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TECHNICAL REPORT FOR THE DESIGN AND IMPLEMENTATION OF THE MONITORING AND EVALUATION ACTIVITIES OF THE COMMUNITY NATURAL RESOURCES MANAGEMENT PROJECT:

AN INTERNATIONAL TECHNICAL COOPERATION PROJECT FOR THE CONSERVATION AND MANAGEMENT OF NATURAL RESOURCES IN HIGHLAND COMMUNITIES OF GUATEMALA, CENTRAL AMERICA 1993 - 1997

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LIST OF ACRONYMS

CNRM	Community Natural Resource Management Project
COMPDA	Watershed Management Component of the Highland Agricultural Development Project
DIGEBOS	General Directorate for Forestry and Wildlife
DIGESA	General Directorate for Agricultural Extension Services
GIS	Geographic Information System
GOG	Government of Guatemala
HAD	Highland Agricultural Development Project
IWM	Integrated Watershed Management
MAGA	Ministry of Agriculture, Livestock and Food of Guatemala
MICUENCA	Integrated Watershed Management Component the Community Natural Resource Management Project
MIS	Management Information System
M&E	Monitoring and Evaluation
NGO	Non Governmental Organization
PC	Peace Corps
PI	Policy Improvement
SEAD	Small Economic Activity Development
USAID	United States Agency for International Development
USPADA	Sectoral Planning Unit
NGO	Non-Governmental Organization
SAR	Semi-Annual Report

EXECUTIVE SUMMARY

The vast majority of the Guatemalan agricultural population consists of small producers who cultivate the land using unimproved traditional practices to produce subsistence crops. Rural families survive on marginal lands with traditional agricultural practices being carried out on steep slopes where inclinations approach 60 degrees. Being unfamiliar with natural resource conservation and management technologies, the highland farmers rely on traditional land-clearing practices and monocultural grain production which lack soil and water conservation methodologies and integrated uses of forest resources. Soil erosion prevails and land degradation is common. The present rate of environmental deterioration and unsustainable use of the natural resources base is seriously jeopardizing Guatemala's national long-term prospects for social and economic development.

On August 19, 1993, the United States Agency For International Development (USAID) authorized the Community Natural Resources Management Project for Guatemala, Project Number 520-0404. USAID total project financing involves US$ 4,200,000 in planned obligations in the form of grant funds over the four year project. Additional counterpart contributions of US$ 1,610,000 in match funds is budgeted by four core participating institutions including CARE International/Guatemala, the United States Peace Corps/Guatemala and the General Directorates of Forestry and Wildlife, and Agricultural Extension Services of the Ministry of Agriculture of Guatemala.

The Community Natural Resource Management (CNRM) Project seeks to improve the long-term socio-economic well-being of the rural poor through the improved management and sustainable use of natural resources. It uses an integrated multi-disciplinary methodology involving agricultural, social, educational, economic and policy-oriented technical assistance activities.

The central tenant of the project is that the incorporation of modern agroforestry management systems and the adoption of sustainable agricultural management techniques will permit both the conservation of soil, water and forest resources, as well as promote sustainable socio-economic development.

The CNRM Monitoring and Evaluation Information System is designed as a distributed data collection and dissemination network which manages the technical information requirements of the eighteen project activities implemented throughout the four year inter-institutional action plan.

The development of the CNRM information strategy is based on a detailed review of a) project task analysis, b) core project personnel inventory, c) existing automatic data processing equipment and software inventories, d) consolidated data collection instruments, e) end-user information requirements inventory, f) objectively verifiable indicators inventory and g) information scheduling requirements.

The Monitoring and Evaluation System design is modular, integrated, transparent to the user and services all of the planned project information requirements in a timely manner. It facilitates monitoring, analysis, evaluation and consensual decision-making at the activity and project level.

This report serves as a basic working guide, by which project managers, can initiate monitoring and evaluation activities. It treats organizational, operational and systems design issues in establishing a natural resource management information system based on a distributed data collection and dissemination network.

CHAPTER I: INTRODUCTION

STATEMENT OF THE PROBLEM

Guatemala, having a surface area of 108,430 square kilometers, is the third largest country in Central America. It is located between the tropical and subtropical climatic zones bordered on the north by Mexico, on the east by Belize and on the southeast by Honduras and El Salvador. Elevations vary from sea level to nearly 14,000 feet and thereby encompass a broad range of climates, soils and living conditions. A chain of volcanic mountains crossing the south coast and rugged highlands make life for the rural inhabitants extremely arduous.

Guatemala has a population of approximately 10 million which makes it the second most densely populated non-island nation in the Americas with over 850 people per square kilometer. Guatemala's annual population growth rate is approximately 3.0% Almost half of its population is less than 14 years of age. Approximately 60% of the population is ethnically classified as Mayan. The remaining 40% is mostly mixed European-Mayan. The rural population constitutes 60% of the total population and is approximately 40% literate.

The agricultural sector accounts for 25% of the gross national product and 60% of the nation's employment. Guatemala's agrarian population is largely composed of subsistence farmers who work and live on small marginalized parcels of land. The 1979 agricultural census revealed that 79.2% of all farms were less than 3.5 hectares and represented 8.5% of all agricultural land while 20.8% of the farms exploited 91.5% of the arable land. Approximately 50% of the cultivated land is concentrated in farms larger than 450 hectares for the production and export of coffee, sugar cane and cotton.

The vast majority of the agricultural population consists of small producers who cultivate the land using unimproved traditional practices to produce subsistence crops. Rural families survive on marginal lands with traditional agricultural practices being carried out on steep slopes where inclinations approach 60 degrees. Being unfamiliar with natural resource conservation and management technologies, the highland farmers rely on traditional land-clearing practices and monocultural grain production which lack soil and water conservation methodologies and the integrated use of forest resources.

Mountainous areas require protective forest cover and are best suited for forestry and agroforestry practices. Subsistence agriculture and animal grazing practices eliminate forest cover and reduce soil productivity, which in turn decreases agricultural yields and leads to greater dependence on a progressively deteriorating natural resource base. Soil erosion prevails and land degradation is common.

The situation is further aggravated by the increasing demands of a rapidly growing population which creates a greater need for increased agricultural production and resource exploitation.

Succinctly stated, the present rate of environmental deterioration and unsustainable use of the natural resources base is seriously jeopardizing national long-term prospects for social and economic development.

CHAPTER II: PROJECT BACKGROUND

PROJECT AUTHORIZATION

On August 19, 1993, the United States Agency For International Development (USAID) authorized the Community Natural Resources Management Project for Guatemala, Project Number 520-0404, based on the Project Paper submitted by the Office of Rural Development dated July 2, 1993.

Pursuant to Section 103 of the Foreign Assistance Act of 1961, USAID total project financing involves U$S 4,200,000 in planned obligations in the form of grant funds over the four project. Additional counterpart contributions of U$S 1,610,000 in match funds is budgeted by four core participating institutions including Care International/Guatemala (CARE), the United States Peace Corps/Guatemala (PC) and the General Directorates of Forestry and Wildlife (DIGEBOS), and Agricultural Extension Services (DIGESA) of the Ministry of Agriculture (MAGA) of Guatemala.

USAID obligations began in fiscal year 1993 with the project assistance completion date scheduled for December 31, 1997.

The Community Natural Resources Management (CNRM) Project envisions the concurrent development of three fundamental environmentally oriented component activities involving a) Integrated Watershed Management (IWM), b) Monitoring and Evaluation (M&E) and c) Policy Improvement (PI).

At this time, USAID and the Government of Guatemala (GOG) have approved the Integrated Watershed Management component of the CNRM action plan. The activities of this component are based on the technical proposal entitled MICUENCA, dated March 1993, and submitted by CARE International/Guatemala.

Accordingly, the interviews conducted, analyses of project objectives, purposes and objectively verifiable indicators, and recommendations contained in this report focus exclusively on the development of a monitoring and evaluation information system in support of the eighteen approved project activities identified in the MICUENCA document.

DISCUSSION OF THE PROJECT OBJECTIVES, GOALS, PURPOSE AND OUTPUTS

The CNRM/MICUENCA project has its origins in the USAID funded Highlands Agricultural Development (HAD) Phase I Project and the HAD Phase II Watershed Conservation Project (COMPDA) which ended September 1993. These projects involved the participation of CARE, DIGEBOS, DIGESA and PC in an effort to improve the management of the natural resource base, improve small farm productivity and protect water supplies for small scale irrigation activities in micro-watersheds distributed throughout Guatemala's eastern and highland regions. To a large extent, the CNRM/MICUENCA Project is a continuation of the aforementioned technical assistance projects.

The central tenant of the CNRM/MICUENCA project is that the incorporation of modern agroforestry management systems and the adaptation of sustainable agricultural management techniques will permit both the conservation of soil, water and forest resources, as well as promote sustainable socio-economic development.

Sustainable development is characterized by economic and social growth that neither exhausts the resources of a host country nor damages the economic, cultural or natural environment. Sustainable development creates new sources of income, encourages enterprises and builds and strengthens indigenous institutions that involve and empower the citizenry. Development is sustainable when it permanently enhances the capacity of a society to improve the quality of life. (USAID, Revised Strategy Paper, September 20, 1993)

The CNRM project supports the achievement of broadly based sustainable economic growth. It seeks to improve the long-term socio-economic well-being of the rural poor through the improved management and sustainable use of natural resources.

The project purpose is to develop and replicate improved community-based natural resource management models in upland watersheds. Participants will be primarily poor families which practice subsistence farming on marginalized upland sites ranging in size from 0.89 to 4.50 hectares.

REVIEW OF OBJECTIVELY VERIFIABLE INDICATORS

The project goal, purpose, and outputs represent a hierarchy of objectives which are measured by objectively verifiable indicators.

Indicators are a means of verification, a means by which to measure impact at the strategic and program objective levels and to monitor project progress.

The essential attributes of objectively verifiable indicators are that they be plausible, independent and targeted. Plausible means that it measures changes which are attributable to project activities. By independent, it is meant that it measures success at only one level. Targeted means that the indicator is clearly defined in terms of quantity, quality and time.

The objectively verifiable indicators are the means by which project monitoring activities may track project progress towards the attainment of the project goals and objectives.

The Community Natural Resource Management Action Plan objectively verifiable indicators include:

1) benefit as many as 4,500 families belonging to up to 150 communities located in as many as 20 watersheds in 10 of Guatemala's 22 Departments by providing training in improved natural resource conservation and management practices,

2) bring an estimated 6,750 hectares of privately owned rural lands under improved natural resource management,

3) increase household incomes of participating families as a result of increased production of natural resource-based economic activities due to the increased use of improved natural resource management practices of the participant group,

4) reduce the degradation of the natural resource base on participating lands as measured by improvements in bio physical indicators including a) reduced soil erosion, b) improved soil fertility, c) reduced usage of highly toxic pesticide applications, and d) increased reforested acreage,

5) bring an estimated quantity (still undefined) hectares of communally held rural lands under improved natural resource management,

6) provide training in improved forestry, soil and water management and conservation practices, and integrated watershed planning to a combined total of not less than 50 technicians from the General Directorate of Forestry and Wildlife (DIGEBOS) and the General Directorate of Agricultural Extension Services (DIGESA) and

7) provide training in integrated watershed management to up to 60 community organizations and/or committees.

Refer to Table I for a cross reference list of the CNRM/MICUENCA narrative summary, corresponding objectively verifiable indicators and the means of verification to be used.

DEFINITION OF FUNCTIONS AND RESPONSIBILITIES OF PARTICIPATING INSTITUTIONS

CARE International/Guatemala has been selected by the participating institutions as Project Coordinator. As Project Coordinator, CARE assumes responsibility before USAID for the successful completion of the project objectives.

On November 9, 1993, the four collaborating institutions signed a Letter of Understanding in which their individual, inter-institutional and by-committee project roles, functions and responsibilities are defined. Each of the institutions identify the project sub-components for which they exercise primary operational responsibility, as well as identify unique institutional obligations regarding the hiring of personnel, financial disbursement and disclosure, annual budgetary preparation and project activity monitoring and evaluation reporting requirements. Refer to Table II for a listing of institutions and the technical assistance activities for which they assume primary responsibility.

OVERVIEW OF THE COMMUNITY NATURAL RESOURCE MANAGEMENT INTEGRATED WATERSHED MANAGEMENT PLAN OF ACTION

The CNRM Integrated Watershed Management Component, i.e., MICUENCA, is composed of six primary technical assistance areas or subcomponent activities including, 1) Community Strengthening, Training and Extension, 2) Environmental Education, 3) Sustainable Agriculture, 4) Social Forestry, 5) Watershed Planning and Environmental Monitoring, and 6) Rural Economic Planning.

CARE initiates field activities with the a) Community Organization, Training and Extension and b) Environmental Education activities. Because Guatemala's communities in the indigenous highland areas are recovering from a violent period in which many community organizations were weakened or dissolved, the community-based subcomponents will provide training in organizational and leadership skills development. In conjunction with local non govermental organizations (NGO), project personnel will develop and implement appropriate environmental education strategies, both formal and non-formal, in order to raise levels of natural resource and environmental awareness and, thereby, engender a more favorable atmosphere for the introduction of watershed planning, sustainable agriculture and social forestry activities.

DIGEBOS, DIGESA, PC, selected NGOs and community groups will collaborate in developing and implementing watershed management plans and monitoring bio-physical indicators as a means by which to measure the impact of the project's technical activities on the community natural resource base. Activities will concentrate on "critical impact" areas in each of the participating watersheds.

Through the Sustainable Agriculture and Social Forestry Subcomponents, extensionists and community promoters will work closely with community groups, farmers and local NGOs to identify and prioritize agroforestry-based needs. These activities seek to facilitate the wide-scale adoption of soil conservation, agroforestry, sustainable agriculture, small scale irrigation, reforestation and forest management technologies. The objective of these activities is to increase, in a "sustainable" manner, the production of wood products, basic grains, fruit, vegetables and fodder on which Guatemala's rural population depends for its livelihood. Said activities will also seek to improve the quantity and quality of the water supply.

The Small Scale Forest-Based Enterprises activity, under the Rural Economic Planning Subcomponent, will help participants who own or have access to forest resources, establish small scale forest based enterprises. It is felt that more rural inhabitants will adopt and maintain the recommended forest management practices if there exists an economic incentive to do so. The strategies and principles of CARE's Small Economic Activities Development (SEAD) sector will be used to shape the implementation of this activity.

Although the activities initiated under the HAD II Project entitled Special Fund for Private Sector Technical Assistance Extension Services (FEAT) will be continued under CARE's institutional responsibility, FEAT activities will not fall under the purview of the CNRM/MICUENCA project activities or resources.

Refer to Table III for a listing of the participating micro-watersheds their geographic location and surface area expressed in square kilometers.

CHAPTER III: MONITORING AND EVALUATION METHODOLOGY

OVERVIEW OF THE MONITORING AND EVALUATION INFORMATION SYSTEM

The CNRM/MICUENCA Monitoring and Evaluation Information System is a distributed data collection and dissemination network which manages the technical information requirements of the eighteen project activities implemented throughout the four year inter-institutional action plan.

CNRM/MICUENCA is a multi-disciplinary project involving agricultural, social, educational, economic and policy-oriented activities. Different activities will utilize different activity-specific data collection instruments and schedules in order to monitor the progress of performance data unique to that activity. Notwithstanding, the project information strategy is based on a unified system design which organizes the data into a minimal, yet relational, number of data environments; i.e., data collection instruments, databases, menu-driven query screens and standardized report formats. This approach avoids the duplication of data collection efforts and minimizes data entry and programming routines among various technical activity instruments.

The CNRM/MICUENCA unified system design is modular, integrated, transparent to the user and services all of the donor and participating institutions planned project information requirements in a timely manner. The system facilitates monitoring, analysis, evaluation and consensual decision-making at the activity and project level.

The development of the information strategy is based on a detailed review of a) project task analysis, b) core project personnel inventory, c) existing automatic data processing equipment and software inventories, d) consolidated data collection instruments, e) end-user information requirements inventory, f) objectively verifiable indicators inventory and g) information scheduling requirements.

The Project is divided into six technical assistance areas which are further subdivided into eighteen activities in which various core institutions participate with varying degrees of collaboration. As noted, Table II lists the institutions primarily responsible for project technical assistance activities.

The CNRM/MICUENCA information system is organized according to project activities. Because the project is a multi-disciplinary effort, it follows that the instruments used to monitor project progress, as well as indicators identified to measure project performance, will be multi-disciplinary.

Different activities utilize different activity-specific data collection instruments and schedules in order to monitor the progress of performance data unique to that activity. Some activities, such as baseline and diagnostic studies are "one-time" data collection events. They serve as a basis by which to a) determine the proper "mix" of technical assistance activities appropriate for the participating watershed and b) evaluate project performance and impact.

Other activities require "systematic" monitoring instruments and procedures which enable supervisory and field personnel to track activity status and participant farmer progress. Refer to Table IV for a classification of data environments and their respective corresponding data collection events and instruments.

The CNRM/MICUENCA data collection and dissemination network involves the pooling of human, physical and financial resources of the four participating core institutions.

The pooling of human resources refers to the coordination of core administrative, technical and field personnel among participating organizations in the design and execution of the project. The total planned project manpower resources involve the collaboration of approximately 30 administrators and 120 field personnel in the execution of eighteen project activities during the four year project cycle. Refer to Tables V, VI and VII for a listing of project personnel by institution, job function, job title and geographic distribution.

The pooling of physical resources refers to the assignment of core institution vehicles, installations, computer equipment, etc. in service to the project. Refer to Table VIII for a listing of computer equipment by institution and geographic distribution in establishing the project information network.

The pooling of financial resources refers to the total four year budget of U$S 5,810,00 originating from U$S 4,200,000 in USAID grant funds and U$S 1,610,000 in match funds from the four core institutions.

DATABASE SEGMENTATION

As discussed, the eighteen project technical assistance activities can be grouped into six data environments, based on the typification of the information that these groups of data measure. The database environments include: 1) community-based data, 2) educational data, 3) project personnel training data, 4) bio-physical data, 5) natural resources practices and production/cost data and 6) special studies data. To a large extent, data environments correlate to the grouping of objectively verifiable indicators.

The number and types of data collection instruments, the data attributes and the frequency of data collection efforts will vary significantly from environment to environment. Table IX assigns the eighteen technical assistance activities to a database environment.

The typification of the project's technical activities into subject groups facilitates MIS operations and relational database organization. The partitioning or segmentation of the data into distinct data environments facilitates overall project operations including, for example, the design of consolidated data collection instruments, the streamlining of applications programming, increasing data access speed and the more efficient use of machine memory.

DISTRIBUTED DATA COLLECTION AND DISSEMINATION NETWORK

Due to the poor line quality of telephone communications in rural Guatemalan highlands, the use of electronic data file transfer or modem communications among project central and regional offices is not possible. Consequently, all references to the term "network" refer to a geographic, not electronic, system of distribution.

The M&E information strategic plan is derived from the CNRM/MICUENCA technical assistance project plan. It translates the backlog of individual technical assistance activity information system requirements into aggregate staffing, hardware, software and network requirements for the M&E Coordinating Unit which is discussed more in-depth below.

In order to execute project data collection activities in the 150 communities of the 20 participating watersheds, a pool of approximately 120 technical and field personnel from the core institutions are used. Charts I, II, III and IV diagram the organizational structure of CARE, DIGIGEBOS, DIGESA and PC project personnel, respectively.

Should the need arise, third party data collection services can be contracted for extraordinary peakload data collection events such as project start-up and annual reviews for the collection of baseline and natural resource practices and production/cost data.

Regardless of the type, longevity or purpose of the data collection instrument, all instruments must be designed in conjunction with and be approved by the M&E Coordinating Unit prior to scheduling and initiating field data collection efforts. This is discussed further in a section concerning data integrity and security issues.

Once the data collection activities are completed, the field personnel responsible for the collection effort verify the completeness and correctness of the information and deliver the instruments to their project superiors, whereupon these materials are consolidated and forwarded to the M&E Coordinating Unit in the project central office in Guatemala City.

This procedure permits centralized data processing. It is designed to assure the integrity and security of the data by requiring that the newly collected information pass through rigorous consistency tests, normalization and standardization routines, and unified post-codification criteria for "specify", "explain" and "other" open-ended type responses. The data is updated to the project database once it has satisfied test and standardization criteria.

Once the database is updated, all participating central and field offices, having the minimal requisite computer processing capability to load, store and manipulate the CNRM Information System, will receive a diskette containing the most current data and application programs package. Menu-driven screen interfaces will guide the user through a series of optional query screens intended to facilitate standard data analysis and the emission of standardized reports.

Query screens and report generators allow the user to select a desired level of data disaggregation. Standardized report generators will emit routine monitoring report formats for distribution to its administrative, supervisory, technical and field personnel according to their

respective/customized information requirements. In this manner, donor and participating institutions can request project information in formats conducive to their respective "in-house" reporting requirements. For example, AID could require that semi-annual project reports conform to it's SAR report format. DIGEBOS and DIGESA could require that monthly project reports conform to their respective "in-house" report formats to the Ministry's Sectoral Planning Unit (USPADA). Similarly, this can be apply to CARE and Peace Corps. Accordingly, data collection events will be coordinated with report scheduling requirements.

Apart from standardized query and report generators, the system users will be free to access and manipulate the data. The user will be able to load from the data base environment to a specific applications interface, whereupon the user can choose to plot, graph or statistically analyze data of special interest. Similarly, the user may choose to select a routine written report which will have pre-programmed graphic windows and fields that change according to the data updates at the time of the issuance of the report. The purpose of this interface is to convert the user, regardless of job function, from a data processor to a data analyst/evaluator. Special emphasis and training should be given to analysis and evaluation of project data.

An additional feature of the system is that although the system users will be free to access and manipulate the data, the user will not have access to modify the data files. All data will be write protected. Because it cannot be modified, the user can be certain that what one is analyzing is "unaltered" performance data.

Chart V tracks the information flow through the distributed information network. The example field data collection event begins at the farmer plot, passes to regional consolidation of data collection instruments, proceeds to centralized processing and ends with the issuance of diskettes for distributed query and report generation to the central and regional office end-users.

Chart VI illustrates a field data collection organizational flow chart among participating inter-institutional field personnel.
The CARE Technical Assistant is the designated M&E field interface with the Coordinating Unit.

MONITORING AND EVALUATION COORDINATING UNIT

The Monitoring and Evaluation (M&E) Coordinating Unit is the center of project information standards, procedures, technical leadership, applications programming, data processing, storage and documentation. Chart VII illustrates the relationship of standards, procedures and project management. Chart VIII further desegregates the systems analysis, procedural and task discrimination flow chart.

The Unit is composed of six persons including three core personnel; i.e, a Unit Coordinator, a Data Base Developer/Administrator and a Systems Analyst/Operations Manager, and three liaison personnel referred to as Liaison Systems Analysts/Programmers which are counterpart personnel of CARE, DIGEBOS and DIGESA. Chart IX graphically represents the organizational structure of the M&E Coordinating Unit.

The M&E Unit employs three full-time "core" staff in order to provide administrative and technical continuity to its operations throughout the project four year life cycle. Liaison personnel, however, progressively reduce their exclusive dedication to project information activities from 100% in year one, to 80% in year two, 40% in year three and 20% in year four.

In this manner, the liaison systems analysts/programmers may progressively assume greater responsibility in attending to other related "in-house" information requirements of their respective host institutions as critical project start-up and peakload information requirements are met.

An example of related "in-house" information requirements would be the utilization of project software, hardware and data in developing a geographic information system (GIS) which maps national soil, water and forest resources. Because the interest is national, it is outside of the scope of the CNRM/MICUENCA project. The project, however, can provide the required information on the example variables for the geographical regions that are within the project watersheds.

Analysts could use this data to identify the capacity of use of the soils and correlate this information with parameters for cultivating export crops; e.g., planting densities, average yield per hectare adjusted for loss due to disease or pests, price paid per kilogram, etc., and thereby determine the potential economic impact that the introduction of a given export crop, requiring these biophysical conditions, would have on a given geographic area.

The use of liaison personnel assures that each of the participating institutions will have a) a "voice" at all stages of systems development, b) project activity-specific information requirements directly represented and serviced by "in-house" personnel and c) strengthened institutional information science technical expertise.

Because the M&E Unit's information development requirements involve more tasks than personnel, it will be necessary that the team members have overlapping technical skills and perform more than one specialized function. The job title that is assigned, therefore, represents the primary job responsibility of the individual but does not preclude the execution of several additional tasks normally associated with other specializations.

The M&E Unit will supplement its full-time staff with the temporary and intermittent contracting of third party data entry services if such services are deemed necessary by the Unit Coordinator. The need for such services may arise from the temporary but extraordinary data entry load generated by project start-up, annual review and final evaluation data collection activities.

DEFINITION OF ROLES AND RESPONSIBILITIES OF MONITORING AND EVALUATION COORDINATION UNIT PERSONNEL

Regardless of job function, all team members must have a thorough knowledge of overall project activities and activity interrelatedness, as well as a clear understanding of project purposes and objectives. M&E core and liaison personnel are charged with the technical responsibility to

assure that all aspects of system design, implementation and redesign respond to the guiding parameters of the project purposes and objectives.

MONITORING AND EVALUATION UNIT COORDINATOR

The Unit Coordinator is the designated leader of the M&E six person team. Planning, organization, staff management and control are needed to assemble and direct the team. The Unit Coordinator assumes the multiple responsibilities of a Project Administrator, Network Coordinator and Project Evaluator.

The Unit Coordinator reports a) directly to the CARE Project Manager, as Project Coordinator of the CNRM/MICUENCA Action Plan, and b) executes the joint decisions approved by the CNRM National Committee pertinent to all information systems in the CNRM/MICUENCA project start-up, implementation and redesign cycles.

The Unit Coordinator is responsible for directing the internal M&E project activities, as well as organizing and coordinating the unit's work with participating core institutions among central and regional offices. In technical consultation with the Data Base Developer/Administrator and Systems Analyst/Operations Manager, the Unit Coordinator assigns and reviews the tasks of all core and liaison personnel, estimates task cost and duration, manages the budget, approves scheduling and processes procurement.

Apart from the administrative tasks associated with managing and coordinating the organizational unit, the M&E Unit Coordinator also performs several key evaluation and strategic planning tasks.

Among other matters, the Unit Coordinator, as the principal project information systems manager, is opportunely aware of a) the activities of CNRM project field personnel, b) the utility of the data instruments, c) adequacy of systems hardware and software, d) the performance of technical activities and e) the progress of participating watersheds. The Unit Coordinator has a unified systems view and understanding of the project's "business", "architecture" and "performance".

Accordingly, he/she can contribute valuable insights into project and institutional practices, strengths and limitations. It is recommended, therefore, that the M&E Unit Coordinator prepare periodic evaluation reports for presentation to and discussion with the CNRM/MICUENCA Project Coordinator and National Committee Members. The Unit Coordinator's function as Project Evaluator is considered integral to the successful achievement of the development objectives of the project, as defined by the output, purpose and goal statements of the project's logical framework.

As Project Evaluator, the Unit Coordinator, reports to senior managers of donor and participating institutions about key issues pertaining to current project activities and developments intended to adjust or redesign activities in order to keep them on track toward their objectives, as well as to raise issues of project progress, relevance, effectiveness, efficiency, impact and sustainability. The Unit Coordinator seeks resolutions for future actions to improve project performance. As

such, monitoring and evaluation becomes a cooperative development activity that strengthens the institutional capacity of participating institutions.

DATABASE DEVELOPER/ADMINISTRATOR

The Database Developer/Administrator is primarily responsible for programming and maintaining the relational database. In close consultation with the M&E core and liaison systems analysts/programmers, the Database Developer defines the nature and volume of transactions and data. Based upon his/her understanding of the analyst's entity-relationship model, the database developer designs a database model. The data design model must be understood and agreed upon by the M&E team. Once the design is approved, it is the job of the Database Developer to program the system. The database design is the most important determinant of performance and it is relatively final; changing the design disrupts forms, reports, tables, etc.

The Database Developer also determines the final file structure; i.e., the way that data is stored in fields and tables. A sound structure can provide better performance, simpler reports and easier program maintenance. It is his/her responsibility to "normalize" or reduce the data to its simplest structure with minimal redundancy and maximum data integrity. A normalized data structure greatly simplifies the development and maintenance of the database.

After the system is developed, it is the job of the Database Developer to test it. The only way to see if the system works is to test it, and the only parts of a system that can be known to work are those that are tested. Testing is to be done at the module, subsystem and system levels.

Once the system is tested and approved, it then becomes the Database Developer's responsibility to maintain the system incorporating essential redesign improvements consensually agreed upon by the M&E team and authorized by the Unit Coordinator over the life of the project.

Additionally, it is the Database Developers responsibility to document the system providing detailed updated information on the data dictionary, file structure, table relations, menu and report interfaces, etc. Documentation should be minimal but comprehensive.

SYSTEMS ANALYST/OPERATIONS PROGRAMMER

The Systems Analyst/Operations Manager assumes the multiple responsibilities of Project Systems Analyst, Applications Programmer and Operations Manager. In the capacity of M&E Systems Analyst it is his/her responsibility to coordinate and integrate all participating institutions's activity-specific information requirements at the project level, as well as enforce project standards regarding data collection instrument design, pre and post coding procedures, system codes, indices, tables and system documentation.

In the capacity of Operations Manager, it is his/her responsibility to monitor and manage space usage within the system databases and supervise data security and integrity issues including:

a) establish backup/restore procedures for each update instance and application, as well as, for deciding how many generations of backup tapes are to be kept and how to rotate them in and out of off-site storage.

b) elaborate data consistency tests in programming routines of project and third party data entry activities in order to ensure the integrity of data updates.

c) block write access to all database environments of non M&E Unit personnel.

d) for each data collection event, randomly select a statistically significant number of completed field data collection instruments and field check, i.e. verify, "reported" data with "actual" data.

LIAISON SYSTEMS ANALYSTS/PROGRAMMERS

The Liaison Systems Analysts/Programmers (3) are physically located in their respective host institution's project central office. They represent and service their organization's activity-specific information requirements, but respond to the M&E core staff in all matters regarding systems development and operational procedures.

In this manner, each of the participating organizations is assured a "voice" at all stages of systems development but, simultaneously, is brought into compliance with all centralized project design, programming and operational aspects of the CNRM unified information system.

The first task of the Liaison Systems Analyst/Programmer is to learn, define and document the activity-specific information requirements of the organization represented in collaboration with the M&E core staff. The analyst assists in-house end-users in identifying their immediate and eventual information requirements. It is critical that the analyst acquire a detailed understanding of the "business" of the organization he/she services.

Their job is to convert "soft" statements into "hard" definitions that can serve as the basis for the design of data collecting instruments, on-line interactive query screens and standardized reports. Refer to Chart VIII for a graphic representation of a systems analysis, procedural and task discrimination flow chart.

The primary tools of the analyst are interviewing skills, awareness of project organization and comprehensive knowledge of applications programming; e.g., relational data base, electronic spreadsheets, word processing, statistical and graphics applications packages.

The second task of the Liaison Systems Analyst/Programmer is to develop the institution's activity-specific applications programming modules in accordance with M&E core staff

supervision. This approach assures compliance with the overall project's integrated design of a unified information system.

It should be noted that because Peace Corps (PC) volunteer participation is closely integrated with all of CARE, DIGEBOS and DIGESA project activities, it is determined that the PC information requirements of its activity-specific interests will be satisfactorily addressed by the aforementioned institutions. Consequently, there is no operational justification for requiring a PC Liaison Systems Analyst/Programmer. Like the other core institutions, participating PC project administrative staff and volunteers will receive all standardized system reports, diskette updates of database and applications programming and training in the use of the menu-driven system. It is further noted, that any overriding institutional concerns can be redressed through Peace Corp's representation in the CNRM Watershed, Regional and National Committees.

DATA INSTRUMENTS

CNRM Project data collection events fall into five basic application categories or types; 1) diagnostic tools, 2) baseline studies, 3) monitoring instruments, 4) impact assessment analysis and 5) special studies.

Diagnostic tools refer to those instruments which enable project personnel to inventory the general profile of a given problem under study. They are generally "soft" instruments which rely on personal or group appraisal or qualitative assessment of the situation.

Such a tool might be used in community participatory diagnostic, non-formal environmental education, watershed planning and small scale forest based enterprise activities. They are likely to use opinion polling and attitudinal survey techniques. These instruments assist project personnel in the diagnosis of beneficiary needs and facilitate in the selection or "mix" of technical activities and/or practices to apply to a given situation. They are generally "one-time" data collection instruments and are usually employed at project startup.

Like diagnostic tools, baseline studies are interested in inventory/profile characteristics of the subject under study. Their purpose is to establish a benchmark by which the project may measure future progress and performance information over project indicators. They are generally "one-time" data collection instruments and are usually employed at project startup, but unlike diagnostic tools, they generally collect quantitative data and are periodically compared over the life of the project as a standard of measurement against the current project status.

Monitoring instruments are "systematic" data collection instruments which enable supervisory and field personnel to track activity status and participant community/farmer progress. The frequency and periodicity of data collection events varies according to the activity or data itself; e.g., the incorporation of soil and water conservation techniques into the farmers annual farm management plan can be monitored "quarterly", weather data is usually monitored "daily", crop yields data is monitored according to the "season" in which it is harvested, labor data is usually monitored weekly, etc. Frequent data collection activities reduce the risk that the "inability to collect data" will not have a serious impact on project monitoring and evaluation.

Impact assessment analyses are primarily used for evaluation purposes. They are used at various intervals during the course of the project. Generally, they are annual or mid-term instruments which compare technical activities status and participant farmer progress against the baseline study. Project impact is a measure of project success.

Special studies may utilize any of the aforementioned instruments or combination thereof. They are not incorporated in a systematic way into the mainline project because they are either a) such a small component of project activities to not warrant their incorporation into the unified systems approach of the project's monitoring and evaluation activities, b) the study had not been anticipated at the time of project startup, or c) as a result of special interest or project focus, a detailed analysis is requested. Such special studies are anticipated in the Small Scale Forest Based Enterprise activities, as well as in special gender studies which focus on the role of women in project activities. Refer to Table IV to review the types of data collection events and instruments to be used in project activities.

As previously noted, CNRM is a multi-disciplinary technical assistance project. Different activities require different activity-specific data collection instruments and schedules in order to monitor the progress of performance data unique to that activity. Accordingly, the eighteen project activities are grouped into six data sets, based on the typification of the information that these groups of data measure. The database sets include: 1) community-based data, 2) educational data, 3) project personnel training data, 4) bio-physical data, 5) natural resources practices and production data and 6) special studies data.

The number and types of data collection instruments, the data attributes, periodicity and the frequency of data collection efforts will vary from "one-time" diagnostic and baseline studies to multiple "systematic" or "routine" monitoring and evaluation activities. Regardless of the type, longevity or purpose of the data collection instrument, all instruments must be designed, approved, tested and scheduled in conjunction with the M&E Coordinating Unit.

This unified approach to data instrument design and scheduling facilitates a) the normalization and codification of data solicited, b) the consolidation of the number of requisite collection instruments, c) the programming of corresponding on-line data entry screens and d) coordinating training and collection activities in the use of the instruments.

It is to be recalled that, regardless of job function, all M&E core and liaison team members, having a thorough knowledge of overall project activities and activity interrelatedness, are charged with the technical responsibility to assure that all aspects of instrument design, implementation and redesign respond to the guiding parameters of the project purposes and objectives.

The development of data instruments and requests for the incorporation of data in existing instruments should not be authorized unless such data is considered vital to the measurement of project performance as defined by verifiable indicators.

Two Data Instrument Approaches

This report proposes two basic data instrument options for monitoring project impact. After considerable deliberation over the two options, the MSI Team decided to present both options and leave the final choice up to project management based on the justifications provided within each option for its particular approach.

This dichotomy of approaches is a common one in monitoring impact, one which comes down to on-going data collection integrated into present activities versus special/annual activities specifically focused on the key impacts of the project. Both approaches have worked well in different environments. The major advantage of the on-going data collection approach is the potential time and money savings if management type information can be incorporated into or extracted out of normal operations data--namely agricultural extension activity data. The major disadvantage of this approach is the management challenge of getting many different data collectors to follow the same procedures.

The major advantage of the annual survey is greater control over the data collection quality and sample. There is also greater ease of targeting of specific information needs. A major disadvantage of this approach is the extra cost involved and the lost productivity of the large staff of extension workers essentially involved in the same endeavor. A limited amount of contact with farmers in a poor and ethnically divided country could also present certain data collection and sample problems.

Provided below are the two basic options. Option 1: The Farm Plot Management Plan represents the on-going data collection approach. Option 2: The Farm Plot Baseline and Annual Data Collection proposes the special or annual data collection approach.

<u>Option 1: Farm Plot Management Plan</u>

The Farm Plot Management Plan is the basic instrument by which field personnel enter into a direct dialogue with the participant farmer in the mutual identification and typification of the household and property as a unit of production and, as such, constitutes a 1) fundamental diagnostic tool for the identification of priority watershed training and extension activities and 2) serves as a baseline against which future adoption of agroforestry systems/technologies will be compared. This will facilitate project personnel in identifying which agroforestry systems or technologies are being adopted and at what rate and/or scale of adoption in addressing socio-economic and technology impact assessment issues in the monitoring and evaluation process.

In its current form, developed under the COMPDA Project, the Farm Plot Management Plan is essentially a) an instructional aid and b) a rapid appraisal instrument which provides project personnel with an overview of the households, communities and farming systems in the micowatershed project area.

The current Farm Plot Management Plan form consists of eight areas of study including, 1) a geographic identification of plot and typification of family/community characteristics, 2) a

A review of "A Framework for Analyzing the Socio-Economic Impacts of Agroforestry Projects" by D. Evan Mercer, of the USDA Forest Service, reveals a Table of "Rapid Appraisal Data Objectives and Example Indicators". This table provides an extensive inventory of variables and their corresponding example indicators. It is recommended that the technical directors of the participating institutions review these variables in consideration of their possible inclusion as additional and/or alternative variables to be incorporated in a modified Farm Plot Management Plan and/or associated in-depth monitoring data collection instrument, e.g. farm cost/production record-keeping. The following is an illustrative list of possible indicators. In practice only thhe minimal amount of key data should be chosen and collected regularly. Too much data will clog up the system.

PHYSICAL/BIOLOGICAL ENVIRONMENT

Topography	elevation, average slope, distribution of landform types
Climate	average annual and monthly distribution of rainfall, temperature, solar radiation
Soils	soil types (US Soil Taxonomy, FAO/UNESCO Soil Units, etc.
Hazards and Risks	assessment of potential hazards and risks to farmers such as pests, rainfall and yield variability
Farm Size	number of hectares (productive and non-productive)

SOCIAL/CULTURAL ENVIRONMENT

Population Density	number per square kilometer
Population Demographics	number of household members, distribution by sex, age, ethnic group, religion
Economic Demographics	distribution by income classes, occupation, off-farm employment, expenditures, assests, standard-of - living index, type of dwelling
Forest Products	type and quantity of forest products consumed and produced
Diet	type and quantity of food consumed

SOCIAL/CULTURAL ENVIRONMENT (continued)

Education	distance to nearest school, literacy rate, percent of school-age children attending school, years completed by household menbers
Infrastructure	amount of paved roads, agricultural/forestry processing facilities, water treatment
Migration	rate of in and out-migration
Industries	number, size, profitability of industries in community

INSTITUTIONAL ENVIRONMENT

Local Government	organization, effectiveness, funding, responsibilities
Community Organizations	number, strength and activities
Land and Tree Tenure	laws, rules, customs, degree of Systems land tenure security
Development Assistance Institutions	number operating or planning to operate in community
Development Projects in the Area	number operating or planning to operate in the area

MARKET ENVIRONMENT

Market Locations	numbers, distance (kms), temporal frequency, farmer access
Commodities Traded	major crops, livestock, forest products traded and volumes
Output Prices	tree, crop, livestock prices, seasonal fluctuations
Input Prices	labor, capital, land, materials
Transport Prices	price per kilometer by product

MARKET ENVIRONMENT (continued)

Government Interventions	price supports, subsidies, quotas, etc.
Labor Availability	avaliability of off-farm employment, availability of hired labor, percentage of time employed in on and off-farm labor
Credit Availability	number of formal and informal credit organizations, cost of credit

LAND USE/PRODUCTION SYSTEMS

Types	distribution by crops, management practices, size of parcels
Technical Expertise of Farmers	% of population familiar with and/or experience using technologies
Tree Species	temporal and spatial distributions and uses, census of numbers of trees grown in and around farms pre and post-project
Annual Crop Species	temporal and spatial distribution and uses
Livestock Species	temporal and spatial distribution and uses

In order to determine the net economic impact derived from the adoption of improved agroforestry techniques, in-depth farm input-output cost/production data will be required. Such data is fundamental to cost-benefit and impact assessment analysis. Direct observation and measurement on a timely basis by farmer and project field personnel is the most reliable method for collecting this data. A "farm record-keeping" approach is recommended, but this does not entail that the farmer himself would have to maintain the record. Since many farmers are illiterate and would be incapable of keeping such records, the large extension staff would be capable of maintaining these records. Basically, participating farmers are to maintain regular records of specific farm activities, inputs and outputs associated with various forestry, cropping and livestock systems. Alternate project field personnel,i.e. a) CARE Technical Assistant, b) DISEBOS Watershed Technician and Promoter, c) DIGESA Extension Agent, Agricultural Guide and Agricultural Representative and d) PEACE CORPS Volunteer visit the participating farm plots weekly and monitor the records in order to ensure data quality. Crop calendars and farm input-output cost/production schedules will be derived from this data. Correspondingly, project personnel should take great care to maintain a low participating-farmer to project-field-personnel ratio; preferably not to exceed 35 farmers per field staff member.

The aforementioned agroforestry techncial publication by D. Evan Mercer, also provides a Table titled "Minimum Data Set for Economic Efficiency Analysis". This table provides an extensive inventory of variables and their corresponding example indicators. It is recommended that the technical directors of the participating institutions review these variables in consideration of their possible inclusion as additional and/or alternative variables to be monitored in the design and implementation of a Farm Cost/Production Record-Keeping Instrument. Said instrument would be utilized by either all participating farmers or a randomly selected stratified sample of participating farmers in conjunction with the Farm Plot Management Plan. A revised summary of these variables and their corresponding example indicators include:

INPUTS

LAND

Tree	number and type of hectares
Crops	number and type of hectares
Animals	number and type of animals

LABOR/TREE CROPS

Site Preparation	hours or days by type of labor
Planting	hours or days by type of labor
Weeding	hours or days by type of labor
Chemicals	hours or days by type of labor
Thinning	hours or days by type of labor
Pruning	hours or days by type of labor
Felling	hours or days by type of labor
Processing	hours or days by type of labor
Transportation	hours or days by type of labor

LABOR/ANNUAL CROPS

Site Preparation	hours or days by type of labor
Sowing	hours or days by type of labor
Cultural Practices	hours or days by type of labor

LABOR/ANNUAL CROPS (continued)

Fertilizer	hours or days by type of labor
Herbicides	hours or days by type of labor
Harvesting	hours or days by type of labor
Transportation	hours or days by type of labor

LABOR/LIVESTOCK

Feeding	hours or days by type of labor
Medicating	hours or days by type of labor
Grooming	hours or days by type of labor

CAPITAL AND MATERIALS

Tree Seedlings	amount of seed and/or seedlings
Chemicals	weight or volume of chemical
Tools	number of each type
Transportation	number of each type

OUTPUTS

TREES

Fuelwood	quantity per hectare
Poles	quantity per hectare
Timber	quantity per hectare
Fruit	quantity per hectare
Forage	quantity per hectare
Green Manure	quantity per hectare
Other	quantity per hectare

Forage	quantity per hectare
Green Manure	quantity per hectare
Other	quantity per hectare
ANNUAL CROPS	
Yield	quantity per hectare
Residues	quantity per hectare
LIVESTOCK	
Food	quantity per hectare
Manure	quantity per hectare
Skin	quantity per hectare
Other	quantity per hectare
ENVIRONMENTAL	
Soil Conservation	changes in soil erosion rates, difference in topsoil thickness between agroforestry and non-agroforestry systems
Watershed Protection	hydrologic changes (volume, floods, sedimentation)
Natural Forest Conservation	change in forest products harvested from natural forest, change in deforestation rates, change in area under shifting cultivation, change in forest quality Crop Protection, Change in crop damage from wind, sun, rain, etc.

The utilization of these two instruments, i.e. the Farm Plot Management Plan and the Farm Cost/Production Record-Keeping Instrument will form the basis of all monitoring and evaluation activities at the farm plot level.

Option 2: Farm Plot Baseline and Annual Data Collection

Evaluation of Production and Agricultural Practices

The goal of the project is to improve the sustainable incomes of farm families. The purpose of the project is to improve management of natural resources (water, soil, forests) in upland

watershed used by those farm families. M&E will focus on project activities from the point of view of this goal and purpose.

The principal indicators for evaluation of this project are thus (1) improved incomes for those living in project watersheds as a result of project activities and (2) improved management of natural resources in project watersheds.

Income is understood as material benefit which can usually be given a monetary value. Since project activities involve use of natural resources, income derived from these resources will be the focus of evaluation, primarily annual and permanent crops, firewood and wood used for other purposes, and farm animal forage. To determine improve income from natural resources on private land, it is necessary to establish a baseline of pre-project income from private lands and then restudy income from the same lands after improved resource management techniques have been applied to them. If income related to improved management has increased, the project is likely to have been a success.

Improved natural resource management is understood as the application of 15-20 techniques to private and communal lands. These techniques include tree-based activities, such as dispersed trees, tree fences, trees in contour rows, and private and communal forest plantation and management; soil-based activities, such as terraces, planted and constructed barriers, and ditches; and agriculture-base activities, such a composting. The tree-based activities relate to income through the use of wood-based products, such as firewood, poles, and stakes. The soil and agriculture-base activities relate to income through improved agricultural yields and animal forage.

To determine improved management of natural resources, its is necessary to establish a baseline which describes the pre-project situation concerning improved practices. This is done in two ways: aerial photography and surveying existing practices on lands in the watershed. In both cases the same lands can be restudied at the end of the project using the same techniques. If the amount of land under improved management has significantly increased, the project is likely to have been a success.

The evaluation will not cover all of the population in each watershed. Improved income and ground study of private land management practices will be studied only among project participants. Aerial photography will cover improve management practices of all residents in the watershed, both participant and non-participants. Improved communal land management practices will be studied as if the community or, as is usually the case, the municipality, were the owner.

1. Farm plot baseline and annual data collection

The M&E system for farm plots is based on a baseline carried out in the first quarter of 1994 which provides information at the level of the farm in each watershed. The baseline will include the following information:

Exact measurement of the plot
Existing resource management practices on the plot

Corp(s) grown on the plot the previous year (1993)
Total production of each plot
Gross value of production
Production costs: seed, fertilizer, pesticides
Net value of production

Plots will be coded as belonging to individual households. Each household's members will be coded as to adult male, adult female, or juvenile.

The initial baseline sample size will be determined by the number of Plot Management Plans (PMP) completed at the time of the baseline. The PMPs formed part of the extension activities during the previous project and have been developed to help the farmer analyze his plots and to decide on a course of action to improve them. As of September 30, 1993, about 300 PMPs had been completed, and it is possible that up to 400 may be completed by the time of the baseline.

a) Farm management practices data

Farm management practices data will be collected using the PMP. As an extension tool, the PMP helps the farmer to think about his plot, to see its weaknesses as regards soil conservation, and to understand what the plot needs too counteract these weaknesses. The PMP includes not only a description of the plot at present, but also a sketch of the plot as it would look with the addition of necessary management practices selected by the farmer.

This helps the farmer, but it also represents a baseline goal toward which the project will work. The PMPs should be used to establish project goals which will represent goals (1) which are technically sound and (2) which the farmer agrees would improve the plot.

The baseline will record these plot goals for future impact evaluation as well as for project monitoring. The goals will be recorded in the baseline in numeric form, and the annual review of the plots will measure progress toward these goals. Two versions of plot goals should be placed in the baseline: (1) the version representing goals the farmer himself feels are needed, and (2) an "ideal" version developed by the Promoter and WT representing the best possible development of the plot, showing practices of which the farmer is not convinced.

Thus the baseline includes these three statements of each plot:

1) the plot as it presently exists,
2) the plot as the farmer agrees to improve it, and
3) the plot as it should be with all reasonable practices implemented.

Each statement will be converted into numeric form for computer data entry (meters of tree fences, cuerdas of land with contour rows, etc.).

The collection of baseline plot data will be carried out by the Promoter with assistance from project extensionists. The Promoter inputs the exact measurements of each plot and describes the existing resource management practices on the plot at the time of the baseline. In many

cases, the Promoter need only refer to the PMP already carried out with participating farmers. In other cases, he will input the data from his knowledge of the plot or will visit the plot personally. These data will be quantitative: number of dispersed trees, meters of trees in contour rows, planted fences, barriers, terraces, and so on. A sketch of the plot, a standard feature of the PMP, will be filed as well.

b) Economic farm plot data

To complement the PMP, an instrument will be designed to collect information on the economic or material benefit derived from this plot. In 1994 the instrument will be developed and tested, and the data will be collected by a firm specialized in rural surveys. The instrument will collect information concerning all economic or material benefit perceived from each plot. Data gathering will concentrate on planted annual crops, but information will be gathered concerning other benefits of the plot, such as the economic value of firewood gathered from tree fences and small forests, pasture land and planted barriers of pasture grass, and stakes for planting climbing plants. This survey will be carried out with the plot sketch in hand to help surveyors to ask about economic benefits from the plot other than annual crop yields.

c) Annual resurvey of baseline information

The baseline study will be carried out as soon as possible after project initiation in early 1994 and will study management practices and income over the previous calendar year (1993). Restudy will be carried out each year: early 1995 over the 1994 crop year, 1996 over the 1995 year, and 1997 over the 1996 year. The 1997 restudy will provide data for the external impact evaluation to be carried out that year.

In most cases, the resurvey will involve the same data collection procedures as the baseline. The Promoter collects the information on improved farm management practices on the plot.

The data are quantitative, and a new sketch of the plot is filed. Similarly, the survey team resurveys the farmer concerning the material benefits of the plot.

New participants will be included in the baseline at this time if a new participant has developed a PMP for his land. In this case, as the farm management practice data has already been collected, the annual data collection effort will simply require collecting the material or economic benefit data on the plot.

Data will be gathered from the original baseline participants every year through the end of the project, whether they continue to participate actively or not. Participants may retire from active participation if their plots have been brought to optimum management standards, but the annual collection of data from these individuals will establish the long-term benefits of improved management practices.

Important aspects of the baseline and annual data collection include:

- Use of an outside survey firm: The economic data collection at the baseline and annually requires skilled, well-trained field workers working full-time for 4-6 weeks and concentrating on this one task. It would harm the extension activities of the project to have regular extension personnel carry out this data collection. Extension personnel should be briefed on the data collection and should be asked to help introduce the effort to the community as facilitators.

- Central role of PMP: The existence of the PMP determines whether a farm family is really committed to participation in the project. Without it, there is no way to determine the extent of farm-level improved management practices nor to determine the economic benefit achieved by the project for project participants.

- Increasing the participation sample: While the initial baseline will allow measurement of project activities over the full 4 years, new participants should be added to the project annually as they complete their PMPs.

- Time required for economic plot study: The plot economic data collection at the baseline stage includes a minimal amount of demographic data to identify the family and will thus require slightly longer to complete. The annual restudy will require less time since it will be unnecessary to repeat collection of this demographic data. The baseline data collection should require no more than 45 minutes and the restudy no more than 25 minutes per farm.

- Extension uses of baseline and resurvey data: The PMP was developed primarily as an extension tool and will continue to function as such. The baseline economic data collection complements the PMP by adding economic benefit data to the PMP for each plot. Each farmer will receive the results of the economic data collection and will be able to review these results with extension personnel. In addition as annual restudy data collections are done, the farmer will receive these to see how the farm management practices have improved his or her production and economic benefit from each plot.

- CARE's movement toward a similar system: While the previous CARE computerized reporting systems did not focus on the individual farm household, CARE did develop non-computerized monitoring and implementation instruments which do identify the individual farmer or household. One instrument was the PMP itself. Another instrument focused on the individual plot was a form containing a block for production data in which the crop, area, production in quintals, production consumed, production sold, amount purchased, and date of data collection were detailed, an idea similar to that proposed for the baseline and subsequent annual reviews of production of plots. A third form indicating the increased focus on the individual is found in the group work plan. While most of this form is a calendar of activities, it also contains a chart in which the individual activities are related to individual members of the group. None of the above data instruments was computerized. The M&E plan presented here represents the computerization of most of the information from the CARE instruments concerning individual plot production and individual improvements on plots aimed at reducing damage to the natural resource base.

Monitoring of Activities Involving Farm Plots

In keeping with the focus on farm plot activities, monitoring will also involve the farm families who are owners of these plots. The Promoters in the previous project collected the names of participants in existing watersheds, but last names were not included in the information system. For monitoring purposes, the Promoter will provide a list of current "active" participants to begin the monitoring process which will be regularly updated.

The monitoring system on participation will consist of a list of the participants and columns in which to mark the participation of each individual in events or activities. There are two possible forms: one which simply indicates participation and another documenting in numeric form the participant's achievements that month. The first form will be computer-scannable: the Promoter places a mark in a box in the participant's row in the column corresponding to a particular event or activity. Alternatively, the data would be entered not by scanning but manually by an outside firm. The second form would require keying in data. Sample data collection are provided below.

Sample data collection sheet for Promoters of participation in project events and activities:

Watershed:	_____			Community:		_____		Month:	_____	
	Meeting	Extension	Nursery	Plant tree	Manejo bos	Demo	Charla #1	Charla #2	Gira #1	Gira #2
Name 1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Name 2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

This form should be related to more detailed descriptions of events and activities. The names are coded to relate participation to individual households and their plots.

Sample data collection sheet for Promoters of achievements in project events and activities:

Watershed: _____ Comunidad: _____ Month: _____

	A	A	R	C	C	S	P	B	B	B	T
	R	R	O	E	A	I	L	A			E
	B	B	M	R	L	L		R	M	M	R
	O	O	P	C	L	V	F	R	U	U	R
	L	L	E	O	E	O	R		E	E	A
					J	P	U	V	R	R	Z
	D	C	V	V	O	A	T	I			A
	I	O	I	I	N	S	A	V	R	P	S
	S	N	E	V	E	T	L	A	A	D	
	P	T	N	O	S	O		S	S	R	
Unit:	cds	mts	mts	mts	cds	cds	cds	cds	cds	cds	cds
Name 1											
Name 2											

The second form allows for the monitoring of quantifiable achievements by the participant and corresponds closely with both the "Validación Planes de Manejo de Terreno" and the "Plan de Trabajo de Grupo" forms currently used by CARE.

Watershed: _____ Comunidad: _____ Code: _____

Month: _____ Farmer/Household: _____

	A	S	Z	S	M	A	P	P	I	M	M
	C	U	A	I	A	B	L	L	N	A	A
	E	R	N	E	N	O			S	N	N
	Q	C	J	M	T	N	M	M	C	E	E
	U	O	A	B		E	A	A		J	J
	I				E	R	N	N	P	O	O
	A	A	A	P	S	A	E	E	L		
	S	B	B	A	T	S	J	J	A	P	B
		O	O	S					N	L	O
		N	N	T	C		T	F	T	A	S
Unit:	cds	cds	cds	cds	cds	mts	#	#	?	?	?
Name 1											
Name 2											

Important aspects of monitoring system:

- Workplan tied to baseline: Program development in the form of monthly and annual workplans should be determined by the results of the farm management practices baseline. PMPs will indicate the types of management practice which most interest farmers, and CARE's training, DIGEBOS' and DIGESA's extension, and Peace Corps' program should be geared to respond to these management practice needs.

- Individual agency needs regarding monitoring: The individual agencies (CARE, DIGEBOS, DIGESA, Peace Corps) must produce indicators for the monitoring system and indicate what routine reports they will require and what information those reports should contain.

CHAPTER IV. RECOMMENDATIONS

This report serves as a basic working guide, by which project managers, can initiate monitoring and evaluation activities. It treats organizational, operational and systems design issues in establishing a natural resource management information system based on a distributed data collection and dissemination network. In order to initiate M&E activities:

1) **It is strongly recommended that Care International/Guatemala (CARE), the General Directorate of Forestry and Wildlife (DIGEBOS) and the General Directorate of Agriculture (DIGESA) each prepare an Individualized Sub-Project Logical Framework Table.** It is not considered necessary that the United States Peace Corps/Guatemala (PC) prepare such a table because this institution does not assume a Sub-Project Manager profile in the definition of its' organizational role or level of organizational responsibility in the execution of the CNRM/MICUENCA project technical assistance activities. Refer to Table II of the "Technical Report for the Design and Implementation of the Monitoring and Evaluation Activities of the Community Natural Resources Management Project", dated December 1993 (M&E Technical Report) for the identification of institutions primarily responsible for the execution of the eighteen project technical assistance activities identified in the MICUENCA/CNRM Project Document.

   The development of an Individualized Sub-Project Logical Framework for each of the aforementioned institutions will a) clarify what each of the participating Sub-Project Managers (CARE, DIGEBOS and DIGESA) is responsible for accomplishing and why, b) identify the key elements of each institutions' sub-project relationship with each other and c) foster a clearly stated, explicit and "measurable" description of what will happen if the project is successful at each sub-project/institutional level.

   Individualized Sub-Project Logical Frameworks should be based on the Project Logical Framework's a) narrative summary, b) objectively verifiable indicators and c) means of verification as specified in Table I of the aforementioned M&E Technical Report. Each institution, according to its respective sub-project roles and responsibilities, must develop a matrix which clearly identifies the tasks that each will perform as a function of its participation in activities related to the means of verification and objectively verifiable indicators specified in Table I. Each institution must qualify these activities in terms of the scheduling of data collection and reporting requirements that these actions imply for a given annual work plan over the life of the project. Additionally, each institution must qualify 1994, 1995, 1996 and 1997 annual work plan activities expressed as an annual "share" of the Objectively Verifiable Indicator Targets at the Output Level. It is noted that the Output Level is within the manageable interest of the institution and, therefore, the institution will be held accountable for producing the projected results.

The result of this analysis will be to provide a one or two page concise summary of major sub-project tasks and summary level activities and their relationships to one other in the context of the overall project action plan.

It is emphasized that the use of the logical framework approach will not only facilitate a detailed visualization of the sub-project and project activities, tasks, resources and scheduling requirements, but this approach will also more clearly communicate among the three Sub-Project Managers the overall Project structure and their independent and/or collaborating roles and responsibilities specified in both quantifiable and temporal terms. Accordingly, if the inputs are managed properly, then the outputs will be produced; if the outputs are produced, then the project purpose will be achieved; if the project purpose is achieved, then this will contribute to the achievement of the program/sector goal.

It is important to emphasize that "in-house" agendas, information reporting requirements and other institutional activities/resources not subordinate to the project are not to be included in the Individualized Sub-Project Logical Framework Tables.

2) **Project authorities should contract the M&E core and liaison personnel and initiate the systems analysis and design phase of the unified information system.**

A minimal but not recommended number and technical mix of M&E personnel would include:

a) one National Short-Term Consultant Project Systems Analyst/Programmer for one three-month and one one-month level of effort in the design and redesign phases of Project Start-Up, respectively,
b) one Project Database Developer/Administrator for the life of the Project, i.e. 45 months,
c) one CARE Project Information Coordinator/Care Information Manager for the Life of the Project, i.e., 45 months,
d) one DIGEBOS Liaison Information Manager for the life of the Project, i.e., 45 months,
e) one DIGESA Liaison Information Manager for the life of the Project, i.e., 45 months,
f) one Short-Term Consultant Project Evaluator for one six-month and two subsequent annual reviews each requiring a five day level of effort.

By contracting M&E technical personnel through the use of short-term task-oriented contracts, the project may not only finalize project design and start-up efforts critical to the initiation of M&E field technical assistance activities, but such a hiring mechanism may also serve as a "staged" or "phased-in" development strategy for the M&E Coordinating Unit while obviating, at this time, long-term budgetary commitments to its institutionalization. This may be particularly

desirable in view of a) still undefined or shrinking counterpart funds b) the out-migration of technical personnel from participating national institutions and/or c) an unfavorable hiring-policy environment for said institutions.

However, it is important to bear in mind that as a result of a reduction in the number and kind of specialized technical personnel from the optimal model of the M&E Coordinating Unit as outlined in the M&E Technical Report, it becomes necessary for a reduced number of technically prepared personnel to perform a greater number of technically diverse tasks, e.g., the Project Database Developer/Administrator must now perform the specialized functions and responsibilities of those previously assigned to the Project Systems Analyst/Operations Manager.

Accordingly, a reduction in the optimal model of the M&E Coordinating Unit will bring with it a commensurate reduction in the project's pool of information sciences technical skills and manpower resources which, correspondingly, a) will affect operations and performance standards of monitoring and evaluation activities in tracking project performance, as well as b) increase the margin of risk of underachieving project outputs.

3) **The M&E Unit Coordinator, in consultation with the M&E core and liaison personnel, should prepare a detailed scheduling and tasks requirements plan for presentation to the Project National Committee. The M&E scheduling and tasks requirements plan forms the basis of information strategic planning of the monitoring and evaluation activities and as such should require approval from donor and participating institutions.** Correspondingly, all actions approved by the Committee should result in a written resolution, prepared by the M&E Unit Coordinator, incorporated as an addendum to the Letter of Understanding.

In the absence of "qualified" Liaison Systems Analysts/Programmers in DIGEBOS and DIGESA, it is recommended that the Project contract a national local mid-level systems analyst/programmer, possessing a computer sciences information degree and not less than three years job experience, for a three month period.

Said consultant will confer with each of the following Project Personnel: a) Ogden Rodas Camas, MICUENCA/CNRM Project Coordinator of DIGEBOS, b) Homogenes Gonzales, MICUENCA/CNRM Project Coordinator of DIGESA, c) Basilio Estrada, MICUENCA/CNRM Project Coordinator of PC, d) Mark Dripchak, MICUENCA/CNRM Information Specialist of CARE and e) Edin Barrientos, Program Officer of MICUENCA/CNRM Project of AID.

The scope of work should entail the preparation of the following deliverables:

a) flow chart of sub-project data collection and reporting processes,

b) completed Data Forms I and II of the M&E Technical Report updating the inventory of project hardware and software according to institution and geographic location,

c) prepare hardware and software component upgrading recommendations, disaggregated by institution, with corresponding costs in order to meet minimum project distributed computer network specifications,

d) develop proposed standardized pre-coded data collection instruments of the project unified information system as outlined in Table IV of the M&E Technical Report,

e) prepare a detailed reporting schedule to track the timing of the data collection efforts and reporting requirements at the sub-project and project level. It is to be noted that the purpose of the schedule is to identify maximum load or impact that the execution of all required reports and data collection instruments would have on the overall reporting process. Accordingly, the periodicity, length of reporting period and proposed delivery dates are analyzed and represented in schedule format. Refer to Annex II for an example format to be used,

f) complete Tables V, VI and VII of the M&E Technical Report in order to expedite a timely review of project manpower resources and field personnel distribution requirements and

g) in order to facilitate system documentation, all of the aforementioned deliverables are to be prepared in project word processing and matrix calculation applications software packages.

4) **Project computer hardware and software resources should be upgraded to assure that all central and regional offices participating in the distributed information network have the minimum requisite processing capability.** M&E personnel should determine the procurement requirements and proceed to upgrade the network installations. Data Forms I and II will assist M&E personnel in determining system and network requirements.

5) **In order to facilitate the analysis of Project manpower requirements and coordination of manpower resources in executing monitoring and evaluation activities, the M&E Coordinating Unit should complete Tables V, VI and VII.**

It is worthy to note that as project activities become more "successful" within the community and more farmers wish to participate, the project must have the human and financial resources to assign additional field personnel to deliver the technical assistance services to the growing participant population. Based on interviews with promoter and volunteer field personnel, it is determined that 35 farmer households is the maximum number of active extension cases that should be assigned to an extension agent at any given time.

6) To date, a final determination as to **the number and distribution of project microwatersheds has not as yet been officially approved. It is important to review, and modify where necessary, quantifiable objectively verifiable**

indicators at the output level in Table I of the M&E Technical Report to reflect the final selection. Correspondingly, such modifications should require National Committee approval and result in a written amendment to the Project Document.

Emphasis should be placed on consolidating project extension activities within existing micro-watersheds, rather than expanding to others. In the interest of modeling, replicability and impact assessment, considerations regarding expansion of the project's geographic coverage should emphasize technical rather than political criteria. For example; in order to "measurably" impact the bio-physical natural resources short-term indicators, extension activities must intensify soil, water and vegetation cover management practices on a statistically significant and representative land mass within the watersheds. It is recommended, therefore, that the Project concentrate technical assistance activities on existing watersheds. Future expansion should seek a) "clustering" of additional micro watersheds within existing watersheds, b) optimizing the number of farmer participants within existing micro watersheds and c) intensifying the number and type of improved land management practices employed.

7) In the interest of measuring increases in rural incomes, as a result of increased production due to the incorporation of improved natural resource management practices, **it is necessary to monitor labor as a cost of production.** No instruments in any previous or current projects track labor costs or assign weights to conservation and management techniques which can be converted to a labor cost schedule. It is recommended that research analysts critically review labor and other project assumptions as these assumptions translate into limitations of data which in turn limit conclusions that can be drawn from project results.

If it is determined that some reliable measure of labor use must be included in the cost of production, then the best way would be to carry out intensive case studies in a random, stratified sample. This sample can then be extrapolated for the universe. Project assumptions regarding increases in rural incomes, increased land under improved natural resources management practices, the decline in biophysical deterioration rates and replicability should be documented as part of the project design and limitations of the study. Project assumptions and limitations of the data should be presented to and approved by donor and participating institutions. Correspondingly, all decisions approved by the Project National Committee should result in a written resolution, prepared by the M&E Unit Coordinator, incorporated as an addendum to the Letter of Understanding.

8) Because statistical design and sampling methodologies will significantly delimit conclusions that can be derived from project data and interpretations that these findings may infer regarding project modeling and replicability, **it is recommended that the project contract a consultant, specialized in statistical methods, for a period of one week in order to review and formulate recommendations** regarding a) stratification, b) survey sampling methodologies,

c) control groups, d) typification of agricultural units of production according to land characteristics, types of conservation techniques employed, length of project participation, type of agroforestry activity, etc. e) minimum sample size across variable microwatershed participant populations and f) other such matters referent to project statistical design.

9) **Install the Geographic Information System (GIS) on the DIGEBOS Project central office computer station in order to begin digitizing project mapping information for existing microwatersheds** including a) altitudes, b) slopes, c) surface drainage, d) soil capacity use, e) current soil use, f) physiographic and g) demographic data. This activity is be accomplished in consultation with the Watershed Management Division of CATIE, Turialba, Cost Rica. Selection of Project biophysical indicators must also be identified in order to determine sampling techniques, as well as schedule monitoring procedures in order to evaluate project impact in reduced deterioration of the natural resource base in participating microwatersheds.

TABLE I
NARRATIVE SUMMARY, OBJECTIVELY VERIFIABLE INDICATORS AND MEANS OF VERIFICATION

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal			
To improve the long-term economic well-being of the rural poor through improved management and sustainable use of natural resources.	Increased sustainable income from natural resource-based production	Baseline and follow-up surveys of target population.	
Improved Management of the natural resource base.	Reduce deterioration of natural resources as measured by improved soil fertility, reduced toxic pesticides applications and increased reforested acreage.	Baseline and follow- follow-up studies of biophysical indicators.	
Project Purpose			
To develop and replicate sustainable, community-based natural resources management models in upland watersheds.	Increased use of improved NRM practices among target groups. Increased land area under improved natural resource management.	Base line follow-up and impact analyses.	
Outputs			
Improved incomes for small farm families in upland watersheds.	4,500 farm families in 20 watersheds with increased incomes.	Baseline study of economic benefit from individual plots followed by annual resurvey.	Participating agencies able to engage farm family participation from present level of 1500 to 4500 families in 20 watersheds.
Increased upland area under improved management	6,750 hectares of privately owned land under improved management.	Baseline study of Plot Management Plans of individual farms and plot management monitoring.	Extension activities demonstrate to farmers benefit of improved management practices.
	(Undefined number of) hectares of communally owned (land under improved management).	Baseline and monitoring of community-level activities.	
Improved technical capacity of public-sector NRM institutions	50 DIGEBOS & DIGES technical extension agents trained in improved NRM practices.	Monitoring and training of project personnel.	
Improved local technical capacity to plan and implement improved NRM practices.	4,500[2] small farmers and up to 60 community organizations trained in improved NRM practices and community organization.	Monitoring of community strengthening activities.	

NOTES:
1) Calculation based on average farm plot of 1.4 hectares per 4,500 farm family participants.
2) Total of 6,500 farmers in target population less 2,000 participants in the "Fondo Especial de Asistencia Técnica" (FEAT).

TABLE II
INSTITUTIONS OF PRIMARY RESPONSIBILITY FOR PROJECT TECHNICAL ASSISTANCE ACTIVITIES

INSTITUTION OF PRIMARY RESPONSIBILITY*	TECHNICAL ASSISTANCE AREA	ACTIVITIES
CARE INTERNATIONAL	Community Strengthening, Training and Extension	Participatory Community Diagnosis
		Community Organizational Strengthening
		Training and Extension
	Environmental Education	Formal Environmental Education
		Non-Formal Education
	Rural Economic Planning	Private Sector Extension Services
		Small Scale Forest-Based Enterprises
GENERAL DIRECTORATE OF FORESTRY AND WILDLIFE	Social Forestry	Forest Management Planning
		Agro-Forestry
		Reforestation
		Plantation Management
		Natural Forest Management
	Watershed Planning and Environmental Monitoring	Watershed Management Planning
		Environmental Monitoring
GENERAL DIRECTORATE OF AGRICULTURAL SERVICES	Sustainable Agriculture	Farm Management Plan Development
		Soil and Water Management
		Low-Input Sustainable Agriculture and Integrated Pest management
		Livestock Husbandry

NOTE: Although Peace Corps is a participating core institution, it does not assume primary responsibility for the execution of any technical assistance areas. Volunteers cooperate with all core institutions in all technical assistance activities.

TABLE III
GEOGRAPHIC COVERAGE OF MICRO-WATERSHEDS
DISTRIBUTED BY REGION, DEPARTMENT AND
SQUARE KILOMETERS

REGION	DEPARTMENT	MICRO-WATERSHED	TOTAL SQUARE KILOMETERS
I	METROPOLITAN		
	GUATEMALA	MOLINO	
		LOS CUBES	
IV	SOUTHEAST		
	JUTIAPA	SAN PEDRO	125.68
		TAMAZULAPA	23.92
		QUEBRADA MONTE LARGO	24.32
		QUEBRADA MEDRANO	19.68
		TAHUJAPA	27.08
			30.68
V	CENTRAL		
	CHIMALTENANGO	PAQUIP	18.44
		XEPANIL	4.12
		XELUBACYA	11.20
			3.12
VI	SOUTHWEST		
	SAN MARCOS	NAHUALA	74.30
		LA DEMOCRACIA	30.30
		ESQUIPULAS	19.00
			25.00
	QUETZALTENANGO	TALCANAC	
			28.60
			28.60
VII	NORTHWEST		
	HUEHUETENANGO	VILLA ALICIA	60.80
		TRES CRUCES	2.76
		BATZALOM	6.00
		ESQUIZAL	5.92
		COLORADO	19.20
		SELEGUA	8.12
			18.80
PROJECT TOTAL			323.82

TABLE IV
CLASSIFICATION OF DATA ENVIRONMENTS LISTED BY TYPE OF DATA COLLECTION EVENTS, INSTRUMENTS USED AND FREQUENCY OF DATA COLLECTION

DATA ENVIRONMENT	TYPE OF DATA COLLECTION EVENT	INSTRUMENT TO BE USED	FREQUENCY DATA COLLECTION
COMMUNITY-BASED DATA	DIAGNOSTIC	• Demographic Studies • Survey Community Organization • Survey Policy Initiatives	Project Start-Up
	Baseline Studies	• Community Profile • Watershed Profile	Project Start-Up and Annual Reviews
	Special Studies	• Gender Analysis • Policy Issues Analysis • Critical Impact Analysis	Periodic Short Term Studies
EDUCATION-BASED DATA	Special Studies	• Attitudinal Surveys about Natural Resources in School Environment • Attitudinal Surveys about Natural Resources in Community Environment	Periodic Short Term Studies
TRAINING OF PROJECT PERSONNEL	Monitoring	• Training in Agro- Forestry Techniques in Accordance with Watershed Field Requirements • Training in Soil and Water Conservation and management in Accordance with Watershed Field Requirements	Event by Event
BIO-PHYSICAL DATA	Baseline Studies Monitoring Evaluation Special Studies	• Measurement of Soil, Water and Plant Resources in Watershed, Community and/or Farm Plots • Critical Impact Analysis • Policy Issues	Monthly and/or Annual According to Selection of Indicators
NATURAL RESOURCES PRACTICES AND PRODUCTION/COST DATA	Diagnostic Baseline Studies Monitoring Evaluation	• Farmer Plot Management Plan and Production/Cost Data • Community Plot Management Plan and Production/Cost Data • Watershed Management Plan • Economic, Environmental & Agricultural Practices Critical Impact Analyses • Policy Issues Analysis	Seasonal and Annual According to Agro-Forestry Activities at Each Level of Participation
SPECIAL STUDIES	Diagnostic Monitoring Evaluation	• Critical Impact Analysis of Watershed Planning • Policy Issues Analysis • Gender Analysis • Select Biophysical Indicators	To be Determined According to Special Studies Selected

TABLE V
PROJECT PERSONNEL BY INSTITUTION, JOB FUNCTION, JOB TITLE, PERCENTAGE DEDICATION AND GEOGRAPHIC DISTRIBUTION

	DEDICATION					GEOGRAPHIC LOCATION					
	FULL	PART TIME					REGIONAL FIELD DISTRIBUTION				
							CENTRAL		WESTERN		EASTERN
INSTITUTION	100%	50%	25%	10%	TOTAL	CENTRAL OFFICE	I	V	VI	VII	IV
CARE INTERNATIONAL											
ADMINISTRATIVE SUPERVISION											
Project Manager (CNRM/MICUENCA)											
Coordinator of Training and Extension Activities											
Coordinator of Environmental Education Activities											
Coordinator of Rural Economic Planning Activities											
Coordinator of Sustainable Agricultural Activities											
Project Manager (ARCP)											
Project Manager (PACA)											
Project Manager (MAYAREMA/EDUCAREMOS)											
SUBTOTAL											
ADMINISTRATIVE COORDINATION											
Regional Coordinator											
SUBTOTAL											
TECHNICAL SUPPORT											
Technical Assistant											
SUBTOTAL											
EXTENSION SERVICES											
SUBTOTAL											
INSTITUTIONAL TOTAL											

NOTE: Personnel are assigned to the Institution responsible for salary disbursement without regard to origin of funds or administrative/technical supervision.

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TABLE V
PROJECT PERSONNEL BY INSTITUTION, JOB FUNCTION, JOB TITLE, PERCENTAGE DEDICATION AND GEOGRAPHIC DISTRIBUTION

	DEDICATION					GEOGRAPHIC LOCATION					
	FULL	PART TIME					REGIONAL FIELD DISTRIBUTION				
							CENTRAL		WESTERN		EASTERN
INSTITUTION	100%	50%	25%	10%	TOTAL	CENTRAL OFFICE	I	V	VI	VII	IV
DIGEBOS/MAGA											
ADMINISTRATIVE SUPERVISION Assistant Director											
SUBTOTAL											
ADMINISTRATIVE COORDINATION Regional Manager											
SUBTOTAL											
TECHNICAL SUPPORT Subregional Technical Sectoral Technician											
SUBTOTAL											
EXTENSION SERVICES Watershed Technician Promoter											
SUBTOTAL											
INSTITUTIONAL TOTAL											

NOTE: Personnel are assigned to the Institution responsible for salary disbursement without regard to origin of funds or administrative/technical supervision.

TABLE V
PROJECT PERSONNEL BY INSTITUTION, JOB FUNCTION, JOB TITLE, PERCENTAGE DEDICATION AND GEOGRAPHIC DISTRIBUTION

	DEDICATION					GEOGRAPHIC LOCATION					
	FULL	PART TIME					REGIONAL FIELD DISTRIBUTION				
							CENTRAL		WESTERN		EASTERN
INSTITUTION	100%	50%	25%	10%	TOTAL	CENTRAL OFFICE	I	V	VI	VII	IV
DIGESA/MAGA											
ADMINISTRATIVE SUPERVISION Assistant Director											
SUBTOTAL											
ADMINISTRATIVE COORDINATION Regional Manager											
SUBTOTAL											
TECHNICAL SUPPORT Extension Agent											
SUBTOTAL											
EXTENSION SERVICES Agricultural Guide Agricultural Representative											
SUBTOTAL											
INSTITUTIONAL TOTAL											

NOTE: Personnel are assigned to the Institution responsible for salary disbursement without regard to origin of funds or administrative/technical supervision.

TABLE V
PROJECT PERSONNEL BY INSTITUTION, JOB FUNCTION, JOB TITLE, PERCENTAGE DEDICATION AND GEOGRAPHIC DISTRIBUTION

	DEDICATION					GEOGRAPHIC LOCATION					
	FULL	PART TIME					REGIONAL FIELD DISTRIBUTION				
							CENTRAL		WESTERN		EASTERN
INSTITUTION	100%	50%	25%	10%	TOTAL	CENTRAL OFFICE	I	V	VI	VII	IV
PEACE CORPS											
ADMINISTRATIVE SUPERVISION Project Director											
SUBTOTAL											
ADMINISTRATIVE COORDINATION											
SUBTOTAL											
TECHNICAL SUPPORT											
SUBTOTAL											
EXTENSION SERVICES Volunteer											
SUBTOTAL											
INSTITUTIONAL TOTAL											

NOTE: Personnel are assigned to the Institution responsible for salary disbursement without regard to origin of funds or administrative/technical supervision.

TABLE VI
PROJECT PERSONNEL BY JOB FUNCTION, INSTITUTION
PERCENTAGE DEDICATION AND GEOGRAPHIC DISTRIBUTION

	DEDICATION					GEOGRAPHIC LOCATION					
	FULL	PART TIME					REGIONAL FIELD DISTRIBUTION				
							CENTRAL		WESTERN		EASTERN
INSTITUTION	100%	50%	25%	10%	TOTAL	CENTRAL OFFICE	I	V	VI	VII	IV
ADMINISTRATIVE SUPERVISION											
CARE INTERNATIONAL											
DIGEBOS/MAGA											
DIGESA/MAGA											
US PEACE CORPS											
SUBTOTAL											
ADMINISTRATIVE COORDINATION											
CARE INTERNATIONAL											
DIGEBOS/MAGA											
DIGESA/MAGA											
US PEACE CORPS											
SUBTOTAL											
TECHNICAL SUPPORT											
CARE INTERNATIONAL											
DIGEBOS/MAGA											
DIGESA/MAGA											
US PEACE CORPS											
SUBTOTAL											
EXTENSION SERVICES											
CARE INTERNATIONAL											
DIGEBOS/MAGA											
DIGESA/MAGA											
US PEACE CORPS											
SUBTOTAL											
PROJECT TOTAL											

NOTE: Personnel are assigned to the Institution responsible for salary disbursement without regard to origin of funds or administrative/technical supervision.

TABLE VII
DIRECTORY OF PROJECT FIELD PERSONNEL LISTED BY
REGION, MICRO-WATERSHED AND JOB TITLE
PART I

REGION & MICRO-WATERSHED		REGIONAL COORDINATOR (CARE)	TECHNICAL ASSISTANT (CARE)	WATERSHED TECHNICIAN (DIGEBOS)	EXTENSIONIST (DIGESA)	VOLUNTEER (PEACE CORPS)
I.	METROPOLITAN					
	MOLINO					
	LOS CUBES					
IV	SOUTHEAST					
	SAN PEDRO					
	TAMAZULAPA					
	Q MONTE LARGO					
	Q MEDRANO					
	TAHUAPA					
V	CENTRAL					
	PAQUIP					
	XEPANIL					
	XELUBACYA					
VI	SOUTHEAST					
	MAHUALA					
	LA DEMOCRACIA					
	ESQUIPULAS					
	TALCANAC					
VII	NORTHWEST					
	VILLA ALICIA					
	TRES CRUCES					
	BATZALOM					
	ESQUIZAL					
	COLORADO					
	SELEGUA					

DIRECTORY OF PROJECT LD PERSONNEL LISTED BY REGION, MICRO-WAT SHED AND JOB TITLE
PART II

REGION & MICRO-WATERSHED		AGRICULTURAL PROMOTER (DIGEBOS)	AGRICULTURAL REPRESENTATIVE (DIGESA)	AGRICULTURAL GUIDE (DIGESA)
I.	METROPOLITAN			
	MOLINO			
	LOS CUBES			
IV	SOUTHEAST			
	SAN PEDRO			
	TAMAZULAPA			
	Q MONTE LARGO			
	Q MEDRANO			
	TAHUAPA			
V	CENTRAL			
	PAQUIP			
	XEPANIL			
	XELUBACYA			
VI	SOUTHEAST			
	MAHUALA			
	LA DEMOCRACIA			
	ESQUIPULAS			
	TALCANAC			
VII	NORTHWEST			
	VILLA ALICIA			
	TRES CRUCES			
	BATZALOM			
	ESQUIZAL			
	COLORADO			
	SELEGUA			

TABLE VIII
MONITORING AND EVALUATION NETWORK
COMPUTER HARDWARE AND SOFTWARE CHARACTERISTICS
LISTED BY INSTITUTION AND GEOGRAPHIC DISTRIBUTION

	GEOGRAPHIC DISTRIBUTION					
		SOUTHEAST	CENTRAL	SOUTHWEST		NORTHWEST
INSTITUTION	METROPOLITAN	Jutiapa	Chimaltenango	San Marcos	Quetzaltenango	Huehuetenango
CARE 1 2 3 4						
DIGEBOS 1 2 3 4						
DIGESA 1 2 3 4						
PEACE CORPS 1 2 3 4						
TOTAL						

TABLE IX
TYPIFICATION OF TECHNICAL ASSISTANCE ACTIVITIES AND ORGANIZATION OF RELATIONAL DATABASES

COMMUNITY-BASED DATA	Participatory Community Diagnostic Community Organizational Strengthening
EDUCATIONAL DATA	Formal Environmental Education Non-Formal Environmental Education
PROJECT PERSONNEL TRAINING DATA	Training of Project Core Personnel
BIO-PHYSICAL DATA	Environmental Monitoring
NATURAL RESOURCES PRACTICES AND PRODUCTION DATA	Training and Extension of Project Participants Small-Scale Forest-Based Enterprise Forest Management Planning Agro-Forestry Reforestation Plantation Management Natural Forest Management Watershed Management Planning Farm Management Plan Development Soil and Water Management Low-Input Sustainable Agriculture and Integrated Pest Management Livestock Husbandry
SPECIAL STUDIES DATA	Private Sector Extension Services

CHART I
PROJECT PERSONNEL ORGANIZATIONAL CHART OF
CARE INTERNATIONAL

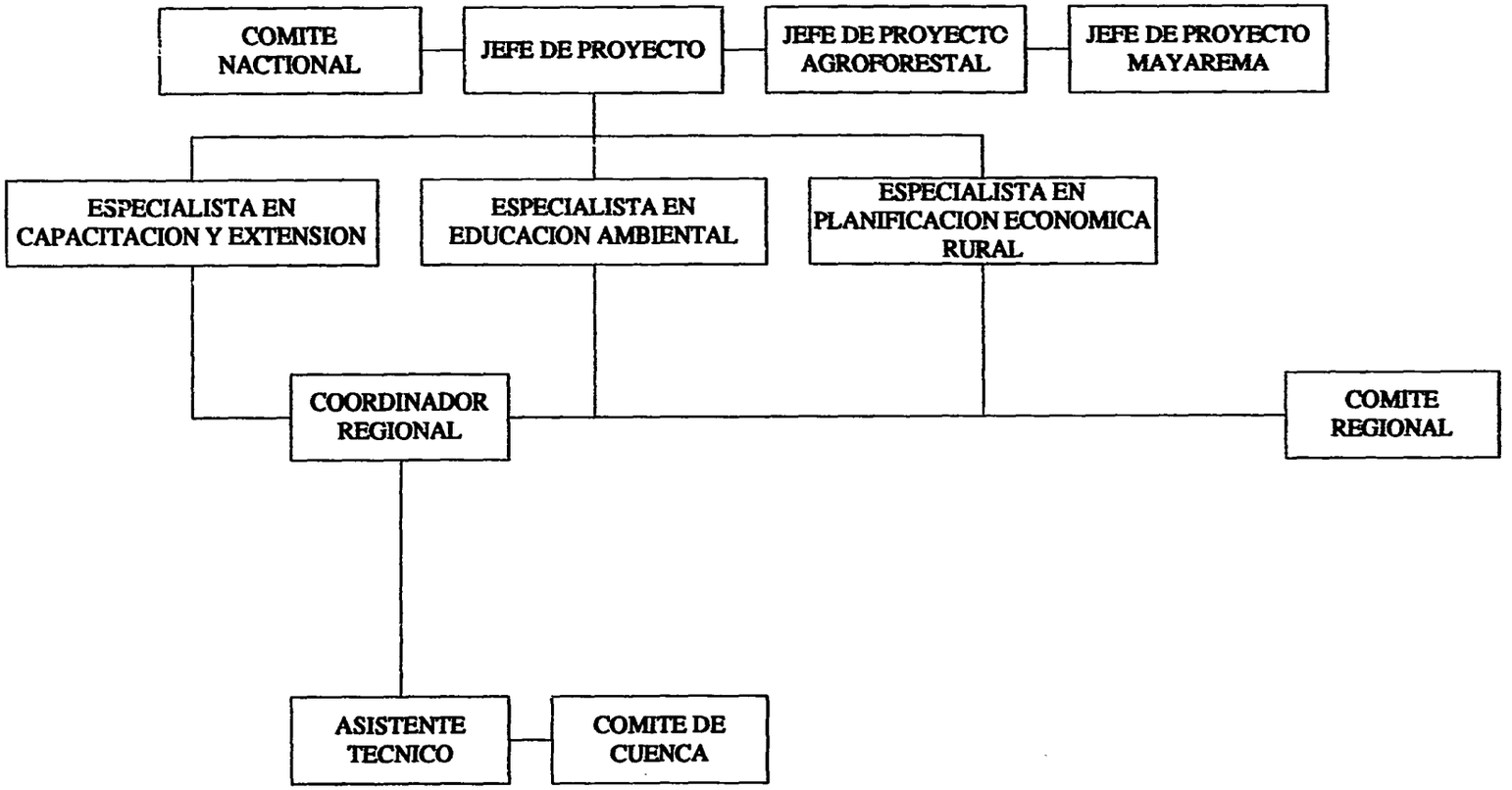


CHART II
PROJECT PERSONNEL ORGANIZATIONAL CHART OF THE GENERAL DIRECTORATE OF FORESTRY AND WILDLIFE

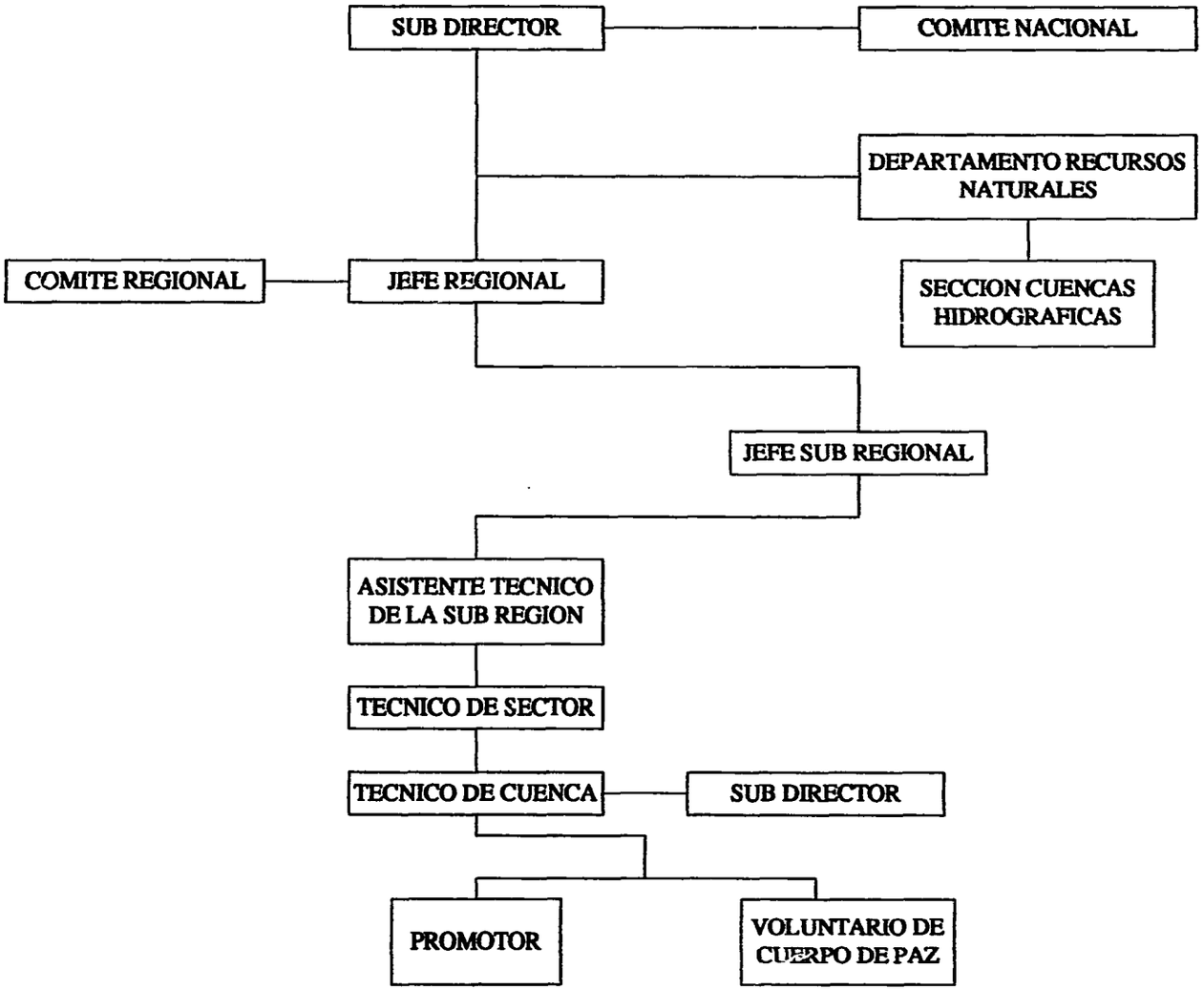


CHART III
PROJECT PERSONNEL ORGANIZATIONAL CHART OF THE GENERAL DIRECTORATE OF AGRICULTURAL SERVICES

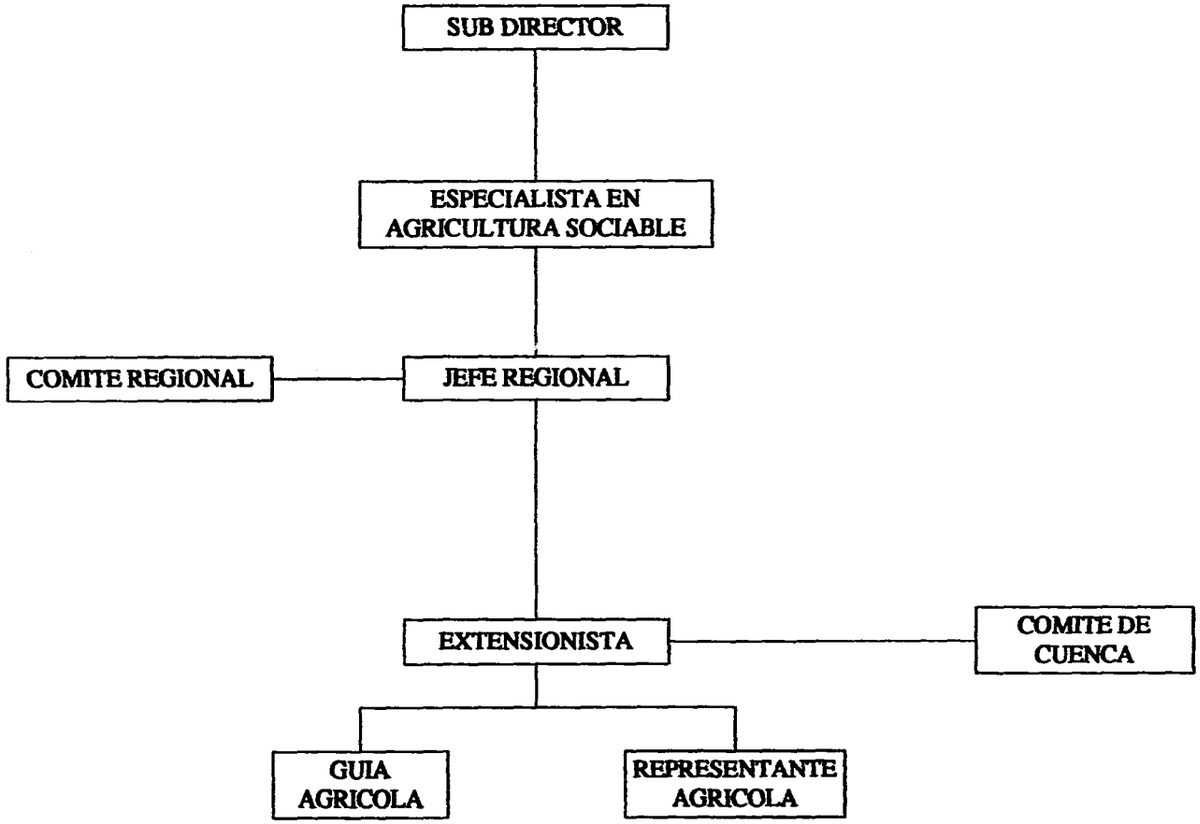
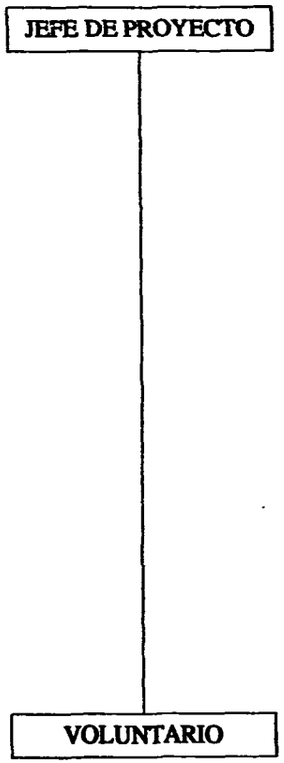
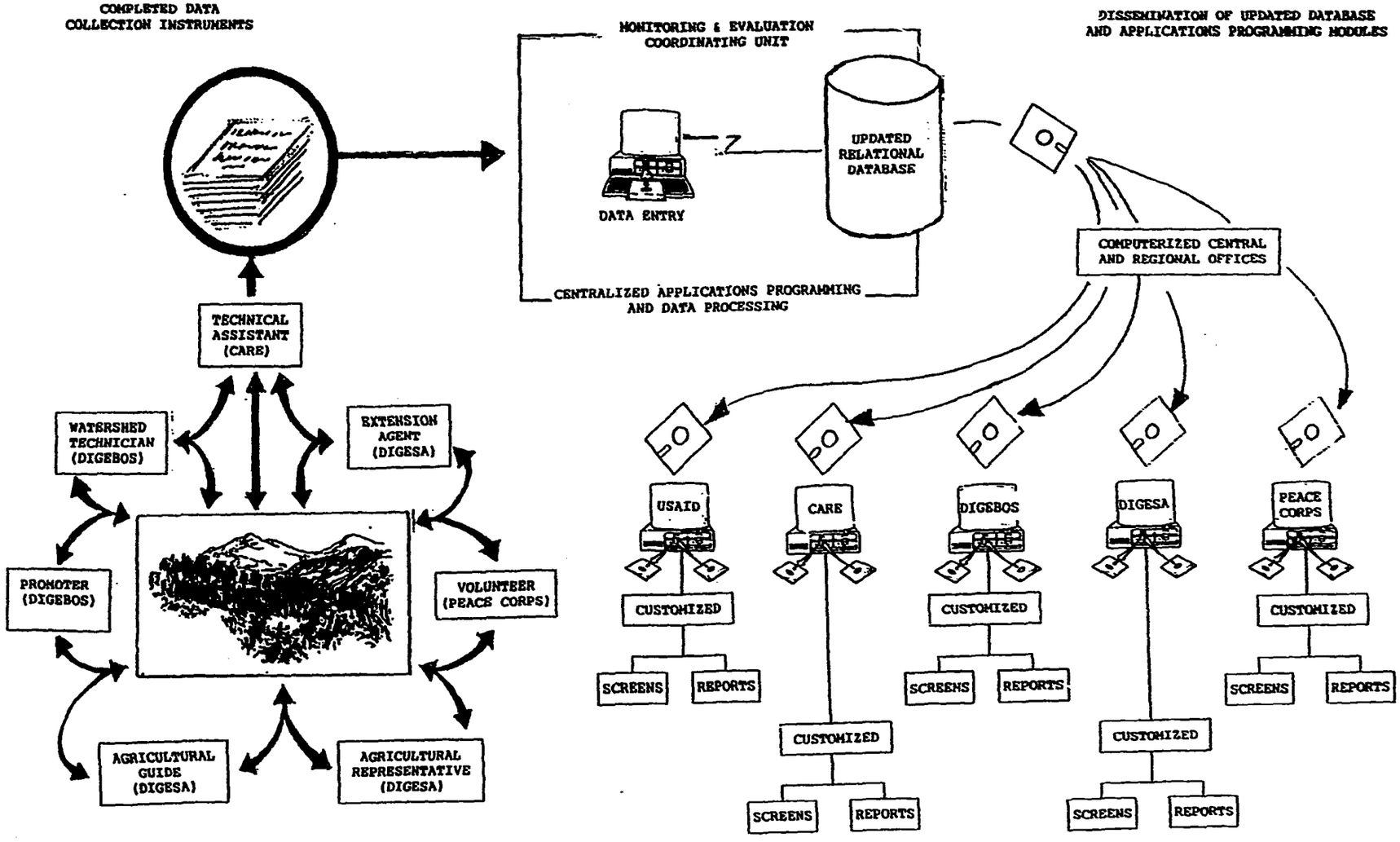


CHART IV
PROJECT PERSONNEL ORGANIZATIONAL CHART OF PEACE CORPS



FLOW CHART OF
DISTRIBUTED INFORMATION NETWORK OF
CNRM/MICUENCA PROJECT



5

CHART VI
FIELD DATA COLLECTION ORGANIZATIONAL FLOW CHART

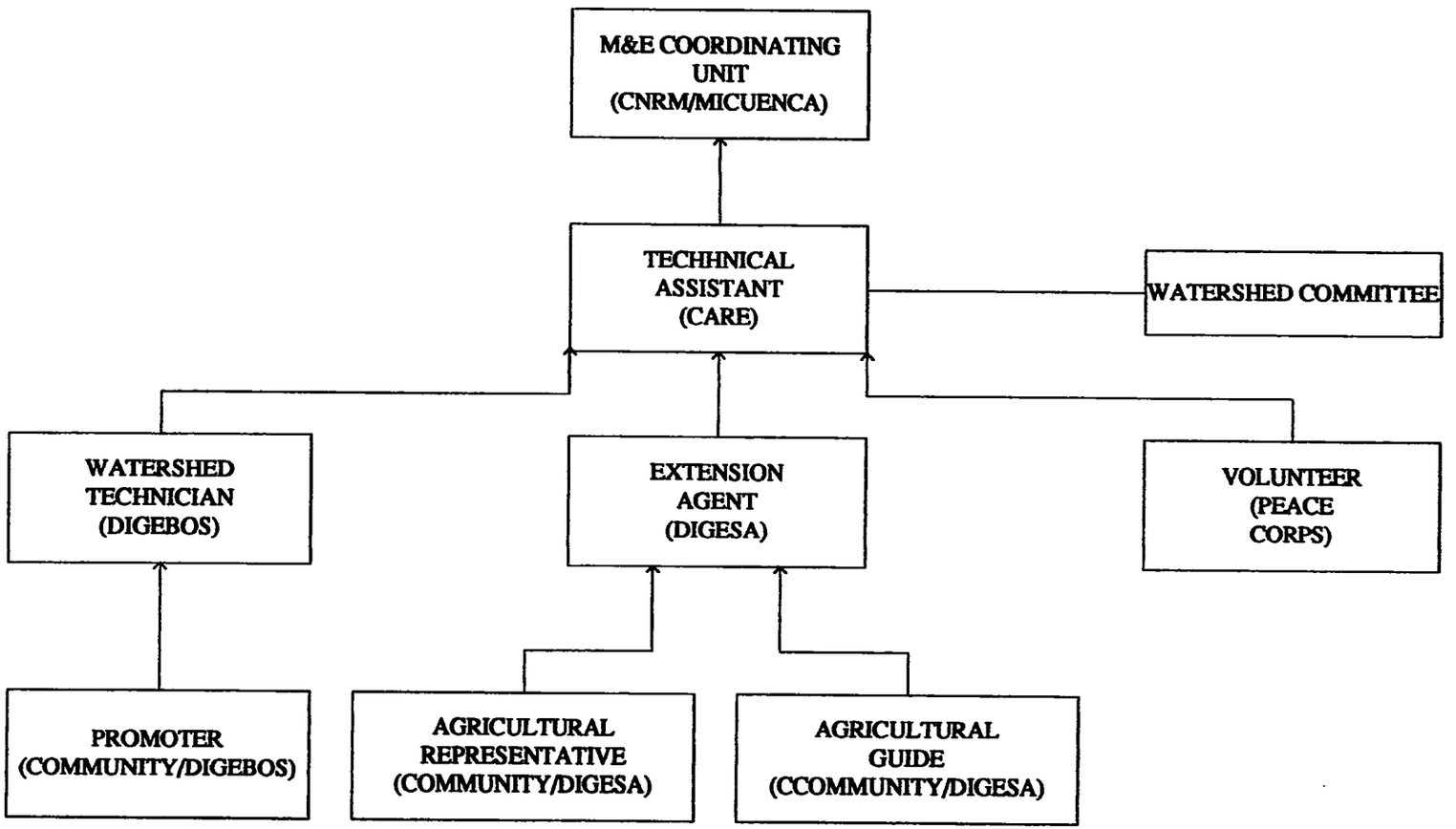


CHART VII
RELATIONSHIP OF STANDARDS, PROCEDURES AND PROJECT MANAGEMENT FLOW CHART

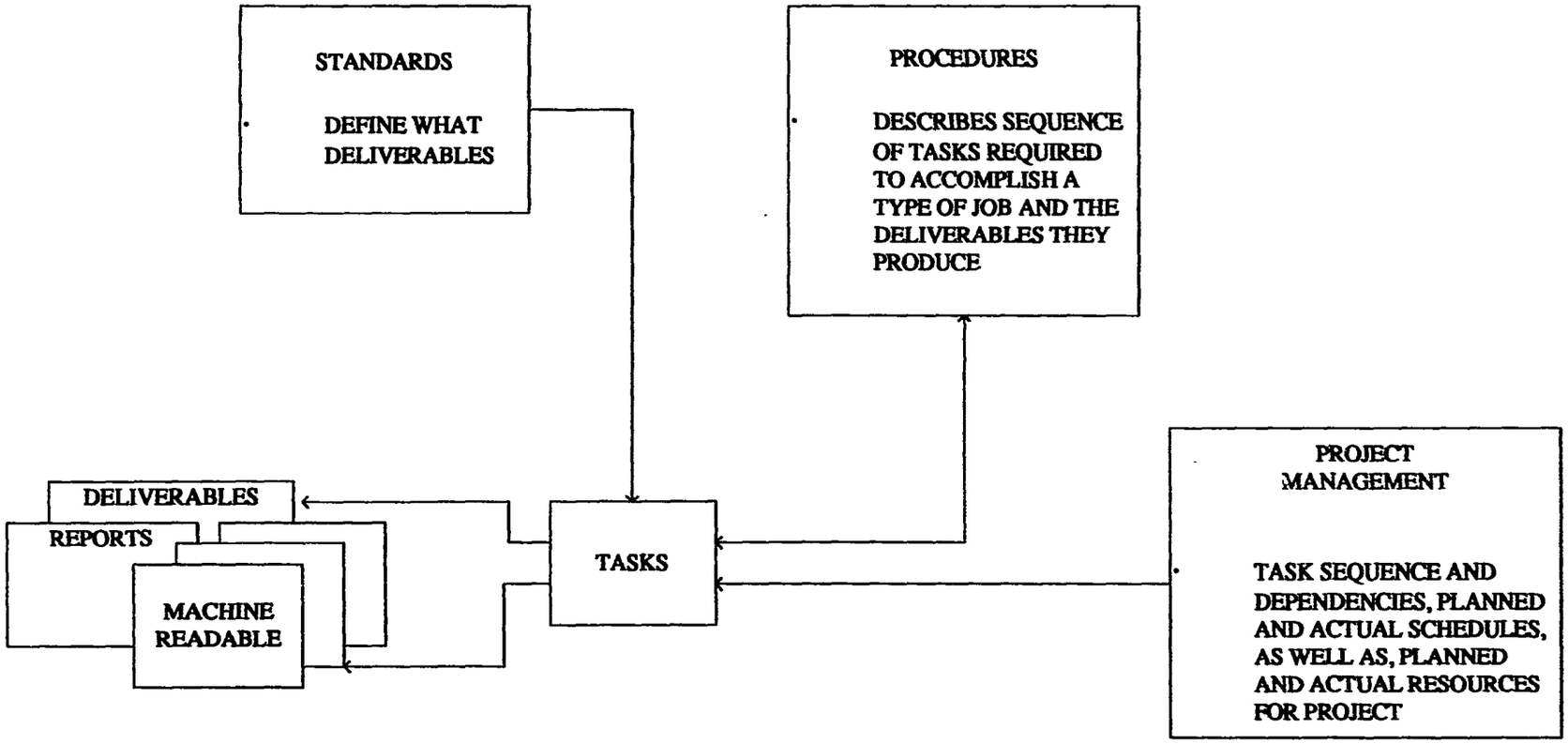


CHART VIII
SYSTEMS ANALYSIS, PROCEDURAL AND TASK DISCRIMINATION FLOW CHART

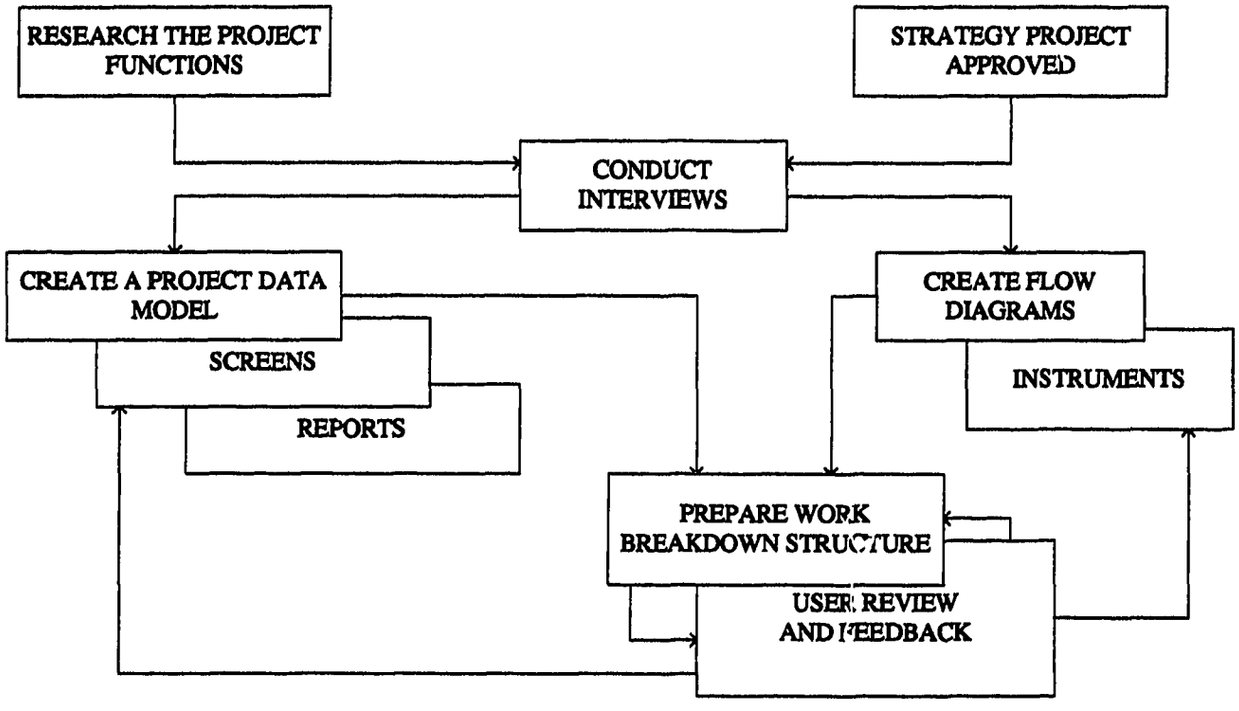
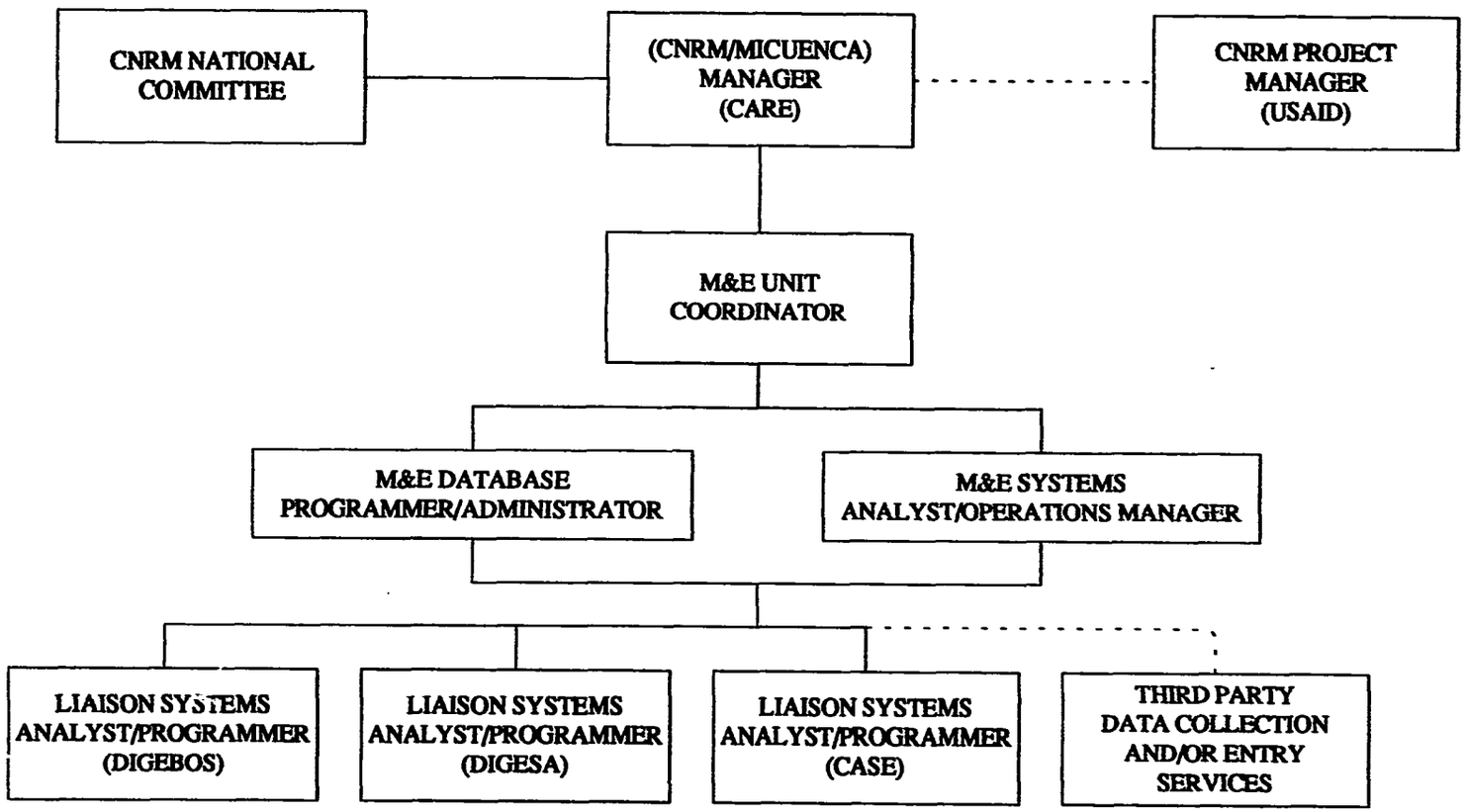


CHART IX
MONITORING AND EVALUATION COORDINATING UNIT
ORGANIZATIONAL CHART



5-6

DATA FORM I
OBJECTIVELY VERIFIABLE INDICATOR DATA FORM

OBJECTIVE	INDICATOR	UNIT OF MEASUREMENT	LEVEL OF AGGREGATE	DATA SOURCE	PROCESS COLLECT	FREQ.
COMMENTS:						

DATA FORM II
GENERAL CHARACTERISTICS OF HARDWARE AND SOFTWARE CONFIGURATIONS OF COMPUTER AND RELATED EQUIPMENT OF THE PROJECT INFORMATION NETWORK BY PARTICIPATING INSTITUTION AND GEOGRAPHIC LOCATION

INSTRUCCIONES: RESPONDER UN FORMULARIO POR EQUIPO.

INSTITUCION

INSTITUCION PROPIETARIA DE LOS BIENES: _____

DIRECCION POSTAL DEL EQUIPO INSTALADO: _____

TELEFONO: _____

PERSONAL

PERSONAL RESPONSABLE ANTE EL PROYECTO POR EL MANEJO DE EQUIPO EN ESTA OFICINA (Apellidos, Nombres)

1. _____
2. _____
3. _____
4. _____

CPU

AÑO DE INSTALACION: _____

MODELO DE EQUIPO	UNIDAD DE PROCESAMIENTO CENTRAL					ALMACENAMIENTO DE DISCO/DISKETTERAS				
	MEMORIA CENTRAL (RAM)	MICRO PROCESADORA	VELOCIDAD (MHZ)	TOMA DE CUANTOS BITS	NUMERO DE SLOTS DE EXPANSION	CAPACIDAD DEL DISCO DURO	CAPACIDAD DE LA PRIMERA DISKETTERA	TAMAÑO DE LA PRIMERA DISKETTERA	CAPACIDAD DE LA SEGUNDA DISKETTERA	TAMAÑO DE LA SEGUNDA DISKETTERA

MONITOR

AÑO DE INSTALACION: _____

MODELO DE MONITOR	CARACTERISTICAS DEL MONITOR		
	COLOR O MONOCROMATICO	TAMAÑO FISICO	RESOLUCION EN PIXELES (Horizontal x Vertical)

IMPRESORA

AÑO DE INSTALACION: _____

MODELO DE IMPRESORA	TAMAÑO FISICO		TECNOLOGIA DE IMPRESSION			
	80	132	Laser	Matriz de Puntos	Ink Jet	Otra

SOFTWARE INSTALADO

	PROCESAMIENTO DE PALABRAS	HOJAS ELECTRONICAS	BASES DE DATOS	GRAFICADORES	OTROS	OTROS
PROGRAMA:						
VERSION:						

COMENTARIOS: _____

RESPONSABLE DE LLENAR EL FORMULARIO: _____

FECHA: __/__/__

E:\erpdata\reports\3021-001\001-001.w51
(4/94)

LIST OF INSTITUTIONS AND PERSONNEL CONSULTED

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5) Romeo Antonio de la Cruz Aguilar, Coordinador Sistema de Monitoreo de Proyectos Agroforestal y Microcuencas
6) Martin Antijon, Encargado de Computos
7) Delia Nunez, Assistente Tecnica de Region I de los Proyectos MICUENCA y AGROFORESTRIA
8) Mario Rojas, Tecnico de Cuencas de la Region I de los Proyectos MICUENCA y AGROFORESTRIA
9) Genaro Mijangos Bran, Promotor de la Microcuenca Los Cubes del Proyecto MICUENCA
10) Rodolfo Guzman, Coordinador Regional del Oriente
* 11) Wilson Castaneda, Coordinador de Capacitacion
* 12) Telma Perez, Coordinadora de Planeamiento Economico Rural
* 13) Lily Gutierrez, Coordinadora de Educacion Ambiental
14) Mark Dripchak, MICUENCA/CNRM Information Specialist

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LIST OF INSTITUTIONS AND PERSONNEL CONSULTED
(Continued)

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20) Julio Catalan, Encargado de Sistemas DIGESA/SISE
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25) Roberto Matheu, Coordinador de USPADA
26) Enrique Alvarado, Tecnico del Departamento de Estategias y Formulacion de Politicas de USPADA

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31) Oscar A. Gonzalez, Director del Plan de Maestro y Ex-Coordinador Tecnico del Proyecto PNUD/OSP/GUA/88/003
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Claudio Roberto Hernandez Perez, Analista de Sistemas de la Unidad Coordinadora de Monitoreo y Evaluacion (M&E) del Proyecto Comunitario de Manejo Integrado de Cuencas (MICUENCA) y Ex-Assesor Tecnico del Sistema de Informacion, Seguimiento y Evaluacion (SISE) del Proyecto de Desarrollo Agricola (COMPDA) [redacted]

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5) Manuales Administrativos: Estrategias y Formulacion de Politicas, Reestructuracion de la Unidad Sectorial de Planificacion Agricola y de Alimentacion (USPADA), Preparado por la Direccion Superior de Coordinacion del Sector Publico Agropecuario y de Alimentacion (DISCSPADA) del Ministerio De Agricultura, Ganaderia y Alimentacion (MAGA), Guatemala, Agosto 1993.

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20) Trip Report: Volume I, Proposed Program and Project Monitoring, Evaluation and Reporting System for USAID/Botswana, Submitted by: Nancy Diamond

(R&D/EID/RAD), Lawrence Heilman (MSI), Robert Klein (CDC/Guatemala), Marcia Musisi-Nkambwe (Consultant), Diane VanBelle-Prouty (AFR/ARTS/HHR/ED), Management Systems International, May 1993.

21) Trip Report: Volume II, Proposed Program and Project Monitoring, Evaluation and Reporting System for USAID/Botswana, Submitted by: Nancy Diamond (R&D/EID/RAD), Lawrence Heilman (MSI), Robert Klein (CDC/Guatemala), Marcia Musisi-Nkambwe (Consultant), Diane VanBelle-Prouty (AFR/ARTS/HHR/ED), Management Systems International, May 1993.

22) Impact Indicators for Measuring Change in the Natural Resource Base, by Ralph J. McCracken (Senior Consultant), AID Evaluation Occasional Paper No. 34, Center for Development Information and Evaluation, Bureau for Program and Policy Coordination, United States Agency for International Development, Washington, DC 20523, November 1989.

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24) Designing Monitoring and Evaluation Systems: Issues and Opportunities, AID Evaluation Occasional Paper No. 14, by Chris Hermann, Bureau for Program Policy and Coordination, United States Agency for International Development, October 1987.

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26) Memorandum de Entendimiento del Projecto Manejo Integrado de Cuencas (MICUENCA) entre La Direccion General de Bosques y Vida Silvestre, Direccion General de Servicios Agricolas, CARE y Cuerpo de Paz, 1994.

27) Diagnostico y Plan de Manejo de la Microcuenca de Selegua. CARE International, 1993.

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30) Costs and Returns Associated with USAID Expenditures in Soil and Water Conservation in Cochabamba Uplands, Final Report, Prepared for USAID by Michael S. Hanrahan, Development Alternatives, Inc., May 1992.

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ANNEX I: COMPDA FARM PLOT MANAGEMENT PLAN

COMPDA

CONVENIO DIGEBOS - CARE - CUERPO DE PAZ - PDA

PLAN DE MANEJO, DE TERRENO

CODIGOS

DEPTO. ☐☐ MUNICIPIOS. ☐☐☐

FECHA DE INICIO DEL PLAN.

DIA: _____ MES: _____ AÑO: _____

(A) IDENTIFICACION, LOCALIZACION, Y OTROS DATOS DEL TERRENO QUE QUEREMOS MANEJAR:

1) NOMBRE DEL PROPIETARIO(A) DEL TERRENO: _____

2) DONDE SE LOCALIZA EL TERRENO: _____

3) CUANTAS CUERDAS Ó TAREAS TIENE EL TERRENO: _____

4) DE QUE TAMAÑO SON LAS CUERDAS Ó TAREAS: _____

5) NUMERO DE MIEMBROS DE LA FAMILIA: H ☐ M ☐

6) PROMOTOR: _____

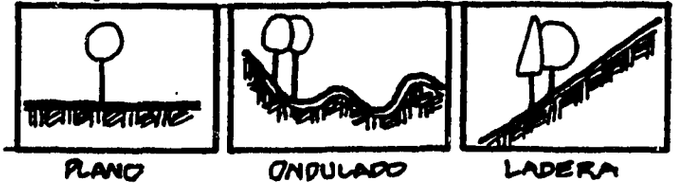
VOLUNTARIO: _____

MICROCUENCA: _____

(B) CONOCIENDO EL TERRENO ¿QUE RECURSOS TIENE?

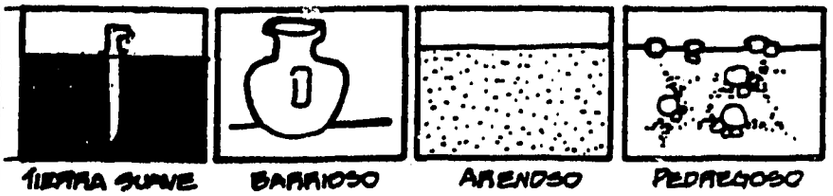
MARQUE UNA "X" SOBRE EL CUADRITO QUE CORRESPONDE, PUEDE HACER COMENTARIOS MUY BREVES SOBRE LAS LINEAS QUE ESTAN DEL LADO DERECHO DE LOS CUADRITOS.

1) QUE PENDIENTE TIENE EL TERRENO:



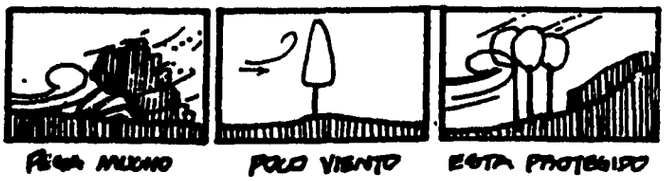
PLANO ONDULADO LADERA

2) QUE TIPO DE SUELO, HAY EN SU TERRENO:



TIERRA SUAVE BARRIOSO ARENOSO PEDREGOSO

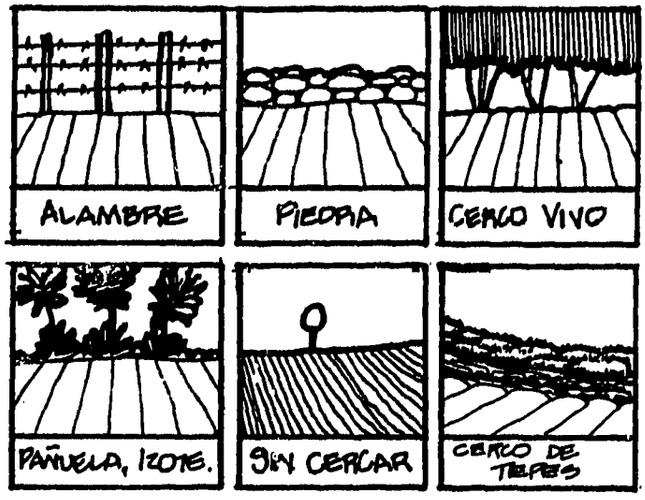
3) EL VIENTO:



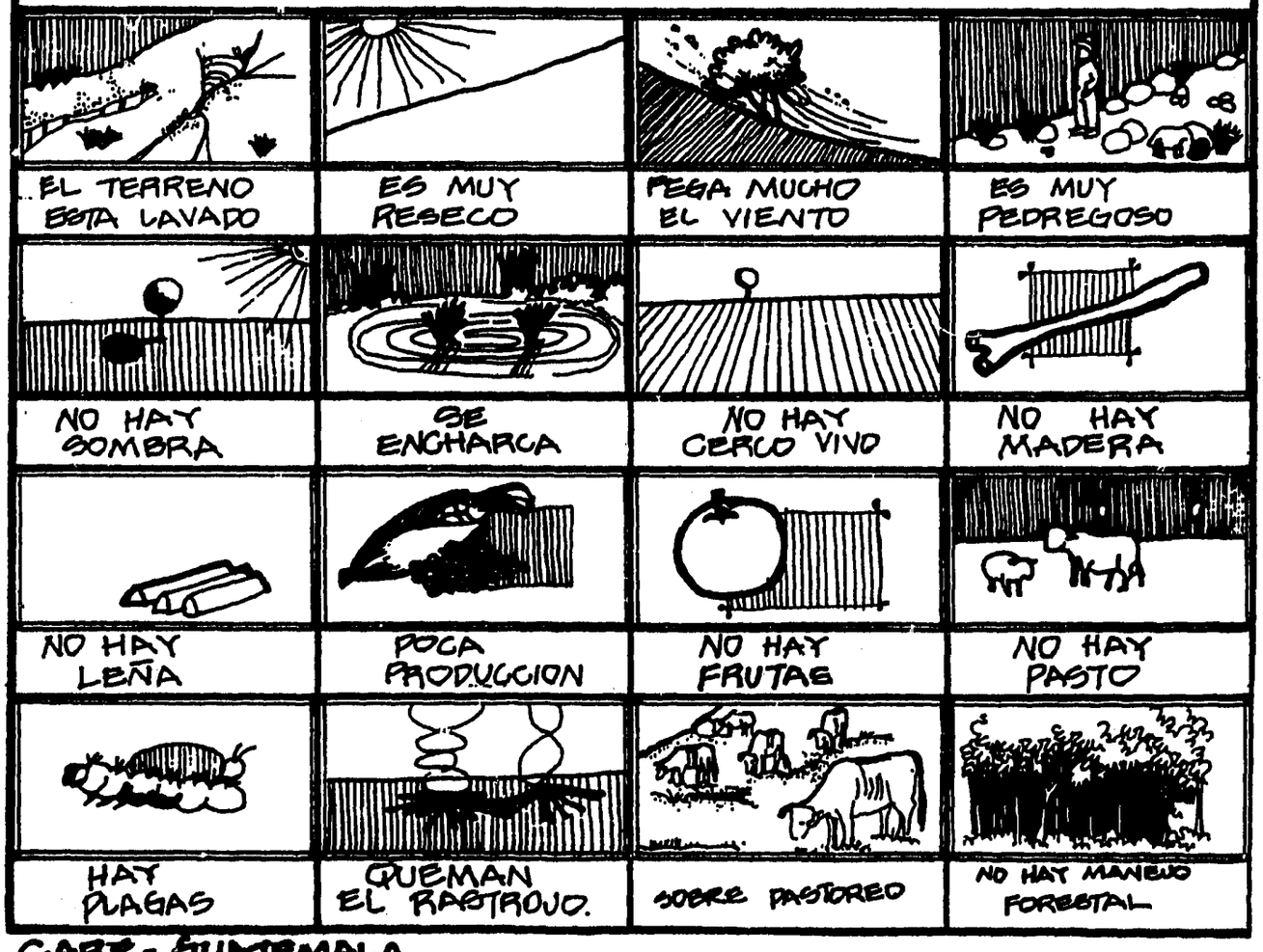
PEGA MUCHO POCO VIENTO ESTA PROTEGIDO

CARE - GUATEMALA.

4 EL TERRENO ESTA CERCADO CON?



D PROBLEMAS EN EL TERRENO:



5 EN EL TERRENO HAY?

AGUA		ARBOLES FORESTALES		ARBOLES FRUTALES		PASTOS	
	POZO		BOSQUETE		HUERTO PURO		ZACATERA
	RIO		GRUPO DE ARBOLES		HUERTO MIXTO		MANCHA
	NACIMIENTO		ARBOLES DISPERSOS		ARBOLES DISPERSOS		ORILLA
	ARROYO		GUAMIL				POTRERO
	RIEGO						BARRERAS Ó TALUDES
							HENO/ GUATERA

OTROS:

_____
_____
_____
_____
_____
_____
_____

E OBJETIVOS DE ESTE PLAN DE MANEJO

CONSERVACION DE SUELOS	MEJORAR LA HUMEDAD	PROTEGER DEL VIENTO	CONSERVACION EN BARRERA MUERTA
DAR SOMBRA PARA GENTE Y ANIMALES	DESENCHARCAR	CERCO VIVO	PRODUCIR MADERA
PRODUCCION DE LEÑA	MEJORAR LA PRODUCCION	PRODUCCION DE FRUTAS	PRODUCCION DE FORRAJE
CONTROL DE PLAGAS	APROVECHAR EL RASTROJO	TENER LOS ANIMALES QUE PODAMOS MANTENER.	MANEJO DE BOSQUES

(C) QUE SE DA EN EL TERRENO? DATOS SOBRE CULTIVOS Y PRODUCCION PECUARIA

No.	CULTIVOS QUE SIEMBRA	CUANTO SIEMBRA?	PRODUCCION	AÑO		

	CANTIDAD:	LECHE:	ESTIERCOL:		CANTIDAD:	HUEVOS:	ESTIERCOL:
	CANTIDAD:	LECHE:	ESTIERCOL:		CANTIDAD:	HUEVOS:	ESTIERCOL:
	CANTIDAD:	LANA:	ESTIERCOL:		CANTIDAD:	ESTIERCOL:	
	CANTIDAD:		ESTIERCOL:		CANTIDAD:	MIEL:	

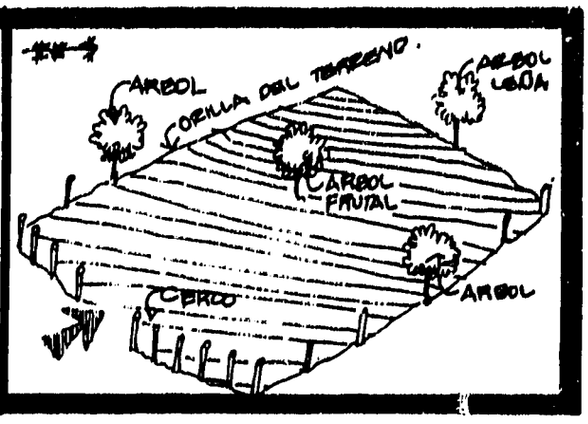
(F) ACTIVIDADES A REALIZAR POR AÑOS:

	ACTIVIDAD	AÑOS		
AGROFORESTERIA	ARBOLES DISPERSOS			
	ARBOLES EN CONTORNO			
	CORTINA ROMPE VIENTOS			
	CERCOS VIVOS			
	CULTIVO EN CALLEJONES			
CONSERVACION DE SUELOS	BARRERAS VIVAS			
	BARRERAS MUERTAS			
	TERRAZAS			
	ACEQUIAS			
	SURCO ABONERA			
	SIEMBRA DE PASTOS			
	ZANJA ABONERAS			
	ABONERAS			
P	PLANTACION FORESTAL			
	PLANTACION FRUTAL			
M/B	MANEJO BOSQUE NATURAL PLANTACIONES			

CARE-GUATEMALA. P= PLANTACIONES M/B= MANEJO BOSQUES.

6 CROQUIS DEL TERRENO, COMO ESTA HOY

(ANTES DEL PLAN DE MANEJO).



(H) CROQUIS DEL TERRENO DE COMO SE VERIA SI LO MANEJAMOS

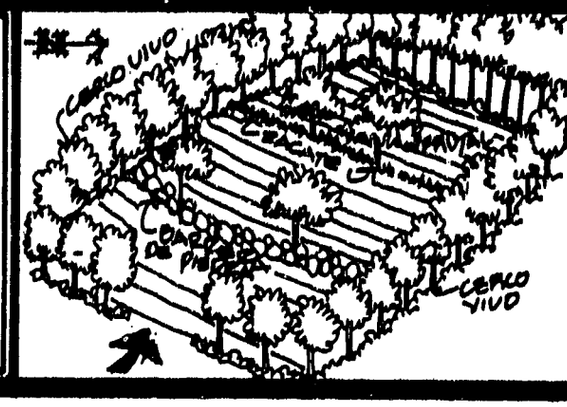


Table A1: Reporting Systems and Contractors' Responsibilities (cont'd)

Report Description	Responsibility	Frequency	Report Delivery Date/	Length of Reporting Period (in months)	Calendar Reporting Period (Month/Year)	Rationale
II. Performance & Technical Reports						
A. Annual Work Plan and Budgets	MSI	Annual	Oct 1/93	12	Oct 01/93-Sep 30/94	Wisecarver memo of 1/11/94 authorizes deviation from Sec. F., Art. 11.8.(1) of TIPS Contract.
			Mar 20/94	9	Mar 15/94-Dec 31/94	Wisecarver memo 1/11/94.
			Sep 20/94-97	18	Sep 15/94-Mar 15/96	
					Sep 15/95-Mar 15/97	
				10	Sep 15/97-Jul 14/98	Length of reporting period will be extended from 10 to 18 months in event of project continuation.
B. Quarterly Progress Report	MSI	Retroactive to Mar 15/94	Mar 20/94	9	Oct 01/93-Mar 15/94	None
		Quarterly	Jun 20/94	3	Mar 16/94-Jun 15/94	As stipulated in Sec. F., Art. 11.8.(2) of TIPS Contract Performance compared to calendar year baseline Annual Work Plan and subsequent Rolling Annual Work Plan, as updated in prior adjusted Quarterly Progress Reports.
			Dec 20/94	3	Sep 16/94-Dec 15/94	
			Mar 20/95	3	Dec 16/94-Mar 15/95	
			June 20/95	3	Mar 16/95-Jun 15/95	
			Dec 20/95	3	Sep 16/95-Dec 15/95	

a/ The authorized delivery date is not to exceed five working days subsequent to termination date of reporting period. (cont'd)

ANNEX II: EXAMPLE REPORTING SCHEDULE FORMAT (CONTINUED)

Table A1: Reporting Systems and Contractors' Responsibilities (cont'd)

	Report Description	Responsibility	Frequency	Report Delivery Date/	Length of Reporting Period (in months)	Calendar Inclusion and Termination Date	Comments
II.	B. Quarterly Progress Report (cont'd)	MSI	Quarterly	Mar 20/96	3	Dec 16/95-Mar 15/96	
				Jan 20/96	3	Mar 16/96-Jun 15/96	
				Dec 20/96	3	Sep 16/96-Dec 15/96	
				Mar 20/97	3	Dec 16/96-Mar 15/97	
				Jun 20/97	3	Mar 16/97-Jun 15/97	
				Dec 20/97	3	Sep 16/97-Dec 20/97	
				Mar 20/98	3	Dec 16/97-Mar 15/98	
				July 19/98	4	Mar 16/98-Jul 14/98	Length of reporting period will be reduced from 4 to 3 months in event of project continuation.
b/	C. Annual Summary Progress Report	MSI	Annual	Sep 20/94	6	Mar 15/94-Sep 15/94	Performance compared to calendar year baseline Annual Work Plan
				Sep 20/95	12	Sep 15/94-Sep 15/95	
				Sep 20/96	12	Sep 16/95-Sep 15/96	
				Sep 20/97	12	Sep 16/96-Sep 15/97	
				Jul 19/98	10	Sep 16/97-Jul 14/98	Length of reporting period will be extended from 10 to 12 months in event of project continuation.

a/ The authorized delivery date is not to exceed five working days subsequent to termination date of reporting period.
b/ Semi-Annual Performance reporting requirement was eliminated, as stipulated in Sec. F, Art. 11.B.(3) of the TIPS contract, per Wisecarver's memo of 1/11/94: "... Three Quarterly reports, followed by an Annual Summary (Progress) Report, which summarize accomplishments of preceding four quarters versus planned activities during the year.