or 11 centavos per plant. The team feels that 68 hectares can be planted in 1984.

There have been no loans for crops or soil conservation up to now in this watershed management unit (zone). Loans for inputs for basic grains are needed in this area.

Five clubs for amas de casa have been organized:

Nueva Esperanza	Organized on March 15, 1983 with 25 socios, has 23 at present
Apinto	organized on Feb. 20, 1983 with 15 socios, has 26 at present
La Montana	organized on April 26, 1983 with 15 socios at present
La Fortuna	organized in October 1983
Alta Aire	organized in October 1983

Dixia Mejia reported that 25 Lorena stoves had been built and are functioning now. The biggest out of pocket cost is 10 lempiras for the aluminum chimney and many of the socios could not afford this. The Centro de Desarrollo Industrial (CDI) provided subsidies to build 20 of these stoves in November and December 1983. Unfortunately no more subsidy funds have been available for 1984. The NRMF office has not approved any subsidies for Lorena stoves. These stoves are a high priority item in this region, because of the need to reduce the use of lena (fuelwood).

Dixia Mejia also has been working with the amas de casa in teaching them how to conserve fruits, how to prepare jellies and marmalades, how to prepare food and how to make soap. Dixia seemed to have a good rapport with many of the women in the area. Dana interviewed Dixia while Nelson and Dan were interviewing a socio. She is 23 years old and has been with the team since

March 1983. She works with the campesino wives to improve their knowledge of basic sanitation, nutrition, food preparation and horticultural crops. She held demonstrations this past year on the making of mango jelly which the women have prepared to market in Cholulteca. She has been encouraging the women to plant fruit trees around their houses to improve the production of jellies. She says that the other members of the team (three males) are very supportive of her efforts with the amas de casa and help with the demonstrations and courses. Her immediate goal is to increase the number of Lorena stoves in the area as well as increase the production of horticultural crops. Dixia meets with the women once per week.

We left the headquarters office at 8:30 a.m. in three jeeps to visit several farms of the committee members.

We visited with Justo Pastor Perez, Treasurer of the La Fortuna local committee. He has a vivero with seedlings of avocado, mango, and nancy (a tree with small fruit for juice and jelly) which will be planted by four socios in his committee. Other socios have another vivero. On his finca, he had 300 avocado trees, 150 mango trees and about 1,000 citrus trees (oranges, some grapefruit and a few other types of citrus.) He indicated the technical team comes by about one time per week. That frequency probably is sufficient if they bring good information with them. His committee members were disappointed with first technical team members because they promised a loan in April 1983 for water storage (pilas), and the committee never received the loan. He feels there should be more subsidies or incentives to encourage the socios to try more new crops, build more terraces, etc. Some of the members would like to begin a new project with bees (apicola), but cannot do that without loans, and currently there are no loans. The members also need more assistance in the production of basic grains. The housewives need more information on the use of medicine for the family and the entire family needs assistance in building latrines. His committee members feel the new technical team is providing excellent service to the socios now.

We interviewed Gustavo Pineda, Secretary of the Tablones Arriba local committee. He has one-half manzana of land devoted to horticultural crops and a little corn. He gets very low yields (and very small ears of corn) with the native variety. He has terrazas de banco, terrazas de ladera for his tomatoes and retention walls for soil conservation. He received subsidies or credits for these projects. His committee members need short term loans for inputs for both basic grains and horticultural crops. They want more technical assistance on how to produce sweet peppers and onions. They need more assistance in obtaining improved varieties of seed, and more experimental plots with the improved varieties.

We interviewed Federico Mejia, treasurer of the Los Tablones Arriba committee. He has one-fourth manzana of basic grains (corn and grain sorghum) and horticultural crops, primarily tomatoes. He has constructed several soil conservation projects, such as terraces, acequias de ladera and retention walls. He also planted trees in October 1983. His family built a Lorena stove in June 1983 with assistance of the Promotora Social of the team. He has used improved corn seed (HB-84), fertilizer (12-24-12), pesticides, and abonera (organic fertilizer) and has gravity irrigation from a well. He received subsidies for the soil conservation project.

These committee members have received technical assistance from the team on controlling weeds, on conservation of soils, on planting trees, and have received a donation of fertilizer through the team. He feels all this assistance has been beneficial to the committee. He believes there has been an increase in soil fertility, resulting in an increase in the size of the ears of corn; and also an increase in yields. These in turn have increased the family income or well-being. He believes the technical team should provide economic incentives, such as subsidies or credits for fertilizer, and also medium term loans for projects the socios would like to start, such as honey bees, chickens, and hogs. There also needs to be some way to obtain short term loans for those socios without title to the land.

We interviewed Ramón Mejía López, president of the La Montana agricultural committee. He only has 1/8 manzana with cabbages, beets, tomatoes and onion. He has constructed several types of terraces for soil conservation and received subsidies. He also planted trees in June 1983. The technical team provided assistance for his family to build a Lorena stove in November 1983. He is using organic fertilizer (has abonera) and gravity flow irrigation. The technical team has been helpful to the committee members. However, the team could provide more educational tours, and more assistance through talks. The committee members need loans for inputs to produce basic grains, preferably longer term loans. Some of the members also need assistance in repairing homes badly in need of repairs, building more Lorena stoves, more information on producing horticultural crops, and more soil conservation projects.

We visited two other fincas for brief visits with the socios. We returned to Choluteca at 3:00 p.m., tired and dirty. After taking on several soft drinks, the entire team went to the beach at Cedeno for a refreshing dip in the Gulf of Fonseca (Pacific Ocean) and ate a combined lunch and supper of fried fish. We had a lot of uninvited guests in flies, small children, cats and dogs (yes, dogs eat fish heads and bones!)

We returned to Choluteca at 6:00 p.m. We worked on the trip report and Nelson and Dan discussed the various sections of the Evaluation Report, and how to divide responsibility in writing up the various sections. Since we planned to get up at 5:00 a.m. tomorrow morning, we all turned in for the night at 9:30 p.m. Needless to say, we all slept well after a tiring but eventful day.

Wednesday, January 11, 1984

The Evaluation Team met Eduardo Canales, José Fasquelle and Isaac Abastida at 6:00 a.m. in the Hotel Pierre lobby. We left for El Triunfo, where we ate a typical breakfast at 7:30 a.m. in the best restaurant in town! The technical team members ate with us. We then went to the El Trinfo Watershed Management Unit headquarters office and visited with the following: Carlos Flores, Agronomist and Coordinator; Tomás Herrera, Agronomist; Francisco Moradel, Forestry; and Santos Duarte, Promotor Social. The technical assistance team began functioning in El Triunfo on Oct. 14, 1982. The Las Bateas committee was the first one organized, in January 1983. The El Llano committee also was organized in January 1983. Two of the committees formed in 1983 have been

integrated into one committee, and a new committee has just been organized, for a total of 8 committees in the El Triunfo zone. Some of the committees lost members when they found out they were not eligible for credits (subsidies) and no loans were available from the NRMP. CARE and COHAAT have "Food for Work" projects, so some of the current and former socios have participated in those projects.

In the Sample subwatershed, only the local committees in the Concepción de María watershed management unit are eligible for loans. None of the other committees have been able to obtain loans, due to the low (and risky) profitability of the crops, the very small size of the "farms", the harshness of the climate which almost always has adverse effects on the yields (too hot and/or too dry), the fact that most of the crops grown are for family consumption, and not for sale, and very few members have title to the land.

The subsidies or incentives that have been paid to Committees in this zone are as follows:

<u>Committee</u>	<u>Soil Conservation (Lps)</u>	<u>Reforestation (Lps)</u>
Las Bateas	2,345	2,365
El Llano	3,665	1,465
Las Chacaras	672	-
Las Uvas	1,171	311
El Chorro	-	1,172
Matapolis No. 4	-	1,227
Pozo Grande Yorolan	-	3,332
T o t a l s	7,853	9,872
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A great variety of species of trees have been planted in the zone, which is good. At least 10 different species have been planted for both production of fuelwood and lumber. Also some trees have been planted for the protection of the Choloteca (city) watershed.

Up to now this team has not had any projects with the Amas de Casa. There has been no Promotora Social hired as of yet; therefore, the team has not provided any technical assistance in building Lorena stoves. However, some of the socios have Lorena stoves as a result of the "Food for Work" programs of CARE and COHAAT. The technical team has made a request for funds for 1984 loans for pasture management (fences for rotation) and for pasture improvement, but have no clearance yet for such loans. The Las Bateas and Las Uvas Committees have an interest in loans for producing chickens. Up to now, beans and corn are the most important crops in this Committee. Due to the high elevation (about 600 meters) of the Palo de Agua Committee, the socios are planting some oranges, mangoes and other fruit trees.

The technical team has had a few dias de campo for soil conservation projects. More such demonstration days are needed. The team did not have a vivero to produce tree seedlings in 1983. However, plans are to have two viveros in 1984; one in the Las Bateas committee area with 85,000 plants, and the other in the Matapolis No. 4 committee area with 50,000 plants. The average cost of production will be about 12 to 15 centavos (6 to 7 1/2 cents U.S.) per plant.

We left the team headquarters office at 8:30 a.m. and stopped by a cashew processing plant in El Triunfo to see how the cashews were produced. The NRMP technical teams have not been encouraging any socios to plant cashew trees yet until a more stable processing operation is developed. Cashews are a high profit crop, if the nuts can be properly processed. We left the processing plant at 9:00 a.m. to visit some of the farms of the local agricultural committee members.

We interviewed Angel Martinez, socio in the Las Chacaras Committee. He has two manzanas of land on 45% slope, and produces corn, grain sorghum and beans. The corn is a native variety, producing short ears, and low yields. He has been a member of the Committee since November 1983. He has built retention walls, for which he received a subsidy. He also has constructed a Lorena stove, under the COHAAT "Food for Work" program.

He has received technical assistance from the NRMP team in the construction of soil conservation projects, plus information on seeding rates for traditional crops. He has been satisfied with the technical assistance received to date. Some of his relatives are socios of the same committee and have requested loans for inputs to produce corn and grain sorghum, but have not been able to receive any loans. He feels the socios need more technical assistance in building Lorena stoves, latrines, and wells for potable water, instructions on how to cook different foods, medical assistance, an increase in planting fruit trees and establishment of lots with trees planted for firewood. The technical team apparently has little knowledge of small animals, such as goats and rabbits, and bee production. Many of the socios want to start one or more of these enterprises.

We went to another committee area and interviewed Francisco Ortiz, an officer in the Las Batens local committee. He has one hectare of land in two parcels on about a 45% slope. He is producing grain sorghum, corn, beans and sesame seed. He joined the committee in October 1982. He constructed terraces and retention walls in November 1983, with technical team assistance. He received a subsidy of 216 lempiras for these soil conservation projects. Some of the soil conservation projects were constructed under the COHAAT "Food for Work" project.

He feels the socios in his committee need more technical assistance through more visits and talks by the team members, and more information on fruit trees, and information on construction of latrines.

We visited two other small farms in the zone, including one in the El Llano committee. This socio had built retention walls and reinforced them with rocks. An improved variety of corn will be planted on the slopes. Some trees were left standing to determine how much protection can be provided by trees without adversely affecting the corn yields.

We returned to Choluteca at 2:00 p.m. After replenishing body fluids with plenty of soft drinks, we visited the local market. We returned to the hotel to clean up. After supper, we worked on the report until 11:20 p.m.

Thursday, January 12, 1984

The Evaluation Team left the Hotel Pierre at 6:15 a.m. with Jose Ricardo Fasquelle to travel to Concepción de María, near the Nicaraguan frontier. We arrived at the Watershed Management Unit office at 7:30 a.m., after a gruelling ride over rocky mountainous roads that can shake a jeep (and its occupants) to pieces. At the Technical Team headquarters, we met Omar Oyuela, Ing. Forestal and Coordinator of the Unit; Carlos Mendoza, Agronomist with a BS degree from CURLA; and, Oscar Díaz, Promotor Social. Omar has his BS degree in forestry from CURLA also. We went to breakfast and returned to the office at 8:15 a.m. Omar was the first member of the Team to come to Concepción de María, in February 1983. Four local committees have been organized since then:

- Los Espabeles in April 1983 with 32 members and 19 now
- Unidos de Cofradía in April 1983 with 20 members and 19 now
- El Jicarito in May 1983 with 21 members and 17 now
- El Tejar in May 1983 with 17 members and 17 now

The Concepción de María committees have lost some members because some of the socios did not have ownership papers and others did not own any land; when they found out they were not eligible for loans or subsidies, they dropped out of the committees. This Watershed Management Unit is the only one in the Sample subwatershed which has had loan funds. The only loans made so far have been medium term loans (5 years) for livestock management. In this case, it includes money borrowed for management of pastures (fences and watering facilities), and also purchase of cattle. The following loans have been made, using existing owned cattle or the purchased cattle for collateral:
El Jicarito. 6 socios initially borrowed but only 5 are using the loan of 26,467 lempiras, of which 10,736 lempiras have been repaid; 15 mother cows were purchased.

Cofradía. 3 socios borrowed 12,613 lempiras, of which 3,999 lempiras have been repaid; five cows were purchased.

Los Espabeles. 2 socios borrowed 7,545 lempiras and have repaid 1,808 lempiras; 5 cows were purchased.

There have been no loans for basic grains or horticultural crops because of the non-profitability of these crops and because 80% of the committee members don't have title to their land.

The technical team has been working with the committee members on soil conservation projects (acequias de ladera, retention walls, rock walls, drainage canals, etc.) and on reforestation projects. The number of members involved and the subsidies paid to each committee are:

	<u>SOIL CONSERVATION</u>	<u>REFORESTATION</u>
Los Espabeles	Lps. 586 to 4 members	Lps. 970 to 9 members
El Tejar	322 to 2 members	1,050 to 8 members
Cofradía	164 to 2 members	1,061 to 6 members
El Jicarito	242 to 1 member	-
TOTALS	<u>Lps.1,314</u> <u>9</u> members	<u>Lps.3,041</u> <u>23</u> members

Many different species of trees have been planted. The Forestry Specialist on the team indicated that 10 centavos has been paid the first year for each seedling planted; thus 30,410 trees were planted in 1983. There was no vivero established in the zone in 1983. All the plants were brought from the La Lujosa Experiment Station of MRN. The Technical Team is clearing a lot on a socio's land to establish a vivero this year, and will plant 75,000 seeds soon. It takes 5 to 6 months before the seedlings can be transplanted.

There have been other committee members who have participated in soil conservation projects with technical assistance provided by the Watershed Management Unit team. In those cases COHAAT (the West German Food for Work agency) has paid the members in rations. One ration is earned for a day's work of 5 hours (6:00 a.m. to 11:00 a.m.), and is valued at 2.40 lempiras. The members receive the food in lieu of money. One ration consists of 6 pounds of corn and 3 pounds of beans. In total, 2,000 rations have been provided to various members of the four committees for constructing soil conservation projects.

In this zone, the primary crops grown are basic grains such as corn, grain sorghum and beans. A little yuca and some sugar cane for panela also is produced. The members use the corn for family consumption. They also sell some grain sorghum, beans, yuca, and panela.

Omar gave us some examples of yields and prices received by the committee members for crops grown in this zone.

Grain sorghum	50-70 qq/Mz.	Sells for Lps. 10 qq
Corn	20-30 qq/Mz.	Sells for Lps. 15 qq (if any sold)
Yuca	100 sacks/Mz.	Sells for Lps. 12 sack
Beans	10 qq/Mz.	Sells for Lps. 40 qq
Sugar cane	18 cargas/1/2 Mz	Sells for Lps. 2 carga (a carga has 50 stalks of cane)

Up to now, none of the members have used chemical fertilizer. Some members have built aboneras and the compost material is almost ready; it will be used for the first time this planting season. A few of the members have Lorena stoves, built with the assistance of CEDEN, an evangelistic church group. The Technical Team has not had time to begin any projects for families, and no technical assistance has been provided to build Lorena stoves.

Omar believes his team needs a Promotora Social. The wives of the committee members are eager to receive assistance to improve family life. They particularly need assistance in producing fruit trees. Many of them don't know if the soils and climate are adaptable for the types of fruit trees they are planting.

The Technical Team has not promoted the production of horticultural crops in this zone because of the harsh climate, lack of irrigation water in critical periods, and the non-profitability of some of these vegetable crops. Water is generally available in springs of small trickles in rivers in summer, but there are no loans available to build storage tanks and purchase plastic pipe to develop a gravity type irrigation system with sufficient pressure to irrigate vegetable crops.

Some of the committee members have expressed interest in developing a bee project. A feasibility study is being done; 10 socios want to start with 40 hives (boxes). One hive or box costs 100 lempiras to construct, which seems high. The equipment to extract the honey costs 5,000 lempiras.

The Technical Team has not thought about implementing any projects with small animals, such as goats, rabbits, a small chicken operation, or hogs. The Team indicated there is no infrastructure to support the production of hogs. The members don't know what it takes to produce a good hog; and, it takes a lot of investment. However, Kerr Foundation in Poteau, Oklahoma has developed some minimum cost farrowing facilities on pasture that may be useful for small farm hog operations in Southern Honduras.

Many of the committee members don't have latrines and don't have potable water. More needs to be done in this area.

The Team has planted some test plots of improved varieties of corn in three of the committee's areas. The variety planted was a criollo variety, but a higher yielding variety than is being planted. The Team organized a tour for one skeptic or non-believing member from each of the four committees to visit some soil conservation and reforestation projects in El Triunfo and talk to the members in that zone. It helped to make believers out of those hard-to-convince farmers. More such tours are needed, as well as some field days for committee members in their own zone.

The Team has planned some one-day courses and short seminars on control of pests, management of credit, pasture improvement, management of horticultural crops, etc. for 1984. The major constraint is lack of time by the three member team to do all that is needed. Another Agronomist and a Promotora Social would be valuable additions to increase the productivity of this team in Concepción de María. The zone is very large and there is too much territory and too many families for the team to work with all of them.

We left the team headquarters at 9:15 a.m. to visit several members and to see some of the soil conservation and reforestation projects. We visited with Marcos Rivera, member of the El Tejar committee since May 1983. He has two manzanas of land and has built 5 terraces (acequias de ladera) on 1/4 Mz., and received subsidies for this; he plans to construct more terraces this year. He planted corn in May and harvested it in August on this terraced land and obtained better results than in previous years. For one thing, there are less rocks in the field, so more dirt is available for planting since the rocks have been used in construction of the acequias. He has built an abonera with technical assistance of the team, but has not used any of the compost yet. He has never used chemical fertilizers or pesticides. He also plants beans and has some fruit trees around his house. He sells oranges, sometimes in Choluteca and sometimes in the local area.

His family does not have a Lorena stove, but he thinks such a stove would help his family. The family also needs a latrine. He has some of the material for a latrine, but has not found a good location to build it. The family does have water. There is an Amas de Casa group organized by a church group that has helped his family in growing vegetables and making soap, but he thinks the technical team could provide more help in this area.

He wants to plant some trees in a forestry project for fuelwood and lumber. He has not made any requests for loans yet, but he is part of the group of 10 members who want to obtain a loan for a bee project. He would like to have more technical assistance in planting seed and in starting a small chicken project (20-30 hens). The technical assistance team comes about once every 15 days. He would like for them to visit more often and bring more ideas to help him.

We interviewed Lucio Hernandez, member of the Los Espabales committee. He is 55 years old, married and has 11 children (4 to 28 years old). He farms on 3 manzanas, and produces corn, yuca, grain sorghum, beans and sugar cane. He also has 3 manzanas of pasture, owns 2 cows, and plans to borrow money to buy two more cows. He became a member of the committee in April 1983. He has built terraces in April 1983, and planted several species of trees in June 1983 for which he received subsidies. Actually several other committee members helped him build the terraces and received part of the subsidy. He has an innovative system for irrigating his fruit trees (he used bamboo to make an aqueduct). He plans to build an abonera this year, begin to improve his pastures, plant some fruit trees and build more soil conservation projects. He will continue to seek the assistance of the technical team in these areas. He would like to make more frequent visits to other Watershed Management Units to see their projects and would like more training on soil conservation and production practices. He thinks the project should make available more loans and continue the subsidies for incentives. Help is needed in constructing Lorena stoves and latrines, and in preparing food and canning food.

John Warren came down from Tegucigalpa and came out to the field with Eduardo Canales to join us during the above interview. We stopped by a small plant in an open shed where a pair of oxen were being used to turn a machine to squeeze juice from sugar cane. The juice was then boiled in big pots and poured into molds to make a brown sugar cake (panela). This was an interesting operation involving about 6 people.

We went to another small farm and interviewed Jose Hernandez, President of the Cofradia local committee. He is 46 years old, married, and has 8 children (9 to 26 years old). He farms one manzana in five different lots. He does not own the land. He produces corn, grain sorghum, yuca, and sugar cane. He has four cows. He joined the local committee in April 1983. He has built terraces (acequias de ladera) and received a subsidy for this soil conservation work. His committee members want to build more terraces and want technical assistance in building Lorena stoves, latrines, and repairing their homes (physical construction). They also need more technical assistance in soil conservation, obtaining improved seed and planting crops (spacing, etc.). He feels the technical assistance provided has been beneficial. Some of his committee members need credit desperately and believe the subsidies (economic incentives) are important to begin other types of projects. The committee would like to work with some small enterprises such as bees, laying hens, hogs and storage tanks for water so they can plant and irrigate horticultural crops. Some small storage facilities to store grains (corn and grain sorghum) to prevent loss from rats, rain spoilage, etc., are very critical in this area. The committee members have an urgent need for the services of a Promotora Social working with the team.

We left the Concepción de María zone at 12:30 p.m., made a brief stop in El Corpus to see some of the buildings and park, and arrived at the Hotel Pierre at 2:00 p.m. Betty Jo and Dana checked out of the hotel. We all had lunch and John Warren, Dana and Betty Jo left at 4:00 p.m. for San Lorenzo and Tegucigalpa. Nelson and Dan worked on the Evaluation Report and Trip Report the rest of the afternoon and evening.

Friday, January 13, 1984

Dana went to the A.I.D. offices in Tegucigalpa and had copies made of the Trip Report. Nelson, Dan and Paul Dulin had breakfast at 6:45 a.m. We left the hotel at 7:30 a.m. to go to the MNR Regional Office for a meeting of two Chemonics team members (Paul Dulin and Fred Tracy) with the Sample subwatershed teams from the Watershed Management Units. Nelson and Dan interviewed Hugo Cardenas, Promotor Social of the Namasigue Watershed Management Team. The team has one other member, Julio Mayorga, Agronomist and Coordinator. Hugo began working in the Namasigue area in May 1983 with MNR Extension. He transferred to the NRIP later. Three local committees are Buen Agricultor with 16 members; Agricultor En Marcha with 18 members; and, Unidos por La Paz with 47 members. Two other local committees, already functioning, will be transferred to this team's area in 1984; one from El Triunfo and one from Yusguare.

There are no programs with Amas de Casa in this area, and none are planned in 1984. The team does plan to add a forestry specialist soon, but has no plans to add a Promotora Social. The team had no vivero and the committees planted no trees last year. However, they plan to establish a vivero with 60,000 seedlings this year in the La Montana committee area, and plan to plant 200 hectares with trees this year, for watershed protection and for fuelwood. COHAAT and CARE both have food for work projects in the area. The team has provided some technical assistance for soil conservation work where COHAAT provided rations (food) for the work. The NRIP team paid no subsidies or incentives for soil conservation projects in 1983.

Most of the committee members in this area do not have ownership papers, so it may be difficult to obtain loans. The team does plan soil conservation projects on 19 ha. in 1984, mostly acequias de ladera and retention walls. They also hope to encourage construction of some aboneras.

The committee members have planted some horticultural crops and some fruit trees; notably 733 fruit trees (oranges, nancy, mango, avocodo) were planted by 12 socios of the Unidos por La Paz committee in November and December 1983.

The team plans to work with the committee members on pasture management and pasture improvement projects for cattle this year. The team has received good support from the Sample subwatershed office and the MNR Regional office (Eduardo Canales and José Ricardo Fasquell) but to date has received very little technical assistance from the CHEMONICS team or their NRIP central office counterparts. Probably more members of the CHEMONICS team and their counterparts should make an effort to be visible in the Sample subwatershed in 1984.

We attended the reunion of the team where goals for 1984 were discussed. The meeting adjourned at noon. We returned to the hotel and checked out. We left Choluteca at 1:00 p.m. and arrived in Tegucigalpa at 4:00 p.m. at the NRIP office. Nelson and Dan took a taxi to the Winrock International residence, arriving at 4:30 p.m. The week's visit to Choluteca was very worthwhile and provided many useful insights for our evaluation.

Dan, Betty Jo, and Dana went to the Lin Nan Chinese restaurant at 7:30 p.m. for a Chinese supper. Dana went to visit some student friends from OSU, and Dan worked on the Evaluation Report.

Saturday, January 14, 1984

We got up at 5:15 a.m. and Dana finished packing for her trip home. Suyapa, the Winrock International representative in Tegucigalpa, took us to the airport at 6:45 a.m. After an hour's delay caused by technical problems, the SAHSA flight left at 9:20 a.m. Betty Jo and Dan returned by taxi to the Winrock residence. Dan worked on summarizing data from the field trip visits to the eight Watershed Management Unit teams. We had some brief visits by Reynerio and Teresa Barahona, Angela Gonzalez, and René Cruz. Nelson Agudelo worked on the Evaluation Report at his home in Zamorano.

Sunday, January 15, 1984

We went to the Union Church services with Rene and Martha Cruz, and went with them to Maxim's Restaurant to have lunch. We returned to the Winrock residence at 2:00 p.m. and Dan worked on the report until 10:30 p.m. Nelson worked on the Evaluation Report for several hours.

Monday, January 16, 1984

Nelson and Dan left the Winrock residence at 7:30 a.m. and arrived at the NRMP central office at 7:45 a.m. We planned to meet with the Chemonics technical assistance team and their counterparts. Due to a mixup in time schedules, and other commitments on the part of the team members, we instead met with Carlos Rivas, Executive Director of the NRMP, and Paul Dulin, Chief of Party for the Chemonics team. We asked about directions the project has taken, the reasoning for some of the decisions made on subsidies and loans, and related issues. At 11:30 a.m. we returned to A.I.D. to meet with John Warren and to obtain typing assistance for the report.

At 1:30 p.m., we left A.I.D. for a 2:00 p.m. meeting with Juan Blas Zapata, General Manager of the Department of Forests for COHDEFOR. Arnulfo Messen and Rolando Ordonez of COHDEFOR also attended the meeting. We discussed the agreement between COHDEFOR and MNR for the NRMP, and the types of support provided by COHDEFOR in training NRMP personnel. We also discussed the CATIE-COHDEFOR project Lena (fuelwood), and the tree experiments planted in the Choluteca River Watershed under that project. The COHDEFOR personnel seemed to be pleased with the progress being made by the NRMP, and the importance of that project in protecting the Tegucigalpa water supply source in the headwaters area. The COHDEFOR personnel indicated they planned to continue supporting the NRMP project in 1984, and also requested the assistance of WMU team members in reporting violations of fuelwood and timber cutting in the various zones.

We returned to the NRMP office at 3:20 p.m. and visited with each of the Chemonics team members and their counterparts about their 1983 accomplishments, problems encountered, and plans for 1984. We left the NRMP office at 5:30 p.m. to return to our respective homes. Each of us worked on the Evaluation Report for several hours after dinner.

Tuesday, January 17, 1984

Nelson and Dan went to OET/AID at 7:45 a.m. to work on the Evaluation Report. Dan visited with Julio Zepeda for about one hour on various aspects of the NRMP, and visited with Ray Baum, the Program officer for the NRMP about the budgetary and equipment request aspects of the project.

We worked on the report into the evening and had one secretary typing the draft of the report until 8:00 p.m. Dan edited the first 10 pages of the printout. Dan obtained his security carnet (identification card) today. Happy Days----no more hassle with the security guards!!

Wednesday, January 18, 1984

We arrived at the OET/AID office at 7:45 a.m. and worked on the Evaluation Report all day. Two secretaries continued working on the Trip Report and Evaluation Report. Dan visited with John Warren and Julio Zepeda about several aspects of the NRMP. Two secretaries typed on the reports until 9:00 p.m. Dan edited the printout of what was typed today. Nelson spent considerable time trying to rectify data we obtained on soil conservation and reforestation projects and aboneras from the field personnel with data presented in written reports by the NRMP office.

Thursday, January 19, 1984

We arrived at the OET/AID office at 7:45 a.m. We left at 8:30 for a meeting at 9:00 a.m. with Ing. Miguel Bonilla, Minister of Natural Resources. Carlos Rivas also attended the meeting. We had a good visit with him about the NRMP, and discussed the high priority of the NRMP being integrated into the MRN as an ongoing activity before the end of the A.I.D. project. At 10:00 a.m. we met with Roberto Villeda Toledo, Advisor to the MNR. Roberto had been Executive Secretary of the CPA when it functioned. He gave us insights on the operation of that committee and why it was no longer functioning.

He also discussed with us the new interinstitutional committee that will soon begin functioning at the Ministry level, Comité Nacional Agropecuario (CNA). It is hoped that this committee will be as effective as the old high-level committee. If so, it should serve as a useful organization to help the NRMP resolve problems. We returned to OET/AID and continued working on the Evaluation Report. Dan and Betty Badger had dinner at the home of John and Joyce Warren at 7:00 p.m.

Friday, January 20, 1984

We arrived at the A.I.D. office at 7:45 A.M. We continued writing and editing the typed parts of the Evaluation Report. We discussed the briefing scheduled for the afternoon and what points to emphasize. At 2:00 P.M. we presented a briefing to A.I.D. personnel and to Chris Smith, of Chemonics International.

After the briefing ended at 3:30 P.M. we continued working on the Evaluation Report until 7:00 P.M. I returned to the Winrock House and while waiting for dinner, we had an incident with the gas stove (oven) exploding from too much gas before lighting, and the maid was burned. Mrs. René Cruz came to take the maid to the emergency clinic at the Children's Hospital, and with the assistance of the American Embassy roving patrol and the Honduras guard with the patrol, was able to obtain immediate attention (treatment). The maid had considerable pain upon returning to the House; however, we all were very fortunate the incident did not have more serious consequences.

Saturday, January 21, 1984

We continued reviewing and revising the Evaluation Report. Two A.I.D. secretaries worked on typing and formatting the final report until we finally had the complete final printed copy at 10:00 P.M. Julio and Lillian Zepeda, Nur Jose (A.I.D. secretary who wrapped up the report for us!) and Betty Jo and Dan Badger went to the Hotel Maya Steak House Restaurant for dinner at 10:30 P.M.

Sunday, January 22, 1984

Mission accomplished, so we have a day of rest. We packed for the trip home and visited with friends.

Monday, January 23, 1984

We went to the airport at 7:00 A.M. After a 1½ hour delay waiting for the SAHSA flight from Managua, we left Tegucigalpa at 10:00 A.M. We arrived in New Orleans at 1:30 p.m. The rest of the trip home by way of Dallas and Tulsa was without incident. We arrived in Stillwater at 9:30 P.M. We feel the Evaluation Team effort on the Natural Resources Management Project involving Nelson Agudelo, Dana Fisher and Dan Badger was a complete success!

PROYECTO MANEJO DE RECURSOS NATURALES

Apartado Postal 168-C, Tegucigalpa, D.C.

PMRN-M-615-83

APPENDIX 4

PARA: DIRECTOR DE CAMPO
ESPECIALISTAS
PERSONAL DE LAS U.O.C.

DE: P.M. JOSE MARIA URBINA MOLINERO
SECRETARIO DEL COMITE TECNICO

ASUNTO: RESOLUCION DEL COMITE TECNICO

FECHA: 30 DE NOVIEMBRE DE 1983



Para conocimiento y fines consiguientes comunico a ustedes la resolución tomada por el Comité Técnico en sesión celebrada el día martes 29 de noviembre del año en curso y cuya vigencia y cumplimiento entró en esta misma fecha.

Atentamente,

cc: Director Ejecutivo
cc: Secretaría de RR.NN.
cc: Cronológico
cc: Archivo
/res*



PROYECTO MANEJO DE RECURSOS NATURALES

Apartado Postal 168-C, Tegucigalpa, D.C.

RESOLUCION DEL COMITE TECNICO

Basandose en la experiencia obtenida en el período de 1983 el equipo de especialistas consideró oportuno hacer una revisión de las estrategias utilizadas en el otorgamiento de subsidios, para lo cual se designó a los responsables de la sección de Promoción y Extensión, preparar una propuesta de las estrategias para el otorgamiento de subsidios.

El Comité Técnico atendiendo las observaciones de los especialistas en la sesión celebrada el día martes 29 de noviembre de 1983 emite la siguiente resolución para conocimiento y aplicación de los involucrados en el otorgamiento de subsidios así:

1 SUBSIDIOS PARA CONSERVACION DE SUELOS

a) Para Conservación de Suelos el subsidio se determinará en función del número de metros lineales de la obra completa da. El monto cubrirá el 50% en efectivo del valor de la mano de obra por el trabajo realizado en una superficie no mayor de una hectárea por beneficiario y los insumos necesarios, fertilizantes y pesticidas, para la producción en el área conservada hasta un máximo de 50% restante del cos to de la obra.

b) Los desembolsos en efectivo se harán cuando la obra haya sido terminada y recibida a satisfacción. La hoja de desembolso contará con el Visto Bueno del Coordinador y el Supervisor.

Adjunto a la solicitud y demás documentación de subsidio deberá detallarse los requerimientos necesarios de insumos para ser presentados al Comité Técnico.

- c) Anualmente se reducirá la cantidad de subsidios entregados en efectivo, en un 33% a partir del año base.
- d) Cuando el subsidio consista en APT, los beneficiarios podrán solicitar créditos de corto y mediano plazo para insumos, de acuerdo a la capacidad de pago del solicitante.

2.- SUBSIDIOS PARA REFORESTACION :

ESTRATEGIAS APLICABLES PARA LA PLANTACION DE ARBOLES POR BENEFICIARIO

PERIODO	AL PLANTAR	AL 1o. AÑO	AL 2o.AÑO	AL 3o. AÑO	TOTAL
1er año	0.10	0.10/APT	0.10/APT	0.10	0.40
2do año	0.10/APT	0.10/APT	0.10		0.30
3er año	0.10	0.10			0.20
4to año	0.10				0.10

Del cuadro anterior se desprende lo siguiente:

- 1.- El Productor recibirá L. 0.40 por árbol plantado el primer año, distribuidos en cuatro entregas de L. 0.10 C/U.
- 2.- Por los árboles plantados por el mismo agricultor el siguiente año en áreas adicionales se le entregará L. 0.30 distribuidos en tres entregas de L. 0.10 C/U.
- 3.- Por los árboles plantados en áreas adicionales por el mismo agricultor el tercer y cuarto año recibirá L. 0.20 y L. 0.10 respectivamente con la misma modalidad de entregas periódicas.
- 4.- En los casos en que el Proyecto lo considere conveniente el subsidio se dará en alimentos por trabajo.

3.- ARBOLES FRUTALES

El Proyecto podrá entregar árboles frutales a los agricultores que realicen obras de conservación de suelos, para ser utilizados en esos lotes. En este caso el costo de los árboles será descontado del 50% en efectivo a que tenía derecho el beneficiario.

En caso de existir interés de compra de parte de los beneficiarios del Proyecto, podrán venderseles árboles frutales siempre que estos sean plantados bajo la supervisión del personal de la UOC respectiva y cumplan los objetivos de conservación de suelos.

Los árboles serán vendidos a precio de costo de adquisición o producción.



COMPLEMENTO DE LA RESOLUCION DEL COMITE TECNICO
DEL 29 DE NOVIEMBRE DE 1983

4.- SUBSIDIOS PARA LA PRODUCCION DE PLANTAS PARA ESPECIES FORESTALES Y FRUTALES

El Comité Técnico resolvió proporcionar en forma de subsidio el costo necesario para la producción de especies forestales y frutales producidas por los C.A.L. conforme un plan de inversión que se elaborará.

Los C.A.L. se responsabilizarán por la producción de plantas bajo la dirección técnica de los Dasónomos.

Para el año de 1984 se determinó adquirir las especies para frutales. Para la distribución de plantas frutales para el año de 1985 en adelante, la sección de Horticultura y Fruticultura deberá hacer un análisis y presentarlo a la Dirección Ejecutiva del Proyecto, sobre la conveniencia de seguirlos adquiriendo en forma de compra o si es conveniente, considerando el aspecto económico, que el Proyecto los produzca. Este análisis deberá ser presentado a más tardar a fines del mes de enero próximo.

Por otro lado, se creyó conveniente que la sección aludida presente un pequeño estudio relacionado con el establecimiento de pequeños huertos de frutales de altura, considerando las zonas adecuadas, principalmente en la subcuenca Cabeceras. Este estudio también deberá ser presentado a la Dirección Ejecutiva en el transcurso del mes de enero.