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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

PANAMA

PROJECT PAPER

NATURAL RESOURCES MANAGEMENT

AID/LAC/P-342

Project Number: 525-0248
Loan Number: 525-T-058

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AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number _____	DOCUMENT CODE 3
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2. COUNTRY/ENTITY PANAMA	3. PROJECT NUMBER 525-0248
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BUREAU/OFFICE Latin America and the Caribbean	5. PROJECT TITLE (maximum 40 characters) Natural Resources Management
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PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 11 30 97	7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4) A. Initial FY 87 B. Quarter <input type="checkbox"/> C. Final FY 97
--	--

8. COSTS (\$000 OR EQUIVALENT \$1 =)						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(2,500)	()	(2,500)	(13,400)	()	(13,400)
(Loan)	(3,318)	()	(3,318)	(22,300)	()	(22,300)
Other						
1.						
2.						
Host Country	1,250		1,250	15,000		15,000
Other Donor(s)						
TOTALS	7,068		7,068	50,700		50,700

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPRO. RELATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
1) FN	233	090	090			13,400	22,300	13,400	22,300
2)									
3)									
4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 066 067 069	11. SECONDARY PURPOSE CODE 283
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12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)						
A. Code	ENV	BR	BL	LAB	PART	
B. Amount	40%	30%	10%	10%	10%	

13. PROJECT PURPOSE (maximum 480 characters)

To improve conservation, management and sustained productivity of soil, water and forest resources in the public and private sectors.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 09 89 09 96	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input checked="" type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other (Specify) _____
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6. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

Approval of methods of implementation/financing:


 Denton Larson, Controller

17. APPROVED BY	Signature Ronald D. Levin	Date Signed MM DD YY 11 30 97	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 11 20 97
	Title Mission Director USAID/Panama		

PROJECT PAPER

NATURAL RESOURCES MANAGEMENT PROJECT
(PROYECTO DE MANEJO DE RECURSOS NATURALES - MARENA)

USAID/PANAMA
September 18, 1986

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PROJECT AUTHORIZATION

Name of Country:	Panama
Name of Project:	Natural Resources Management
Number of Project:	525-0248
Loan Number:	525-T-058

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Natural Resources Management project for Panama involving planned obligations of not to exceed Twenty Two Million Three Hundred Thousand United States Dollars (\$22,300,000) in loan funds ("Loan") and Thirteen Million Four Hundred Thousand United States Dollars (\$13,400,000) in grant funds ("Grant") over a ten (10) year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. The planned life of the project is ten (10) years from the date of initial obligation.

2. The Project consists of assistance to Panama to improve the conservation and use of land, water and forest resources in the public and private sectors, to promote private industrial forest plantations and to strengthen the field operations of the National Directorate of Renewable Natural Resources (RENARE).

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Interest Rate and Terms of Repayment

The Government of Panama (GOP) shall repay the Loan to A.I.D. in U.S. Dollars within twenty (20) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. The Government of Panama shall pay to A.I.D. in U.S. Dollars interest from the date of first disbursement of the Loan at the rate of (i) three percent (3%) per annum during the first five (5) years of the grace period, (ii) four percent (4%) per annum for the second five (5) years of the grace period and six percent (6%) thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Commodities, Nationality of Services (Loan)

Commodities financed by A.I.D. under the Loan shall have their source and origin in Panama or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Except for ocean

shipping, the suppliers of commodities or services financed under the Loan shall have Panama or countries included in A.I.D. Geographic Code 941 as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Loan shall be financed only on flag vessels of Panama or countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing.

c. Source and Origin of Commodities, Nationality of Services (Grant)

Commodities financed by A.I.D. under the Grant shall have their source and origin in Panama or in the United States, except as A.I.D. may otherwise agree in writing. Except for ocean shipping the suppliers of commodities or services financed under the Grant shall have Panama or the United States as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Grant shall be financed only on flag vessels of the United States, except as A.I.D. may otherwise agree in writing.

d. Conditions Precedent to Initial Disbursement

Prior to any disbursement under the Loan or Grant, or to the issuance by A.I.D. of commitment documents under the Project Agreement pursuant to which disbursement will be made, the Government of Panama shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(1) a legal opinion of the Attorney General that the Agreement has been duly authorized and/or ratified by, and executed on behalf of the Government of Panama, and that it constitutes a valid and legally binding obligation of the Government of Panama in accordance with all of its terms;

(2) a statement of the name of the person holding or acting in the office of the Borrower and of any additional representatives, together with a specimen signature of each person specified in such statement;

(3) evidence that the Deputy Director of RENARE has been appointed project manager of the public sector components of the Project, and that the Technical Committee has been established in RENARE;

(4) an annual implementation and financial plan for all the activities to be undertaken during the first year of the Project.

e. Conditions Precedent to Disbursement for the Reforestation Fund (Loan)

Prior to any disbursement under the Loan, or to the issuance by A.I.D. of commitment documents under the Project Agreement pursuant to which disbursement will be made for the Reforestation Fund, the GOP

shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(1) evidence that the Reforestation Fund has been legally established as a trust fund under the laws and regulations of Panama;

(2) evidence that a financial institution has been designated as Administrator of the trust fund and a signed agreement which sets forth the procedures for administration of the trust fund, the fees that will be charged for fund administration, and the policies, procedures and reporting requirements for on-lending to participating banks;

(3) an agreement between the Administrator and at least one participating bank which will make subloans under the Fund.

f. Conditions Precedent to Disbursement for Construction (Loan)

Prior to any disbursement under the Loan, or to the issuance by A.I.D. of commitment documents under the Project Agreement pursuant to which disbursement will be made to finance any construction under the Project, the GOP shall, except as A.I.D. may otherwise agree in writing:

(1) obtain USAID/Panama's approval of the architectural drawings and/or engineering plans and the building site;

(2) furnish to A.I.D. evidence of RENARE's title to the land on which the building or buildings will be constructed.

g. Recurring Conditions Precedent to Disbursement (Loan and Grant)

Prior to any disbursement, or to the issuance by A.I.D. of commitment documents under the Project Agreement pursuant to which disbursement will be made to finance Project activities each year after the first year of the Project, the GOP shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D., an annual implementation plan and financial plan for such year which has been approved by the Project Technical Committee of RENARE and signed by RENARE's Director or Deputy Director.

h. Conditions Precedent for Continuing Project Disbursements 48 months after Signing Project Agreement (Loan and Grant)

Prior to any disbursement, or to the issuance by A.I.D. of commitment documents under the Project Agreement pursuant to which disbursement will be made to finance Project activities forty-eight (48) months after signing the Project Agreement, the GOP shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D., evidence that specific actions have been completed to: classify the land of the Canal Watershed as to appropriate use; demarcate and patrol the boundaries of established reserves; establish a cadastre and census of the occupants; and develop a program to halt destructive land use practices.

i. Covenants

The GOP shall covenant that, unless A.I.D. may otherwise agree in writing:

(1) It will prohibit the granting of government loans (including those from government owned financial institutions as the Agricultural Development Bank and the National Bank of Panama), concessions and development permits in areas designated as national parks or equivalent reserves except as authorized by RENARE under applicable legislation.

(2) It will require that the granting of land titles and use rights, mining and timber concessions, river and coastal use permits, and road construction projects be subject to a determination by RENARE that the proposed land use or development is appropriate and that negative environmental impacts are minimized.

(3) It will establish, in form and substance, satisfactory to A.I.D., an evaluation and audit program as part of the Project, and will complete at least four in-depth evaluations. The evaluations will (i) measure progress in Project implementation, (ii) identify problems in execution and propose corrective action, and recommend changes in the allocation of resources among the Project components, as necessary.

(4) It will provide an adequate central headquarters building for RENARE throughout the Project either at the present location in Paraiso, or through the acquisition of a permanent building.

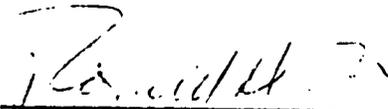
(5) That all Project funded equipment, vehicles and commodities provided to RENARE will be the property of that agency and used exclusively for Project purposes.

(6) It will adjust, by the fifth year of the Project, the minimum stumpage value of public timber to reflect the market value of the end product.

(7) Fees and other income collected by RENARE for stumpage, forest concessions, and other services will be used for the natural resources management activities of RENARE.

j. Waiver

A source and origin waiver from A.I.D. Geographic Code 000 is hereby approved to permit the procurement of training services from countries included in Code 941, in an amount not to exceed \$500,000.



Ronald D. Levin
Director
7/30/76

Date

NATURAL RESOURCES MANAGEMENT PROJECT PAPER

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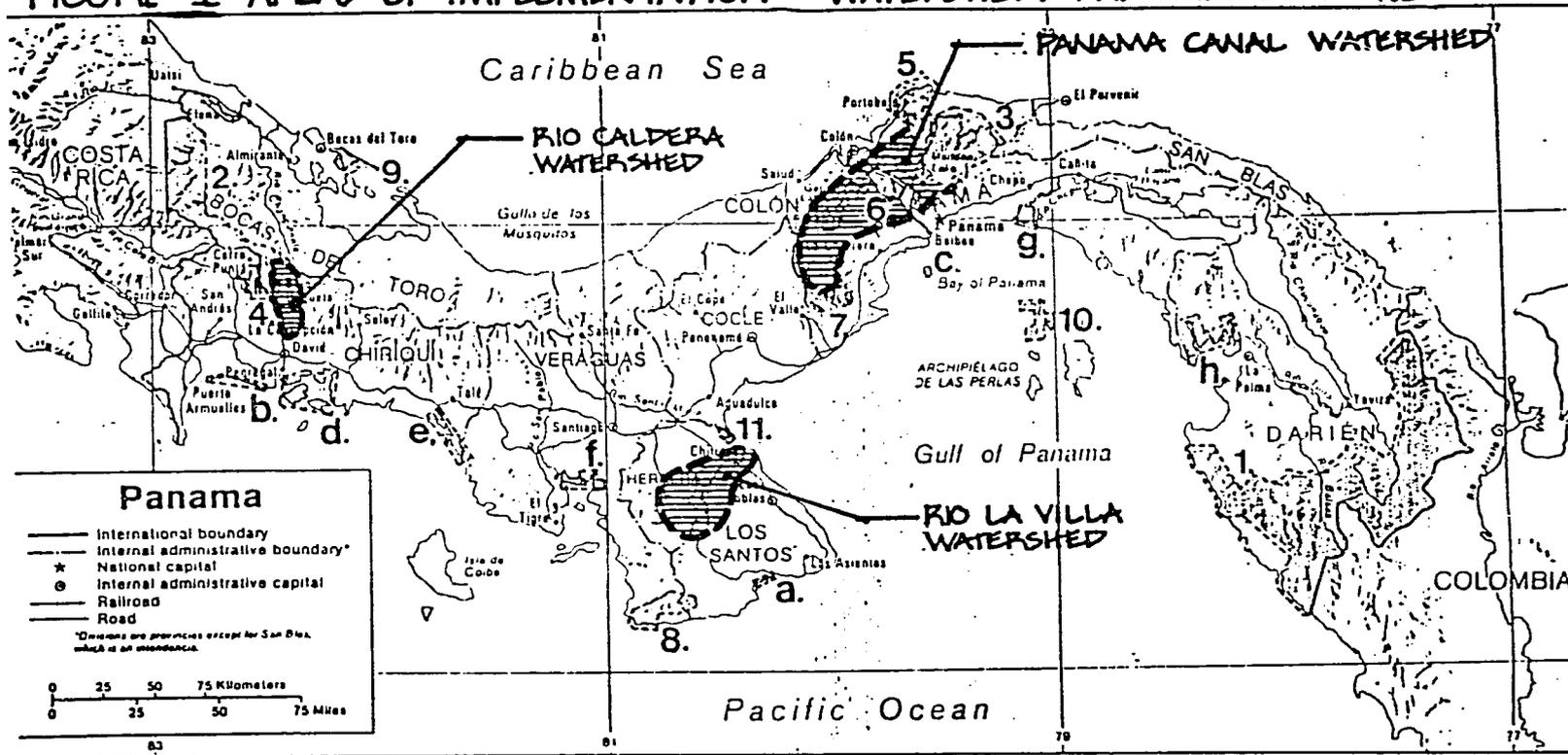
- A. Institutional Analysis
- B. Technical Analysis
- C. Social Soundness Analysis
- D. Financial Analysis
- E. Economic Analysis

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ACRONYMS

AID or USAID	United States Agency for International Development (Agencia de los Estados Unidos para el Desarrollo Internacional)
BNP	Banco Nacional de Panamá / (National Bank of Panama)
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza (Tropical Agricultural Center for Research and Training)
CONAMA	Comisión Nacional del Medio Ambiente (National Environmental Commission)
ESNACIFOR	Escuela Nacional de Ciencias Forestales (National School of Forestry Science - Honduras)
FAO	Food and Agricultural Organization of the United Nations (Organización de las Naciones Unidas para la Agricultura y la Alimentación)
GOP	Government of Panama / (Gobierno de Panamá)
IDAAN	Instituto de Acueductos y Alcantarillados Nacionales (National Water and Sewers Institute)
IDIAP	Instituto de Investigación Agropecuaria (Institute for Agricultural and Livestock Research)
IRHE	Instituto de Recursos Hidráulicos y Electrificación (Institute for Hydraulic Resources and Electricity)
MIDA	Ministerio de Desarrollo Agropecuario (Ministry of Agricultural and Livestock Development)
MIPPE	Ministerio de Planificación y Política Económica (Ministry of Planning and Economic Policy)
MOP	Ministerio de Obras Públicas / (Ministry of Public Works)
NECCA	National Bipartisan Commission on Central America / (Comisión Nacional Bipartita en Centro América)
PCC	Panama Canal Commission / (Comisión del Canal de Panamá)
RENARE	Dirección Nacional de Recursos Naturales Renovables (National Directorate for Renewable Natural Resources)
ROCAP	Regional Offices of Central America and Panama for AID/ (Organización Regional para Centro América y Panamá para AID)
SENEAGRO	Servicio Nacional de Extensión Agropecuaria (National Agricultural Extension Service)
TWMP	Regional Tropical Watershed Management Project (ROCAP/CATIE) (Proyecto Regional de Manejo de Cuencas Tropicales (ROCAP/CATIE))

FIGURE 1: AREAS OF IMPLEMENTATION WATERSHEDS AND NATIONAL PARKS



● NATIONAL PARKS AND EQUIVALENT RESERVES SYSTEM*

NATIONAL PARKS

1. NP, BR, WHS Darién
2. (NP) La Amistad
3. PN Chagres
4. PN Volcán Barú
5. PN Portobelo
6. PN Soberania
7. PN Altos de Campana
8. PN Cerro Olla
9. (PN) Bocas del Toro
10. (PN) Islas de las Perlas
11. PN Sarinua

WILDLIFE REFUGES

- a. (WR) Isla de Cañas
- b. (WR) Playa la Barqueta
- c. WR Islas Taboga y Urava
- d. (WR) Bahía de los Muertos
- e. (WR) Ríos Tabasarà y Bubi
- f. (WR) Golfo de Montijo
- g. (WR) Río Bayano
- h. (WR) Golfo de San Miguel

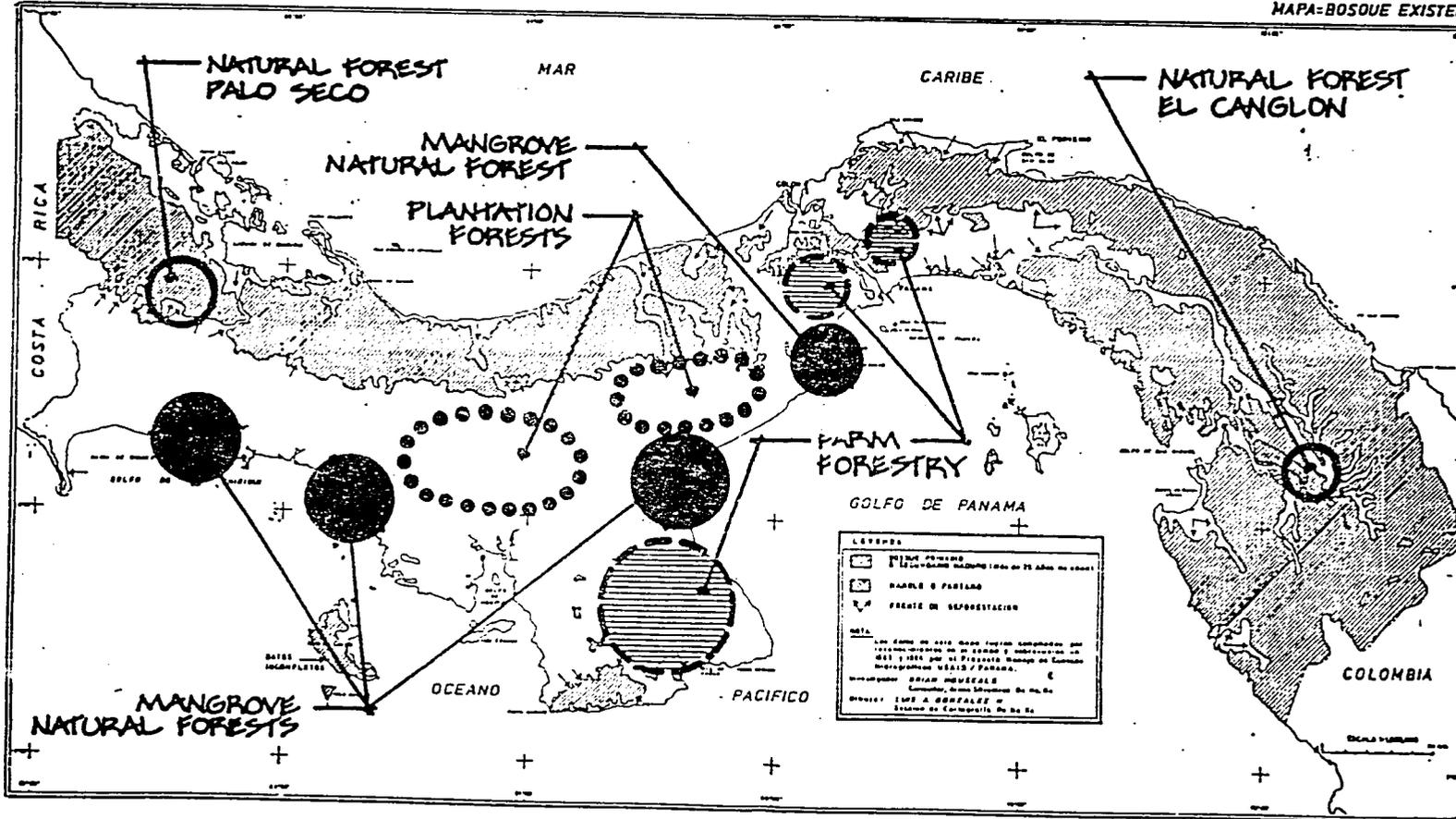
* Map depicts only wildlands units recommended for management by Dept. of National Parks and Wildlife / RENARE.

() - Proposed management category

FIGURE 2: AREAS OF IMPLEMENTATION.
NATURAL FORESTS, FARM FORESTS AND INDUSTRIAL PLANTATIONS

REPUBLICA DE PANAMA

MAPA-BOSQUE EXISTENTE



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I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

The Project Development Committee recommends that a loan in the amount of \$22.3 million, and a grant of \$13.4 million, be authorized to the Government of Panama (GOP) to assist in financing the Natural Resources Management Project.

B. Borrower

The Borrower will be the Ministry of Planning and Economic Policy (MIPPE) representing the GOP.

C. Summary

The Project goal is to protect and manage Panama's renewable natural resources to permit sustained economic and social development. The purpose is to improve conservation and use of soil, water, and forest resources. The problem addressed is the unplanned and exhaustive use of the renewable natural resources of Panama. Deforestation for agriculture, grazing, and timber extraction has resulted in seasonal flooding and drought, soil erosion, and loss of land productivity. Dry season navigation of the Panama Canal is threatened. Rare biological resources are endangered or have vanished. At present rates of forest clearing and commercial logging, local fuelwood and industrial timber supplies will be exhausted by the year 2005.

USAID/Panama identified these problems and responded in 1979 with the Watershed Management Project (525-0191). However, further actions are needed to conserve soils, manage water resources, protect biological resources, and sustain the productivity of the natural forests. This Project builds on the experience of the prior project, concentrating activities in critical resource areas throughout the country. The technical capabilities of the Directorate for Renewable Natural Resources (RENARE) will be strengthened and its energies concentrated on field management of natural resources. Private investment in forestry will be promoted to provide the future industrial timber required by the national economy. This Project has five components:

1. Watershed Management and Soil Conservation actions in the Panama Canal, Rio La Villa and Rio Caldera watersheds will concentrate on grazing management and tree planting. The water and soil survey capability of RENARE will be strengthened to provide a basis for environmental assessments and watershed planning. Management of two other watersheds will be planned and implemented.
2. National Parks and Wildlands Management will be strengthened to protect fragile upland watershed areas for multi-purpose uses and to conserve threatened biological resources and ecosystems. Environmental education and non-damaging park use will be promoted.
3. Natural Forest Management field units will be established in the three areas of remaining natural forests in the country. Management programs will be implemented to increase forest productivity.

4. Farm Forestry will be promoted to small farmers for tree planting for fuel and other uses to increase family incomes and conserve soils.

5. Private Industrial Plantations will be promoted to encourage investment in tree growing on a commercial basis to supply the local wood products industry. A credit program will finance planting costs.

RENARE will implement the first four components in coordination with other agencies of the public sector. The Project will assist RENARE to strengthen the management and logistical support of field operations. The private sector will implement the industrial plantation component with technical support from RENARE.

D. Project Inputs (\$ Millions)

<u>Project Components</u>	USAID		<u>GOP</u>	<u>TOTAL</u>
	<u>Grant</u>	<u>Loan</u>		
RENARE Public Sector Components	7.7	11.1	12.5	31.3
Private Reforestation Component	1.1	6.5		7.6
USAID Project Management & Support	2.1			2.1
<u>Component Totals</u>	<u>10.9</u>	<u>17.6</u>	<u>12.5</u>	<u>41.0</u>
Inflation & Contingencies	2.5	4.7	2.5	9.7
<u>Project Totals</u>	<u>13.4</u>	<u>22.3</u>	<u>15.0</u>	<u>50.7</u>

E. Project Development

USAID/Panama Project Development Committee:

Gary Bayer, AGR
Douglas Chiriboga, ODR

Juan Belt, ODP
Stella de Patiño, Controller

Project Design Team:

Consultants

Alan Randall, Forestry Advisor
Christopher Smith, Natural Resources Advisor
Freeman Smith, Watershed Management Planner
Brian Houseal, Parks Planner
Jan Laarman, Forest Economist
Stanley Heckadon, Rural Anthropologist
Henry Tschinkel, Tropical Forester (ROCAP)
Frank Zadroga, Environmental Advisor (ROCAP)

RENARE

Moisés del Río, Director
Sergio Ducreux, Deputy Director
Jorge Mendieta, Watershed Manager
Erasmus Vallester, Parks Planner
Carlos Melgarejo, Forester
Rosa Barriá, Program Evaluator
Yariela Hidalgo, Parks Manager
Manuel Hurtado, Forester

Project Paper Reviewed by:

John L. Lovaas, Deputy Director
Denton Larson, Controller
Michael Hacker, Chief, ODR
Michael Kenyon, COO

David H. Schaer, Chief, AGR
Annette Adams, RLA
Bernard Masters, Chief, ODP

Project Paper Approved by: Ronald D. Levin, Mission Director

II. PROJECT BACKGROUND

A. The Problem

The natural resources of Panama were abundant in the recent past. There was little public concern to conserve and manage natural resources on a sustainable basis. As the population expanded (more than doubling since 1960), forests were converted to agriculture and grazing. The soils were soon depleted and the users moved on to new areas. Denuded land eroded or reverted to brush and low productivity grasses. By 1985 only 40% (31,245 Km²) of the original natural forest remains. Essentially all of the lowland forests of the Pacific slopes have been eliminated with the exception of Darien province, coastal mangroves, and a narrow area along the Panama Canal. On the Atlantic side the forest is largely intact except where new roads give access, such as the pipeline road in Bocas del Toro.

Good agricultural land in Panama is limited. By USDA standards there is no Class I (unrestricted as to use) land in the country, and 75% is in Class V or higher (suitable for forestry or permanent crops but with severe limitations on agricultural use without expensive conservation investments). Demand for farm land grows as the population of 2 million increases at 2.3% per year. The growing rural population is increasingly forced into less suitable areas such as steep uplands and fragile Atlantic slopes in search of new land. Deforestation followed by extractive agricultural practices is leading to reduced soil productivity and water retention capacity, followed by severe erosion.

Deforestation has other impacts that are less apparent than floods and aridity. Unique tropical ecosystems are destroyed with land clearing. Fuelwood is increasingly scarce in southwestern Panama where the rural population has no affordable alternative sources of energy. At current land clearing and wood consumption rates the commercial forests of Panama will be gone in 20 years.

The original abundance of forests and unoccupied land in Panama delayed national recognition of the importance of conserving natural resources. Past public policies emphasized the "conquest" of the jungle, conversion of the land to agricultural and grazing uses. The occupation of new lands was encouraged without regard to land capability or sustained use. Private sector investment was largely exploitive, stressing short-term income generation. It was not until the 1980's that a national awareness of the devastation of natural resources began to emerge.

B. Problem Response

The current environmental legislation was enacted in 1966 for the conservation and management of water and forests. RENARE was formed in 1973 through the consolidation of small management units within the Ministry of Agricultural Development (MIDA) responsible for soils surveys and forest conservation. Initial activities were focussed on the administration of the law governing the use of forests and water resources.

With the initiation of the USAID-supported Watershed Management Project in 1979 the first significant program resources became available to RENARE. The purposes of this project were (1) to build up RENARE as an institution; (2) to increase public awareness of the importance of natural resource conservation; and (3) to establish watershed management programs in the Canal, Rio La Villa and Rio Caldera watersheds. Through this effort, with the support of FAO and others, RENARE's capabilities increased. The staff of the agency increased from 440 to 850, and skill levels were improved through training and technical assistance. Watershed management activities of soil conservation and the introduction of improved pasture provided initial field operational experience. Four thousand hectares of public lands were reforested. A preliminary strategy was written to protect and develop national parks and equivalent reserves. Protection facilities were established in three national parks. A farm woodlot demonstration program was started and gained local support. A public education campaign raised national consciousness of the problems of natural resource degradation and fostered the formation of private voluntary groups that support environmental and conservation actions.

Despite these gains, RENARE is not yet fully effective as a natural resource management agency. RENARE has had a limited role in the implementation of field programs as decentralized MIDA Regional offices control field resources. Despite nominal authority for renewable natural resources conservation and use, RENARE's activities have been limited to passive advisory functions rather than the active promotion of conservation and provision of services to the public. Its major field activity was limited to the Watershed Management Project. Lessons were learned from the implementation of the project, and confirmed by evaluations and other studies of RENARE. The following lessons learned were used in designing the Project to strengthen RENARE's effectiveness in conserving natural resources.

- o RENARE's field projects were implemented separately from the technical departments. Not all RENARE staff and material resources were used effectively. Experience was not institutionalized.
- o Technical assistance received was limited in utility. Vehicles, field equipment and funds for field operations were inadequate.
- o The management of natural forests for sustained timber production received little priority. Timber was harvested without supervision and with inadequate economic returns to the state.
- o Data collection and analysis of soils, water and biologic resources were limited. Information was inadequate for formulating policies and plans, or to measure the impacts of resource use on the environment.
- o RENARE did not offer technical advisory services to promote organized popular support of conservation measures and to stimulate private investment in reforestation and natural resources management.

C. Priorities and Strategy

1. Government of Panama Priorities: The Government of Panama is giving increasing priority to natural resources management and conservation. The Ministry of Agriculture, in consultation with other agricultural agencies, released a statement of objectives, policies and strategies in October 1985. One of the four priority areas was natural resources. Action was called for to conserve and manage principal watersheds, protect parks and reserves, maintain essential ecosystems, and to reforest degraded areas for protection and industrial purposes. These policies were supported at the political level in the 1986 Investment Budget which approved the largest MIDA program appropriations, exclusive of credit, for natural resources management.

President Eric Arturo Delvalle, in a "state of the nation" address in January 1986, emphasized the importance of the protection and rehabilitation of the Canal Watershed, and called for increased protection activities. MIDA has prepared a draft law to establish RENARE as an autonomous Institute; the law will be presented to the Legislature in April 1986. MIDA also imposed a moratorium on all forest concessions in December 1985 to force compliance with RENARE legal requirements to reforest harvested areas. An interagency Canal Watershed Working Group was formed in July 1985 to achieve better coordination of public agencies and local government efforts to control and regulate land use and development matters.

In the private sector, various voluntary associations dedicated to conservation were formed in 1984-1985. They raised \$200,000 in private funds in 1985 to support and complement RENARE efforts. Landowners and private companies show increasing interest in investing in tree planting for industrial purposes. Five private banks have expressed interest in participating in a reforestation loan program.

2. USAID Policy Guidelines: This Project closely follows AID's policies for natural resources and environmental conservation as described in Policy Determination Number 6 (PD-6) of April 26, 1983. PD-6 sets out specific problems for priority consideration: range degradation, declining soil productivity, soil erosion, loss of biological diversity, and development pressures on coastal zones. AID's policy response to these problems is "through appropriate natural resources management (programs)...such as those addressing watershed protection, soil stabilization, social forestry, establishment or enhancement of natural areas or reserves, coastal zone management, and identification of plant and animal species in remote areas...". The Project also conforms with the guidelines of PD-7 (Forestry Policy and Programs, May 16, 1983), the AID Policy Paper on Energy (July 1984), and with directives to promote biological diversity and conserve wildlands and humid tropical forests.

Nine recommendations of the Kissinger Commission (NBCCA Report) and the Jackson Plan will be followed in Project implementation (NBCCA recommendation numbers 21, 22.1, 22.2, 22.4, 22.6, 22.7, 22.8, 22.9 and 24). For example, the Project will "clarify the legal status and use of public lands to check deforestation and the degradation of the environment", and

"study the holding of idle but productive land, and programs to capture capital gains from public works for the public". It will also implement recommendations to encourage individual initiative, private investment and credit programs in rural areas, to provide a basis for economic growth.

3. Joint Commission on the Environment: Project actions to be implemented in the Panama Canal Watershed are consistent with the recommendations of the Comprehensive Management Plan of the Panama Canal Watershed adopted by the US/Panama Joint Commission on the Environment (JCE Resolution No. 5, 6/30/83). The Project begins to implement four of the six programs recommended in the Third Phase of the JCE Plan: Program 1, Protection, Control and Monitoring of the Canal Watershed; Program 2, Determination of Appropriate Use of Natural Space; Program 4, Rehabilitation of Critical Areas; and Program 6, Data Collection Service.

4. USAID Mission Strategy: The USAID/Panama program goal in the natural resource sector is to increase productivity on a sustainable basis from land, forest and water resources. This goal requires conservation to ensure continued resource availability, and management to increase the contribution of natural resources to economic and social development. The strategy is to: (1) encourage the inclusion of natural resources management and conservation in policies and resource allocations in the public and private sectors; (2) strengthen public programs and institutions that conserve and use natural resources for sustained production; (3) promote private sector investment in forestry and the managed use of private lands; and (4) foster popular environmental awareness and participation in natural resources management and conservation. This Project is the major vehicle to achieve the Mission's natural resources strategy.

5. Project Strategy: The Project is designed to achieve Panama's objectives in improving natural resources conservation by implementing the Mission strategy. Project strategy is two-fold: (1) to support those activities that will protect fragile lands from further destruction; and (2) promote acceptable use of those renewable resources that can sustain development. To do this the Project will:

- o Concentrate RENARE staff and resources in priority field operations that conserve and develop natural resources that are endangered or not fully productive;
- o Increase operational capability by providing RENARE field staff with technical assistance, training, and the equipment and facilities required to be effective;
- o Manage productive natural forests for sustained timber supply and increased economic benefits to the nation;
- o Develop a data collection and analysis capability to provide the information needed for planning and management, and the assessment of potential environmental impacts.

Since government funds are limited, the scale of activities is adjusted to the absorptive capacity of RENARE. To complement RENARE's activities the Project will promote public support of conservation efforts, and private investment in reforestation, improved pastures and soil conservation.

D. Complementary USAID Activities

The Project will be complemented by the USAID Natural Resources Education Project (525-0257), implemented by the World Wildlife Fund and the Fundación PA.NA.M.A. It strengthens the capacity of private voluntary organizations to participate in solving environmental and natural resource problems. The Project will also receive direct support from the AID/ROCAP financed Tropical Watershed Management and Tree Crop Production Projects implemented by CATIE. Both regional projects have a technical coordinator in Panama who is responsible for support of the activities of RENARE and this Project. Both projects provide technical assistance, long-term training at CATIE, and in-country short courses and seminars.

E. Relationship to Other Donors

The natural resource sector in Panama has received little direct financial assistance from other donors over the past decade. Several FAO projects provided technical assistance and training to RENARE staff from 1979-1984, and completed a number of technical and research studies on forestry problems in collaboration with RENARE. These studies were used in the preparation of the forestry components of this Project. Other technical assistance over the last five years was received through bilateral programs (France in soil conservation, Spain in forestry and watershed management, Japan in forest inventory). RENARE staff gained experience as counterparts in these efforts and through training provided by these programs and others. (See Table II - 1)

III. PROJECT DESCRIPTION

A. Goal and Purpose

The goal of the Project is to protect and manage Panama's renewable natural resources to permit sustained economic and social development. The purpose is to improve conservation, management and sustained productivity of soil, water and forest resources, in the public and private sectors.

B. End of Project Status

1. Five priority watersheds will be under management. Water and soil survey information will be compiled, analyzed and made available for watershed planning and environmental impact assessment purposes.
2. The strategic plan for nineteen national parks and reserves will be implemented to protect fragile lands and endangered flora and fauna. Encroachment by agriculture and other inappropriate land users in these reserves will be halted.

TABLE II-1: OTHER DONOR RENEWABLE NATURAL RESOURCE ACTIVITIES

<u>PROJECT</u>	<u>DONOR</u>	<u>DURATION</u>	<u>LOCATION</u>	<u>COMPONENTS</u>	<u>FUNDS (B/.1000)</u>
Environmental Education, Management of the National Monument, Research	Smithsonian Tropical Research Institute	On-going	Barro Colorado Island/Gatun	Public Education Training, Research	
Skills Training of Indians and campesinos (HASEIC-PMA)	FAO-IFAD	1985-1989	Chiriqui, Veraguas Coclí	Agroforestry Community Development (Food for Work)	Donation: 570 GOP: 3,600
Integrated Rural Development of the Guaymie (DRI-Guaymie)	FAO-IFAD	1985-1989	Western & Central Regional	Reforestation	Donation: 870 GOP: 660
Darien National Park	(WWF/UNESCO/CATIE)	1985-1989	Frontier of Colombia and Panama	Research, Planning, Park Use Devlp.	Donation: 160 GOP: 100
Conservation of Agricultural Soils	Government of France	1980 to Present	Province of Chiriquí	Mission Follow-up	One technician (Volunteer)
National Conservation Association (ANCON)	Nature Conservancy, local businesses & private individuals	On-going	Soberania Park, Isla Las Perlas, Development	Education, Protection, and Park Use	Donation 160

3. Three natural forest reserves will be managed for long-term productivity and increased yields. New timber sale practices will be in use, increasing revenues from public forest lands.

4. Small landholders in the priority watersheds will have planted 6,000 hectares of trees on their land or in community forests for fuelwood and other local uses.

5. Private forest plantations (20,000 ha.) will be established and managed by landowners to supply future industrial demand. A loan program will be capitalized to finance plantation establishment costs.

C. Project Components

1. Watershed Management and Soil Conservation

a. Analysis: Prior to the initiation of the USAID-supported Watershed Management Project there was little successful experience in Panama with multipurpose watershed management. Previous projects had single-use purposes such as hydropower or municipal water supply. The Watershed Project was designed to develop RENARE as a natural resource management agency and to commence watershed management activities in critical areas of three watersheds: the Panama Canal (320,000 has.), Rio La Villa (80,000 has.) and Rio Caldera (20,000 ha.). These watersheds were selected through an analysis of the situation in nine watersheds of western Panama where there was a growing concern with the impacts of accelerating deforestation and conversion to grazing, and the resulting flooding and soil erosion. The parameters used in ranking the priority for management were: total area, population, social conditions, agricultural potential, hydrologic balance, resource degradation, existing investments, and planned future development. With USAID support additional staff was recruited, public lands were reforested, a park protection program begun, and soil conservation practices and improved pasture introduced.

Through these activities RENARE has gained valuable experience. Efforts to promote the planting of improved pasture grasses were successful and will be expanded in combination with advice on grazing management. Other conservation practices have been successfully introduced, chiefly the planting of trees on a demonstration basis, and have been accepted by small and medium-size landholders in the watersheds under management. These activities will be continued. This experience has also identified the need to integrate RENARE's departmental activities and to concentrate them in specific areas, the need for in-service training to increase staff capability, and the specific disciplines in which technical assistance is required. The collaboration and support of local inhabitants and other government agencies is also recognized as essential for effective watershed management.

b. Objectives: The objectives of the watershed management component are to: (1) improve management programs in three watersheds (Panama Canal, La Villa, Caldera), and in two new watersheds to be selected; (2) to strengthen RENARE capability in water and soils surveys to provide the information necessary for planning and management; and (3) to develop a capacity for environmental impact assessment.

c. Implementation: RENARE watershed management activities in the Panama Canal, Caldera and La Villa watersheds will be reprogrammed on the basis of recent evaluations. The agency will be organized on a geographic basis by watershed, and will concentrate on critical areas where pressures to use the land beyond capacity are most intense. Protection of the national parks and reserves that protect the uplands of watersheds will be strengthened through the Project. The introduction of farm forestry with small landowners, and the promotion of industrial plantations by larger landowners and companies will be coordinated in each watershed. Those areas that are classified as production forests will be placed under sustained yield forest management. These actions will reduce the pressure to cut trees in protection forests and other fragile lands that must be reserved for soil conservation and water supply objectives. As intra-departmental coordination is achieved by RENARE, a systematic program to collaborate with the activities of other public agencies (IDIAP, SENEAGRO, IRHE, PCC, IDAAN), chiefly through cooperative training and workshops, will be promoted.

(1) Management of Priority Watersheds: The Project will provide long-term (48 months) technical assistance in watershed management planning and conservation. This advisor will work with the field staff, principally the chiefs of each watershed, in the reprogramming and scheduling of activities that integrate the operations of RENARE and other essential agencies in priority areas. Through regional courses (TWMP) 40 staff members of RENARE and cooperating agencies will be trained in the fundamentals of watershed management, and 20 in the techniques of integrated watershed planning. Long-term training in watershed management (Master's level) will be provided at CATIE for four staff members to increase the professional competence of the agency. This training is scheduled so that the thesis research in Panama will be supported by the watershed management advisor, who will also overlap at least one year with each trainee. In addition to protection and private reforestation activities, RENARE will implement three soil conservation actions.

Soil conservation measures that are compatible with the existing farming systems will be tested in collaboration with IDIAP. These practices will be designed to reduce runoff velocity and erosion. They include mixed permanent and annual cropping, agroforestry, alternative tilling practices, and stream and gully control structures. The Project will train 40 technicians of RENARE and MIDA agencies in soil and water conservation extension (TWMP). With the assistance of the watershed management advisor RENARE will develop an in-service training program to teach 60 of the less experienced field staff in soil conservation and extension techniques. The Project will provide vehicles and equipment to support these activities and will provide resources for environmental education and conservation promotion meetings with local community leaders and public agency personnel.

Expansion of grazing is one of the major incentives for deforestation; it represents the predominant land use in the three watersheds under management. The Project will provide long-term technical assistance (24 months) in grazing management. This advisor will work with the RENARE staff in each watershed to develop demonstration farms of improved grasses and

pasture management with farmers who are willing to share in project costs. The Project will provide barbed wire and grass seed to other farmers who install fences and prepare planting sites. The combination of tree planting with grazing management will be promoted through the Farm Forestry component, inducing tree species (such as *Leucaena* spp.) which enrich the soil and provide dry season forage in addition to fuelwood and other products. RENARE staff (20 people) will be trained in instructional and promotional methods through the TWMP to increase their effectiveness in the design and delivery of extension materials to watershed populations.

The protection and restoration of forests on public and private lands will be promoted by the Forest Service of RENARE in each watershed through control of logging, clearing, and burning. Natural regeneration will be protected on cut over public lands by fencing and fire control. Reforestation of private holdings will be promoted to small landholders through the Farm Forestry component, and to larger landholders through the Industrial Plantation component.

RENARE will bring two additional watersheds under its management in years five and seven of the Project. These watersheds will be selected with MIPPE on the basis of national development objectives and priorities and the availability of resources. A methodology for determining watershed investment priorities is being developed for Panama by the ROCAP/CATIE Regional Tropical Watershed Management Project. This methodology is based on an analysis of: existing infrastructure, area, land use capability, hydroelectric potential, water and forest resource potential, degree of environmental degradation, socio-economic characteristics, population density, spontaneous colonization, and planned future development. Cost/benefit analysis will be used to rank specific investment alternatives where the negative impacts and positive benefits can be quantified. The Project will provide assistance to RENARE to collect that information, and to make the analyses needed to apply the methodology, and to prepare the resulting watershed management plans. The Project will also finance supplementary studies of socioeconomic impacts and population acceptance where required for effective planning. Local inhabitants, the representatives of other water use agencies, local public officials and producer associations will be included in the planning process.

(2) Water and Soil Survey Capability: Short-term (6 months) technical assistance in groundwater and surface hydrology will be provided by the Project. An advisor will assist RENARE to compile and analyze data on groundwater and aquifer resources, and to integrate this information with hydrologic and climate records. RENARE technicians and other water management agencies will be trained through CATIE regional programs in surface and groundwater hydrology (36 people). The Project will provide field equipment and vehicles for water resource inventories, and stream gauging and agrometeorological stations. These stations will be built in river basins for which management plans will be prepared. Water quality testing kits will be provided for field staff, and equipment and supplies procured for the analysis of water quality in the laboratory of RENARE. The Project will fund the

contracting of more advanced testing of samples (for pesticides and trace elements) from the IDIAP laboratory or the university. Training in water quality analysis will be provided to 12 people. Water quality and supply data will be used by RENARE in the granting of water concessions and for subsequent monitoring of water use impacts.

The Project will provide long-term (24 months) technical assistance in soils classification and land capability assessments. This advisor will assist the soils survey unit to compile and analyze existing soils information, and in planning and implementing soil surveys and land capability mapping. Thirty technicians from RENARE and other agencies will be trained in land classification techniques through the TWMP. An in-service course for 40 RENARE soil survey assistants will be developed to expand the scope of the soils inventory program. The Project will finance aerial photography, vehicles, field equipment and soil sampling kits. Additional equipment will be provided to RENARE's field soils laboratory, and short-term (6 months) technical assistance will be provided to train laboratory staff in soils analysis and classification. By the end of the Project RENARE will have the capability to survey and classify 50,000 ha. per year, and will have completed 300,000 ha. of surveys.

Eight RENARE staff members will be trained in soil and water data base management at CATIE. The Project will provide a microcomputer to enable RENARE to build a data bank of baseline data on water and soils information. This data bank will be compatible with that developed by ROCAP/CATIE for Central America to permit the exchange of data.

(3) Environmental Assessments: Enhanced survey capability and baseline data on soils and water will enable RENARE to review or participate in environmental studies of proposed development actions such as road construction or hydroelectric projects. Training in environmental impact assessments will be provided to the professional staff of RENARE and other agencies by the Project. The Project will also provide technical assistance and training to develop the standards and specialized skills that may be required by RENARE for this function. RENARE will be given technical assistance and equipment to carry out environmental assessments on activities which have potentially significant environmental impacts. Assessments will be carried out for: (1) road construction in or near RENARE resource management units; (2) management plans for watershed, parks, and reserves; and (3) major development activities in watersheds with management programs.

d. Outputs Watershed Management Component

- o Grazing management, forest protection, tree planting and soil conservation programs will be implemented in the Panama Canal, La Villa and Caldera watersheds.
- o Natural resources will be surveyed, watershed management plans prepared, and management initiated in two new priority watersheds.

- o Hydrology and soils survey and analysis capability will be developed to provide a basis for planning natural resource management. Capability to survey up to 50,000 ha. per year will be achieved by the end of the project.
- o A data bank of information on watershed management parameters will be established to provide information for planning and assessment.
- o An environmental assessment capacity will be developed for the identification of the impacts of development and to prescribe mitigation measures. Eight assessments will be completed.

e. Inputs: The Project will provide technical assistance, training for RENARE and other agency technicians, vehicles, laboratory and field equipment, aerial photography and conservation materials for conservation activities. Financial requirements are: USAID \$2,325,000 in grant and \$4,094,000 in loan funds. The GOP contribution will be B/.4,450,000 for personnel and operating costs.

2. National Parks and Wildlands Management

a. Analysis: Panama has officially established 933,800 ha. as national parks or equivalent reserves (wildlife refuges, protective forests, natural recreation areas). An additional 210,000 ha. is proposed for this status. Established and proposed areas comprise 14.2% of the country. The designation of these reserves responds to three factors: (1) recognition that the park system protects the upland areas of critical watersheds of the Panama Canal and other rivers with hydroelectric potential; (2) a growing realization that these reserves are a common property resource that should not be exploited by individuals; and (3) national and international concern for the preservation of tropical forests and biological diversity that they contain. (The Darien and proposed La Amistad national parks have been declared World Heritage Sites by UNESCO.)

The legal creation of these parks and reserves has proceeded at a faster pace than the ability of the government to effectively protect them. In most cases their boundaries have not been defined and marked on the ground. Patrols to control entry and use are lacking. Preliminary management plans have not been implemented. Baseline data on the resources of each park have not been collected.

The USAID-supported Watershed Management Project provided technical assistance to prepare a "Strategic Plan for a National Park and Equivalent Reserve System." This strategy is directed at protecting these reserves against further destruction by establishing the minimum protection system that is adequate to conserve these areas. The previous project assisted RENARE in beginning park protection activities. Training was provided to park personnel; patrol stations and administrative offices were constructed for Soberania National Park; and some park boundaries were

marked. It was demonstrated that uncontrolled use is curtailed when boundaries are marked, and signs and patrols established.

b. Objective: The objective of the Parks Management Component is to implement the preliminary strategy for the protection of the natural parks and equivalent reserves. The purposes are: (1) to protect those established reserves that provide downstream watershed and soil conservation benefits; (2) to identify and conserve endangered upland and coastal ecosystems and rare biologic communities; and (3) to promote sustainable use of these renewable natural resources.

c. Implementation: Protection and management activities will be implemented in the following areas (by order of priority, beginning with national parks):

<u>NATIONAL PARKS</u>	<u>HECTARES</u>	<u>WILDLIFE REFUGES</u>	<u>HECTARES</u>
Darién	555,000	Isla de Cañas (and Isla Iguana)	3,000
La Amistad	150,000	Playa Barqueta	1,000
Chagres	76,000	Isla Taboga	260
Volcán Barú	14,000	Bahía de los Muertos	5,000
WHS Portobelo	11,000	Ríos Tabasará/Bubi	2,500
Soberanía	22,500	Golfo de Montijo	5,000
Altos de Campana	4,816	Río Bayano	1,500
Cerro Olla	18,000	Golfo de San Miguel	5,000
Bocas del Toro	6,300		
Islas de las Perlas	10,000		
Sarigua	4,500		

(1) Parks and Reserves Protection: The Project will assist RENARE to establish a permanent physical presence in each national park and reserve. Funds will be provided for boundary demarcation, posting and the installation of patrol trails. Guard posts, gates and fencing will be constructed in those areas where population pressure is severe. Priority for establishing patrols will be given to those parks and reserves most threatened by the entrance of squatters or other uncontrolled development: Soberanía, Chagres and Portobelo national parks in the Canal Watershed; and Volcán Barú National Park in the Caldera Watershed. A training program on natural resource and park protection will be developed by RENARE directed at park and forest reserve patrolmen, local government officials and community leaders.

(2) Park and Reserve Resource Management: The Project will provide long-term (36 months) technical assistance in park planning and management to RENARE. Four of the professional staff of the agency will receive master's level training at CATIE in Wildlands Management. RENARE park supervisors, other land managers and private conservation group leaders will be trained (60 persons) in wildlands management at CATIE regional seminars. Short-term (6 months) technical assistance in data base management will be provided to establish and maintain baseline inventories of the physical resources in specific parks and reserves, and to record present occupancy,

tenure and use. This information will be used to plan compatible uses and review and approve proposed private development and other activities that are found to be compatible with park objectives. Surveys will be repeated periodically to monitor the impacts of resource use and to modify management and development actions. Short-term training in data base management will be provided to 4 RENARE staff members.

The indigenous populations that live in or adjacent to national parks will participate in the planning process, e.g. the Embera and the Wounan in Darien National Park and the Guaymi and Teribe in La Amistad National Park. These plans will include development strategies directed at the needs of the local population to assure that reserves are protected from off-site impacts and integrated into adjacent development projects. Where the local population use is destructive the Project will assist RENARE to promote alternative land uses or to relocate the occupants to less fragile areas. Project short-term technical assistance (6 months) will work with RENARE on this activity. This advisor will work with RENARE to develop a training course on environmental education for RENARE staff and other private organizations (total 74 people) over the course of the Project. The Project will also provide funds for the development of environmental education and recreation facilities at the three most visited parks: Soberanía, Portobelo and Volcán. The support of private environmental organizations for each park will be promoted by RENARE.

(3) Policy and Planning: The parks planning and management advisor will assist RENARE in drafting a National Parks and Equivalent Reserves Law, and assist in the development of policies and plans for its implementation. The law will define the criteria for classifying each type of designated reserve (National Park, Protection Forest, Wildlife Refuge, Biologic Reserve) and will set standards for their use. Existing park and reserve areas will be examined and the classification changed where appropriate. The Project will provide short-term (6 months) technical assistance to RENARE to define policies and programs for wildlife management and the conservation of endangered species. Short-term training in wildlife management will be provided to 15 RENARE staff members in a CATIE regional course.

d. Outputs-National Parks and Wildlands Management

- o The boundaries of 11 national parks and 8 wildlife refuges will be marked and posted. Trained patrolmen will be assigned to each park.
- o Baseline data on five parks (Chagres, Soberanía, Portobelo, Darién and La Amistad) will be collected and established in a computerized data base. Resurveys will be made after three years to analyze trends.
- o Management objectives and operating plans will be prepared and implemented for the above five parks.
- o Facilities for environmental education and recreation will be installed in the Chagres, Soberanía and Portobelo Parks. Private conservation groups will help to develop those facilities and will participate in environmental education and research activities.

e. Inputs: The Project will provide grant financing for \$1,125,000 of technical assistance and training. Loan amounts of \$3,015,000 will finance procurement of vehicles, laboratory and field equipment, aerial photography, and the construction of park facilities and patrol stations. Boundary surveys and marking, cadastral inventories and social surveys will be contracted locally with loan funds. The GOP will contribute B/.3,250,000 for personnel and operating requirements.

3. Management of the Natural Forests

a. Analysis: In 1980 FAO estimated the area of natural forest for Panama at 3,500,000 ha., (46% of the total area). This forest was classified as protection forests (1,300,000 ha.), mangrove forests (300,000 ha.), and production forests (1,900,000 ha.). Theoretically, protection forests should not be exploited, and a large part of this area has been designated as national parks. Areas classified as production forests are those judged suitable for forest management on a sustained yield basis. The same study estimated deforestation at 80,000 ha. per year. This cutting is largely confined to the production forests as their soils and topography are more suitable to agriculture and grazing, and they tend to be more accessible. Based on these trends, the areas of production forests were reduced to 1,340,000 by 1985, and will be completely cut-over by the year 2005.

The production forests are characterized by the presence of a large number of species (200), of which only a dozen currently have market acceptance. These merchantable trees have a low frequency of occurrence within the forest, and the logging of the three to five merchantable trees per hectare does not result in deforestation. It does have the effect of removing the seed source of the merchantable species leaving a degraded, less economically productive resource. An FAO study estimates that 28% of the production forests have been logged at least once by 1980 reducing the commercial timber volume by some 67%.

Three natural forest stands are found in Panama which are exceptions to the heterogenous species composition: the riverine stands of "cativo" (Prioria copirfera) found in Darien; "orey" (Camonosperma panamensis) concentrated in Bocas del Toro, and mangroves (Rhizophora spp.) located along the Pacific coast. These species occur in relatively pure stands (reducing development costs), have market acceptance for a variety of uses, are relatively quick growing, and are on public lands. They are therefore appropriate for sustained yield management by the Forest Service of RENARE. At present these areas are not managed by RENARE nor are patrols maintained to protect these forests from conversion to agriculture and grazing.

These three forest stands and adjacent forest reserves (El Canglón and Palo Seco) total about 636,000 ha. of which 115,000 ha. is accessible for economic production. If protected and managed this area could produce 175,000 m³/year of industrial timber on a sustained yield basis (1.5 m³/ha. year net product volume). This volume would supply 55% of the anticipated national demand for veneer and sawwood of 320,000 m³ in the year 2010.

b. Objective: The objective of the natural forest management component is to place three publicly owned productive forests under sustained yield management. The purposes are to: (1) develop and maintain a sustained yield timber production program; (2) increase the productivity of the resource through sound silvicultural practices; and (3) increase economic returns through utilization of wasted wood and trees not now commercial. The minimum public stumpage fees (sales price of standing timber) will be raised from an average of \$2/m³ to a price reflecting the economic value of the forest resource to the nation.

c. Implementation: The Forest Service of RENARE will designate three forested areas as management units. A forester will be designated to manage each area. Each Chief Forester will be assigned a staff of at least 5 technically trained people and the necessary patrol and support personnel. The Project will fund boundary marking of established forest reserves, the construction of field administrative stations and patrol huts, and vehicles, aerial photography, field equipment and radios. The three management units are:

- o El Canglón Forest Management Unit, located at Yaviza, Darién. The Unit will manage the El Canglón Forest Reserve of 33,000 ha., and the adjacent 43,000 ha. of cativo forest types. The unit will also be responsible for the management of forest concessions on public lands in Darién and will advise and assist the Embera Indigenous Reserves in forest management.
- o Palo Seco Forest Management Unit, located near Chiriquí Grande, Bocas del Toro. The Unit will protect and manage the Palo Seco forest reserve of 244,000 ha. and the coastal formations of orey forests of 20,000 ha.
- o Mangrove Management Unit, at a site to be determined in western Panama. The Unit will protect and patrol 300,000 ha. of the Pacific mangrove formations and about 40,000 ha. located from Chame to Chiriquí will be managed for commercial use.

In each of these forest management units the sequence of activities will be the same: (1) identification and marking of the boundaries of the forest reserves; (2) establishment of a system of patrols to control forest use, and (3) development and implementation of a forest management plan.

(1) Forest Management: The Project will provide a forest management advisor (36 months) to work with the field units in the design and implementation of forest inventories and the preparation of management plans. Aerial photography and ground surveys will be used to locate squatters and to identify merchantable timber stands. Six months of short-term technical assistance in tropical silviculture (over a three years span) will assist RENARE field staff to design and test those forest practices which enhance the regeneration of valuable tree species. Practices which are determined to be cost effective will be incorporated into the management plans for each forest type.

The Project will train one graduate (MSc. level) in forest management, and train one technician in general forestry in Honduras (3 year program). As the management plans are developed for each area a series of courses on the management activities to be implemented will be given to the staff of RENARE and other technicians (total 120 trainees). This training will be taught by the forest management advisor and senior staff of RENARE responsible for this component. Training responsibility will be assumed by the trained Panamanian forester upon his return from the U.S.

(2) Improved Forest Utilization: The Project will finance six months of technical assistance in timber marketing and utilization and will work with the Wood Technology Center of RENARE and the field staff. This advisor will assist RENARE and the forest industry to develop wood product specifications and utilization standards designed to recover more merchantable volume from each tree, and to develop markets for smaller dimensioned materials, waste wood, and unutilized species. The Project will provide equipment, supplies and technical information to the Wood Technology Center, and assist in the construction of a wood working and testing shop. The utilization expert will provide in-service short courses in log scaling and grading to 40 trainees of RENARE.

(3) Timber Sales Program: Periodic short-term technical assistance in forest economics (6 months) will be provided to RENARE to analyze the national forestry sector and to assist in preparing a strategy to increase the supply of wood products. Graduate training in the U.S. in forest economics will be provided for at least one forester. This training is scheduled so that the participant can return to gain practical experience through working with the short-term advisor. Forty people from RENARE and the private sector will be trained in forest appraisal methodology developed for Panama, initially by the technical advisor and subsequently by RENARE foresters.

Additional short-term assistance (6 months) in stumpage appraisal and logging cost analysis will be provided to develop a timber sales program to be implemented by RENARE. This advice together with the economic analysis will provide a basis for establishing minimum stumpage prices by species and products. This minimum stumpage price will be adopted in phases for all forest concessions. Those timber sales that are appraised as having higher values through ease of access and density of commercial trees will be offered at public auction. Increased revenues from timber sales will be used to finance RENARE's natural resource management activities.

d. Outputs - Natural Forests Management Component

- 636,000 ha. of public forests and reserves will be marked and patrolled.
- 115,000 ha. of accessible commercial timber will be inventoried and management plans prepared and implemented.
- Three management unit field stations will be constructed and staffed by trained RENARE personnel.

- A timber sales program will be implemented in managed forests to ultimately produce 55% of the national lumber and veneer requirements.
- Public stumpage fees will be adjusted to reflect the market value of the forest products to the economy.

e. Inputs: The Project will provide 36 months of long-term technical assistance in forest management and 24 months of short-term assistance in tropical silviculture, forest economics, timber appraisal and marketing. Financial requirements for this component are: USAID \$1,175,000 in grant and \$1,760,000 in loan funds. The GOP contribution is estimated at B/.2,693,006 in personnel costs and B/.764,000 in operating expenses.

4. Farm Forestry and Community Woodlots

a. Analysis: Fuelwood production is the major use of Panama's forests. FAO estimates that about 70% of the production of the forest is used for firewood. Another 6% is used on the farm for fence posts, rough construction and other rural uses. Although rising income levels will reduce the per capita consumption of wood as the source of domestic energy, this drop will be more than offset by population increases. In the past, the relative abundance of the forests made the planting of trees unnecessary. However, the rapid pace of population growth and deforestation have resulted in an increasing shortage of fuelwood in many districts of western Panama.

RENARE began the promotion of tree planting by small farmers in 1979 in cooperation with the ROCAP/CATIE Regional Fuelwood Project (596-0089). This pilot project was successful. Species trials and demonstration woodlots were established in the Provinces of Los Santos, Herrera and Coclé where the scarcity of fuelwood is most acute. Appropriate species and planting techniques are now known for parts of these provinces. Some RENARE staff were trained in nursery management practices, and gained experience in promotion and extension techniques. Small farmers have responded well to this program, and will plant trees if seedlings are made available at affordable prices. A basis of experience now exists to expand farm forestry in those provinces, and to extend this activity to other districts.

b. Objectives: The objective of the Farm Forestry component is to promote the planting and management of trees by small scale farmers on their own lands. The purposes of this component are: (1) to extend the demonstration program into new areas; (2) to produce and distribute planting stock; and (3) to supply forestry advisory services to small farmers.

c. Implementation: The farm forestry component will be implemented by the Forest Service of RENARE. Technical assistance and training will be provided by the ROCAP/CATIE Regional Tree Crop Project through its resident coordinator in Panama and his team of seven RENARE technicians. Additional advisory assistance will be provided by the advisor or tropical silviculturist from the natural forest component and the advisor on industrial plantations.

Following the success of this program in the Azuero Peninsula, promotion efforts will be extended throughout the remainder of La Villa watershed. It will also be immediately introduced in the Panama Canal watershed to take advantage of the installed RENARE nursery capacity and respond to the urgent need to reforest degraded areas. ROCAP/CATIE will conduct species trials and demonstrations in new areas for at least three years prior to an extension effort in a new area. By the end of the Project it is planned that new plantings will reach 1000 ha. per year, and the equivalent of 6,000 ha. will have been planted. The following methodology will be used.

(1) Demonstration Plots: Clusters of three demonstration plots will be installed in 25 new districts on the land of cooperating farmers that use the common farming systems of the region. Tree species introduced will complement current farming practices while producing fuelwood and other products for on-farm use or sale. Demonstrations will include farm woodlots, shade trees for perennial crops, trees in pastures, live fences, and windbreaks.

(2) Farm Forestry Extension: An additional 25 staff members of RENARE will be trained to promote the planting of trees and in the technical aspects of tree crop production. As a promotional device a farmer will be given "a free introductory offer" of seedlings when a planting site has been prepared. Subsequent plants will be sold to the farmer at cost. To expand the promotion effort RENARE will train 250 successful tree farmers in extension techniques. These individuals will be compensated for their promotional efforts on the basis of the number of hectares of trees established by their neighbors.

(3) Seedling Production: One of the obstacles to more widespread tree planting by farmers is the limited availability of appropriate planting stock at an affordable price. Available seedlings from existing RENARE nurseries will be used initially but will be replaced by the Project through contracts with local farmers or cooperatives for planting stock. The Project will fund the purchase of selected seeds and additional facilities for the Seed Bank of RENARE to assure that the appropriate tree species are available for the various site and soil conditions.

The Project will provide the resources, nursery supplies, contract seedlings, and vehicles necessary to enable RENARE technicians to expand this program. Three of the technical staff of RENARE will be selected for training in general forestry at ESNACIFOR (3 year program) after working for at least a year on this activity.

d. Outputs-Farm Forestry Component

- o In 25 new districts of the Canal Watershed and western Panama three farm forestry demonstration plots will be established.
- o 600,000 seedlings per year will be produced.

- o Two practical extensionists will be promoting reforestation in each of the 25 districts.
- o Total tree plantings equivalent to 6,000 hectares will be established in the 25 Farm Forestry districts.

e. Inputs: The Project will provide \$202,000 of grant funding for training activities and \$669,000 in loan funds for motorcycles, nursery supplies, contracted services and materials for the Seed Bank. The GOP contribution for this activity will be B/.750,000.

5. Private Industrial Plantations

a. Analysis: A 1984 AID/ROCAP study of the "Supply and Demand Trends for Mechanical Wood Products in Central America" projects Panama's lumber and veneer requirements at 320,000m³ in the year 2010. As natural forest management can supply 55% of that requirement on sustained yield basis (as described above), a demand for 165,000 M³ will remain. This deficit could be supplied by cutting in less productive areas, entry into the protection forest and national parks, or by imports. A better alternative is to establish industrial plantations on vacant or underutilized lands since it is calculated that the stumpage costs of plantation timber will be \$30/m³, less than a half of the (imputed) stumpage cost of imported lumber the year 2000 of \$70/m³. (See Economic Analysis Annex III Exhibit E.)

A reforestation program can help to fill this deficit and provide an additional source of timber to the forest industries of the country for processing and export. Initiation of an industrial reforestation program designed to supply the deficit estimated above will require the planting of 20,000 hectares assuming an average yield of 8.0 m³/ha./year of net finished product volume of sawnwood and veneer (15 m³/ha./year gross production x .55 utilization factor). Since public funds for reforestation are limited and dedicated to the restoration of protection forests and small landholder woodlots, the resources of the private sector must be mobilized to grow this timber.

Limited private reforestation by individuals and companies already exists in Panama, generally in parcels under 5 hectares, with fuelwood, landscaping or soil conservation objectives. These plantings are too widely scattered and heterogenous to provide an economic industrial timber source. The constraints to large private investments in reforestation identified in a USAID study in 1983 are: the potential financial return from forest plantations is unknown; landowners lack experience in plantation management for timber production; and the absence of a long-term credit appropriate to the time required for trees to mature.

b. Objective: The objective of industrial plantation component is to establish 20,000 hectares of privately-owned forest plantations for the production of industrial wood. These plantations will be designed to supply half of the industrial lumber required by the national economy after the year

2010. Component purposes are: (1) to collect and analyze experience on the silviculture and economics of forest plantations; (2) to disseminate that information to promote tree planting for industrial purposes; and (3) to establish a credit program for private investment in industrial plantations.

c. Implementation: The Project will promote and support private sector initiatives to establish and manage plantations for industrial wood production by providing the services of a long-term advisor (60 months) in industrial forestry. A vehicle, office and field equipment will be provided to this advisor as well as operating expenses and secretarial services. The advisor will work in cooperation with the forest industries and RENARE in three activities:

(1) Data Collection and Analysis: Private and public tree plantings in Panama will be surveyed during the first year to identify the area, species yields and management costs of forest plantations. Information will also be collected on the location of private and public nurseries, the availability of local consulting forestry and reforestation services, and existing or potential markets for plantation thinnings. This survey will provide a factual basis for the promotion of plantation forestry.

(2) Promotion: The advisor will promote plantation forestry initiatives by companies and individual landowners. Promotion activities will proceed parallel with the data collection effort and increase in intensity during the second year of the Project. To make this promotion effort effective the advisor will work with existing agricultural associations and private companies. The formation of local reforestation associations will be encouraged where landholders have planted trees or are interested in the potential of forest plantations. These landholders will receive assistance to organize and to establish local nurseries. They will share the costs of consulting forestry and reforestation services. The formation of a national reforestation association by private landowners will be promoted by the advisor. The association will provide a forum for the effective promotion of plantation forestry by the advisor. It will support the interchange of experience among members and represent their collective interests in national policy and planning matters. The association will also continue the promotion and support of reforestation after technical assistance ends.

The Project will finance landowner workshops, conferences and field days for local association members, local foresters, and agriculturists on plantation silvicultural practices (120 trainees), and on plantation financial analysis and accounting (80 trainees). Specialized short-term technical assistance in plantation silviculture (4 months) will be provided during the first five years to analyze existing plantations and to present the workshops and short courses to association members. Local accountants and attorneys will be contracted to present information on fiscal incentives and tax matters. In years four and five, technical assistance (4 months) in the marketing of wood products will be provided.

(3) Credit Program: The Project will support the establishment of a National Reforestation Fund (Fondo Nacional de Reforestación - FONARE) which will provide long-term lending to private

individuals and companies that plant trees with industrial timber supply objectives. FONARE will be established as a trust fund, under Panamanian law, by the Government of Panama in consultation with USAID. To advise the Government of Panama and USAID on the initial terms of the trust, and to periodically review progress and determine if policy changes are required, the two parties may form an ad hoc advisory board composed of representatives of the private banking sector, private reforestation associations, the forest industries and the Director of RENARE.

FONARE will be administered by a financial institution experienced in trust management and lending selected by the Government of Panama and USAID. Project loan funds of up to \$6,500,000 will be provided to FONARE as the demand for reforestation loans is generated.

Participating commercial banks will lend the funds of FONARE to individual investors using their normal credit procedures. The banks will have full responsibility for lending decisions: determining the credit worthiness of the borrowers, the technical feasibility of the proposed investment, and for conformance with the policies and objectives for which the Trust was established. The lending terms planned for FONARE are: loans up to 15 years with interest at prevailing rates for the agricultural sector, capitalization of interest for the first two years, and seven years grace on repayment of principal. The industrial forestry advisor will assist participating banks in initiating the lending program. Short-term technical assistance (2 months) in financial analysis of forest plantation investments will be provided to association members and bank personal, and a series of short courses presented on this matter (80 trainees).

d. Outputs - Industrial Plantations Component

- o Data will be collected and analyzed on existing plantations, nurseries and reforestation services in Panama for dissemination to landowners.
- o Six associations of landowners cooperating on reforestation will be established in the provinces of Western Panama - Océ, Chiriquí, Herrera, Los Santos, Panamá and Veraguas.
- o Six private forestry services will be developed and trained to provide advisory services to landowners and banks.
- o A Reforestation Fund will be established to provide credit to landowners for industrial plantation investment.
- o Privately owned and managed forestry plantations will be established on 20,000 hectares.

e. Inputs: USAID will provide 60 months of long-term technical assistance in industrial forestry and 10 months of short-term technical assistance in plantation silviculture, financial analysis and wood products marketing. Financial requirements are \$1,094,000 of grant monies. A loan of \$6,500,000 will provide capital to the Reforestation Fund. Private investment in industrial forestry plantations of B/.12,000,000 is expected to be generated during the life of the Project.

6. Strengthening Field Operations of RENARE

a. Analysis: RENARE is not established as an executive agency. Its role within MIDA is "technical normative," providing advice and the technical criteria for natural resource conservation activities implemented by the regional offices of the ministry. Therefore, RENARE has little operational experience in the management of field activities with the exception of the USAID-financed Watershed Management Project. That project was managed separately from the rest of the agency, and experience was not institutionalized. As an autonomous institute, RENARE will withdraw from the administrative support nominally provided by MIDA, and be responsible for the implementation of all its own field activities. A major institutional development effort is needed for RENARE to enable it to become effective in the management of decentralized operations.

b. Objectives: The objective of this component is to increase the effectiveness of field operations. The purposes are to: (1) develop the management function within RENARE, (2) strengthen headquarters support of field operations, and (3) improve administrative and logistical systems and procedures.

c. Implementation: The Project will provide a senior management advisor for the initial two years of the Project. The advisor will work with the Deputy Director General and senior staff in the planning, organization and staffing of the agency for decentralized field operations (see job description in Annex II.C.). This advisor will assist in the preparation of functional statements and an organizational manual for the agency; in the preparation and implementation of an institutional development plan; and the development and implementation of a training plan. Planning for the initiation of the Project will be accomplished with a senior staff member of RENARE responsible for coordination of this effort, and with the Technical Committee composed of implementing department chiefs.

These initial activities will be supported by a Project-funded Administrative Assistant (12 mos.) to ensure timely documentation and flow for technical, procurement, planning, and programming actions in the first project year. During years 3 through 5 of Project implementation, while technical assistance is being implemented, management advisory services will be suspended. Upon conclusion of that phase the Project will fund an additional five years of long-term management technical assistance in the area of specialization most useful to RENARE at that time.

(1) Project Management: The Annual Implementation and Financial Plan will provide the basis for monitoring and evaluation by the Programming and Evaluation Unit. A reserve of 10 months of short-term technical assistance will be financed by the Project for additional assistance that may be required by this Unit, or for other problems that may arise. This Unit will also coordinate the development of administrative procedures and systems and the use of the computer facility. Funding for locally contracted services is provided for computer programming and systems development, and for training 12 staff members in computer programming. Once computer systems are

developed, an in-service training program of computer familiarization and use will be taught to 120 staff members. RENARE's training plan will be implemented by this Unit, and a reserve of \$100,000 is provided through the Project for special training opportunities or requirements that may arise.

(2) Technical Support: The Project will fund the purchase of headquarters vehicles, word processing and other office equipment and supplies that will support the management and implementation of field operations. Definitive procurement orders will be prepared by the implementing departments in consultation with the technical assistance provided through the Project. This procurement will include: equipment for interpreting aerial photographs and preparing and reproducing maps; surveying equipment for park and reserve boundary location and construction supervision; radios for communication with field management units; audiovisual equipment and teaching materials; and a technical library supplied with document copying equipment and technical publications. Training in public information and community relations will be provided for 9 staff members. The Project provides US\$1,000,000 towards the construction or structural remodeling of a permanent headquarters building for 200 staff members of RENARE.

(3) Administrative Development: The Project will finance the contracting of a local accounting firm to help RENARE to develop and install an accounting, financial management, personnel management, and payroll systems. These administrative systems will use the computer facility acquired with current USAID assistance. Procedural manuals will be developed and the staff trained (45 persons) to assure that administrative personnel, managers, and project staff understand the purposes and procedures of administrative systems and the requirements to maintain system integrity. Accounting systems design will allow cost control by department, project, and field management units. It will provide basic financial data for monitoring and evaluation.

(4) Additional Project Activities: During the course of the Project, special studies and research or training activities will be required to respond to technical or operational problems identified through the evaluations. The Project will provide \$450,000 in grant funds for applied research and development requirements that will be identified during implementation. (Examples are small grants to universities and institutes for field testing the provenance of native species, examinations of natural regeneration after logging, feasibility studies for squatter relocation and applied agroforestry trials.) These resources will also be used to provide matching funds to other agencies that will support the natural resource management objectives of RENARE, and to participate in workshops and conferences concerned with environmental issues relevant to Panama.

d. Outputs-Strengthening Field Operations of RENARE

- o A manual of the functions and organizational structure of RENARE will be prepared, and job descriptions and qualifications statements prepared for all positions.
- o An organizational development plan will be prepared, in conjunction with a training plan, and implemented. The plan will be evaluated every three years and updated.

- o Annual Implementation and Financial Plans will be prepared for all RENARE activities, linked to overall agency budgets, and progress in implementation will be monitored.
- o A computer based financial management and accounting system will be developed and placed in operation, and staff will be trained in its maintenance and use.
- o A permanent headquarters building for RENARE will be acquired.
- o Six research, development, or training actions will be implemented that will support technically the objectives of natural resource management.

e. Inputs: The Project will provide grant financing of \$2,051,000 for technical assistance (\$1,045,000), training (\$205,000), and locally contracted advisory services and research and development (\$801,000). Loan funding of \$1,540,000 will purchase vehicles, equipment and supplies, and contribute to the construction or structural remodeling of a permanent headquarters building (\$1,000,000). The GOP will provide B/.850,000 for personnel and operations.

7. Contractor Technical Assistance Support: As indicated in the Technical Assistance Procurement Plan (see Annex II Exhibit C) advisory services for Watershed Management, National Parks Planning and Natural Forest Management will be contracted from an institution or company. These advisory services of 168 months of long-term assistance (five individuals) and 57 months of short-term (10 individuals) will be supplied from year 2 through 6 of Project implementation. Logistic and administrative support for this staff, and liaison with headquarters will be provided by an administrative officer in Panama over the five years of contract implementation. The contract will also provide funds for short-term assignments in Panama (6 months) of the Project Supervisor or other home-office officials of the contracted institution. The costs for these support services is \$815,000 in grant funds.

8. USAID Project Administration and Support: USAID project management, and evaluation and audit costs will be funded by the Project. Substantial Mission support of implementation will be required during the first few years as RENARE lacks adequate technical services contracting and procurement systems. Since the Project is complex, with multiple components, periodic in-depth evaluations and audits will be needed to ensure adequate management and administrative control .

The Project will finance a Mission Project Manager, experienced in natural resources management projects and USAID procedures, for most of the project period, years 1 through 5, and 8 through 10 (See job description in Annex II.C). To support this officer an Assistant will handle USAID correspondence and documentation of procurement, reporting, logistics and general administrative functions. An expatriate knowledgeable in AID procedures and administrative requirements will provide this support during

the critical first year of implementation. A locally contracted administrative assistant will succeed the expatriate for the remaining nine years. A locally hired secretary, will be funded for ten years to support the Project Officer and Assistant.

There will be four in-depth external evaluations and audits (total 36 person months) during Project life in accordance with the evaluation and audit plan outlined in Chapter V (E).

Management of the Project by the Agricultural Office of USAID will require \$1,450,000 (336 person months); evaluation and audits \$540,000; and office furniture, transportation, supplies, and services \$104,000. Total cost is \$2,094,000 in grant funds.

IV. PROJECT ANALYSES SUMMARY

A. Institutional Analysis

The summary of the Institutional Analysis examines: (1) changes required for RENARE to become functional as an autonomous institution; (2) private sector implementation issues; and (3) administrative arrangements required to effectively implement the Project. An institutional profile of RENARE is presented in Annex III (A).

Establishment as an autonomous institute will be a significant change in the responsibilities and authority of RENARE from its past "technical normative" role. Currently the agency has a technical advisory role, and the three departments (Water and Soils, Parks and Wildlife, and Forest Service) largely perform routine technical administrative functions. Field staff of RENARE are assigned to MIDA regions, except for those on the Canal Watershed Project, under the direction and control of the MIDA regional coordinator. Therefore, RENARE field personnel have been effectively separated from the control of the agency, and technical direction and coordination of their activities is lacking. (The clearance of the MIDA region is required before supervisors can visit RENARE field staff.) This division of functions and the overlapping lines of authority have made RENARE natural resources conservation and management programming and implementation ineffective.

The establishment of RENARE as an autonomous executive Institute prior to Project initiation means that implementation begins just when the agency is adapting to a new role and responsibilities. One year of transition will be required to allow time for the development of management and personnel systems, financial and accounting procedures, and procurement practices. The initial work must concentrate on the organizational development of RENARE.

1. RENARE Organizational Development

a. Leadership: Field operations to implement the Project will require a new role for the Director General and department chiefs of RENARE. They will have to learn to work as a management team and develop new ways to

make decisions on priorities, formulate programs and direct decentralized operations. Pending the enactment of the legislation that makes RENARE an autonomous institution, a transition team has been formed by the Director General to plan and implement the reorganization of the agency. USAID mission staff is advising the team members on this process. The team is led by a full time senior staff member, and is responsible to the Director General for completing the necessary analysis and initial organizational design work. The Project will provide continuing technical assistance in management through the first two years of the Project.

RENARE will continue operations during the transition period. Increasing demands will be placed on the time of the Director and senior staff as the agency develops. The Deputy Director will have overall responsibility for management of the Project. Planning of each step of organizational development, and its coordination with the initiation of Project field activities will be essential. Sufficient time will be allowed for the coordination of activities and monitoring the beginning of field operations.

b. Organizational Changes: Effective Project implementation will require organizational changes in RENARE. To make effective use of limited technical staff and material resources requires the agency to be restructured along geographic lines to implement the Project components. Within each geographical zone, specific Project components will be implemented in a field management unit (watershed, national park, forest type). Implementation of the Project will require that technical personnel be relocated to these management units. The Project has been designed to be implemented with existing personnel of the agency with the understanding they be reassigned to the field and be responsible for more than one function (e.g. promote tree planting on farms adjacent to parks and forests as part of protection activities). Operating funds will be sufficient if the existing budget levels of RENARE are fully funded, and forest concession and stumpage fees flow to RENARE as planned.

c. Coordination: Project initiation and implementation will require careful internal coordination within RENARE. Cooperation among departments will be facilitated by a Technical Committee which will ensure the sharing of personnel, equipment and facilities, and arranging for the efficient use of operating funds in accordance with agency priorities. The Deputy Director's management and control of operations will be facilitated by a Technical Committee composed of the executing departments and the chief of the Programming and Evaluation Unit as senior staff. Implementation plans and financing will be approved by the team to assure coordination of activities.

d. Administrative Systems: An additional organizational change that will be required by autonomous status is the development of a separate financial management system for budgeting, accounting, and payroll. Improved procurement and logistic systems are required for decentralized field operations. The Project provides funding for contracting an accounting firm to develop, install and train personnel in a financial management system.

2. Private Sector Institutional Issues

a. Role of RENARE: RENARE has the most experience in Panama in nursery management and tree planting, and has had the benefit of the research from ROCAP/CATIE Regional Fuelwood Project. Through the promotion of this small landholder farm forestry, the technical staff of RENARE is gaining the experience and knowledge necessary to support larger plantation efforts.

The role of RENARE in promoting large scale private forestry investments was examined during design of the private sector plantation component. Landowners expressed reservation concerning RENARE's ability to lead the program. Generally, they believe that private investment in forest plantations should be wholly the effort of private individuals, as they take the risks and should receive the benefits. This belief is due in part to a recognition that government resources are limited and are fully engaged on conservation activities of public land.

b. Regional Reforestation Associations: Experience in the United States, Sweden, Chile and other countries has demonstrated the effectiveness of associations organized by private landowners to represent their interests. At one level an association is expected to: (1) encourage members and other landowners to invest in forestry; (2) disseminate information on the sources of seedlings and forest management services, plantation silvicultural practices and markets for intermediate and final wood products; and (3) represent landowner interests in the formulation of national policies for the forestry sector and advise government on laws and incentives to plantation investments. At another level, association members can reduce costs through: joint purchasing of seedlings and other inputs and joint contracting of technical services; cooperating in fire prevention and control; exchanging information to improve productivity; and collaborating in the sale of intermediate and final wood products. A precedent for the development of local reforestation organizations exists in Panama through the regional agricultural organizations such as the rice producers associations in Chiriquí and Ocoelé. The Project will assist in the formation of a national reforestation association to promote the plantation program and to represent tree grower's interest at the national level.

c. Reforestation Lending Program: Reservations were also expressed by the private sector about dealing with public banks in the management of the reforestation lending program. Experience with the difficulties in loan approvals and frequent changes in government policies and procedures was cited. The participation of private banks was considered particularly important to the success of the program as they have clients who own land of the size needed for commercial viability, and have established credit ratings and sufficient resources to undertake this long-term investment. Five private Panamanian banks have contributed to the design of the credit component, and are prepared to call it to the attention of their clients, depending on the final loan conditions and interest rates that will be negotiated.

3. Administrative Matters: Institutional autonomy will enable RENARE to develop its own administrative and systems procedures suited to decentralized field operations. Management and administration of the agency will be significantly improved. For example, the draft law proposes to give authority to the Director of RENARE for personnel appointments, financial management, and contracting for services or purchasing for up to B/.50,000 in accordance with government procedures. The Board of Directors of RENARE can authorize contracting or procurement in any amount subject to the same regulations. This authority will streamline the administration of the agency and eliminate many of the delays in administrative and logistical support from MIDA that have hampered past project implementation to date. However, it will take time to develop and install these systems. An administrative development plan is being prepared in advance of enactment of legislation to make RENARE autonomous.

USAID Project management will require a full-time Project Officer, and an Administrative Assistant, on the staff of the Agricultural Office of USAID/Panama. The Project Officer will be supported by a Project Committee of the Mission representing the Controllers Office and the offices of Development Resources, Engineering and Development Planning. The Administrative Assistant will work directly with personnel of the Mission and RENARE in preparation of project implementation documents.

B. Technical Analysis

Project design was examined to determine: (1) if proposed activities address the natural resource problems; (2) if the most suitable and cost effective technical alternatives were selected; and (3) if planned activities are technically feasible at this time in Panama. The linkages among the technical components of the Project and the institutional and social issues were also analyzed. (See Annex III-B.)

1. Watershed Management: The watershed management component is an expansion of the activities carried out under the current project. A large watershed cannot be managed by one entity; it requires many public and private institutions working in concert. RENARE is the most appropriate institution for determining watershed management and soil conservation strategies and for implementing selected activities.

The current and past projects in Latin America have demonstrated that conservation practices cannot be implemented and maintained unless they are incorporated into the farming systems of the target area. Successful extension of pasture improvement and farm forestry activities in current RENARE activities show that these are technically feasible conservation interventions. These activities will be expanded under this Project. New techniques such as agroforestry and mixed grazing-tree farming systems will be field tested before extension by RENARE and cooperating agency personnel.

Watershed management activities will be continued by RENARE in the three watersheds (Canal, Rio La Villa and Rio Caldera). The emphasis of these actions will be directed at tree planting and grazing management on private land with cooperating landholders. These activities will build on two

previous successes: (1) the Farm Forestry planting program initiated in western Panama with the assistance of the ROCAP/CATIE fuelwood project, and (2) the acceptance of improved pasture demonstrations through the Watershed Management Project. Where technically and economically feasible, mixed tree planting and grazing will be combined. Other soil conservation practices will be continued with annual crops where they can be incorporated into the extension services of SENEAGRO. The nurseries established under the Watershed Management Project will provide seedlings for this program. The grazing management program recognizes that grazing for dairy and beef production is the predominant use in many areas where the land has been deforested, and that fencing, rotation of animals, dry season forage and fattening areas can improve weight gain and milk production while avoiding overgrazing and compaction of the soils.

2. National Parks Management: The upland areas of Panama's critical watersheds are legally reserved as National Parks or have been proposed for such status. These fragile areas cannot support intensive use or provide higher sustainable economic values than their present natural ecosystems. The National Parks Management component has the sound strategy of protection followed by planned appropriate use. It is far more cost efficient to control development of a fragile area than to rehabilitate it in the future. Successful park and equivalent reserves programs in many countries, including the U.S. and Costa Rica, have demonstrated that controlled use is the best assurance for conservation. "Trying to protect land by "locking it up" has never worked as the pressures for use cannot be resisted. However, due to ecological fragility, the uses allowed must be very carefully planned and documented in management plans for each of the parks or reserves. Techniques for this kind of planning have been introduced in Latin America through AID and other bilateral agencies, as well as through the support of FAO, CATIE, and IUCN.

3. Natural Forest Management: The natural forests management component will require the greatest change in RENARE's current operations. In place of the practice of unsupervised timber concessions the Project will support the introduction of sustained-yield natural forest management and an active public timber sales program to increase forest productivity. These innovations are essential to maintain the natural forests of Panama and increase their contribution to the national economy.

a. Tropical Forest Management: Although the management of natural tropical forests has a long history in Asia, nowhere in Central America has it yet been applied on a large scale. However, enough is known to initiate the simple kind of forest management planned for the first years of this Project. Several existing studies will serve as the basis for initial planning (e.g. the FAO study of the Darien and the AID mangroves assessment). The three forest areas chosen to implement the component are appropriate as each is a large block of relatively undisturbed commercial forest. Since El Canglón and Palo Seco are contiguous with existing national parks, forest management activities will complement the park conservation program.

b. Increased Public Timber Revenues: Under the forest concession system, timber revenues from public lands are low because stumpage fees charged for timber are low and tree species accepted in the lumber

market are limited. A phased increase in stumpage fees for public timber is proposed, moving immediately from B/.2.00 m³ to B/. 5.00/m³, and increasing to B/.12.50/m³ over the succeeding three years. While this will initially be unpopular with the forest industries and difficult to administer, the proposed increase represents less than 10% of the estimated sales price of timber. The additional cost of the raw material to industry can be justified if revenues are used to contract for the construction and maintenance of forest access roads, and to organize the timber sales program in such a way that logging costs are reduced. The present forest law contemplates adjusting the stumpage fees paid on public timber to the value of the end product. At this time, such adjustments are technically feasible and economically justified. A second important way to increase revenues from the public forests and to decrease the costs of logging is to utilize species not currently harvested. The Center for Wood Technology can increase the revenues of public lands if it can promote market acceptance of previously unutilized species.

4. Farm and Plantation Forestry: Tree planting on private lands suitable for forestry will provide a future source of fuelwood and industrial timber. This will decrease future pressures to overexploit the natural forest or to cut protected forests, national parks, and reserves. No major technical problems are seen because RENARE can use the experience gained in the planting of pine on over 4,000 hectares. Also, the ROCAP/CATIE fuelwood project has established and measured growth and yield of 16 species on 50 individual plots, and planted 130 demonstration areas. This experience supported by the ongoing ROCAP/CATIE Regional Tree Crop Production Project is adequate to initiate a major reforestation program on certain sites in western Panama. The introduction of new species to an area should be preceded by species trials under the direction of qualified foresters through the CATIE/ROCAP Project and RENARE.

5. General Conclusion: Project design addresses the major problems of natural resource management in Panama: extractive land use; the need to conserve fragile uplands and ecosystems that contain rare and endangered flora and fauna; the destruction and low productivity of the natural forests; and the need to supply the future demand for fuelwood and industrial timber. It is built on the technical experience that has been developed in RENARE through the Watershed Project and other activities. Most of the technical actions proposed for this Project have been tried in Panama or elsewhere in tropical America under comparable conditions. They are considered the most suitable and cost effective now available.

All components share the need to motivate and educate rural inhabitants through extension activities. This will be achieved through promoting the participation of the local population in the design and implementation of the activities.

C. Social Soundness Analysis

The social analysis was used to guide the design of Project components and to confirm the sociocultural feasibility of the proposed

activities. The information for this analysis was compiled through a review of existing social studies, field interviews and discussions with persons concerned with resettlement activities and is presented in Annex III-C. The key sociocultural issues are discussed below.

1. Public Support and Participation: Public attitudes on natural resource issues have changed in Panama over the last decade. There now exists a growing awareness that destruction of the forests and abuse of land will have severe consequences, and that "something should be done". Public support for the Project is expected to be high among the urban population. This ecological awareness must be extended to the rural areas where environmental damage occurs, and more appropriate land uses must be promoted among the local population. Success in the implementation of all conservation measures by the Project will depend on public support. It has been found that support can be generated when there is public participation in the planning of an activity so that the objectives and intended results are clear and acceptable. RENARE has been successful in building support for the farm forestry and pasture improvement programs through demonstrations and trials.

2. Public Opinion and Conservation Law Enforcement: The protection of natural resources will require strengthening and enforcement of existing legislation. While RENARE park and forest patrolmen will have the responsibility for enforcement of legislation, they will not be armed nor have power to arrest. These functions will be handled by local political authorities, alcaldes and corregidores, or the local detachments of the Panamanian Defense Force (PDF). In the Canal Watershed a Forest Police has been established by the PDF to patrol jointly with the staff of RENARE and control access and use of the watershed. This arrangement is working successfully, and will be extended to other areas where pressure on a resource is high. RENARE staff also have authority to impose fines and to order the confiscation of forest products or game taken without permit. There is legal appeal from these regulatory and administrative decisions.

Enforcement of the laws will be resented by campesinos denied entry to reserved areas and by those who have traditionally exploited public lands. RENARE must vigorously and convincingly demonstrate the technical and legal basis for its programs. Public acceptance of conservation law enforcement will hinge on the perception that the law is equally applied to all, not just to the poor and powerless.

3. Relocation of Squatters: The Project will place three areas under management from which people might have to be relocated: the Alto Chagres National Park of the Canal Watershed; the El Canglón Forest Reserve in the Darién; and the Palo Seco Protection Forest in Bocas del Toro. The nature and magnitude of the problem varies in each area, as do the methods and costs of a successful relocation program.

In the Canal Watershed there are estimated to be over 2000 occupants in the Alto Chagres National Park, in some cases well established over a long period of time. While it may be preferable to relocate all occupants from within the Park, this is financially unfeasible as there is limited public land to offer in compensation, and the costs of acquiring

private land for distribution would be excessive. These people are unlikely to accept public land on the frontiers as they are accustomed to the proximity to urban amenities, public services and occasional jobs. The only economic alternative at this time is to halt further entry into these critical areas, and to promote land use practices that are appropriate to the area.

Since the forest areas of El Canglón and Palo Seco have only become accessible by road in the last four years, the number of illegal occupants is still small. It is estimated that there are less than 300 squatters in each area although the number is rapidly increasing. As they have recently arrived in these areas they have not yet had the chance to make a substantial investment in land clearing and other improvements. In these two cases, resettling the present squatters may be feasible if alternative land for them to occupy can be found. RENARE must halt continued entrance to these lands, and collaborate with Agrarian Reform to locate better land to which people can be encouraged to move through the support of public services and other incentives.

In general, it has been found that lump sum cash payments are only effective in acquiring the land rights of absentee landowners that are not dependent on the land for their livelihood. For most squatters the opportunity to receive suitable land in compensation will be the more attractive incentive. Particularly this is the case since the value of their "improvements" (e.g. clearing) is small, and the cash payment is not sufficient for them to acquire other land or enter some other activity. Cash compensation programs must be carefully managed as they will tend to attract additional squatters who anticipate being bought out. Such a program must first insure that there is no new entry, and register and appraise the holdings of each existing occupant prior to the disbursement of funds.

The strategy of the Project is to: (1) halt further entrance by settlers into inappropriate lands or reserved areas; (2) complete a cadastre and census of the people in critical areas whose land use is destructive, (3) identify those vacant public lands that are appropriate for settlement; and (4) estimate the costs of relocation and/or compensation. The Project provides funding for the protection of reserved areas, the classification of land capability, and land tenure surveys and census of the existing occupants. Where it is decided to relocate settlers separate projects will be developed for financing and implementation by the appropriate agency with the collaboration of RENARE.

Government support of these actions is essential for them to be effective. This includes insuring that existing laws controlling land use and unauthorized settlement of public lands are enforced, that government use permits, services and credit programs are withdrawn from the inhabitants of those areas where destructive land use is taking place, and that sufficient funding or suitable land is available for a relocation or compensation program.

4. Institutional Cultural Issues: Successful Project implementation will require the reassignment of RENARE personnel to duty stations in the field where conservation activities will be implemented. The delegation of authority and responsibility to field unit managers is a change from the organizational culture of Panamanian public service agencies. The new style of management has to be learned by the executives of the agency and accepted by the field staff. To be effective, delegation of authority requires consistent policies and guidelines and the careful selection and training of field managers. Specific training in project management will be provided to the professional staff of RENARE who will be assuming field assignments.

A recurring institutional problem in Panama is the reluctance of different agencies to collaborate in the implementation of projects and field activities. While RENARE has signed a series of agreements and letters to cooperate with other agencies, the experience in this mode of work is just beginning. The interdisciplinary character of most natural resource management activities will require RENARE to work with and be supported by other public and private agencies. A campaign to involve other agencies in planning and supporting the work of RENARE will be implemented, and matched by RENARE support in return. In particular, local authorities and police will be educated on the purposes and provisions of conservation laws and regulations.

5. Conclusions and Recommendations: Project design in general is judged to be appropriate to the sociocultural context of Panama. The accomplishment of the overall purpose of the Project will introduce changes in the way people perceive and use natural resources. This will require convincing a wide strata of Panamanian society that the protection and proper management of land, water and forests is a sound ecological and economic investment. These are cultural as well as technological changes. The training of RENARE field staff in public information and community development skills is included in the project to make their technical work effective.

D. Financial Analysis

This analysis examines five issues: (1) government ability to finance the public sector counterpart; (2) the impact of increased public revenues from higher stumpage rates; (3) recurrent costs after PACD; (3) the financial feasibility of individual (private) investments in forest plantations; and (4) the financial soundness of the proposed reforestation lending program.

1. Counterpart Project Funding: The minimum required RENARE counterpart funding for the Project is estimated at B/.1,250,000 for the first year of implementation, rising to B/.1,779,000 by year 10 (Table V-3, page 49). For year 1 the cash requirements are estimated at B/.992,000 in contracted personnel costs, and B/.258,000 in operating costs—largely fuel and other field expenses. It should be noted that personnel costs do not represent new hires, but the continuation of the contracts of staff financed by the investment budgets of the previous Watershed Management Project and other activities of RENARE.

In anticipation of the initiation of activities in calendar 1986 an investment budget of B/.1,938,000 was approved as counterpart funding for this Project. Of this amount B/.1,835,000 was appropriated for contracted personnel and B/.103,000 for other operating costs. The allocation of additional existing RENARE personnel to the proposed Project activities was achieved through the phase out of other activities, and the planned reorientation of the agency to field operations with more staff assigned away from headquarters.

To meet the need for operating funds of at least B/.258,000 per year the government (in January 1986) gave instructions to fully fund the budget of RENARE, and directed that all income from the sale of plants from nurseries, and other fees payable, would be collected by that agency and not diverted to other MIDA activities. This income amounted to over B/.12,000 per month in January and February, which should provide operating funds in excess of B/.140,000 per year. RENARE has also reached an agreement (January 14, 1986) with the loggers of timber concessions in the Darien to pay a stumpage fee of B/.10.00 per thousand board feet, and a fee of B/.2.00 per thousand board feet for processed lumber, on current production. This income could total B/.430,000 per year once scaling and accounting procedures are established, which will enable RENARE to finance the operating costs of the Project.

2. Public Sector Revenues: Net public revenue from the harvesting of timber on public forest land is a small percentage of the value of the lumber produced. Until January 1986, stumpage and miscellaneous fees collected from the sale of public timber have averaged less than B/.2.00 m³. The stumpage value could be as high as B/. 60.00/m³ depending on logging and transport costs as shown below.

TABLE IV-1: ESTIMATION OF STUMPAGE VALUES
(B/.m³ of roundwood)

	FAO Study of Darien Costs ^{1/}	Plantation Estimates
Lumber Price	<u>152.00</u>	<u>95.00</u>
Sawmilling & Marketing	51.00	42.00
Cost at Sawmill	<u>101.00</u>	<u>53.00</u>
Delivery to Sawmill	28.00	12.00
<u>Logging Costs</u>		
-Supervision	.35	1.00
-Access improvement	3.20	2.00
-Marking & treatment	1.00	2.00
-Haul to roadside	7.70	5.00
-Falling/bucking	.75	1.00
Residual stumpage values	<u>60.00</u>	<u>30.00</u>

^{1/} Source: Christiansen-1983 FAO Cost Study of Darien Logging.

The fixed stumpage fees presently charged are payable to local governments and have not increased since 1973, although the value of lumber has more than doubled since that date. Logging costs are high in the Darien, due in part to the low density of merchantable species, the lack of roads and the distance to the sawmills located in Panama. However, it is likely that public timber is greatly underpriced there, particularly when spot prices of as much as B/.40.00 per tree are reported on timber sales on indigenous lands. Stumpage fees will be adjusted to properly reflect the increased value of public timbers.

The Project proposes to increase government revenues from the sale of public timber. Initially a flat rate increase in stumpage fees of the equivalent of B/.5.00/m³ for all commercial tree species is recommended. At present annual cutting rates of 100,000 m³/year (44,200,000 board feet) this would produce revenues of B/. 442,000 per year. This minimum fee should be increased over the next years aimed to a level of B/.12.50/m³. With the development of an active timber sales program the stumpage price for timber will be set by public auction as provided by the Forest Law. If there is competition for accessible timber, the stumpage price in some cases could approach the B/.60.00/m³ estimated in TABLE IV-1.

A significant first step in raising the stumpage fees to economic levels occurred in January 1986. By agreement with the loggers in the timber concessions in the Darien the minimum stumpage fees for public timber were increased by B/.5.00/m³ for the more valuable species, in effect almost a tripling over the past rates.

3. Recurrent Costs: RENARE will have to assume the recurrent costs of the Project from appropriations and miscellaneous income, chiefly stumpage revenues, after PACD. This will include the continuation of expenditures for the replacement of equipment and vehicles, and for building construction and maintenance, financed by USAID loan funds during the 10 years of the Project. In addition, RENARE will assume the costs of the training program that is grant financed by the Project. If current levels of appropriations of B/.1,938,000 (1986 costs) for Project activities are continued, the amount of annual recurrent costs after PACD that would have to be financed through miscellaneous income is estimated at B/1,508,000.

TABLE IV-2: FORECAST OF RENARE RECURRENT COSTS AND INCOME AFTER PACD
(B/. 1,000)

<u>Line Item of Expenditure</u>	<u>Appropriations</u>	<u>Income</u>	<u>Totals</u>
Personnel costs (+fringes)	1,835		1,835
Training		110	110
Vehicles and Parts Replacement	4	240	244
Equipment and Supplies	7	400	407
Construction and Maintenance	8	200	208
Fuel & other Consumables	30	192	222
Contracted Services	36	300	336
Misc. Field Expenses	<u>18</u>	<u>66</u>	<u>84</u>
TOTAL	<u>1,938</u>	<u>1,508</u>	<u>3,446</u>

It has been assumed that managed public forests could sustain an annual harvest of 175,000 m³ of public timber by the end of the Project. Stumpage fees averaging B/.12.50/m³ would produce an annual income of B/.2,187,500. This income will cover the annual recurrent costs of the Project component and produce a surplus for expanded operations.

4. Forest Plantation Investments: A pine plantation model with a 20 year rotation was developed to test the financial feasibility of a plantation investment (ANNEX III, Exhibit D). Establishment cost and yield estimates were based on FAO studies and CATIE research in Panama, updated for the 1985 price of labor and other inputs. The average cost of a large scale planting program was estimated (on a per hectare basis) at about B/.400. Subsequent protection and management costs over 20 years cost an additional B/.500/hectare, for a total cost of B/.900 per hectare. Assuming total revenues of B/.8,850 per hectare, using a B/.30.00/m³ stumpage price for pine lumber (Table IV -1), the predicted financial return on a one hectare basis is:

Present Value of Revenues at 10%	\$1,660
Present Value of Costs at 10%	575
Net Present Value at 10%	\$1,086
Benefit/Cost Ratio	2.5
Internal Rate of Return	19.0%

To test the sensitivity of the IRR to changes in the underlying assumptions of the model, "switching values" for the key variables were calculated. (A switching value is defined as the value of a variable at which the IRR is equal to the opportunity cost of capital, e.g. 10 percent.)

	<u>Assumed Variable</u>	<u>Switching Value</u>
Mean Annual Increment (log basis) m ³ /Year	15	5
Stumpage fee B/./m ³	30	10
Establishment Costs B/.hectare	900	2600
Labor Costs B/.Worker Day	7	46
Management Services B/.Day	75	775
Seedling Costs B/.Plant	0.20	1.20

As shown above, the IRR is not very sensitive to changes in any one of the underlying assumptions of the model. The establishment costs could increase from B/.900 to B/.2600 per hectare before the IRR was reduced to a cost of capital of 10 percent. Similarly, the stumpage prices could be one third of the estimated value, or two thirds of the potential yield of 15m³/ha/year would have to be lost through fire or other disaster, to reach the "break-even" point of the investment.

Although the IRR of 19% is attractive, the high first year costs of B/.400/hectare, and the length of time to the receipt of significant revenues (12 years), limit the ability of many landowners to invest in forest plantations. To encourage this type of investments the Project recommends the creation of a line of long-term credit for landowners that establish industrial forest plantations.

5. Reforestation Fund Financial Analysis: A flow of funds analysis was prepared to determine the ability of the Reforestation Fund to meet the interest and repayment schedule of the USAID loan (ANNEX III, Exhibit D). In this scheme USAID will provide the initial capital of the Fund, through a loan of \$6,500,000 to the Government of Panama. The loan conditions are: term is 20 years, 10 years of grace on repayment, interest rates at 3% for the first five years, 4% for the second five, and 6% thereafter. The Fund would on-loan to participating commercial banks at the interest rates of "long-term U.S. Treasury notes", currently about 9%, as required by USAID policies. The banks would loan this money to individual borrowers at 9%, plus their transaction fee of 3% to 5%, less the credit of 4% provided by the Special Interest Compensation Fund (FECI) for loans to the agricultural sector.

The lending terms to individual borrowers were assumed to average: term of 12 years, interest at the prevailing agricultural rate of about 9%, capitalization of the first two years of interest, and seven years grace on loan repayments. It was determined that loan repayments and interest earned by the Fund of about 9%, less management fees of 1%, could meet interest payments to USAID and amortize the loan within 20 years. The spread between Fund interest income of 8% and interest paid on the AID loan will be retained to capitalize the Reforestation Fund. This will allow the lending program to continue beyond the life of the Project.

E. Economic Analysis

1. Public Sector Managed Components: The public sector components of the Project have the objective of conservation and management of natural resources. These activities cannot readily be analyzed for economic returns due to the absence of data and the impracticality of quantifying or assigning benefits. Least cost considerations are therefore the appropriate economic evaluation.

RENARE experience in implementing the Watershed Management Project, and the studies conducted with the assistance of FAO and other donors, have identified least cost methods of land rehabilitation. For example, monies spent to encourage tree planting by small landholders (\$250/ha.) is much less costly than public land reforestation (\$1,200/ha.) The control of fire and grazing in most cases will allow natural regeneration to return degraded areas to vegetation. This is much less costly than the planting of trees for land rehabilitation (\$1,200/ha.). Likewise, the management of natural forests is potentially more economic than reforestation activities as establishment costs are low or avoided. Similarly, protecting an area against encroachment and destruction is cheaper than any kind of rehabilitation effort which can cost up to \$2,000/ha.

Studies also show that public investments in promoting improved pasture have a higher economic return when combined with the introduction of grazing management. Similarly, soil conservation practices are more cost effective if combined with agricultural extension work. This experience has been incorporated in Project design to make public investments in natural resources management as economic as possible.

Establishing a higher minimum stumpage price, and improving the economic productivity the natural forest, would have a significant impact on public revenues. The economic issue is whether an increase in the minimum

stumpage price to B/.15.00/m³ would severely impact on the consumer and reduce demand for lumber. From TABLE IV-2 it will be seen that the 1985 price of lower quality lumber, used in construction for concrete forms and other uses was B/.152/m³, about ten times the proposed stumpage rate. If sawmillers and distributors were to pass through the full cost of the stumpage to the consumer the increase in lumber price would be about 10%. However, for more valuable species which command prices of up to B/.400/m³ the increase would be on the order of 3%. Projected shortages of industrial timber supply in the future will have more serious impacts on consumer prices than the increase in minimum stumpage price proposed.

In the case of the Farm Forestry Component, recent World Bank studies on social forestry have identified small landholder tree plantations as a relatively low cost operation. Costs are less than \$250 per hectare of which as much as 70% can be attributable to family labor. Since this work can be done during the dry season, it does not conflict with agricultural activities and periods of high demand for farm labor. Thus, there is no loss in farmer income.

These farm forestry investments were reported to "yield higher economic rates of return" than government plantation investments. Government programs cost between \$800 to \$1,300 per hectare, and produce economic rates of return of 10 to 15 percent. By contrast, in most of the farm forestry projects financed, total establishment costs range from \$200-\$500 (1983), with rates of return in the order of 25 to 30 percent. This is mainly a reflection of lower infrastructure, overhead and reduced transportation costs.

2. Private Forest Plantations: The economic feasibility of the industrial plantation component was examined on the basis of planting 20,000 hectares in the ten years of the Project. Labor was costed as in the financial analysis at B/.7/worker day, which includes wages, social security contribution, transportation, and other benefits. (This overestimates economic costs if the opportunity cost of labor were lower.) The opportunity cost of marginal grazing on abandoned brush land is estimated at B/.10/hectare. The output was valued at 1.5 times the stumpage rates used in the financial analysis in order to better reflect the cost to society of importing timber and the growth in real prices of lumber estimated at 2% per year. Technical assistance of \$900,000 in the first five years of the Project was included in the overall cost stream. Using the above assumptions, the IRR of the industrial plantation component has been estimated at 24%. The switching values are:

	<u>Base</u>	<u>Switching Value</u>
Stumpage		
Posts and Poles (\$/unit)	0.75	0.21
No. 1 Sawlogs (\$/m ³)	45.00	12.80
No. 2 Sawlogs (\$/m ³)	37.50	10.70
 TOTAL COSTS (\$million)	 22.00	 55.10

As in the financial analysis, the internal rate of return is not very sensitive to changes in the underlying assumptions.

The opportunity costs of land utilized in the industrial plantation program are considered to be negligible. It is assumed that the land is already owned by the participants and therefore the issue of purchase or rental does not arise. Further it is assumed that the areas planted to trees are fallow or otherwise unused, so that the issue of opportunity cost of the land is avoided, and there will be no loss of agricultural production to the economy. To the extent that there is an obvious alternative use, such as grazing, then the returns from this use would be compared with the plantation alternative. However, this may not be a conflicting land use as the spacing proposed for tree planting makes it feasible to continue grazing under the trees, or to underplant with coffee or other crops. In these cases the costs of thinning and harvesting may increase as the result of the care needed to avoid damage to the alternative crop. However, the costs of weeding and protection would be expected to decrease. This multiple use may enhance yields of both crops through nitrogen fixing by certain tree species, or the amelioration of wind and other micro climatic factors.

The environmental impacts of plantation establishment have not been included in the economic analysis. This could be an important economic benefit as forestry represents, from an ecological point of view, a better use of a large proportion of Panama's land than present practices allow. In addition, it is expected that the future availability of plantation timber at competitive prices will reduce pressures to harvest the natural forest in areas that should be maintained for watershed protection and soil conservation.

F. Environmental Soundness Analysis

The Initial Environmental Evaluation (IEE) prepared for the Project (Annex I, Exhibit E) recommended a negative determination. This opinion is based upon the implementation of a series of mitigative measures for road construction and field activities to be carried out by the Project in watersheds, wildlands and forest reserves. The specific concerns of the IEE are discussed in trip report No. 85-10 included in Annex I.

The Project will assist RENARE to develop an environmental assessment capability which can identify and mitigate the impacts that may arise from its programs. The concerns of the IEE will be met as this capability is utilized to assess the impacts of other development projects in Panama.

V. PROJECT IMPLEMENTATION

A. Administrative Arrangements

1. RENARE Implementation Responsibilities: The Deputy Director of RENARE will be responsible for Project management within that agency and will coordinate the work of the executing departments. The Project will finance a long-term Natural Resources Management Advisor to assist the Deputy Director in the management of Project implementation.

Each Project component will be programmed by the appropriate technical department of RENARE. The departmental chiefs will be responsible for the planning and follow-up of field activities, and for the effective use of personnel and resources assigned. The chiefs of field management units (forest reserves, parks, and watersheds) will be responsible for implementation of Project actions in their units. The Deputy Director will be assisted in the management and control of operations by a Technical Committee formed by the chiefs of the executing departments and the Programming and Evaluation Unit. The Project-financed Management Advisor will be an ex officio member of the Technical Committee. The Annual Implementation and Financial Plans prepared to execute the Project will be approved by the Technical Committee to assure that departmental operations are coordinated and that technical standards are maintained.

The Programming and Evaluation Unit will be responsible for the implementation of the component designed to strengthen administrative support of field operations. The Unit will also be responsible for coordinating and assisting the technical departments to prepare the annual implementation and financial plans, for administering the Project training plan and for the scheduling of technical assistance and procurement actions. The Unit will also be responsible for all Project correspondence to USAID, and for the submission of financial documentation, reimbursement requests, and quarterly and annual progress reports.

2. Reforestation Fund Management: The Reforestation Fund will be established as a trust fund under Panamanian law by the Government of Panama in consultation with USAID. The terms of the trust will be agreed upon by USAID and the Government of Panama, and the financial institution to administer the Fund will be selected by the two parties. Periodically the Government of Panama and USAID will meet to review the operations of the Reforestation Fund, and to prepare the Annual Implementation and Financial Plan based on estimates of the amount of lending that participating banks can promote. As the participating banks approve loan requests, USAID will advance monies to the Trust Fund for on-lending to the participating banks. The trust administrators will be responsible for preparing the quarterly and annual financial statements and analyses for submission to the Government of Panama and to USAID. The two parties will consult with participating banks and representatives of reforestation associations and RENARE on the terms of the trust and will conduct such studies and evaluations as are necessary to verify that the loans are used for the purposes for which the Fund was established.

3. USAID Implementation Responsibilities: The Agriculture Office (AGR) will have primary responsibility for Project management. A Project Officer will be contracted and financed by the Project to provide technical and administrative continuity to Project implementation.

The Mission will form a Project Committee to advise and assist the AGR Office in the management of the Project. The Committee will be composed of staff members of the offices of Private Sector Development, Development Planning, Development Resources, and the Controller. The Committee will review and accept the operational plans prepared by RENARE and by the Private Sector Component, and the evaluations and audits of Project implementation. Additional Mission staff will support Project implementation as needed to monitor construction, training, and procurement activities.

4. Negotiating Status and Conditions and Covenants

The Project was developed in collaboration with the department chiefs and the professional staff of RENARE, and in consultation with representatives of the private sector and the banking community. It has also been discussed with the Ministry of Planning and Political Economy and MIDA. Reaction has been favorable and there appear to be no major impediments to negotiating and signing the Project Loan and Grant Agreement in FY 1986. The GOP request for the Project is shown in Annex I.

In addition to the statutory requirements, the following conditions and covenants are recommended for inclusion in the Project Agreement:

a. Conditions Precedent to Initial Disbursement

Prior to the first disbursement under the Loan or Grant, or prior to the issuance by USAID of documentation pursuant to which disbursements will be made, the Government of Panama will furnish to USAID in form and substance satisfactory to USAID:

(1) A legal opinion of the Attorney General that the Agreement has been duly authorized and/or ratified by, and executed on behalf of the Government of Panama, and that it constitutes a valid and legally binding obligation of the Government of Panama in accordance with all of its terms;

(2) A statement of the name of the person holding or acting in the office of the Borrower and of any additional representatives, together with a specimen signature of each person specified in such statement;

(3) Evidence that the Deputy-Director of RENARE has been appointed as project manager of the public sector components of the Project, and that the Technical Committee has been established in RENARE;

(4) An annual implementation and financial plan for all the activities to be undertaken during the first year of the Project, including evidence that GOP funds have been included in the budgets approved for RENARE.

b. Conditions Precedent for Reforestation Fund Disbursement

(1) Evidence that the Reforestation Loan Fund is legally established as a trust fund by the Government of Panama with the terms of the trust acceptable to USAID;

(2) Designation of a financial institution acceptable to USAID as the administrator of the trust fund with an agreement on the procedures and fees that will be charged for fund administration, and on the policies, procedures and reporting requirements for on-lending to participating banks;

(3) Execution of an agreement by the fund administrators with at least one participating bank that agrees to lend to clients for the purposes for which the Reforestation Fund has been established.

c. Conditions Precedent for Continuing Project Disbursements to RENARE

(1) USAID acceptance of annual implementation and financial plans for each executing department or unit approved by the Technical Committee of RENARE and signed by the Deputy Director of RENARE. These plans will provide adequate resources for the identification and control of destructive land use practices in critical areas, and for the implementation of field activities that manage the land resource for sustained productivity.

d. Conditions Precedent for Continuing Project Disbursements 48 months after Signing Project Agreement

RENARE will give evidence in a form acceptable to USAID that specific actions have been completed to: classify the land of the Canal Watershed as to appropriate use; demarcate and patrol the boundaries of established reserves; establish a cadastre and census of the occupants; and develop a program to halt destructive land use practices.

e. Conditions Precedent for Construction Disbursement

USAID approval of the architectural and/or engineering design and building site, and evidence of RENARE title to the land on which the building will be constructed.

f. Covenants

The Government of Panama covenants to:

(1) Prohibit the granting of government loans (including those from such government sources of financing institutions as the Agricultural Development Bank), concessions and development permits in areas designated as national parks or equivalent reserves except as authorized by RENARE under applicable legislation.

(2) Require that the granting of land titles and use rights, mining and timber concessions, river and coastal use permits, and road construction projects be subject to a determination by RENARE that the proposed land use or development is appropriate and that negative environmental impacts are minimized.

(3) Provide an adequate central headquarters building for RENARE throughout the Project, either at the present location in Paraiso or through the acquisition of a permanent building.

(4) Use all Project-funded equipment, vehicles and commodities provided to RENARE exclusively for Project purposes, unless USAID otherwise agrees in writing, and that this material will be the property of that agency.

(5) Adjust the minimum stumpage fees for public timber to reflect the market value of the end product by year 5.

(6) Dedicate all fees and other income collected by RENARE for stumpage, forest concessions, and other services to the natural resources management activities of RENARE.

The Government of Panama and USAID further agree to establish an evaluation and audit program as part of the Project, and to complete at least four in-depth evaluations. Evaluations will have three purposes: (1) to measure progress in Project implementation; (2) to identify problems in execution and propose corrective actions; and (3) to recommend changes in the allocation of resources among different Project components.

B. Methods of Implementation and Financing

Disbursement will be authorized on the basis of the Annual Implementation and Financial Plans submitted for Mission approval. Grant disbursements under the Project will be made using standard USAID procedures, including direct payment, direct reimbursement and Letters of Commitment. In the event a Procurement Services Agent (PSA) is used for large procurements, a Direct Letter of Commitment will be issued.

1. Loan Funds: USAID Loan funds will provide the initial capitalization of the Reforestation Fund. Reforestation loans under the Industrial Plantation Component will be managed separately by a financial institution using direct reimbursement procedures. Prior to the first disbursement of funds, the USAID Office of the Controller will assure that an adequate system of fiscal control, operating procedures, and guidelines for credit disbursement have been established.

Loan funds will finance commodities, construction and local contract services for public sector Project components. USAID will contract and procure large value items. RENARE will be expected to contract for local services, to procure small value commodities through direct purchase or a Procurement Services Agent (PSA) if necessary, and to arrange for short-term training and seminars. RENARE will procure construction services through the Fixed Amount Reimbursement procedure.

<u>Method of Implementation</u>	<u>Method of Financing</u>	<u>Amount</u> <u>(millions)</u>
Commodities/AID Procurement	Direct Payment	\$ 5.2
Local Contract Services/RENARE	Direct Reimbursement	2.0
Commodities/RENARE Procurement	Direct Reimbursement/PSA	1.2
Construction/RENARE Contracts	Direct Reimbursement	2.7
Reforestation Loan Program	Direct Reimbursement	6.5
TOTAL		<u>\$17.6</u>

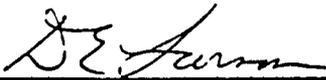
2. Grant Funds: The USAID grant funds will finance a total of 324 person months of long-term and 83 person months of short-term technical assistance (T.A.) through Personal Services Contracts (PSCs) or Institutional Contracts as agreed with RENARE. Grant monies will also finance training.

USAID Mission Project management and administrative support are included in the Grant funding, as well as short-term assistance for four evaluations and audits.

Grant funds will also be used to finance certain locally contracted personnel services and training for all project components. RENARE will administer local services contracting for the public sector components. USAID will administer private sector component local services contracting and the training of overseas participants (see Annex II-E: Procurement Plan).

<u>Method of Implementation</u>	<u>Method of Financing</u>	<u>Amount (millions)</u>
T.A./AID-US Contract	Direct Payment	\$6.2
Overseas Training/AID	Direct Payment	.6
USAID Mission Proj. Mgmt.	Direct Payment	1.6
Audits/Evaluations	Direct Payment	.5
Local T.A. Contracts	Direct Reimbursement	1.0
Local Training/RENARE	Direct Reimbursement	1.0
	TOTAL	<u>\$10.9</u>

3. Controller's Certification: The USAID/Panama Controller has reviewed and approved the detailed assessment of methods of Implementation and Financing for the activities included in the Project Paper as summarized above. The Office of the Controller has also reviewed RENARE's procurement and payment procedures and capabilities (see Annex II) and concluded that they are adequate except for the submission of invoices by the contractor and administrative approval of services rendered prior to payment. The Mission Controller will assure that the Agriculture Office and the administrative offices of the Mission are aware of the importance of recording the approval of contractor invoices for services, and for maintaining invoices and other administrative documentation in the Contract file for possible USAID review before and after the PACD.



Controller, USAID/Panama

9/29/86

Date

C. Cost Estimates and Financial Plan

The total cost of this ten-year Project is estimated to be US\$50.7 million. USAID will finance US\$35.7 million with a loan of US\$22.3 million and a grant of US\$13.4 million. The GOP will finance an estimated B/.15.0 million in staff salaries and operations through the annual operations and investment budgets of RENARE, and through other income received by the agency.

The Financial Plan by Project Component (Table V-1), the Financial Plan by Project Input (Table V-2) and Estimated Disbursements by Component by Year (Table V-3) are presented below. An inflation factor of 4.0% per year and a contingency amount of 10% of the uninflated annual totals has been included. More detailed budget tables are found in Annex II F.

TABLE V-1: FINANCIAL PLAN BY PROJECT COMPONENT
(US\$ millions)

<u>Project Components</u>	USAID		<u>GOP</u>	<u>Total</u>
	<u>Grant</u>	<u>Loan</u>		
Watershed Management	2.3	4.1	4.4	10.8
National Parks Management	1.1	3.0	3.3	7.4
Natural Forest Management	1.2	1.8	3.2	6.2
Farm Forestry	.2	.7	.8	1.7
Industrial Forest Plantations	1.1	6.5		7.6
Strengthening Field Operations	2.1	1.5	.8	4.4
Contractor T.A. Support	.8			.8
<u>Project Component Sub-Totals</u>	<u>8.8</u>	<u>17.6</u>	<u>12.5</u>	<u>38.9</u>
USAID Project Management and Support	2.1			2.1
<u>Project Component Totals</u>	<u>10.9</u>	<u>17.6</u>	<u>12.5</u>	<u>41.0</u>
Inflation and Contingencies	2.5	4.7	2.5	9.7
PROJECT TOTALS	<u>13.4</u>	<u>22.3</u>	<u>15.0</u>	<u>50.7</u>

TABLE V-2: FINANCIAL PLAN BY PROJECT INPUT
(US\$ millions)

	USAID		<u>GOP</u>	<u>Total</u>
	<u>Grant</u>	<u>Loan</u>		
Technical Assistance	6.2			6.2
Training	1.6			1.6
Vehicles and Parts		2.4		2.4
Equipment and Supplies		4.0		4.0
Construction		2.7		2.7
Contracted Services	1.0	2.0		3.0
Loan to Reforestation Fund		6.5		6.5
Government of Panama				
Personnel			9.9	9.9
Operations			2.6	2.6
<u>Project Component Sub-Totals</u>	<u>8.8</u>	<u>17.6</u>	<u>12.5</u>	<u>38.9</u>
USAID Management and Evaluation	2.1			2.1
<u>Project Component Totals</u>	<u>10.9</u>	<u>17.6</u>	<u>12.5</u>	<u>41.0</u>
Inflation and Contingencies	2.5	4.7	2.5	9.7
PROJECT TOTALS	<u>13.4</u>	<u>22.3</u>	<u>15.0</u>	<u>50.7</u>

TABLE V-3: ESTIMATED DISBURSEMENT BY COMPONENTS BY YEAR
(US\$ thousands)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GDP	TOTAL
Watershed Management														10779
AID Grant	35	509	791	494	237	87	10	36	36	0	2235			
AID Loan	46	763	1013	471	644	402	279	386	59	31		4094		
GDP	445	445	445	445	445	445	445	445	445	445			4450	7390
National Parks Management														
AID Grant	12	365	324	319	33	45	0	27	0	0	1125			
AID Loan	100	450	390	535	630	285	190	265	90	80		3015		
GDP	325	325	325	325	325	325	325	325	325	325			3250	6175
Natural Forest Management														
AID Grant	58	335	372	342	102	2	2	2	0	0	1215			
AID Loan	52	700	182	294	169	171	18	150	6	18		1760		
GDP	320	320	320	320	320	320	320	320	320	320			3200	1621
Farm Forestry														
AID Grant	5	23	31	39	36	28	15	15	5	5	202			
AID Loan	36	154	94	70	58	58	73	51	51	24		669		
GDP	75	75	75	75	75	75	75	75	75	75			750	7594
Private Forest Plantations														
AID Grant	186	198	215	228	226	41	0	0	0	0	1094			
AID Loan	300	600	700	700	700	700	700	700	700	700		6500		4491
Strengthened Field Operations														
AID Grant	331	345	212	157	117	287	177	155	155	165	2151			
AID Loan	69	1137	50	20	92	20	20	92	20	20		1540		
GDP	85	85	85	85	85	85	85	85	85	85			850	
Contractor Technical Assistance Support														
AID Grant	0	175	160	160	160	160	0	0	0	0	815			815
Project Component Subtotals														38865
AID Grant	627	1950	2105	1739	911	650	204	235	196	170	8787			
AID Loan	603	3804	2429	2090	2293	1636	1280	1644	926	873		17578		
GDP	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250			12500	
Project Management and Evaluations														2094
AID Grant	292	289	169	304	185	174	39	169	304	169	2094			
Project Totals														40959
AID Grant	919	2239	2274	2043	1096	624	243	404	500	339	10881			
AID Loan	603	3804	2429	2090	2293	1636	1280	1644	926	873		17578		
GDP	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250			12500	
Inflation @ 4%		1.04	1.081	1.124	1.169	1.216	1.265	1.315	1.368	1.423				6848
AID Grant		90	186	255	186	179	64	128	184	144	1415			
AID Loan		152	198	261	389	354	340	519	341	370		2925		
GDP		50	102	156	212	271	332	395	461	529			2508	
Contingencies @ 10%														2846
AID Grant	92	224	227	204	110	82	24	40	50	34	1088			
AID Loan	60	380	243	209	229	164	128	164	93	87		1758		
PROJECT GRAND TOTALS														50652
AID Grant	1011	2552	2687	2502	1392	1085	332	572	734	516	13384			
AID Loan	663	4337	2870	2560	2912	2154	1748	2328	1360	1330		22261		
GDP	1250	1300	1352	1406	1462	1521	1582	1645	1711	1779			15008	

D. Implementation and Monitoring Plan

The Project implementation plan for the first year of execution is detailed below. The plan concentrates on the management and administration requirements of the initiation of activities. It is based on the achievement of pre-implementation activities by USAID in collaboration with RENARE and MIPPE. These include: (1) recruitment of a USAID Project Manager and an Institutional Advisor for RENARE (PDS financed); (2) request for expressions of interest from technical assistance contractors; (3) completion of RFP's for technical assistance; (4) preparation of first year procurement and training plans; and (5) completion of draft first year Annual Implementation and Financial Plans. A general 10 year implementation schedule by Project component is found in Annex II B.

1. Schedule of First Year Implementation Events

	<u>Week</u>
Project Agreement Signed	0
Mission Project Manager and RENARE Institutional Advisor transferred to Project Financing	1
Institutional Technical Assistance Advertised by USAID	1
Project Implementation Letter No. 1 Sent to GOP	3
Recruitment Begun for: Industrial Forestry Advisor	3
Project Administrative Assistant	3
<u>First Year Annual Implementation and Financial Plans approved</u>	4
First Year USAID Project Procurement Plan approved	5
First Year Training Plan approved	8
Initial CPs Met by GOP	10
PIL Authorizing Disbursements for Implementation Sent to GOP	11
First year procurement orders placed (IQ-PSA)	12
Agreement between USAID and GOP on the organization of the Reforestation Fund and loan purposes and procedures	12
Receipt of Technical Assistance Proposals	13
Trainees and participants for first year training selected	14
Recruitment of Administrative Assistant completed, at post	17
USAID/RENARE Complete evaluation of T.A. Proposals, select 3 finalists	17
First year PIO/T processing completed	18
Reforestation Fund Legally Established as a Trust Fund	20
Select of Institutional T.A. Contractor, start contract negotiation	21
Recruitment of Industrial Forester completed, at post	28
Arrival of Initial commodity procurement-vehicles, microcomputers, etc.	28
Institutional T.A. contracting completed	29
Work Plan for Private Forest Plantation Component of Project Completed	32
Long Term T.A. specialists interviewed and approved by USAID/RENARE	37
Arrival of T.A. scheduled in consultation with RENARE counterparts	40
Three Year Project Implementation Plan Completed	44
Three Year Training Plan Completed	45
<u>Second Year Annual Implementation and Financial Plans approved</u>	46
<u>Second Year USAID Project Procurement Plan approved</u>	48
Procurement Contracts Drawn Up and Signed	49
Long Term T.A. advisors begin to arrive at post	52
Year-end Report on Project Implementation	52

2. Monitoring Plan: RENARE will prepare Annual Implementation Plans and Annual Financial Plans using the formats and definitions designed by USAID for each Project component. These plans will be synchronized with the annual budget cycle of RENARE and the fiscal year of USAID. Each component and activity will be managed as a cost center by RENARE with performance targets defined and scheduled. Quarterly Progress Reports will provide a basis for monitoring and subsequent evaluations of Project implementation.

E. Evaluation and Audit Plan

Four external evaluations of the Project are scheduled: (1) to measure progress towards achievement of the Project purposes; (2) to identify problems in execution and propose corrective actions; and (3) to recommend changes in the allocation of resources among different Project components. At each evaluation the implementation capacity of the counterpart institutions and the USAID mission will be assessed, and the scope of the Project adjusted to deal with any constraints or problems that are identified in timely execution. Independent audits will be scheduled by the Mission Controller's Office as needed to verify that acceptable practices and accounting standards are maintained. The evaluations are scheduled as follows:

TIMING EMPHASIS

Year 3 The initial evaluation will take place approximately 18 months after the arrival of the T.A. team. The evaluation will focus on: compliance with CPs and covenants by the GOP; effectiveness of the technical assistance advisors and their counterpart working relationships; the level of support of field activities by RENARE; use of the Annual Implementation and Financial Plans for management and monitoring activities; adequacy of USAID management and administrative support of the Project; and response of the private sector to the industrial reforestation component and the demand for reforestation loans.

Year 5
and
Year 7 These evaluations will cover the same implementation concerns as above with particular attention to problems in meeting schedules and objectives in component activities. Recommendations will be made on changes in Project priorities, performance criteria and the allocation of Project resources where appropriate.

Year 9 The final evaluation will examine overall Project accomplishments in terms of the specific targets of the LOGFRAME and the impacts resulting from implementation. The lessons learned and technologies developed will be identified. The evaluation will also recommend follow-on activities for natural resources programs in Panama.

All evaluations will be planned and carried out jointly by USAID and RENARE with the assistance of USAID-contracted specialists. The Mission Evaluation Advisor will assist in planning the evaluations and recommend the additional studies and independent audits may be required. Final preparation and publication of the evaluations will be the responsibility of the Planning and Evaluation Unit of RENARE.

ANNEX I. LEGAL EXHIBITS

- A. PID Approval Message/DAEC Guidance/Guidance Response
- B. Director's 611 (e) Certification
- C. Statutory Check List
- D. Government of Panama Request for the Project
- E. Environmental Determination
- F. Redelelegation of Authority to Approve Project Paper and Authorize Project

1/2
UNCLASSIFIED
ACTION: USAID-7 INFO: 004 CTION

ANNEX I
EXHIBIT A

UNCLASSIFIED
PP 912123
DE RUEBIC #6211/01 1332210
ZNR JUTUJ ZZT
P 132242Z MAY 85
FM SECSTATE WASHDC
TO AMEMBASSY PANAMA PRIORITY 4303
BT
UNCLAS STATE 115211

AIDAC

E.O. 12356: N/A
TAGS:
SUBJECT: NATURAL RESOURCES DEVELOPMENT PROJECT (525-0243)

1. THE DACS REVIEWED AND APPROVED THE SUBJECT PFD ON MARCH 26, 1985. THE ADMINISTRATOR HAS BEEN REQUESTED TO APPROVE THE MISSION'S REQUEST THAT THE MISSION DIRECTOR BE AUTHORIZED TO APPROVE THE PP AND AUTHORIZED THE PROJECT. WILL ADVISE WHEN SIGNED VIA SEPTEL. PRIOR TO PP APPROVAL, MISSION SHOULD FORWARD THE DRAFT PP DESCRIPTION OF THE CREDIT ADMINISTRATION AND SUBLENDING ARRANGEMENTS AND THE ECONOMIC AND FINANCIAL ANALYSES TO AID/W FOR REVIEW AND APPROVAL. GUIDANCE FOR PROJECT DEVELOPMENT FROM THE REVIEW IS PROVIDED PARAS 2 TO 7, INCLUSIVE.

2. SCOPE AND LENGTH OF PROJECT. THE PROJECT IS A MUCH LARGER EFFORT THAN ANY UNDERTAKEN HERETOFORE BY USAID/PANAMA AND CALLS FOR A 10 YEAR IMPLEMENTATION PERIOD. THE PROPOSED LENGTH WAS ACCEPTED IN VIEW OF THE KIND OF DEVELOPMENT PROBLEM, I.E. DETERIORATION OF THE NATURAL RESOURCE BASE, BEING ADDRESSED. ON THE OTHER HAND, THE COP'S PRECARIOUS FINANCIAL SITUATION AND EXPECTED FISCAL CONSTRAINTS FOR THE FORESEEABLE FUTURE, ARGUE FOR CAREFUL CONSIDERATION DURING PP DEVELOPMENT, OF HOW THE COP WILL BE ABLE TO FOLLOW THROUGH.

IT IS SUGGESTED THAT THE MISSION REVIEW THE COP'S PROJECTED INVESTMENT BUDGETS, FUNDING REQUIRED FOR OTHER HIGH PRIORITY DEVELOPMENT PROJECTS (SOME OF WHICH HAVE ALREADY BEEN SCALED BACK DUE TO LACK OF COUNTERPART), AND POSSIBLY HIGH RECURRENT COSTS OF THE PROPOSED PROJECT. THE FINAL AMOUNT OF AID FUNDING APPROVED SHOULD REFLECT THE PROJECTED CAPABILITY OF THE COP TO PROVIDE ITS SHARE OF THE INVESTMENTS AND RECURRENT COSTS OF CARRYING OUT THE PROJECT.

3. RELATION TO OTHER DEVELOPMENT PROJECTS. THE NEED FOR THE PROJECT IS DUE IN PART TO NEGATIVE IMPACTS THAT HAVE RESULTED FROM THE IMPLEMENTATION OF OTHER DEVELOPMENT PROJECTS. FOR EXAMPLE, CLEARING OF AREAS FOR AGRICULTURAL USES HAS LARGELY FOLLOVED ROAD CONSTRUCTION, AND THE TERRIER-CRANGUINOLA REHABILITATION PROJECT IS LEADING TO ENVIRONMENTAL DETERIORATION IN THAT AREA. THE PROJECT

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PROPOSES ACTIVITIES TO MITIGATE THE NEGATIVE ENVIRONMENTAL IMPACTS OF THESE OTHER EFFORTS. AID/W UNDERSTANDS THAT MOST OF THESE PROJECTS ARE FUNDED BY OTHER INTERNATIONAL FINANCING INSTITUTIONS (IFI'S), SUCH AS THE WORLD BANK AND IDB, WHICH HAVE LESS RIGOROUS STANDARDS FOR ANALYSIS OF ENVIRONMENTAL QUALITY THAN WE DO. HOWEVER, THE COP COULD MAKE A STRONGER CASE FOR INCORPORATING ACTIVITIES TO ADDRESS NATURAL RESOURCES MANAGEMENT CONCERNS IN THOSE PROJECTS IF IT HAD BETTER POLICIES AND PROCEDURES DESIGNED TO PROMOTE APPROPRIATE LAND USES AND A STRONGER CAPABILITY TO ANALYSE ENVIRONMENTAL IMPACT OF PROPOSED PROJECTS. IT WAS CONCLUDED THAT THE PROJECT SHOULD INCLUDE A COMPONENT TO THIS EFFECT.

A START ON THE PREVENTIVE APPROACH SHOULD BE MADE BY ASSISTING THE COP TO DEVELOP AND IMPLEMENT EFFECTIVE, APPROPRIATE POLICIES FOR REVIEW AND APPROVAL OF PLANNED DEVELOPMENT ACTIVITIES HAVING NATURAL RESOURCE IMPLICATIONS, WHERE SUCH ACTIVITIES WILL BE OR ARE BEING UNDERTAKEN BY OTHER PUBLIC SECTOR AGENCIES. THIS MIGHT BE DONE BY: (1) PROJECT FUNDING OF ACTIVITIES TO DEVELOP REVIEW'S CAPABILITY TO ANALYSE THE ENVIRONMENTAL IMPACT OF ALL PROPOSED DEVELOPMENT PROJECTS, AND THEIR EFFECT ON WATERSHED QUALITY; AND/OR (2) CONDITIONING AID ASSISTANCE ON ESTABLISHMENT OF COP PROCEDURES WHICH REQUIRE THAT REVIEW AND APPROVE ALL PROPOSED DEVELOPMENT PROJECTS PRIOR TO FORMALIZING FUNDING ARRANGEMENTS; AND/OR (3) COP ADOPTION OF A POLICY THAT THE COSTS OF WATERSHED PRESERVATION BE INCLUDED IN THE BUDGET FOR ALL DEVELOPMENT PROJECTS, AND OPERATING RESPONSIBILITY FOR MAINTENANCE OF

WATERSHED PRODUCTION CAPACITY CHARGED TO THE AGENCIES WHICH IMPLEMENT THEM. ALTHOUGH THIS WOULD NOT BE POSSIBLE IN ALL AREAS, THE TERIBE-CHANGJINDLA WATERSHED IS A GOOD EXAMPLE OF WHERE THIS COULD BE CARRIED OUT, JUST AS THIS WAS ATTEMPTED TO DO IN THE BAYANO AREA.

2. COP FORESTRY AND AGRICULTURAL POLICIES. THE MISSION ESTIMATED THAT 70 PERCENT OF AGRICULTURAL LANDS IN PANAMA ARE UNTITLED AND THAT STUMPAGE TAXES ON TIMBER AMOUNT TO BETWEEN A TENTH AND A THIRTIETH OF THE STUMPAGE FEES CHARGED TO LOGGERS ON U.S. PUBLIC LANDS. WITHOUT SECURE TENANCY THERE IS LITTLE INCENTIVE TO INVEST IN IMPROVING LAND SUITABLE FOR SUSTAINED AGRICULTURE OR FORESTRY PRODUCTION. WITH CHEAP FOREST RESOURCES THERE IS EVERY REASON TO CUT AND REMOVE SHORT RUN PROFITS. AS INDICATED IN THE PID, THE PP SHOULD IDENTIFY POLICY ISSUES THAT WOULD BE ADDRESSED THROUGH THE PROJECT.

IT WAS AGREED THAT ESTABLISHING AN ECONOMICALLY REAL PRICE FOR TIMBER ON PUBLIC LANDS IS NECESSARY TO ENSURE THAT PROJECT OBJECTIVES ARE ACHIEVED OVER THE LONG RUN. IT WAS

RECOGNIZED THAT INCREASING THE STUMPAGE PRICE ON PUBLICLY OWNED TIMBER TO AN ECONOMICALLY REAL LEVEL WOULD RAISE PRICES FOR THE CONSTRUCTION INDUSTRY, AND MIGHT LEAD TO ADDITIONAL LUMBER IMPORTS. ON THE OTHER HAND, IT WOULD PROVIDE AN INCENTIVE FOR IMPROVING EFFICIENCY IN THE LUMBER INDUSTRY AND FAVOR USE OF HIGHER VALUE SPECIES SUCH AS MADRONE FOR HIGHER VALUE WOOD PRODUCTS SUCH AS FURNITURE. ON BALANCE, IT WAS CONCLUDED THAT THE PROJECT SHOULD INCLUDE ACTIVITIES WHICH HELP REVENUE TO DEVELOP THE NECESSARY POLICIES AND PROCEDURES AND THE OPERATIONAL CAPABILITY FOR CHARGING REAL PRICES ON PUBLICLY OWNED TIMBER. APPROPRIATE POLICY COMMITMENTS SHOULD BE OBTAINED PRIOR TO FIRST DISBURSEMENT. TO MINIMIZE THE IMPACT ON PRICES, STUMPAGE FEES COULD BE INCREASED OVER TIME, BUT SHOULD REACH ECONOMICALLY REAL LEVELS BEFORE THE END OF THE PROJECT. THE INCREASED REVENUE WOULD BE USED TO FINANCE SOME OF REVENUE'S OPERATING AND DEVELOPMENT COSTS, ESPECIALLY REFORESTATION ACTIVITIES, THUS FURTHER HELPING TO ACHIEVE THE PROJECT PURPOSE AND MINIMIZING THE DRAIN ON THE JOF TREASURY.

IT WAS SERIOUSLY QUESTIONED WHETHER ASSISTANCE THROUGH RUSA EXTENSION SERVICES WOULD BE SUCCESSFUL IN BRINGING ABOUT CHANGED AGRICULTURAL PRACTICES WHERE FARMERS DO NOT HAVE ACCESS TO PRODUCTION CREDIT AND ON-FARM INVESTMENT, AND WHETHER FARMERS ARE LIKELY TO OBTAIN PRODUCTION CREDIT AND MAKE ON-FARM INVESTMENTS IN THE ABSENCE OF SECURE LAND TENANCY. WE UNDERSTAND THAT MISSION IS CONSIDERING A LAND

TITLING PROJECT FOR NEXT FY, AND SEE THIS AS A PARTIAL SOLUTION. ACCORDINGLY, FIELD ACTIVITIES SUPPORTED THROUGH THE PROJECT SHOULD BE CONCENTRATED WHERE THE GREATEST IMPACT ON ACHIEVING POSITIVE LAND USE CHANGES IS LIKELY. THIS SUGGESTS THAT AT THE ONSET, PROJECT SUPPORTED FIELD ACTIVITIES SHOULD BE: (1) DIRECT REFORESTATION AND OTHER IMPROVEMENTS ON PUBLIC LANDS UNDER REVENUE CONTROL; AND (2) EXTENSION SERVICES TO FARMERS HAVING SECURE TENANCY IN WATERSHEDS HAVING A HIGH DEGREE OF TITLED AGRICULTURAL LANDS. IF THE MISSION PROCEEDS WITH THE TITLING PROJECT, ACTIVITIES UNDER THIS PROJECT COULD BE INITIATED IN ADDITIONAL WATERSHEDS AS TITLES ARE ISSUED IN THOSE AREAS.

MISSION SHOULD ALSO ANALYSE OTHER POLICY AND/OR LEGAL CONSTRAINTS WHOSE RESOLUTION IS NECESSARY OR HIGHLY DESIRABLE TO FACILITATE ACCOMPLISHMENT OF THE PROJECT PURPOSE, AND MAKE ADJUSTMENTS TO THE PROJECT DESIGN AS INDICATED BY THE RESULTS.

5. WATERSHED MANAGEMENT PLANS. ALTHOUGH THE PID STATES THAT WATERSHED MANAGEMENT PLANS HAVE BEEN PREPARED FOR SEVERAL OF THE WATERSHEDS THAT WOULD BE IMPROVED UNDER THE PROJECT, IT WAS UNCLEAR FROM THE PID AND THE PRESENTATION AT THE REVIEW WHAT THOSE PLANS CONSIST OF, HOW SOUND THEY ARE (TECHNICALLY, FINANCIALLY, SOCIALLY, ETC.), AND HOW FEASIBLE THEIR IMPLEMENTATION IS FROM THE POINT OF VIEW OF THE FARMERS. FURTHERMORE, THE CRITERIA FOR SELECTION OF THE WATERSHEDS ON WHICH THE PROJECT WILL FOCUS WERE UNCLEAR. IT IS SUGGESTED THAT A BENEFITCOST RELATIONSHIP

BE A GUIDING PRINCIPLE IN THE SELECTION OF THE WATERSHEDS. THE MISSION MAY FIND IT USEFUL TO DEVELOP A RIGOROUS SELECTION PROCESS FOR WATERSHEDS BASED ON FACTORS SUCH AS: TYPE AND SEVERITY OF WATERSHED DEGRADATION; TYPES OF CORRECTIVE MEASURES AND ACTIVITIES REQUIRED; ON-SITE AND DOWNSTREAM BENEFITS (E.G. AGRICULTURAL PRODUCTION, REDUCED DAM SILTATION RATES, ETC.); EXISTENCE OF LOCAL FARMERS ORGANIZATIONS AND COMMUNITY GROUPS; JOP AGENCY PRESENCE; AND LINKAGES WITH OTHER DEVELOPMENT ACTIVITIES. BY ASSIGNING A WEIGHTED VALUE TO THESE CRITERIA IT SHOULD BE POSSIBLE TO ARRIVE AT A PRELIMINARY WATERSHED PRIORITY LISTING. MORE DETAILED ESTIMATES OF COSTS AND BENEFITS CAN THEN BE PERFORMED. THE MISSION MAY ALSO WISH TO REVIEW THE FRAGILE LANDS CONCEPT PAPER FOR A FAIRLY COMPLETE IDENTIFICATION OF DOWNSTREAM BENEFITS. THE PP SHOULD CONTAIN A CLEAR STATEMENT OF THE CRITERIA THAT ARE USED IN SELECTING THE WATERSHEDS ON WHICH PROJECT ACTIVITIES WILL BE FOCUSED.

WITH REGARD TO THE WATERSHED MANAGEMENT PLANS, CARE SHOULD BE TAKEN TO ACHIEVE AN APPROPRIATE BALANCE BETWEEN IDEAL LAND USES FROM THE WATERSHED PLANNER'S POINT OF VIEW AND PROFIT MAXIMIZATION TO FARMERS THROUGH ENVIRONMENTALLY SOUND PRODUCTION PRACTICES.

5. PRIVATE REFORESTATION. IT WAS RECOGNIZED THAT INCENTIVES WOULD BE NEEDED TO ATTRACT PRIVATE CAPITAL TO PRIVATE REFORESTATION ACTIVITIES. CARE SHOULD BE TAKEN TO INSURE THAT THE INCENTIVES REWARD EFFICIENT PRODUCTION AND MANAGEMENT RATHER THAN SIMPLY SUBSIDIZING INVESTMENT COSTS. FINANCIAL INSTITUTIONS SHOULD NOT BE EXPECTED TO PROVIDE INCENTIVES OR SUBSIDIES, AND THE SUBSIDIES SHOULD NOT BE FINANCED FROM PROJECT RESOURCES. EXTENDED GRACE PERIODS FOR CAPITAL AND/OR INTEREST, WHICH IS BEING CONSIDERED BY THE MISSION, MAY MEAN THAT FINANCIAL INSTITUTIONS ARE SUBSIDIZING THE OPERATION (AT LEAST TO THE EXTENT THAT THEIR OWN RESOURCES FINANCE SUCH LOANS), WHILE CAPITALIZING THE INTEREST DURING THE GRACE PERIOD.

THEORETICALLY WOULD ELIMINATE THE SUBSIDY ELEMENT, NEGATIVE LENDER CASH FLOW AND CONCERN ABOUT LIKELIHOOD OF REPAYMENT MAY STILL DISCOURAGE THEM FROM MAKING LOANS. ALTHOUGH THE BNP MIGHT PROVIDE LOANS IF A.I.D. MAKES MOST OF THE LONG-TERM CAPITAL AVAILABLE, PRIVATE LENDER INTEREST IN MAKING SUCH LOANS AND MOBILIZING NON-A.I.D. FUNDS FOR REFORESTATION WAS CONSIDERED UNLIKELY.

IT WAS SUGGESTED THAT WRITE-OFF OF LOSSES FROM REFORESTATION AGAINST OTHER INCOME FOR INCOME TAX CALCULATION PURPOSES, TAX-LOSS CARRY FORWARD PROVISIONS, AND SIMILAR OPTIONS MAY BE MORE EFFECTIVE IN ACHIEVING PROJECT OBJECTIVES THAN GRACE PERIODS FROM FINANCIAL INSTITUTIONS. STRUCTURING THE INCENTIVE SYSTEM IN THIS FASHION SHOULD HAVE THE SAME EFFECT ON INVESTOR CASH-FLOW, BUT THE SUBSIDY WOULD BE IMPLICIT AND PROVIDED BY THE PUBLIC SECTOR, LENDER CASH-FLOW TO BE MAINTAINED, AND RELATIVELY MORE EFFICIENT ENTERPRISES WOULD GAIN RELATIVELY GREATER BENEFITS. WHILE IT IS RECOGNIZED THAT THE ENTREPRENEURS MOST LIKELY TO BE ABLE TO TAKE ADVANTAGE OF THESE INCENTIVES ARE ESTABLISHED ENTREPRENEURS WITH SOLID ASSETS, IT WAS NOTED THAT SMALLER, UNDERCAPITALIZED INVESTORS WOULD BE ABLE TO MANAGE INVESTMENTS THAT DON'T GENERATE ANY CASH FLOW UNTIL YEAR 5 OR 6 AT THE EARLIEST IN ANY CASE.

THERE WAS CONSIDERABLE DISCUSSION OF THE EXTENT TO WHICH UNAVAILABILITY OF INVESTMENT CREDIT IS THE CONSTRAINT TO LACK OF INVESTMENT IN AFFORESTRY RATHER THAN A COMBINATION OF OTHER FACTORS SUCH AS BANK LENDING PROCEDURES, BOP AND PRIVATE BANK POLICIES, AND PERCEIVED INVESTMENT RISKS. THE MISSION IS REQUESTED TO CARRY OUT A

FULL ANALYSIS OF THESE CONSTRAINTS IN FINALIZING THE DESIGN OF THE CREDIT COMPONENT AND INCLUDE IN THE PP THE ANALYSIS AND A DESCRIPTION OF THE MEASURES TAKEN TO RESOLVE CONSTRAINTS OTHER THAN CREDIT.

7. IMPLEMENTING AGENCIES. PROJECT ACTIVITIES WILL BE IMPLEMENTED BY RENARE, OTHER MINISTRY OF AGRICULTURAL DEVELOPMENT (MIDA) AGENCIES, AND THE PRIVATE SECTOR. RENARE'S CAPABILITY TO CARRY OUT ITS ROLE WAS UNDOUBTEDLY STRENGTHENED UNDER THE WATERSHED MANAGEMENT PROJECT. HOWEVER, THE PERFORMANCE OF OTHER MIDA AGENCIES UNDER OTHER A.I.D. FINANCED PROJECTS HAS BEEN DISAPPOINTING. THE PLANNED ROLE FOR THE OTHER MIDA AGENCIES COULD PUT THEM INTO THE POSITION OF SIMULTANEOUSLY CARRYING OUT THEIR OWN AGENCY'S WORK PLANS AND RENARE DEVELOPED ACTIVITIES. A GOOD COORDINATION MECHANISM SHOULD BE DESIGNED TO HELP RESOLVE THIS PROBLEM. OTHER SOLUTIONS FOR THIS PROBLEM, E.G. ASSISTANCE THROUGH PRIVATE PRODUCER'S ORGANIZATIONS, WATER USER'S ASSOCIATIONS, SHOULD BE CONSIDERED DURING INTENSIVE REVIEW.

8. FINANCIAL AND ECONOMIC ANALYSES. IT IS SUGGESTED THAT THE ANALYSES CONSIDER THE COMPETITIVENESS OF LUMBER PRODUCED IN DIFFERENT PARTS OF PANAMA WITH THE COST OF PRODUCTION IN NEIGHBORING COUNTRIES. THE RESULTS MAY BE

USPFI IN PLANNING WERE TO DIRECT THE PROJECT FJNDED
 TECHNICAL ASSISTANCE TO MAXIMIZE THE FINANCIAL AND
 ECONOMIC RETURNS TO SCARCE RESOURCES. AS WELL, THE
 ANALYSIS SHOULD INCLUDE A JUSTIFICATION AND REFINEMENT OF
 NET DIRECT EMPLOYMENT CREATION ESTIMATES PRESENTED IN
 THE PID.

9. DETAILED FIRST YEAR IMPLEMENTATION PLAN. IT WAS NOTED
 THAT LAC/DR WILL NOW BE REVIEWING THE IMPLEMENTATION
 PROGRESS OF NEWLY AUTHORIZED PROJECTS AS PART OF THE
 SEMIANNUAL PIPELINE REVIEW. TO PERMIT INFORMED
 DISCUSSION, PLEASE INCLUDE DETAILED FIRST YEAR
 IMPLEMENTATION PLAN IN PP, AND INCLUDE DISCUSSION OF
 ACHIEVEMENT OF EACH PLANNED ACTIVITY IN SEMIANNUAL
 PROJECT STATUS REPORTS. DAM

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(SUBJECT: PANAMA NATURAL RESOURCES MANAGEMENT PROJECT
((525-0248)

(REFS: (A) STATE 146211 (B) PANAMA 9034

(1. REF A REQUESTED DRAFT DESCRIPTION OF CREDIT
(ADMINISTRATION AND SUBLENDING ARRANGEMENTS AS WELL AS
(ECONOMIC AND FINANCIAL ANALYSES.

(2. THE DRAFT PP DESCRIPTION FOR THESE COMPONENTS
(CONTAINED IN REF B SUBSTANTIATED THE FINANCIAL AND
(ECONOMIC FEASIBILITY OF THE PRIVATE SECTOR CREDIT
(ACTIVITY. THE MISSION IS TO BE CONGRATULATED ON THE
(THOROUGHNESS OF THE ANALYSIS

(3. THE MISSION MAY PROCEED TO COMPLETE THE PP AND TO
(APPROVE THE PROJECT PROVIDED THAT OUR UNDERSTANDING ON
(THE FOLLOWING IS CORRECT: (1) THE INTEREST RATES USED
(WILL BE THOSE PROVIDED BY COMMERCIAL BANKS WHICH ARE
(ESTABLISHED BY THE MARKET RATHER THAN BY THE
(TERMS OF MDB LOANS BEING REDISCOUNTED BY COMMERCIAL
(BANKS; (2) WHILE THE BENEFICIARIES OF THE PRIVATE
(INDUSTRIAL PLANTATIONS ARE MEDIUM TO LARGE FARMERS WHO
(HAVE FREE AND CLEAR TITLE TO THEIR LAND; THAT OTHER
(PROJECT COMPONENTS WILL BE TARGETED TOWARD SMALL FARMERS,
(AND (3) PER REF A THE GOP WILL TAKE MEASURES TO INCREASE
(THE STUMPAGE PRICE ON PUBLICALLY OWNED LUMBER SO AS NOT
(TO UNDERCUT THE PRIVATE PLANTATION PROGRAM.

(4. FROM THE ANALYSIS PRESENTED IT WAS NOT CLEAR WHETHER
(THE MISSION HAS FACTORED LOSSES DUE TO FIRE, DISEASE,
(HUMAN ACTIVITIES, ANIMALS AND OTHER FACTORS INTO THE
(FINANCIAL AND ECONOMIC ANALYSIS. IF NOT WE REQUEST THAT
(THIS BE DONE.

(ALSO, THE DESIGN OF THE CREDIT COMPONENT SHOULD TAKE
(INTO ACCOUNT THE POSSIBILITY OF HIGH LOSS RATES TO
(INDIVIDUAL BORROWERS AFFECTED BY FIRE OR OTHER
(CATASTROPHIC LOSS AND INCLUDE MECHANISMS TO MITIGATE THE
(IMPACT OF THIS EVENTUALITY. WHITEHEAD

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MISSION RESPONSE TO DAEC GUIDANCE CABLE

Par. 1: Request by AID/W to approve the draft description of the administration of the reforestation credit administration and sub-lending arrangements, and the economic and financial analysis.

The draft description was cabled to AID/W (Panama 9034) and approved in State 266992 with congratulations on the "thoroughness of the analysis". In Par 4 of the reply two questions were asked: (1) whether the analysis factored in losses due to fire etc., if not it was suggested that this be done; and (2) whether the credit component takes into account the possibility of high loss rates from fire or other catastrophe, and to include mechanisms to mitigate that eventuality.

Loss through fire or other disaster cannot be explicitly factored in for three reasons: (1) there are no statistics on the probability of fire in plantations since relatively little area has been planted in Panama; (2) the amount of loss will depend on stand age, species resistance to fire, and fire intensity; and (3) existing plantations have not been planned and managed to minimize fire loss through maintaining fire breaks, controlled burning, and planting buffers of fire resistant vegetation. Implicit factoring for loss comes from the sensitivity analysis on page 38. The switching value calculation has determined that two thirds of the product of a plantation could be lost before the forest investor would lose money.

Fire control is feasible, and the annual costs of protection included in the illustrative plantation model. The issue of fire protection is of concern to private landowners, and being examined by the National Reforestation Association of Panama (ANRAP). ANRAP has identified a source of forest fire insurance, asked the government to strengthen enforcement of the laws controlling burning, and is planning to support a publicity campaign on fire danger and the need for cooperation in fire control.

Par. 2: Consideration of GOP funding and recurrent costs in relation to Project Size

The scale of the new Project was developed after careful consideration of the general financial situation of the GOP, current budgetary levels of RENARE, and a conservative estimate of the ability of the government to finance future recurrent costs. Parameters for design were: (1) Project loan funds were not to be used to hire additional personnel; (2) the Project be implemented through the reassignment of existing staff; and (3) that additional operating funds will be generated from the sale of public timber and the collection of the charges and fees established by law. It is anticipated that this income will cover the increased operating expenses for field activities required and recurrent costs after the PACD.

The annual costs of the public sector GOP counterpart financed components of the new Project are less than that of the previous Watershed Management Project. Excluded the private sector reforestation component (not GOP financed), and the AID Project Management and inflation and contingency allowances not included in the previous project, the annual cost of the new project is \$3,050,000 per year as compared with the previous project of \$3,360,000 per year.

Par. 3: Environmental Impact Assessment and Mitigation Impacts

The Project will fund technical assistance and training to develop an environmental impact assessment capability in RENARE. The development of this capability will take time. It was decided that it would be premature to require the GOP to establish procedures for RENARE to complete environmental impact studies, and to approve all proposed development projects, prior to formalizing funding arrangements until that capability exists. The Project will assist RENARE to perform environmental impact assessment experience over the next 6 years through technical assistance and training.

The DAEC suggestion that the budgets of future watershed projects include funding for the costs of watershed protection and management will be considered when new projects, such as the Teribe Changuinola, are planned. DAEC state that the "Teribe-Changuinola Hydroelectric Complex is leading to the environmental deterioration in that area." That development is still in the planning state and it is reported that it will be postponed until after the year 2000.

Par. 4: GOP Forestry and Agricultural Policies

The DAEC concluded that "the project should include activities which help RENARE to develop the necessary policies and procedures, and the operational capability, for charging economically real prices on publicly owned timber", and that "appropriate policy commitments should be obtained prior to first disbursement". The project includes technical assistance to RENARE in the area of forest economics, and in stumpage appraisal, and provides for training the technical staff in these techniques. In time these actions will assist RENARE to develop the policies and procedures necessary to establish "economically real prices" for public timber. No commitments prior to first disbursement in this regard are proposed as the GOP has doubled stumpage prices in public timber in the Darien in January 1986. This is considered a satisfactory first step in achieving the recommendation of the DAEC.

The other issues mentioned by DAEC on farmer access to production credits, agricultural extension and land titling are applicable to agricultural sector programming. To comment on some of the DAEC observations: it should be noted that BDA loans are made to farmers that do

not have titled land, but have use rights; small landowners will plant tree on lands that are untitled; and previous efforts to reforest public lands were ineffective due to lack of maintenance and fire control. Therefore this Project concentrates on the control of land use to allow natural regeneration to restore vegetation to public lands (as recommended in the IEE), and will promote private sector reforestation efforts.

The major policy issue and legal constraint identified during Project design was the limitations on RENARE authority and operational autonomy as a subordinate unit within MIDA. This has been dealt with by requiring autonomy and increased status for that agency prior to signing a Project Agreement.

Par. 5: Criteria for Watershed Selection

The criteria used for determining the priorities for watershed management activities begun in three watersheds, the Panama Canal, Rio La Villa and Rio Caldera, have been included in the Project Paper. The criteria used include the following variables: total watershed area, population, social condition, agricultural area, hydrologic balance, resource degradation, existing investments, and planned future development. An AID financed course on the methodology and criteria to be used to determine the priorities of watershed investments was taught (May 1986) to personnel of RENARE and other GOP institutions. The Project will provide technical assistance and training to extend the use of this methodology in selecting the two new watersheds for management in years 4 and 6 of the Project.

Cost/benefit analysis is used to rank specific construction alternatives or to compare specific programs. This type of analysis requires reliable data on the physical resources of a watershed, trends in present use, and the quantification of the benefits that can be realized from potential uses. The Project will provide assistance to RENARE to collect that information, and to make the analyses needed to prepare watershed management plans. The Project will also finance supplementary socioeconomic studies where required.

Par. 6: Private Reforestation Financial Incentives

The DAEC recommendations on this topic were used to prepare the study forwarded to AID/W on the design of the credit component, and in the financial and economic analysis of the trust fund as a method for providing long term credit for reforestation investments. It was established in this analysis that there was no subsidy element in the proposed program, and that there was no long term credit (greater than 8 years) available for agricultural investments of this nature.

During Project development the Mission contracted for a study of the bankability of the proposed program. This study identified five commercial banks that were willing to manage the on-lending program, and would recommend

it to their established clients. No difficulties in bank lending procedures, GOP or private bank policies were foreseen. The issue of risk was noted, particularly with regard to fire, otherwise the principal impediments to the forest plantation investments identified in the Project Paper were: the lack of experience in plantation management, lack of knowledge on the returns from tree planting on the part of landowners (and banks), and the unavailability of long term credit. The Project provides for data collection and analysis of plantation experience in Panama, and a promotional campaign through private reforestation and agricultural associations together with training in plantation investment analysis.

As noted by DAEC forestry investments can be stimulated if fiscal incentives in the form of tax credits are available. The Mission has worked with private groups to develop draft legislation that would ensure that industrial forestry plantations and agroforestry receive the same fiscal incentives as do other agricultural activities. While the latest law on agricultural incentives reduced the tax benefits previously available to landowners, there remain several incentives to industrial reforestation investments that will help to promote the program.

Par. 7: Implementing Agency Coordination

The Project Paper (page 10) states that RENARE will undertake a systematic program of collaboration with other agencies, particularly in training, in developing watershed management actions. RENARE plans to form an advisory committee for each watershed, as exists for the Canal Watershed, which will include representatives of the local inhabitants, water using agencies, local government and producer associations. The draft legislation on autonomy gives RENARE the authority to organize and manage those committees to fulfill its objectives. In addition, a strengthened mechanism for interagency collaboration will exist through the representation of other ministries on the governing board of RENARE. That agency has recently taken a more active role in coordinating with other agencies, the private sector, and non-governmental conservation groups.

Par. 8: Comparative Lumber Prices and Employment Creation Estimates

Two comparative analysis were made for the specific purposes of determining: (1) a plantation stumpage price that could be used in the financial analysis to determine the financial feasibility of growing trees for the local forest industries (Table IV-2); and (2) if future plantation pine lumber prices, as estimated from the import parity price of pine lumber in the year 2000, would be competitive with imported lumber (Economic Analysis, Annex III, Exhibit E, page 4). As requested by DAEC the net employment creation estimates of the private sector reforestation component, erroneous in the PID, were corrected and refined. The new estimate of employment impacts was included in Panama 9034, and is presented in the Economic Analysis (Annex III, Exhibit E., page 6).

Listed below are statutory criteria applicable generally to FAA funds, and criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

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|---|------------|
| <p>1. <u>FAA Sec. 481(h)(1); FY 1985 Continuing Resolution Sec. 528.</u> Has it been determined or certified to the Congress by the President that the government of the recipient country has failed to take adequate measures or steps to prevent narcotic and psychotropic drugs or other controlled substances (as listed in the schedules in section 202 of the Comprehensive Drug Abuse and Prevention Control Act of 1971) which are cultivated; produced or processed illicitly, in whole or in part, in such country or transported through such country, from being sold illegally within the jurisdiction of such country to United States Government personnel or their dependents or from entering the United States unlawfully?</p> | <p>No.</p> |
| <p>2. <u>FAA Sec. 481(h)(4).</u> Has the President determined that the recipient country has not taken adequate steps to prevent (a) the processing, in whole or in part, in such country of narcotic and psychotropic drugs or other controlled substances, (b) the transportation through such country of narcotic and psychotropic drugs or other controlled substances, and (c) the use of such country as a refuge for illegal drug traffickers?</p> | <p>No.</p> |

3. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) the debt is not denied or contested by such government? No
4. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? No
5. FAA Sec. 620(a), 620(f), 620(D); FY 1985 Continuing Resolution Sec. 512 and 513. Is recipient country a Communist country? If so, has the President determined that assistance to the country is important to the national interests of the United States? Will assistance be provided to Angola, Cambodia, Cuba, Laos, Syria, Vietnam, Libya, or South Yemen? Will assistance be provided to Afghanistan or Mozambique without a waiver? No
6. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property? No

7. FAA Sec. 620(1). Has the country failed to enter into an agreement with OPIC? No.
8. FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. (a) Has the country seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters? No.
- (b) If so, has any deduction required by the Fishermen's Protective Act been made?
9. FAA Sec. 620(q); FY 1985 Continuing Resolution Sec. 518. (a) Has the government of the recipient country been in default for more than six months on interest or principal of any AID loan to the country? (b) Has the country been in default for more than one year on interest or principal on any U.S. loan under a program for which the appropriation bill (or continuing resolution) appropriates funds? (a) No.
(b) No.
10. FAA SEC. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the amount of foreign exchange or other resources which the country has spent on military equipment? (Reference may be made to the annual "Taking Into Consideration" memo: "Yes, taken into account by the Administrator at time of approval of Agency OYB." This approval by the Administrator of the Operational Year Budget can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.) Yes, this was taken into account by the Administrator at time of approval of the Agency's OYB.

11. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? No
12. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? (Reference may be made to the Taking into Consideration memo.) Panama is current on payments of its U.N. obligation
13. FAA Sec. 620A; FY 1985 Continuing Resolution Sec. 521. Has the President determined that the country (a) grants sanctuary from prosecution to any individual or group which has committed an act of international terrorism, or (b) otherwise supports international terrorism? Has the government of the recipient country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed or is being sought by any other government for prosecution for any war crime or act of international terrorism? (a) No (b) No
14. ISDCA of 1985 Sec. 552(b). Has the Secretary of State determined that the country is a high terrorist threat country after the Secretary of Transportation has determined, pursuant to section 1115(e)(2) of the Federal Aviation Act of 1958, that an airport in the country does not maintain and administer effective security measures? No

15. FAA Sec. 666. Does the country object, on the basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. who is present in such country to carry out economic development programs under the FAA? No
16. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it transferred a nuclear explosive device to a non-nuclear weapon state, or if such a state, either received or detonated a nuclear explosive device? (FAA Sec. 620E permits a special waiver of Sec. 669 for Pakistan.) No
17. FAA Sec. 670. If the country is a non-nuclear weapon state, has it, on or after August 8, 1985, exported illegally (or attempted to export illegally) from the United States any material, equipment, or technology which would contribute significantly to the ability of such country to manufacture a nuclear explosive device? No

18. ISDCA of 1981 Sec. 720. Was the country represented at the Meeting of Ministers of Foreign Affairs and Heads of Delegations of the Non-Aligned Countries to the 36th General Assembly of the U.N. of Sept. 25 and 28, 1981, and failed to disassociate itself from the communique issued? If so, has the President taken it into account? (Reference may be made to the Taking into Consideration memo.)

Yes. This was taken into account by the Administrator at the time of the approval of the Agency OYB.

19. FY 1985 Continuing Resolution. If assistance is from the population functional account, does the country (or organization) include as part of its population planning programs involuntary abortion?

Not applicable.

20. FY 1985 Continuing Resolution Sec. 530. Has the recipient country been determined by the President to have engaged in a consistent pattern of opposition to the foreign policy of the United States?

No.

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

No.

1. Development Assistance Country Criteria

FAA Sec. 116. Has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that contemplated assistance will directly benefit the needy?

2. Economic Support Fund
Country Criteria

FAA Sec. 502B. Has it been determined that the country has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, has the country made such significant improvements in its human rights record that furnishing such assistance is in the national interest?

Not applicable

5C(2) PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only:
B.1. applies to all projects funded with Development Assistance loans, and
B.3. applies to projects funded from ESF.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 1986 Continuing Resolution Sec. 524; FAA Sec. 634A.

Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project.

The project was included in the FY'86 Congressional Presentation as a new project in FY'86. A Congressional Notification was sent on May 9, 1986 and the waiting period expired on May 24, 1986.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$500,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) Yes

(b) Yes

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

Project Committee recommends that RENARE obtain autonomy. This is a condition to be met prior to signing Project Agreement.

4. FAA Sec. 611(b); FY 1986 Continuing Resolution Sec. 501. If for water or water-related land resource construction, has project met the principles, standards, and procedures established pursuant to the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See AID Handbook 3 for new guidelines.) Yes.
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project? Yes.
6. FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. No.
7. FAA Sec. 601(a). Information and conclusions whether projects will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions. The project should aid all of the items mentioned with the exception of (c) and (f) as it is not designed to address those items.

8. FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

It is anticipated that most of the technical assistance and equipment will be of U.S. origin from the U.S. private sector.
9. FAA Sec. 612(b), 636(h); FY 1985 Continuing Resolution Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.

Not applicable. The currency used in Panama is the U.S. Dollar. There is no U.S. owned local currency.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

Not applicable.
11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

Yes
12. FY 1986 Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?

The main purpose of the project is to improve conservation and management of soil, water and forest resources. The project will also assist in wood production for local consumption. Wood is not likely to be in surplus on world markets at the time productive capacity becomes operative.

13. FAA 188(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16. Does the project or program take into consideration the problem of the destruction of tropical forests? Yes.
14. FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (dollars or local currency generated therefrom)? Not applicable.
15. FY 1986 Continuing Resolution Sec. 536. Is disbursement of the assistance conditioned solely on the basis of the policies of any multilateral institution? No.
16. ISDCA of 1985 Sec. 310. For development assistance projects, how much of the funds will be available only for activities of economically and socially disadvantaged enterprises, historically black colleges and universities, and private and voluntary organizations which are controlled by individuals who are black Americans, Hispanic Americans, or Native Americans, or who are economically or socially disadvantaged (including women)? Approximately 15% of technical assistance funds will be available for these organizations and entities.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance
Project Criteria

- a. FAA Sec. 102(a), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status, (e) utilize and encourage regional cooperation by developing countries?

This project promotes participation of the rural poor, and is designed so that they receive benefits from project activities. All project activities occur in rural areas at local levels, and employ labor intensive and appropriate technology production systems. The watershed and farm forestry components will be planned and implemented mainly by farmers from the poor rural sector. The parks and natural forest management components are designed to directly involve local groups and government institutions in planning and executing management plans. The project will encourage co-operatives to participate in all activities, particularly the watershed and tree planting programs. The project promotes participation of women in on-farm activities such as watershed and tree planting activities, and in educational programs. Project design is based on direct linkages with regional organizations such as CATIE in Costa Rica, and plans to utilize experiences from Honduras, Guatemala, Costa Rica and other Caribbean Basin countries in carrying out its programs.

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- b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used? Yes
- c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)? Yes
- d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed country)? Yes
- e. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth? Yes

f. FAA Sec. 128(b). If the activity attempts to increase the institutional capabilities of private organizations or the government of the country, or if it attempts to stimulate scientific and technological research, has it been designed and will it be monitored to ensure that the ultimate beneficiaries are the poor majority?

Yes

g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.

The project supports development and promotes skills of technical and administrative personnel of RENARE. Additionally local private institutions will participate in and benefit from the project.

2. Development Assistance Project
Criteria (Loans Only)

- a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest. Not applicable
- b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan? Not applicable

3. Economic Support Fund Project
Criteria

- a. FAA Sec. 531(a). Will this assistance promote economic and political stability? To the maximum extent feasible, is this assistance consistent with the policy directions, purposes, and programs of part I of the FAA? Yes
- b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities? No
- c. ISDCA of 1985 Sec. 207. Will ESF funds be used to finance the construction of, or the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified Not applicable

that such country is a party to the Treaty on the Non-Proliferation of Nuclear Weapons or the Treaty for the Prohibition of Nuclear Weapons in Latin America (the "Treaty of Tlatelolco"), cooperates fully with the IAEA, and pursues nonproliferation policies consistent with those of the United States?

d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

Not applicable



República de Panamá

Ministerio de Planificación y Política Económica

Panamá, 23 de mayo de 1986
DPIyNP-239

ACTION		
TO	C.R.B.	
DUE	06/11/86	
TAKEN	86-1726 9/8/86	

Señor
RONALD D. LEVIN
Director de la Agencia de los
Estados Unidos para el Desarrollo
Internacional (USAID)
E. S. D.

Señor Director:

Por este medio tengo a bien presentar oficialmente a la Agencia de los Estados Unidos para el Desarrollo Internacional (USAID), solicitud de financiamiento por un monto aproximado de US\$35,700,000 para la ejecución del Programa "Manejo de Recursos Naturales Renovables (RENARE I); cuyo costo total se estima en US\$50,700,000 de los cuales el Gobierno Nacional aportará la cantidad de US\$15,000,000; sumado a US\$22,300,000 provenientes de préstamo y US\$13,400,000 en concepto de donación por parte de USAID.

El organismo ejecutor del programa lo será la Dirección de Recursos Naturales Renovables (RENARE) y el período de ejecución se estima en diez (10) años. El objetivo principal del programa se basa en proteger y manejar los Recursos Naturales Renovables de Panamá, con el fin de mejorar la conservación y uso de los suelos, aguas y recursos forestales de los sectores tanto públicos como privados.

El Programa contempla seis (6) componentes a saber:

- a)- Manejo de Cuencas Hidrográficas
- b)- Manejo de Parques Nacionales y Vida Silvestre
- c)- Manejo de Recursos Forestales
- d)- Fincas Forestales y Reservas Comunales
- e)- Plantaciones Industriales
- f)- Apoyo a Operaciones de Campo

	OFF	ACT	INF
DIR			✓
REP			✓
IMP			✓
OPR		✓	
CONT			✓
EXD			
FLA			✓
RCO			
AGR			✓
PSD			
ENG			
RMUCO			
C&R			

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US AID/PANAMA
C&R SECTION

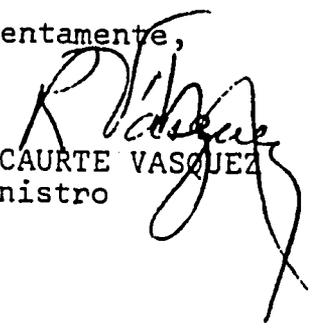
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Pág.-2------

El Gobierno de Panamá le agradece al Señor Director de USAID la atención que sabrá dispensar a esta solicitud de financiamiento dada la prioridad que en el marco del sector correspondiente tiene este proyecto.

Del Señor Director, con las muestras de mi más alta consideración y estima.

Atentamente,



RICAURTE VASQUEZ
Ministro

c.c. Lic. BRUNO GARISTO
Ministro de Desarrollo
Agropecuario

LAC/DR-IEE-85-30

ENVIRONMENTAL THRESHOLD DECISION

Project Location : Panama

Project Title and Number : Natural Resources Management
: No. 525-0248

Funding : LOP \$30.0 million
\$23.4 million (L)
6.6 million (G)

Life of Project : 10 years (FY'86-95)

IEE Prepared by : Frank Zadroga, REMS, ROCAP

Recommended Threshold Decision : Negative Determination

Bureau Threshold Decision : Concur with Recommendation

Comments : This decision is contingent on the incorporation of the IEE and its recommendations into the Project Paper.

Copy to : Ronald Levin, Director
USAID/Panama

Copy to : Frank Zadroga, REMS
ROCAP

Copy to : Eric Zallman, LAC/DR

Copy to : IEE File

James S. Hester Date MAR 19 1985

James S. Hester
Chief Environmental Officer
Bureau for Latin America
and the Caribbean

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT LOCATION: Panama, Central America

PROJECT TITLE AND NUMBER: Natural Resources Management
No. 525-0248

FUNDING: LOP \$40.0 million (AID Loan \$23.4 million; AID Grant \$6.6 million, GOP \$10.0 million)

LIFE OF PROJECT: 10 years (FY 86-95)

IEE PREPARED BY: Frank Zadroga, REMS, ROCAP

RECOMMENDED THRESHOLD DECISION: Negative determination based upon conditions outlined under Section C.



Director, USAID/Panama

March 8, 1985

Date

AGENCY FOR INTERNATIONAL DEVELOPMENT
ROCAP



ROCAP/SAN JOSE or
APO MIAMI 34020

c/o American Embassy
San Jose, Costa Rica.

Telephones: 23-5608
23-6642

Cable: ROCAP/San Jose.

REM 029/85
13 June 1985

MEMORANDUM



TO: Gale Rozell, ADO, USAID/Panamá

FROM: Frank Zadroga, REMS *Frank*

SUBJECT: Environmental assessment and design work for the NRMP.

- ...
1. Attached is my Trip Report from the June 3-5 TDY. I tried to cover some points in the report that will assist you in designing the project, in addition to the exclusively environmental assessment input. I would appreciate any comments you have that might help me with the environmental analysis for the PP.
 2. I will be on home leave from June 15 - July 25 and will call Alan once back in San José to coordinate follow-up work.
 3. I expect to be on consultation in Washington D.C. from July 22-26 and will discuss the IEE, this trip report and other environmental aspects of the NRMP with J. Hester and LAC/DR staff to avoid snags.
 4. Saludos and lots of luck in putting that PP draft together.

Encl.: Above mentioned

FZ/fkm.-

AGENCY FOR INTERNATIONAL DEVELOPMENT
ROCAP



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APO MIAMI 34020

c/o American Embassy
San José, Costa Rica.

Telephones: 23-5608
23-6042
Cable: ROCAP/San José.

REM 024/85
June 10, 1985

MEMORANDUM

TO: David Joslyn, RADO/ROCAP
FROM: Frank Zadroga, REMS/ROCAP *Frank Zadroga*
SUBJECT: Trip Report No. 85-10
Environmental Assessment Work from Panama Natural
Resources Management Project (NRMP) (No. 525-0248)
REF: See list of documents consulted (Attachment I)

I. PLACE AND DATE: Panama, June 3-5, 1985

II. PERSONS/INSTITUTIONS CONTACTED:

RENARE

- . E. Vallester
- . C. Melgarejo
- . J. Mendieta
- . C. Isaza
- . A. Jaen
- . Naderon
- . M. Rodes
- . R. Fletcher
- . J. M. Hurtado

USAID/F

- . G. Rozell
- . G. Bayer
- . A. Randall
- . J. Otterbein

CONAMA

- . S. Heckadon

CATIE

- . C. McFarland
- . B. Houseal
- . R. Morales

Others

- . R. Weber
- . A. Moore

III. BACKGROUND

To assist in developing the Natural Resources Management Project Paper and carrying out the environmental assessment recommendations outlined in the NRMP PID and its EE, three days were spent in reviewing technical project documents and in discussing project implementation/development with both RENARE and USAID/P staff.

Two major areas of environmental significance were identified in the IEE: (1) road construction/improvement work, and (2) selected field activities to be carried out with the implementation of the watershed, wildland and forest management plans.

This trip report summarizes my findings regarding these activities and recommends mitigative measures to be used to improve the project design. Recommendations are presented by project component and sub-component. Further refinement and completion of this work will occur as a result of a follow up TDY projected for early August, 1985.

IV. FINDINGS AND CONCLUSIONS

1. ROAD CONSTRUCTION/IMPROVEMENT AND ISSUES RELATING TO COLONIZATION.

1.1 Watershed Management and Soil Conservation

1.1.1 Canal Watershed

1.1.1.1 Pipeline Road through Soberania National Park.

I discussed road improvement plans with Raul Fletcher, director of the Soberania National Park. Project funded activities are limited to some

bridge reconstruction and repair/resurfacing of parts of the roadbed. The objective is to improve access for visitors as well as to facilitate patrolling and park protection. No substantial earth movement is contemplated and the road alignment will not be changed substantially. Park officials will supervise the work to assure that disturbance and noise are kept to a minimum. Work should be carried out in the dry season. Additional mitigative measures are not needed.

1.1.1.2 Access roads for dikes to control siltation in the Alajuela Reservoir.

Seven dikes are planned in the Alajuela watershed to be located on the following water courses: Baqueron, San Miguel, Escandalosa (2), Mauro, Quebrada Chica and Quebrada Antes de la Mina. According to the Canal Watershed management plan (4), access roads will be built to give temporary dry season access to the dyke construction sites and then these roads will be put to rest. The technical specifications and designs of these roads are described in the Canal Watershed Management plan (pages 375-389), and in corresponding technical plans and maps.

Care needs to be taken in locating the roads (apparently not yet done) to reduce impacts as well as in following the design specifications and dry season construction schedule outlined in the management plan. It is critical that the roadbeds be put out of service and revegetated after construction, and that they be patrolled to avoid spontaneous colonization.

RENARE has requested cooperation from the Panamá Canal Commission to finance and construct six of the seven dykes (i.e., those to be made out of concrete). RENARE plans to construct the seventh dyke (rock and gabion) with project funds. A. Randall should work to assure that this interinstitutional cooperation occurs since the construction of all seven dykes is important to controlling/reducing the siltation of the Alajuela reservoir. The FCC, as a U.S. Government institution, would probably perform routine environmental assessments on any dyke/road construction activities they were to carry out.

1.1.2 Caldera and Changuinola/Teribe Watersheds

Although the NRMP will not provide funds for nor promote road construction in the Caldera, Chiriquí Grande and Changuinola-Teribe watersheds, road

work funded by other sources could have a tremendously negative impact on the natural resources of the NRMP if mitigative measures are not taken. Specifically the Boquete-Cerro Punta road and the Gualaca-Changuinola transisthmica highway threaten to promote spontaneous colonization of the Caldera and Changuinola-Teribe watersheds and the Palo Seco Protection Forest. Sufficient resources need to be programmed into the of wildlands/watershed protection components of the NRMP to assure adequate vigilance and control along these road corridors. Secondary access roads should not be allowed to be built within the wildland areas. Agreements with local communities (i.e., Boquete, Cerro Punta, Changuinola) and the donors providing the funds should be established to help prevent colonization.

1.2. Road impacts on Natural Forest Management Units.

The NRMP will aid RENARE's Forest Service to protect Forest Reserves and supervise timber concessions on public lands.

Detailed technical management plans will be developed for the natural forests to be managed under the Project (El Canglon, La Yeguada, El Montuoso, La Tronosa, selected mangrove and orey forests, and others). Construction/maintenance of forest roads and trails will be part of the management actions. Guidelines on forest road construction and improvement will be developed by the REMS and should be incorporated into the project paper. The application of these guidelines will be required for each natural forest unit as well as for the the timber concessions under the NRMP to be managed by RENARE.

A course in environmentally sound construction, maintenance and improvement of forests roads should be one of the training events periodically (i.e., once every two years) offered to the staff of RENARE and other cooperating institutions. An institution such as the United State Forest Service with ample expertise in this subject matter, could be contracted to assist RENARE in organizing and presenting this course.

1.3 Road impacts resulting from industrial plantations and large scale reforestation.

It is expected that the majority of the industrial plantations and reforestation promoted by the

NRMP will occur on cleared lands with year-round access. The location of these plantings, however, has not yet been defined and it is possible that some be established in remote areas where road/trail work would be necessary. Where significant road impacts are likely to occur either from main access road construction/improvement or from internal plantation roads, private individuals (participating in the reforestation and industrial forest plantations) should be required to apply the road guidelines as is the case of concessionaires in 1.2 above.

1.4 Protection from colonization.

The protection function that the NRMP will perform for all the watershed, wildland and forest management areas is critical. Both forest and park guards will play key roles in preventing encroachment into management areas and is promoting community understanding and cooperation. Training for guards on such topics as environmental impacts of roads, concepts of correct road/trail construction/improvement, public relations, natural resources legislation and environmental education should be incorporated into the NRMP training plan.

2. OBSERVATIONS RELATED TO THE ENVIRONMENTAL IMPLICATIONS OF SELECTED FIELD ACTIVITIES.

2.1 Implementation of Watershed Management Plans

2.1.1 Panamá Canal Watershed

RENARE expects to use the Spanish Mission plan (4) as the basis for their management efforts in the Canal Watershed. This plan, however, attends principally to middle and upper watershed problems and only superficially mentions the potential impacts of industrialization and urbanization in the lower watershed - specifically the corridor between Panamá City and Colón. The reverted lands becoming available via the Torrijos-Carter treaty are under great pressure for urban industrial expansion, and plans already exist for northward expansion of Panamá City into this area (3). Under current GOP policy and public opinion, a rapid expansion into reverted canal lands seems almost inevitable. The medium to long term impact of such growth on water quality and environmental contamination, loss of forest cover and (urban hydrologic impacts on) water yield and timing of runoff have not been assessed.

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Currently there is no concerted effort to plan for and mitigate such impacts. CONAMA, the National Commission on Environment, in cooperation with the Ministries of Health, Housing and the Ministry of Planning and Economic Policy has been taking some actions relating to these issues. CONAMA has started work on an integral management plan for the Canal watershed that pays attention to the lower watershed and urban expansion. Likewise, the US-Panamá Joint Commission on the Environment (JCE), has looked at these watershed problems and has their own separate outline of a plan. Recently a commission and a general secretariat for the use of reverted lands was created by the GOP.

It is critical that cooperation begin to take place between RENARE and these other organizations. RENARE should actively participate in the reverted lands commission. Clear lines of responsibility and authority need to be established by the GOP regarding the future management of the middle and upper watershed vs. the lower watershed. The lack of timely cooperation and preventative planning relating to the urban expansion problems could lead to enormous environmental, social and economic costs in the relatively near future. The divergence between development plans of the urban and housing sectors vs. the natural resource/environmental institutions is startling. Inadequate attention is being paid to this situation to avoid future conflict. (See Panamá Urban Development Assessment prepared by Robert R. Nathan Associates, Inc. (3)).

2.1.2 La Villa Watershed

The La Villa Watershed management plan is not complete nor suitable as a integrated watershed management plan after nearly three years of effort. Both the section on land use planning and the recommendations relating to management units/actions are especially weak. Although RENARE reports that this plan is being revised, little progress is apparent. Until a suitable management plan is presented and approved by USAID/P, project-funded field actions and staff should be either suspended or limited to what is needed to carry out essential management functions (i.e., forest reserve protection, fuelwood plantations, the maintenance of ongoing soil conservation works, etc.). The watershed management consultant for the NRMP project paper effort should be asked his opinion on this subject.

2.1.3 Viability of selected management units.

Two forest reserves (La Tronosa and El Montuoso) and at least one wildland area (Parque Nacional Altos de Campana) currently contemplated for funding and management actions in the initial stages of the NRMP do not meet the international criteria for their particular management unit. Others are rapidly approaching a borderline status (i.e., Volcán Baru National Park). Encroachment and inholdings endanger their viability as management units. Also some of the other wildland areas considered for later phases of implementation in the national wildlands strategy have similar problems. The wildlands and forestry consultants that will assist USAID/P in project paper development should be asked to focus on this problem and recommend appropriate actions. For example, these areas could:

- . have their wildland category changed
- . be left to RENARE for management with other (non-NRMP) resources
- . require special project conditions precedent to their incorporation into the project (i.e., allocation of GOP funds to purchase inholdings etc.).

To have RENARE proceed to handle them as in past years will take scarce resources away from the NRMP that could be better spent in consolidating/managing other areas that are still viable.

2.1.4 Recovery of Protection Lands within Parks and Reserves.

Many of the wildland and forest reserves have serious encroachment problems and inholdings within their boundaries. Some areas, such as the Volcan Baru and Soberania National Parks have been progressively losing ground and a more aggressive stance on the part of RENARE is required. The GOP should both commit resources and establish legal mechanisms to guarantee the success of its parks and reserves system. The wildlands consultant should be asked to recommend specific actions and issues to negotiate with the GOP prior to project approval.

2.1.5 Reforestation vs. Protection Efforts

Where protection of forest reserves, wildlands or other public lands is the principal concern, RENARE's general policy should be to patrol and protect these lands (from cutting, grazing and fire) to allow

al

spontaneous regeneration to occur. Reforestation to fulfill a protection function should only occur in a limited number of cases, such as for soil stabilization and/or recovery of impoverished sites. Otherwise reforestation efforts should have economic objectives. Basically, RENARE should not be carrying out reforestation except to accomplish site stabilization/reclamation; reforestation should be left to the private sector with RENARE providing incentives and T.A.

As pointed out in the PID, reforestation efforts should be located in priority watersheds where multiple benefits will accrue. Plans for reforestation, industrial plantation and farm woodlots should be drawn up with this in mind.

2.1.6 An Environmental Component in Management Plans for Natural Forest Areas.

Many of the natural forests to be managed under the NRMP are large heterogeneous areas that have a diversity of biotic and physical resources. In some cases portions of forest reserves merit delimitation and management as separate wildland areas. For example, in the 31,000 hectare El Canglon forest reserve, approximately 10,000 hectares are in a mountainous area called Serrania Filo del Tallo and an additional 8,000 hectares are covered by a large lagoon and wetlands called The Laguna Matusagarati. Also, adjacent to or surrounded by the orey forests of Bocas del Toro are several coastal, island and wetland areas that will require special protection and management, including:

- Bahia de Almirante
- Laguna de Chiriqui
- Peninsula de Valiente
- Bastimiento

It is important that the wildlands division and Forest Service of RENARE work together in the development of the management plans for these and all other areas where forest production and wildland areas are in juxtaposition within one management unit. Most of these natural areas are currently contemplated within the National Wildlands Strategy but mechanisms for direct coordination with the Forestry Service are not apparent.

Major Actions and Recommendations

1. Juan Diaz of the Panama Canal Commission should be contacted by USAID/P, inquiring about progress on PCC cooperating with RENARE in the construction of siltation

dykes in the Alajuela sub-watershed. This information is needed to be able to cost out the soil conservation component of the NRMP.

2. The REMS will provide to USAID/P guidelines for forest road construction and improvement. RENARE should be required to apply these guidelines for the development and implementation of management plans for natural forest reserves and for the supervision of timber concessions on public lands. The application of these guidelines should also be required, where appropriate, of private individuals or firms participating in large scale reforestation or industrial forest plantations under the NRMP.

3. USAID/P, assisted by the watershed management consultant, should promote cooperation in the integral management of the Canal Watershed. I believe that the best solution would be for the GOP to task RENARE with the protection and management of the middle and upper watershed and that a task force of other institutions, (i.e., CONAMA with cooperation from MIVI, Ministerio de Salud, MIPFE, the JCE, the Municipalities of Panama City and Colon) be charged with planning and directing the development and environmental protection of the urban-industrial Colon-Panama City Corridor.

4. All management plans for natural forests should have an environmental component. Where unique biotic and physical resources occur in forest reserves, plans should be developed with participation of RENARE's wildlands division. Each plan should assess overall land and natural resource capabilities and delineate separate management units such as protection forests or some other type of wildland area. The Canglon Forest Reserve and Grey Forests in Bocas del Toro are both examples of this situation.

REFERENCES CONSULTED

Attachment I

1. Project Identification Document, Natural Resources Management Project No. 525-0248, 15 pages and 4 annexes.
2. Initial Environmental Examination (PID, Annex II), 7 pages
3. Nathan, Robert R. Associates Inc. Urban Development Assessment Panama, January 1985. Vols. I and II.
4. RENARE, Julio 1984. Ordenamiento del Territorio de la Cuenca del Canal de Panama, Proyecto de Correccion Hidrologico Forestal, 4 volumenes y mapas.
5. Houseal, B. and RENARE, 1984. Un Plan Estrategico preliminar para un Sistema de Parques Nacionales y Reservas Equivalentes (Borrador preliminar) 157pp.
6. RENARE, 1980. Diagnostico de la Cuenca del Rio Caldera. 165 pp. and mapas
7. AID Project Paper Watershed Management (525-0191)
8. RENARE 1981. Plan de Manejo de la Cuenca Hidrografica del Rio La Villa. 171 pp.
9. Guidance Cable 85 STATE 146211 UNCLAS.

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ACTION: USAID-7 INFO: DCM ECON CERON

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PP ROERZP
DE ROERHC #1564 0941724
7NR UUUUU ZZB
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FM SECSTATE WASHDC
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CN: 52067
CHRG: AID
DIST: AID

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E.O. 12356: N/A

TAGS:
SUBJECT: NATURAL RESOURCES MANAGEMENT PROJECT, 525-0246

1. AA/LAC HEREBY REDELEGATES AUTHORITY TO MISSION DIRECTOR TO APPROVE PROJECT PAPER AND AUTHORIZE PROJECT IN AN AMOUNT UP TO DOLS 35.7 MILLION.

2. REVISED CN BEING PREPARED. WILL ADVISE EXPIRATION DATE BY SEPT. WHITEHEAD

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#1564

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ODP		✓
ODR	✓	
CONT		✓
EXO		✓
RLA		✓
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AGR		✓
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UNCLASSIFIED
Department of State

OUTGOING
TELEGRAM

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ANNEX I F

ORIGIN OFFICE: LADR-03
INFO AALA-01 LACE-03 LADP-04 AMAD-01 GC-01 GCLA-03 GCFL-01
ES-01 AAID-01 RELO-01 MAST-01 /021.A0

INFO LOG-00 EB-08 ARA-00 /008 R

DRAFTED BY: AID/LAC/DR: EZALLMAN: RJB
APPROVED BY: A/AID: MPMCPHERSON
AID/LAC/DR: DJOHNSON AID/GC/LAC: RMEIGHAN
AID/DAA/LAC: MDBROWN

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TO AMEMBASSY PANAMA IMMEDIATE

UNCLAS STATE 153910

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E. O. 12356: N/A

TAGS:

SUBJECT: NATURAL RESOURCES MANAGEMENT PROJECT
(525-0248)

REF: PANAMA 2150

1. A/AID HEREBY DELEGATES AUTHORITY TO MISSION DIRECTOR,
USAID/PANAMA TO APPROVE PP FOR NATURAL RESOURCES
MANAGEMENT PROJECT (525-0248); AND AUTHORIZE THE PROJECT,
WHICH WILL INVOLVE PLANNED EXPENDITURES OF NOT TO EXCEED
DOLS 30 MILLION OVER A PLANNED TEN YEAR IMPLEMENTATION
PERIOD. SHULTZ

UNCLASSIFIED

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ANNEX II. TECHNICAL EXHIBITS

- A. Logical Framework
- B. Implementation Schedule
- C. Technical Services Contracting Plan
- D. Training Plan
- E. Procurement Plan
- F. Project Budget Estimates/Equipment List

Project Title and Number: Natural Resources Management 525-0248

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
PROJECT GOAL: To protect and manage Panama's renewable natural resources for sustained economic and social development.	<ul style="list-style-type: none"> • Rate of deforestation is decreased • Increased land productivity • Adequate water supply and quality maintained 	Agricultural Census Environmental Profile Studies Soils and Water Data FCC Statistics/Reports	<ul style="list-style-type: none"> • GDP supports project goals and priorities in natural resources conservation and management.
PROJECT PURPOSE: To improve the conservation and use of soil, water and forest resources by the public and private sectors.	END-OF-PROJECT STATUS: <ul style="list-style-type: none"> • 5 key watersheds under conservation management • 19 parks and reserves are protected • 3 natural forest reserves managed for sustained-yield • Private sector increasing cultivation of trees for local and commercial purposes 	MIPPE, RICI, MIDA reports Project monitoring/evaluation Annual agency reports Trade and industry statistics Surveys and research studies	<ul style="list-style-type: none"> • RENARE implementation authority increased and given adequate operational funding. • Private sector investment in natural resource management is generated. • Inter-agency collaboration achieved
OUTPUTS:			
1. WATERSHED MANAGEMENT AND SOIL CONSERVATION			
<ul style="list-style-type: none"> a) Managed grazing, tree planting, forest and soils conservation will be implemented in the Canal, La Villa and Caldera Watersheds b) Natural resources will be surveyed, watershed plans prepared, and management initiated in two new priority watersheds c) A data bank of information of watershed management parameters will provide information for planning and assessment d) Environmental assessment capacity will be developed to identify the impacts of development and to prescribe mitigation measures 	<ul style="list-style-type: none"> a) 8 soils and land capability surveys completed by 1995 25 grazing management demonstrations installed b) 3 existing management plans updated. 2 new management plans prepared c) 300,000 hectares surveyed, information in data bank d.) 8 environmental impact assessments completed by 1995 	Watershed Management Plans RENARE records and reports Field and site inspections Independent Evaluations	Trained RENARE personnel available and working on field assignments
2. NATIONAL PARKS AND WILDLANDS MANAGEMENT			
<ul style="list-style-type: none"> a) The boundaries of national parks and reserves will be marked and posted, trained patrolmen will be assigned to each park b) Base data on park resources and uses collected and analyzed for a data bank, periodic resurveys will monitor trends c) Management operating plans prepared and implemented for parks that are critical for watershed protection or most endangered d) Facilities for environmental education and recreation will be installed in Chagres, Soberania and Portobelo parks. Private groups participate in development, educational and research use 	<ul style="list-style-type: none"> a) 11 parks and 8 wildlife refugees marked and posted 240 patrolmen trained b) 5 parks surveyed every three years, 15 during LDP c) 5 Parks, Chagres, Soberania, Portobelo, Darien and La Amistad d) 3 park facilities developed d) PVD's supporting management of 5 parks by 1990 	Park Management Plans RENARE records and reports Field and site inspections Independent Evaluations	Protection programs accepted and supported by local inhabitants
3. MANAGEMENT OF NATURAL FORESTS			
<ul style="list-style-type: none"> a) Public natural forests will be marked and patrolled in Darien, Rocas del Toro and western Panama b) Accessible commercial timber will be inventoried and management plans prepared and implemented c) Management unit field station constructed and staff trained d) A public timber sales program implemented in managed areas e) Minimum stumpage prices adjusted to reflect product values 	<ul style="list-style-type: none"> a) 275,000 hectares survey and patrolled b) 115,000 hectares inventoried, timber sales begun c) Three field stations constructed and staffed d) 50% of timber consumption provided by managed forests e) Stumpage fees conform to market values 	Forest Management Plans RENARE records and reports Field and site inspections Independent Evaluations Audits of financial receipts Local government records	
4. FARM FORESTRY PROGRAM			
<ul style="list-style-type: none"> a) In each of 25 new districts of the Canal Watershed and western Panama three farm demonstration plots will be established b) Sufficient planting stock to support the program produced c) Small landowners will plant trees in 25 districts 	<ul style="list-style-type: none"> a) 75 demonstrations established in typical areas by 1992 promotion activities in implementation b) 1,200,000 seedlings/year available to farmers c) Equivalent of 6000 hectares planted by landowners 		

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Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
5. PRIVATE INDUSTRIAL PLANTATIONS			
a) Data on plantations analyzed for dissemination to landowners	a) Results of the study published and distributed		Landowners have the capital to invest in forest plantations
b) Associations of landowners cooperating in reforestation established in the provinces of western Panama	b) Seven associations will be formed by landowners	Association records	
c) A Reforestation Fund will lend money for plantation investments	c) A trust fund to provide credit for reforestation	Independent evaluations	Private Voluntary Organizations and associations encourage and support reforestation
d) Private consulting services will be developed and trained	d) Six private forestry service sources identified	Trust Fund and bank reports	
e) Private managed industrial forest plantations established to supply wood products to local forest industries	d) 20,000 hectares of plantations under management	Field surveys and studies	Participating banks will encourage lending program
6. ADMINISTRATIVE SUPPORT FOR FIELD OPERATIONS			
a) Manuals of functions and organization prepared, and job descriptions and standards prepared for all positions	a) 60 RENARE positions identified and classified	RENARE records and reports	Private forestry services and reforestation companies are available to assist landowners
b) An organizational development and training plan prepared and implemented, plan will be updated every three years	b) 9 Plans prepared based on operational experience	Field and site inspections	
c) Annual implementation and Financial Plans will be prepared for RENARE activities linking Project implementation to agency budgets and progress in implementation monitored and evaluated	c) 5 Project components per year	Independent Evaluations	
d) Computerized financial management system installed and staff trained in its use and maintenance	d) 130 RENARE staff members trained	Audits of financial receipts	
e) A permanent headquarters building for RENARE will be acquired	e) Permanent headquarters acquired	USAID reports and audits	
f) Research and development actions will be implemented that will support the objectives of the Natural Resources Project	f) 6 R & D initiatives implemented		

INPUTS: OBJECT OF EXPENDITURE	USAID FUNDING		GDP	TOTAL	Government of Panama, RENARE and USAID accounting records and audits	Compliance with conditions precedent GDP counterpart funding available when required USAID supports project administration
	Grant	Loan				
Technical Assistance	6.2			6.2		
Training	1.6			1.6		
Vehicles and Parts		2.4		2.4		
Equipment and Supplies		4.0		4.0		
Construction		2.7		2.7		
Contracted Services	1.0	2.0		3.0		
Loan to Reforestation Fund		6.5		6.5		
Government of Panama						
Personnel Costs			9.9	9.9		
Operating Costs			2.6	2.6		
Project Component Totals	8.8	17.6	12.5	38.9		
USAID Management and Evaluation	2.1			2.1		
Project Component Totals	10.9	17.6	12.5	41.4		
Inflation and Contingencies	2.5	4.7	2.5	9.7		
PROJECT TOTALS	13.4	22.3	15.0	50.7		

NATURAL RESOURCES IMPLEMENTATION SCHEDULE

The following charts provide the implementation scheduling for the Natural Resources Management Project. Implementation elements are coded in this way:

- P indicates long-term technical assistance.
- p indicates short-term technical assistance.
- T indicates long-term training outside of Panama.
- t indicates in-country training.
- x gives the timing of other implementation actions as listed.

ACTIVITIES	YEARS																																											
	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Year 7				Year 8				Year 9				Year 10							
QUARTERS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
COMPONENT 1: WATERSHED MANAGEMENT																																												
1. T.A. Watershed Management																																												
2. Define Priorities & Annual Work Plans	X	X																																										
3. Strengthen Watershed Management Plans																																												
a. Canal, Rio La Villa, Rio Caldera																																												
b. Develop Plans New Watersheds																																												
4. T.A. Grazing Management																																												
a. Expand Improved Pasture Demonstrations																																												
b. Establish Model Grazing Units																																												
c. Promote Grazing Management																																												
5. T.A. Tropical Soils Taxonomist																																												
6. Strengthening Soils Survey Capability																																												
7. RENARE In-Service Training																																												
a. Soils Surveying Field Assistants																																												
b. Soils Conservation & Extension																																												
8. Strengthen Soils Laboratory																																												
9. Implementation of Soils Surveys																																												
a. Canal Watershed																																												
b. Rio Caldera																																												
c. Rio La Villa																																												
d. New Priority Areas																																												
10. T.A. Soils Analyst																																												
11. Extension of Soil Conservation Practices																																												
Canal, Rio La Villa & Rio Caldera																																												
12. T.A. Hydrologist (Surface & Groundwater)																																												
13. T.A. Water Quality Analyst																																												
14. Conduct Surface and Groundwater Surveys																																												
15. Strengthen Water Quality Laboratory																																												
16. Establish Soils & Water Data Bank																																												
17. Conduct Environmental Assessment Studies																																												
18. Implement Farm Forestry Program																																												
(See Component Plan Below)																																												
19. TRAINING ACTIVITIES																																												
a. LT MSc in Watershed Planning CCATE:																																												
b. Watershed Management																																												
c. Integrated Watershed Planning																																												
d. Land Use Classification																																												
e. Data Base Management																																												
f. Instructional Methods & Materials																																												
g. Soils & Water Conservation Extension																																												
20. Ground & Surface Water Hydrology																																												
21. Water Quality Analysis																																												
22. Environmental Assessment Methods																																												

TECHNICAL SERVICES CONTRACTING PLAN

A. Technical Assistance Considerations

In the previous Watershed Management Project, technical assistance (TA) did not arrive until two years had elapsed from PP authorization. This Project plans for the initial long-term TA advisors to be in-country within 90 days of project start-up (PSC positions). The past project did not provide a clear plan for counterparts for each TA team member. RENARE appointed temporary and junior staff, thus effectively cutting the team out of the mainstream of day-to-day decision-making. This Project will set out exactly which staff position in RENARE will work with each TA team member. This will be the job of the Management Advisor. During the previous project RENARE experienced administrative problems (lack of vehicles, supplies, etc.). Poor use was made of advisors' skills. This Project will avoid this problem by procuring field vehicles and supplies to improve logistic support of field operations.

Table II.C.1 lists the TA requirements for the project by component. It is based on analysis of needs of each department of RENARE relative to the new program and implementation strategies of the Project. Short-term needs are illustrative. Specific disciplines and types of short-term specialists will be defined during project implementation.

In addition to the TA needs of RENARE, USAID requires the services of a Project Manager specialized in natural resources and an Assistant Project Manager for procurement, logistics and documentation functions. The Project also requires evaluation and audit services. Evaluations will be contracted through IQC and local purchase orders. Audits will be done by auditing firms located in Panama. (See contracting plan below and Table II.C.2.)

B. Contracting Plan

1. Institutional Contract

Competition among Title XII universities will be used to contract for the majority of TA (291 person months). In accordance with Federal Government policies and the Gray Amendment to encourage small and disadvantaged businesses, USAID will encourage subcontracting arrangements with such firms.

The institutional contractor will provide a watershed planning and management advisor for years 2, 3, 4 and 5 of the Project (a total of 48 person months); a grazing management advisor, years 3 and 4 (24 person months); a tropical soil taxonomist, year 2 and 3 (24 person months); a national parks planning and management advisor, years 2, 3 and 4 (36 person months); and a forest management advisor, years 2, 3 and 4 (36 person months). Additionally, the institutional contractor will provide a total of 57 person months of short term specialist consultancies in ground water hydrology, water quality analysis, soils analysis, environmental data management, environmental education, wildlife management, forest economics, forest appraisal, forest utilization, and tropical silviculture (see Table II C 1).

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In order to insure adequate administrative coordination and support for the long term advisors and short term specialists, the contractor will provide a qualified administrative assistant to be assigned in Panama during the second through fifth years (60 person months). Short term visits of contractor headquarters personnel are anticipated, and six such visits (total of 6 person months) are programmed for this purpose.

Scopes of work for the long term technical assistance personnel to be provided under the institutional contract are summarized in Attachment E to this Exhibit.

2. Other Contracts

RENARE needs the services of a management advisor immediately. A personal services contract (PSC) will be executed by the Mission. The terms of reference for this position are in Attachment A to this Exhibit. The Project Manager and Assistant Project Manager are needed immediately at the beginning of the Project because of the critical start-up actions necessary. Scopes of work for these positions are found in Attachments B and C. Finally, the Private Sector Industrial Forester position should start work as soon as the Project funding is available. This will be a PSC position; Attachment D contains the terms of reference.

Technical backstopping for project evaluations is available from ROCAP's forestry and environmental specialists. The Mission plans to draw frequently on these resources throughout the LOP. Other technical backstopping for implementation is available through the regional watershed management project and centrally funded projects such as the Development Strategies for Fragile Lands Project. The Project plans to use this assistance for collaborating on training programs and special studies. These services are costed separately under the Strengthening Field Operations Component. The contracting modes will be defined as the needs for such assistance are detected.

Table II.C.2 summarizes the type, mode, and size of all contracting for technical services under the Project.

C. Contracting Schedule

A schedule has been prepared in order to bring the TA needed into the Project as soon as practical. Initial long-term TA would be fielded within two quarters after PP authorization. Section V. D. 1 of the Project Paper sets out the schedule for contracting technical services. Also refer to the Implementation Plan (Annex II. B) where the TA is integrated with a participant training.

D. Contracting Mode

Host country counterpart capabilities for contracting services are inadequate for project needs. GOP policies and procedures for host country contracting are too slow and would jeopardize project implementation. Therefore, the contracting will be done by USAID/Panama using direct AID contracting procedures. (See Annex II. E, Procurement Plan).

TABLE II.C.1: NATURAL RESOURCES MANAGEMENT PROJECT STAFFING PLAN

	PERSON MONTHS	TOTAL COSTS	PERSON MONTHS AND COSTS (\$1000) BY YEAR																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15					
<u>Strengthening Field Operations (PSC)</u>																						
<u>Long Term:</u>																						
Management Advisor (PSC)	84	910	12	130	12	130							12	130	12	130	12	130	12	130	12	130
Administrative Assistant (PSC)	12	25	12	25																		
<u>Short Term:</u>																						
Other Technical Assistance	10	110			2	22	2	22	2	22	2	22	2	22	2	22	2	22				
<u>Institutional Contract</u>																						
<u>Watershed Planning & Management</u>	48	740			12	185	12	185	12	185	12	185										
Tropical Soils Taxonomist	24	370			12	185	12	185														
Grazing Management Specialist	24	370					12	185	12	185												
<u>Short Term:</u>																						
Ground Water Hydrologist	6	90					3	45	2	30	1	15										
Water Quality Analyst	3	45					2	30	1	15												
Soil Analysis	6	90			4	60	2	30														
<u>Parks Planning & Management</u>	36	555			12	185	12	185	12	185												
<u>Short Term:</u>																						
Reserve Data Base Management	6	90			4	60	2	30														
Environmental Education Advisor	6	90			2	30	2	30	2	30												
Wildlife Management Advisor	6	90					2	30	2	30	2	30										
<u>Tropic Forest Management</u>	36	555			12	185	12	185	12	185												
<u>Short Term:</u>																						
Forest Economist Advisor	6	90			2	30	2	30	1	15	1	15										
Forest Appraisal Advisor	6	90					2	30	2	30	2	30										
Forest Utilization Advisor	6	90					2	30	2	30	2	30										
Tropical Silviculturist	6	90			2	30	2	30	2	30												
<u>Contractor Technical Assistance Support</u>																						
Headquarters Backstopping Visits	6	90			2	30	1	15	1	15	1	15	1	15								
Contractor Administrative Assist.	60	725			12	145	12	145	12	145	12	145	12	145								
<u>Industrial Forester (PSC)</u>	60	650	12	130	12	130	12	130	12	130	12	130										
<u>Short Term:</u>																						
Plantation Financial Analysis (PSC)	2	22					1	11			1	11										
Plantation Silviculture (PSC)	4	44			2	22	1	11	1	11												
Wood Products Marketing (PSC)	4	44							2	22	2	22										
<u>PROJECT MANAGEMENT</u>																						
Project Evaluation and Audit (IOC)	36	540			9	135			9	135			9	135							9	135
<u>USAID Management</u>																						
Project Manager (PSC)	96	1010	12	115	12	115	12	130	12	130	12	130					12	130	12	130	12	130
Assistant Project Manager (PSC)	12	115	12	115																		
Administrative Assistant (Local)	100	225			12	25	12	25	12	25	12	25	12	25	12	25	12	25	12	25	12	25
Project Secretary (Local)			10	12	10	12	10	12	10	12	10	12	10	12	10	12	10	12	10	12	10	12

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Table II.C.2
Technical Services Contracting Plan

<u>Type of Assistance</u>	<u>Method of Selection</u>	<u>Contract Mode</u>	<u>Contract Type</u>	<u>Person Months</u>	<u>USAID Grant \$000</u>
<u>1. USAID Management</u>					
Natural Resources	Fully	Direct AID	PSC	<u>108</u>	<u>1125</u>
Project Manager	Competitive			<u>96</u>	<u>1010</u>
Asst. Project Manager	Local Comp.	Direct AID	PSC	<u>12</u>	<u>115</u>
<u>2. Natural Resources Agency Management Advisor</u>					
Natural Resources Management Advisor	Fully competitive	Direct AID	PSC	<u>84</u>	<u>910</u>
<u>3. Private Sector Industrial Forestry Advisor</u>					
Plantation Forestry	Fully Competition	Direct AID	PSC	<u>60</u>	<u>762*</u>
*Includes office and field equipment					
<u>4. Main TA Contract</u>					
Watershed Management	Title XII	Direct	Cost	<u>291</u>	<u>4260</u>
Forest Management	Universities	AID	Reimbursable		
Park Management			Level of Effort		
a. Prime contract				245	3692
b. 8(a) or small business subcontract				32	400
c. Local contractor				14	168
<u>5. Evaluations (4 over LOP)</u>					
Various ST specialties	IOC and local contracts	Direct AID	Work Orders	<u>30</u>	<u>520</u>
			Purchase orders		
<u>6. Audits (4 over LOP)</u>					
Various small contracts	Local competition	Direct AID	Purchase Order	<u>6</u>	<u>20</u>

ATTACHMENT A

Terms of Reference

Natural Resources Agency Management Advisor (RENARE)

1. General Purpose

The Contractor will advise and assist the National Directorate of Renewable Natural Resources (RENARE) of Panama to: design and implement an organization development plan to strengthen field operations; design and install administrative systems and procedures to make more effective use of scarce technical personnel and material resources; advise and assist in implementing an in-service training program for the agency to enable it to add new programmed activities through a major infusion of technical assistance in all phases of natural resource management and the tasks involved in managing a field agency with 850 employees.

2. Specific Tasks

The Contractor will prepare an annual work plan with a time table for accomplishment of tasks within three weeks of arrival and each subsequent work year. The content of the plan will be discussed and approved by USAID and RENARE and will include:

- a. An in-depth study of the institutional aspects of RENARE, as a basis for preparation of an organizational development plan;
- b. An examination of administrative procedures and management systems used to plan, control and evaluate the work of RENARE, and preparation of a report recommending improvements in each, and assistance in implementing the recommendations;
- c. A design of an organizational structure and a functional manual for the agency, and a manpower plan for staffing and training to enable RENARE to undertake new functions and programs;
- d. Other management and administrative advice and guidance relating to the general objectives of the PP and RENARE as may be requested by the Director of RENARE.

3. Reporting Requirements

An annual work plan must be submitted within three weeks of each work year for approval by USAID and RENARE. Short monthly reports are required. These reports will highlight progress and obstacles encountered in meeting work plan targets and the overall terms of reference. Written reports will be required for each major work task: Institutional Analysis and Recommendations for Reorganization of RENARE; Manpower Plan for Reallocating and Training Staff; Analysis, Recommendations and Plan for Improved Management and Administrative Procedures; Functional Manual for RENARE; and other tasks as

needed or requested. An annual report is required summarizing the year's activities and important lessons learned.

4. Qualifications

a. Academic/Work Experience

The advisor should possess an advanced degree in forestry or natural resources administration. The contractor should also have at least ten (10) years of experience in planning and administration of forestry or natural resource agencies. Prior work experience with bureaucracies in Latin America is required. Fluency in Spanish (S3R3) is required.

b. Managerial Qualifications

The advisor should have demonstrated proficiency in the areas of management, organizational analysis, and staff development. Ability to advise at the ministerial and executive level is required.

c. Language Qualifications

The advisor should have a minimum Spanish language proficiency of FSI S-3 or equivalent, and be able to express technical opinions effectively both orally and in writing.

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ATTACHMENT B

Terms of Reference -- Natural Resources Project Manager Specialist

1. General Purpose:

The Contractor shall assist USAID/Panama and the Government of Panama's Natural Renewable Resources Directorate (RENARE) in the execution of the Natural Resources Management Project (525-0248). The Contractor will maintain liaison with RENARE, other public agencies involved in related natural resources/environmental management efforts, and private sector organizations in the conservation and forestry fields. The Contractor will supervise the technical execution of other implementing agencies.

2. Specific Tasks:

In pursuit of the general objectives outlined above, the contractor shall carry out the following specific tasks:

- a. Conduct project monitoring to ensure that operational problems are identified and resolved as effectively as possible;
- b. In close consultation with RENARE and USAID/Panama staff, help identify needed technical expertise for project implementation and advise on the preparation of related scopes of work;
- c. Ensure that effective coordination of the various project participating institutions and USAID is maintained;
- d. Undertake correspondence and analysis, and participate in evaluations as required to implement the Project;
- e. Monitor progress under the natural resources education OPG with World Wildlife Fund-U.S., advise USAID regarding project status, and assist in carrying out actions required to expedite progress;
- f. Provide liaison with ROCAP regional environmental and forestry staff (especially those responsible for the recently approved Regional Watershed Development project), the Panama Canal Commission (PCC), Panama Canal's National Environmental Commission (CONAMA), the Panama Canal's Joint Commission on the Environment (JCE), Panama's National Parks and Environment Foundation, Fundación PA.NA.M.A., the National Nature Conservancy Association (ANCON), and other such organizations.
- g. Supervise and manage the work of the Assistant Project Manager and Secretary.

3. Reporting Requirements:

The Contractor will report to the Chief of the Agriculture Office. The Contractor shall keep AGR and other USAID staff routinely informed of progress and delays, in connection with Section 2 tasks through periodic oral briefings and/or written reports as circumstances dictate. Within two weeks of signing the contract, the Contractor will prepare a draft annual work plan programming the achievement of Section 2 tasks and general purposes. This work plan will be approved by the USAID Agriculture Development Officer and a monthly report of activities will be submitted by the Contractor. Additional reporting requirements may be imposed by USAID from time to time in connection with specific natural resources/environmental concerns.

4. Period of Contract:

The contract will be for an initial one year period renewable on mutual agreement by the two parties.

5. Qualifications:

a. Academic/Work Experience

The Contractor should have an advanced degree (Masters) or equivalent in natural resources planning or management, and at least seven years work experience in the natural resources field, including three years in Latin America.

b. Other Work Qualifications

The individual selected must be a capable manager with highly developed, planning, analytical, organizational and negotiating skills. Superior writing skill is required. Computer fluency in Wang word processing and Wang and Apple computers desirable.

6. Work Site

The Contractor will work at the USAID offices in Panama City. Frequent field travel to remote regions is required.

ATTACHMENT C

Terms of Reference - Assistant Project Manager

Natural Resources Management Projects

1. General Purpose:

The Contractor will assist the Natural Resources Project Manager in Routine administrative tasks related to liason, coordination, and reporting requirements among other public and private sector agencies involved in natural resources activities will be required.

2. Specific Tasks:

The Contractor shall carry out the following specific tasks:

a. Research, draft, and obtain clearances as requested by the Project Manager for the majority of administrative actions required to implement the Natural Resources Management Project.

b. Assist in preparing briefing documents, logistic arrangements, and administrative matters related to visiting consultants and advisors and to field travel.

c. Assist the Project Manager in maintaining project management, administration, evaluation, and monitoring on shedule.

d. Assist in arranging meetings, conferences, seminars, and workshops in Panama and overseas.

e. Other administrative tasks as required.

3. Reporting Requirements:

The contractor shall report to the Project Manager. The Contractor shall keep the Project Manager informed of progress and delays in carrying out Section 2 tasks through daily oral briefing or written reports as circumstances dictate.

4. Period of Contract:

The contract will be for one year with a U.S. citizen, followed by a local hire for the remaining nine years.

5. Qualifications:

a. A minimum of five years experience with administration of complex projects or businesses is required.

b. Fluency in English and Spanish is required.

c. Experience with Panamanian and U. S. procurement and contracting procedures desirable.

d. Experience with WANG word processing and computer equipment is desirable.

6. Work Site:

The Contractor will work at the USAID offices in Panama City but will be expected to undertake frequent trips in the metropolitan area and infrequent field trips.

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ATTACHMENT D

Terms of Reference - Private Sector Industrial Forestry Advisor

1. General Purpose:

The Contractor shall assist USAID/Panama in the implementation of the Industrial Plantation Component of the Natural Resources Management Project (525-0248).

The Contractor is responsible for the promotion of private investment in the establishment and management of forestry plantations for industrial raw material supply. The Contractor will work with the National Reforestation Association of Panama (Asociación Nacional de Reforestadores y Afines de Panama) and other associations that may be established. This work will include the survey of existing tree plantation experience in Panama, the analysis of the financial feasibility of existing or planned plantation investments, and the dissemination of this information to potential plantation investors. The Contractor will also support the establishment of private nurseries and reforestation and land management services to advise and support landowners that are interested in investing in forestry. Close cooperation with the public agencies responsible for forest management and research, the Smithsonian Tropical Research Institute and the University of Panama, the forest products industry and the ROCAP/CATIE Regional Tree Cropping Project will be necessary.

2. Specific Tasks:

a. The Contractor will complete a survey and prepare a report on the plantation forestry experience in Panama that identifies the area, age, species and yields as well as the sources of seeds and technical assistance received. This information be used in the preparation of material to be used in campaigns to promote private landholder investments in forestry.

b. The Contractor will advise and assist in the formation of national and local reforestation associations that will promote cooperation among their members in the inter-change of information and experience, sharing the costs of nursery establishment, and in the protection and management of their forest lands. This task will include the identification of government services and fiscal incentives, and sources of credit, that are available to assist landowners.

c. The Contractor will promote the development of private consulting forestry services to provide advice to landowners on the establishment and management of their plantations; will support the organization of private nurseries, and tree planting and management companies, to provide the services required by landowners; will identify and promote markets for thinnings, other minor forest products, and the final harvest of plantations.

d. The Contractor will assist participating commercial banks to develop procedures for lending for reforestation purposes and in promoting loans to their clients, will advise banks on obtaining qualified professional services for the analysis of plantation investment proposals, and in arranging for the provision of qualified technical services to borrowers.

f. The Contractor will identify the need for technical assistance and training in nursery management, tropical silviculture, forest investment analysis and marketing that may be required. In consultation with the USAID Project Manager the Contractor will prepare the terms-of-reference and manage this supplementary technical assistance, and develop and implement the training activities that are required. .

3. Reporting Requirements:

The Contractor will report to the USAID Natural Resources Management Project Manager. Within three weeks of reporting in-country the Contractor will prepare an annual work plan for this assignment programming the achievement of specific tasks. This work plan will be approved by the USAID Project Manager and a monthly report of activities will be submitted by the Contractor. The Contractor shall also keep the Project Manager informed on progress in implementing the work plan through periodic briefings and/or written reports on specific issues as may be required.

4. Period of Contract:

The contract will be for an initial two and one-half years period renewable by mutual agreement of the two parties. There is a five year requirement for this position.

5. Qualifications:

a. A minimum of seven years of experience in field forestry with experience in tree planting, silvicultural practices and harvesting, preferably working with individual landowners and private companies. Overseas advisory experience in tropical forestry extension work is desirable.

b. A degree in forest management with specialized training in nursery operations, reforestation and tree farm silvicultural practices.

c. The individual selected must have well developed public speaking and training skills, and well developed organizational and planning skills. Spanish language ability at FSI level S-3, R-3 is required. Experience in the use of word processing, spreadsheet and financial analysis microcomputer applications is desirable.

6. Work Site

The Contractor will be based in Panama City, but frequent travel to provincial towns and rural reforestation sites is required.

ATTACHMENT E

INSTITUTIONAL CONTRACT

1. General Purpose:

The Contractor shall assist USAID Panama in the implementation of three components of the Natural Resources Management Project. The Contractor will provide and administratively support long term technical assistance advisors and short term specialists. The general objectives of the technical assistance are these:

a. Watershed Management and Soil Conservation Component:

(1) to improve management programs in three watershed (Panama Canal, La Villa, Caldera), and in two new watersheds to be selected; (2) to strengthen RENARE capability in water and soils surveys to provide the information necessary for planning and management; and (3) to develop a capacity for environmental impact assessment.

b. National Parks and Wildlands Management Component:

(1) to protect those established reserves that provide downstream watershed and soil conservation benefits; (2) to identify and conserve endangered upland and coastal ecosystems and rare biologic communities; and (3) to promote sustainable use of these renewable natural resources.

c. Natural Forest Management Component:

(1) to develop and maintain a sustained yield timber production program; (2) to increase the productivity of the resource through sound silvicultural practices; and (3) to increase economic returns through utilization of wasted wood and trees not now commercial.

2. Tasks of the Long Term Advisors:

a. Watershed Management Planning and Conservation Advisor (48 person months) will work with the RENARE chiefs of each watershed in programming and scheduling activities that integrate natural resources management operations of RENARE and other essential agencies in critical priority areas; in developing soil and water conservation extension capability; in developing and conducting in-service training programs; in technical assistance and training for assessing environmental impacts of construction projects and other ventures.

b. Grazing Management Advisor (24 person months) will work with RENARE field personnel in each watershed in developing demonstration farms where improved grasses and improved pasture management techniques can be shown and communicated to area ranchers.

c. Tropical Soils Taxonomist (24 person months) will advise and assist RENARE central office and field operating personnel in soils classification and land capability assessments; in compiling and analyzing existing soils

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information; in planning and implementing soils surveys and land capability mapping; and in developing an in-service training course in these activities.

d. National Parks Planning and Management Advisor (36 person months) will assist RENARE in drafting legislation governing use and management of national parks and reserve areas; in developing policies and plans for implementing this legislation; in defining criteria for classifying reserves by type; and in establishing standards for their use.

e. Forest Management Advisor (36 person months) will work with forest reserve management units to design and implement forest inventories and to develop forest management plans.

3. Short Term Advisors/Consultants:

The technical assistance to be provided by the long term advisors will be supplemented by short term consultancies in various disciplines. Ten or more specialties will be programmed for consultancies of one to four months duration, with a total of 57 person months of such short term assignments to be provided over five years. Long term advisors will determine the appropriate timing and prepare detailed scopes of work for these consultancies.

Subjects for short term consultancy attention include the following:

- Ground water hydrology
- Water quality analysis
- Soils analysis
- Environmental statistics and data management
- Environmental education
- Wildlife management
- Forest economics
- Forest appraisals
- Forest utilization
- Tropical silviculture

Short term advisors will work with designated long term advisors in advising and assisting personnel of RENARE and of other agencies as appropriate.

4. Institutional Contract Team Support:

The contract organization will be responsible for providing full administrative support in-country for long and short term technical advisors and consultants. A qualified Administrative Officer will be required in Panama for five years (years 2 through 6) for this purpose, acting for the organization in personnel management matters, payroll, housing, travel and other support concerns. The Administrative Officer will coordinate appropriately with RENARE with regard to services provided by the GOP, and with USAID with regard to administrative policies and procedures which require USAID involvement or approval.

The contract organization will be required to provide adequate supervision for the TA team, and periodic visits of supervisory central office personnel

will be expected (6 person months of short-term visits are programmed over years 2 through 6).

5. Reporting Requirements

Advisors will prepare an annual work plan and work schedule in consultation with RENARE for approval by the USAID project officer within three weeks of arrival at post. This work plan and schedule will outline the tasks to be accomplished within each quarter and the methodology to be used in completing each assignment. A periodic review of progress will be conducted and a quarterly report of progress submitted to both RENARE and USAID.

A year end report will be prepared and submitted to RENARE and USAID. This report will summarize the year's work in completing planned objectives, and present specific recommendations on the ensuing year's work or other follow-up.

6. Qualifications Requirements

a. Long term advisors shall have a University degree in their field of specialization, preferably at an advanced level. Extensive experience appropriate to the Project terms of reference will be a requirement. They will require fluency in the Spanish Language at the level of S-3, R-3 or higher.

b. The Administrative Officer shall have a university degree and a minimum of ten years experience in administrative management, at least five years of which should have been overseas. A Spanish Language fluency of S-3, R-3 is required.

PROJECT TRAINING PLAN

The Natural Resources Management Project will provide \$1,642,000 for training as presented in the attached Project Training Schedule. Participant graduate training at the master's level for 10 staff members of RENARE is planned; 4 in wildlands management and 4 in watershed management at CATIE in Costa Rica, and 2 in forestry in the United States (\$386,000). Four natural resource technicians will be trained in general forestry at the National Forestry Sciences School (ESNACIFOR) in Honduras. The Project will utilize the applied short courses developed at CATIE for the AID/ROCAP regional project in tropical watershed management, and the wildlands management program. These courses will be offered in Panama by the staff of CATIE (\$192,000).

Technical assistance advisors provided by the Project will assist the professional staff of RENARE to develop and implement an in-service training program for agency personnel and the personnel of other agencies (\$591,000). RENARE staff will be trained in instructional methods and the preparation of training materials prior to the implementation of the plan. Rural natural resource education activities and the promotion of grazing management and tree planting will cost \$155,000. The sum of \$151,000 is reserved for other training in courses or workshops that further the objectives of the Project.

A. Profile of RENARE Staff

A profile of the staff of RENARE is presented in the following table by category and place of assignment.

PROFILE OF RENARE STAFF BY LEVEL AND ASSIGNMENT
 (April 1985)

<u>Level</u>	<u>Hdqtrs.</u>	<u>Field</u>	<u>Other</u>	<u>Total</u>
Professional	54	44	16	114
Administrative	82	45	12	139
Technician	53	167	10	230
Park guards		83	2	85
Manual Labor	<u>24</u>	<u>240</u>	<u>10</u>	<u>274</u>
<u>Totals</u>	<u>213</u>	<u>579</u>	<u>50</u>	<u>842</u>

The training plan is based on the assumption that the staff of RENARE will not increase in the next few years, and that the Project can be implemented with present personnel. This staff is relatively inexperienced, 47% have less than 5 years of service. Therefore in-service training in specific skills is required to increase the competence of the agency.

Two categories of personnel have priority for training. The technician level is composed of people with associate degrees in general natural resources management, a two-year program offered in Panama and Colombia, and the graduates of agricultural secondary schools. The second category is park and forest patrolmen who are to be responsible for the protection of reserve areas. This group is largely untrained although a pilot training program with park guards was begun with the Watershed Management Project. This group requires a thorough indoctrination in the purposes of natural resource management and the laws that govern its use, the policies and programs of RENARE, and the requirements of their assignments. Increasing the number of park and forest guards is one of the priorities of RENARE to achieve Project objectives of protecting Parks and Forest Reserves. The transfer of manual laborers, largely nursery workers, to duties as park guards has been recommended as contracted nurseries replace the need for state-run nurseries.

Training will also be offered to the technical staff of other agencies and institutions with which RENARE will be working. The advantages of this policy are obvious. Common approaches to a problem are learned, and the basis for collaboration is established, to improve working relationships. It will also foster standardization of technical norms for soil, water, and land use classifications. It has been recommended to RENARE that at least 20% of the Project training funds be reserved for the staff of other agencies and representatives of environmental voluntary groups.

The Project will provide funding for conferences, field days, cursillos and workshops. These activities are directed at the population in or adjoining natural resource management units (parks, watersheds, forests), that will be receiving the soil conservation, tree planting and pasture management promotional efforts of RENARE. This category of training includes meetings with local government personnel, community leaders and the representatives of indigenous groups.

B. Training Objectives

The training objective is to improve on-the-job performance by staff at all levels of RENARE. The purposes are to: develop the skills required for immediate application in the field; increase the effectiveness of technical assistance provided by the Project; and develop the professional competence of the agency as a whole.

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C. Training Plan Implementation

The Project will provide long-term technical assistance of a management advisor to work on the organizational development of RENARE. This assignment includes the definition of the functions that RENARE will implement to achieve its objectives, the technical skills required, and the organizational structure that is most effective for management. A staffing plan will be developed from this analysis, personnel skills assessed, and specific training needs defined. On this basis an organizational training plan will be developed.

D. Overview of Training Planned by Project Component

1. Watershed Management and Soil Conservation

The Project will provide four graduate scholarships in watershed management at the MSc. level. This specialized training is a new field in Central America, and offered only at the graduate level at CATIE with the support of the Tropical Watershed Management Program regional project (ROCAP/CATIE). The training will be given to agricultural engineers and other professionals of RENARE in order to develop an agency capability to plan and implement watershed management programs. At present RENARE has only one professional who has completed this course.

The Project has identified the need for three types of training for which no source of instruction has as yet been recommended: ground and surface water hydrology, water quality analysis, and environmental assessments. Funds provided will be used to contract for this training and/or to finance study visits and internships with agencies in other countries.

2. National Parks and Wildlands Management

Wildlands management is also a field of graduate study which is currently offered at CATIE where the program developed with international assistance is well regarded. Two RENARE professionals, graduates in botany, have taken the MSc program in Wildlands Management at CATIE, and the Project will provide training to others in this subject.

The Project will finance a major training initiative for 240 forest and park guards of RENARE. This is essential since many of the present guards are seasonal laborers or other people who have been assigned to RENARE without any preparation for their assignments. This training program will be taught by the staff of RENARE and will provide basic instruction on the mission of RENARE, the importance of natural resources to Panama, the laws that govern the conservation of natural resources, and the duties and authority of the patrolman and guards. Project technical assistance will also assist RENARE to prepare and present workshops and seminars to rural inhabitants living adjacent to national parks.

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3. Natural Forest Management

RENARE has fourteen forest engineers of whom three have had training at the MSc level, and one is completing a program in the United States. At present there is no forester with graduate training in economics on the staff of RENARE, and a need for advanced training in silviculture has been identified as reforestation and management activities in Panama increase. The Project will finance two additional scholarships for training at the graduate level in the United States, one in forest economics and the other in forest management with a specialization in silviculture.

RENARE has ten dasónomos, graduates of a three-year program from the National Forestry Science School of Honduras (ESNACIFOR). This school has received substantial FAO and United States support in the past. Graduates of the school are considered to be senior technicians and as competent in forestry work as many university graduates, even though the technicians lack some of the theoretical preparation. One scholarship for a junior technician of RENARE has been included in this component, and three under the farm forestry program.

The Project will introduce new techniques of timber appraisal, log scaling and grading and forest management to implement a program of natural forest management. These subjects are specialized, and will have to be adapted to the conditions in Panama. Project technical assistance, both long-term and short-term, will upgrade the forestry staff of RENARE in these subjects, and then assist them in developing an in-service training program for agency personnel. Other trainees in this program include the staff of other public agencies managing forests, indigenous groups that are marketing their timber, and the logging company and sawmill employees who will be affected by logging standards and scaling rules. The Project will support mangrove management with training through study visits to research centers in Puerto Rico, Venezuela and Colombia, where mangrove management is practiced.

4. Farm Forestry

Project training activities include the financing of kursillos and other community education and promotional activities, e.g. field visits of local campesinos to farm woodlots established as demonstration areas by the ROCAP/CATIE Tree Crop Production Project. Training will also be provided to the staff of RENARE, both middle level technicians and laborers in tree planting techniques and farm forestry practices to increase their skills to promote farm forestry. Cooperating landowners who have demonstrated success in planting trees will attend these classes to prepare them as promotores. Three scholarships will be awarded to RENARE Farm Forestry technicians (agricultural secondary school graduates or equivalent), to attend the dasónomo program at ESNACIFOR.

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5. Private Industrial Plantation

The Project will provide funding for a series of promotional meetings, conferences and workshops to promote private forest investment. The objective will be to inform landowners and other potential investors on the experience of Panama and other countries in tree planting and the benefits that can be realized. The initial target groups will be agricultural associations, investor groups, the representatives of banks, and others who have expressed interest in the program. As the plantation program develops, a series of seminars will be offered on plantation silviculture, financial analysis, and the marketing of timber.

6. Administrative and Operational Support

The Project will provide funds for contracted training in computer programming and computer use to be conducted by the supplier of the equipment purchased through the Project. A first priority for this training will be the staff of the computer center, followed by the 120 administrative personnel and support staff. RENARE training will support the installation of new accounting systems and record keeping, and other administrative systems that will be installed. An in-service course will be developed and taught by the accounting firm that has the contract for systems development.

Training in public relations and community education on the environment will be provided by the Project through a program offered in Mexico. A reserve for additional training will also be funded by the Project for the attendance of RENARE personnel in regional conferences and workshops, or to arrange for specialized training that may be required to achieve Project objectives.

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NATURAL RESOURCES MANAGEMENT PROJECT TRAINING PLAN

	No. of PARTICIPANTS	TOTAL COSTS	TRAINING MONTHS AND COSTS (\$1000) BY YEAR																	
			1	2	3	4	5	6	7	8	9	10								
<u>Watershed Management</u>		<u>530</u>	<u>35</u>	<u>79</u>	<u>131</u>	<u>79</u>	<u>37</u>	<u>87</u>	<u>10</u>	<u>36</u>	<u>36</u>									
Watershed Management (MSc) CATIE	4	96	1	3	3	1														
<u>ROCAP/CATIE Regional Courses</u>		<u>80</u>																		
Fundamentals of Watershed Management	45	30	15		15					15	10									
Integrated Watershed Planning	40	10	20	5		20	5													
Land Use Classification	30	10		15	5			15	5											
Data Base Management	8	10			4	5				4	5									
Instructional Methods & Materials	20	5	12	3	8	2														
Soils & Water Conservation Extension	40	15		20	7	20	8													
<u>Courses to be Developed</u>		<u>252</u>																		
Ground and Surface Water Hydrology	36	108			12	36						12	36						12	36
Water Quality Analysis	12	36			4	12		4	12	4	12									
Environmental Assessments	18	108						6	36			6	36					6	36	
<u>RENARE Courses</u>		<u>102</u>																		
Soil Surveying (Field Assistants)	40	12		10	4	15	4	15	4											
Soil Conservation & Extension	60	25		12	5	12	5	12	5			12	5	12	5					
Community education and promotion	6000	65	250	5	1750	20	1000	10	500	5	1000	10	1000	10	500	5				
<u>National Parks Management</u>		<u>300</u>	<u>12</u>	<u>90</u>	<u>49</u>	<u>74</u>	<u>3</u>	<u>45</u>												<u>27</u>
<u>Master's Level (CATIE)</u>																				
Wildlands Planning (MSc).	4	96	1	3	3	1														
<u>CATIE Regional Courses</u>																				
Wildlands Management	62	77		16	20			16	20			16	20					14	17	
Wildlife Management	15	17						15	17											
Data Base Management	4	6			2	3				2	3									
<u>RENARE Courses</u>																				
Natural Resources Protection	240	51		48	11	48	10	48	10			48	10					48	10	
Environmental Education	74	53		40	23			17	15			17	15							

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NATURAL RESOURCES MANAGEMENT PROJECT TRAINING PLAN (Continued)

	No. of PARTICIPANTS	TOTAL COSTS	TRAINING MONTHS AND COSTS (\$1000) BY YEAR																				
			1	\$	2	\$	3	\$	4	\$	5	\$	6	\$	7	\$	8	\$	9	\$	10	\$	
<u>Natural Forest Management:</u>		<u>300</u>		<u>58</u>		<u>90</u>		<u>67</u>		<u>52</u>		<u>27</u>		<u>2</u>		<u>2</u>		<u>2</u>					
<u>Graduate Level</u>		<u>170</u>																					
MSc(Forest Economics (US))	1	60	1	25	1	25																	
MSc(Forest Management (US))	1	60			1	35	1	25															
Reserve for MSc to Phd. (US)	1	50							1	25	1	25											
ESNACIFOR Dasónomo (3 Yr Program)	1	25	1	8	1	8	1	9															
<u>RENARE Courses</u>		<u>105</u>																					
Timber Appraisal	40	20					20	10	20	10													
Mangrove Management	10	15			5	7	5	8															
Log Scaling and Grading	40	10							8	2	8	2	8	2	8	2	8	2	8	2			
Forest Management	120	60	30	15	30	15	30	15	30	15													
<u>Farm Forestry:</u>		<u>202</u>		<u>5</u>		<u>23</u>		<u>31</u>		<u>39</u>		<u>36</u>		<u>28</u>		<u>15</u>		<u>15</u>		<u>5</u>		<u>5</u>	
ESNACIFOR Dasónomo (3 Yr. Program)	3	72			1	8	1	16	3	24	2	16	1	8									
<u>RENARE Courses</u>																							
Nursery Techniques	140	35			20	5	20	5	20	5	20	5	20	5	20	5	20	5	20	5			
Promotion Techniques	150	25			30	5	30	5	30	5	30	5	30	5	30	5	30	5	30	5			
Plantation Silviculture	120	20									30	5	30	5	30	5	30	5	30	5			
Local extension "cursillos"	250	50	25	5	25	5	25	5	25	5	25	5	25	5	25	5	25	5	25	5	25	5	25
<u>Private Industrial Plantation:</u>		<u>55</u>		<u>6</u>		<u>10</u>		<u>14</u>		<u>14</u>		<u>11</u>											
Promotional Meetings	1260	10	180	2	360	3	360	2	360	2													
Financial Analysis & Accounting	60	15			15	4	15	4	15	4	15	3											
Wood Products Marketing	60	15					20	5	20	5	20	5											
To be assigned	150	15	50	3	50	3	50	3	50	3	50	3											
<u>Strengthening Field Operations:</u>		<u>255</u>		<u>30</u>		<u>45</u>		<u>35</u>		<u>20</u>		<u>30</u>		<u>25</u>		<u>15</u>		<u>15</u>		<u>15</u>		<u>15</u>	
Public Relations	9	45	3	15	3	15	3	15															
Reserve for Other Training	96	150	6	15	20	15	20	15	20	15	20	15	20	15	20	15	20	15	20	15	20	15	20
<u>RENARE Training</u>																							
Accounting and Finance	45	15			40	10	20	5															
Computer Use Training	120	15			40	5			40	5	40	5											
Computer Programming	12	30							4	10	4	10	4	10									
<u>TOTAL TRAINING</u>		<u>1,642</u>																					

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PROCUREMENT PLAN

The Procurement Plan was prepared with the assistance of the RCCAP Regional Commodity Management Officer. It is based in part on an Assessment of Host Country Financial Management Capability (summarized below), prepared by the Controllers Office of USAID/Panama, and upon evaluations of the administrative procedures and procurement by Government of Panama counterparts.

A. Designation of Procurement Responsibilities

1. USAID Commodities Procurement

The Mission will procure technical services and vehicles (including motorcycles) through AID Direct Contracting procedures. The Technical Services Contracting Plan is presented in Annex II (Exhibit C), and will amount to \$6,177,000 in technical assistance, and \$1,990,000 in USAID Project Manager and Evaluation and Auditing contracting.

Vehicles and spare parts and motorcycle purchases are estimated to cost \$2,162,000 and \$308,000 respectively over the ten year LOP, as summarized in the procurement schedule below. (The vehicle budget includes funding for contingency TA in vehicle operations and maintenance if such TA is required).

SCHEDULING OF VEHICLE PROCUREMENT
 (Costs in \$1000)

Type	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Wagoneers	3	1			1		1	1			7
Pick-ups		24			24			24			72
Jeeps		10			11			10			31
Sedans	2	1			1	1		1			6
Utility Truck					1			1			2
Bus (15 Pass.)		1			1						2
Total Number of Vehicles	5	37			39	1	1	37			120
Costs (\$000) (including parts)	100	660			700	17	22	663			2162
Motorcycles Numbers	7	13	13	9	25	9	12	22	10	3	128
Costs (\$000)	17	43	31	22	60	22	29	53	24	7	308
Total Procurement (\$000)	117	703	31	22	760	39	51	716	24	7	2470

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2. Host Country Agency Procurement

During the implementation of the Watershed Management Project there was limited local and international procurement of commodities and services by RENARE. The cumbersome procurement laws and regulations of the Government of Panama combined with the relative inexperience in international purchasing has led to the decision to limit Host Country Contracting to limited procurement activities. This will include small-value (under \$50,000) commodity procurements, most of which will be local shelf-item purchases, and local contracts for construction and services.

Major procurement for RENARE will be accomplished through a contract with a Procurement Services Agent (PSA). The terms of this contract will include: development of the technical specifications, purchasing the required commodities, consolidating and packing for shipment, arranging shipment and inspection prior to shipment, and handling claims.

The PSA contract will be for a three year period, renewable at RENARE's option for two additional three year periods. The PSA will be paid by a Direct Letter of Commitment, and the commodities purchased through the PSA will be paid for by letters of credit issued against the Bank Letter of Commitment (the PSA will be the "Approved Applicant").

B. Procurement Waiver Requirements

Some required Project items will not be available from authorized source/origin countries. According to Redelegation of Authority No. 40.11, the Mission Director has the authority to waive the authorized list of eligible countries or geographic code for individual transactions not exceeding \$5 million. According Handbook 11, Chapter 3, Para 2.6.1.3 such a waiver must be based on such criteria as: "The commodity is not available from countries or areas included in the authorized geographic code", or "Such other circumstances as are determined to be critical to the success of project objectives". The items that meet these criteria are listed below.

1. Motor Vehicles

The Ministry of Agricultural Development (MIDA) is implementing a program to eliminate overage and damaged vehicles where the cost of maintenance and repair becomes excessive. As funds for new vehicle purchases become available MIDA and its associated institutions will standardize on 4 cylinder 4 wheel drive diesel field vehicles for which a strong service and parts facilities are available in Panama. The Mission is studying the service and parts availability in Panama for U.S. manufactured diesel 4 wheel drive vehicles. Present maintenance costs and service will be compared against the alternative of contracting all maintenance to a private firm. If this alternative is not feasible, a request that AA/LAC authorize the procurement of non-U.S. manufactured vehicles will be forwarded. The present procurement plan is not based on obtaining such a waiver.

2. Lightweight Trail Motorcycles

Lightweight trail motorcycles will be used by forest and national park patrolmen, and by farm forestry and pasture management promoters. The rugged off-road use will limit the working life of these machines to about 2 years. USAID/Panama will initiate the procurement of non-U.S. manufactured motorcycles under the authority of State cable 086441 dated 20 March, 1986.

3. Agricultural Tractors and 35mm Cameras

The project also intends to acquire 8 small (less than 75 hp) agricultural tractors estimated total value \$240,000; and \$7,000 of 35 mm cameras and associated lens systems and projectors. According to a recent cable from SER/AAM, small tractors are made in the U.S. Based on the availability of agricultural equipment dealer support services and parts availability, the Mission will determine with RENARE origin of the equipment that will be purchased. The cameras are not manufactured in the United States and an alternate source will be required. The Mission Director will be requested to authorize procurement of small tractors (if justified) and cameras from Free World countries other than the cooperating country and Code 941 countries, on the basis that it will facilitate project success and the achievement of U.S. foreign policy objective.

4. Computer Requirements

The microcomputer and data base management software acquired through the Project must be compatible with the equipment used by other government offices in Panama and local and regional research agencies. The Hydrology Office of the Panama Canal Commission, the Smithsonian Tropical Science Institute, and the CATIE Regional Data Bank Programs have standardized on IBM equipment. The Mission will consult with CATIE and ROCAP to determine if computer equipment other than IBM is compatible with the regional system. If justified, procurement will be competed on a proprietary basis. Paragraph 2.4, Chapter 3 of Handbook 11, states that proprietary procurement may be justified for reasons such as: "...stronger local dealer organization, better repair facilities...; compatibility with equipment on hand is required; or special design or operational characteristics are required." Word processing and microcomputer procurement will be less than \$200,000.

D. Procurement Implementation

Project implementation will require the procurement of both technical services and commodities for all seven components. The initial requirement will be the contracting for the USAID Mission Project Manager and an Assistant. These will be PSC positions to be contracted by USAID. A RENARE Management Advisor and the Private Sector/Industrial Forestry Specialist are also needed at the outset of the project. These will also be PSC positions and be contracted by the Mission.

In order to have timely transportation support, a PIO/C will be executed to provide vehicles and equipment for these functions.

Upon assumption of responsibilities, the Project Manager will initiate the procedure for contracting a Procurement Services Agent. A scope of work will be developed to include: specification development and refinement, purchasing the required commodities, consolidating and packing for shipment, arranging shipment and inspection prior to shipment.

E. Procurement Schedule

Procurement planning and implementation will be accelerated by actions prior to signing the Project Agreement and the first implementation letter. This will include:

1. Complete job descriptions for:
 - .USAID Project Manager
 - .Management Advisor (RENARE)
 - .Industrial Forester (Private Sector)
2. Advertise for expressions of interest for above positions.
3. Complete first year USAID procurement plans (4 vehicles) for Industrial Forester and RENARE headquarters support).

UPON PROJECT APPROVAL AND PIL AUTHORIZING DISBURSEMENTS

Project
Implementation
Month

- | | |
|----|---|
| 1 | Issue PIO/T's for Project Manager, Management Advisor and Industrial Forester |
| 1 | Issue PIO/C for First Year Procurement |
| 2 | Issue PIO/T for major TA contract (institutional AID direct) |
| 2 | Evaluate PSC candidates |
| 3 | Negotiate PSC contracts |
| 4 | Project Manager/Management Advisor/Industrial Forestry Advisor arrival |
| 5 | Advertise PSA requirements |
| 6 | Negotiate TA contract contingent on CP's being met |
| 6 | Prepare PIO/C for 35 vehicles |
| 7 | Issue RFP for PSA |
| 8 | Arrival of COP for institutional contractor |
| 9 | Evaluate PSA offers/award |
| 10 | Award PSA contract contingent upon CP's being met |

F. Assesment of Host Government's Financial Management Capabilities

1. Government Purchase Orders

Decree No.33, signed in 1985, states in Article 36 that the Purchase Order is the document used by the Central Government, and all other public institutions, to formalize a contractual relationship for the procurement of commodities and for the definitive adjudication of services within a locality. Article 37, of the same Decree, establishes that the Purchase Order may be used when the obligation does not exceed the amount of \$50,000.00 and should be signed by the Minister, Vice-Minister, or the designated person assigned within the Ministry of Finance, when purchases are for the Central Government, and by the authorized person heading the respective Public Institution or by whoever succeeds in order of hierarchy. In addition, Article 41 states that the Purchase Order shall be subject to all applicable dispositions related to contracts celebrated with the State.

From the above it is inferred: that the Purchase Order is a legally binding document used by the Central Government and other Public Institutions to formalize a contract for the procurement of commodities and services that do not exceed the \$50,000.00 limit.

2. RENARE's Contracting and Commodity Procurement Process

In the case of local personal service contracts (PSC's) and commodities under \$50,000.00 the procedure is as follows:

(a) Personal Services Contracts

1. an office or program requests technical assistance
2. the Director of RENARE approves
3. the Programming and Evaluation Unit (UPE) together with the Legal Advisor prepare scope of work.
4. at least three individuals are contacted by phone or a notice is published in the newspapers soliciting candidates for the described assistance.
5. an evaluation of the candidates is made by the beneficiary office together with the UPE and the Director
6. the UPE negotiates with the selected candidate the terms, conditions and salary.
7. the Legal Advisor prepares contract.
8. UPE reviews and sends it to the Budget and Financing offices.
9. The Budget and the Financing offices verify availability of funds.
10. The UPE locates selected candidate to sign contract and sends it to MIDA for Minister's signature
11. The Minister returns signed contract which is then signed by the Controller General's Auditor assigned to the RENARE offices.
12. The Auditor seals it to UPE which notifies the individual of the starting date and forwards copy of the executed contract to the requesting office.

(b) Commodity Procurement

1. the requesting office solicits equipment or materials
2. the Area and general coordinator approve and transmit to
3. the general administrator who authorizes to proceed with purchase and forwards documents to the Supplies and Purchasing department
4. the Supplies and Purchasing Department which quotes prices from at least three suppliers, awards Purchase Order based on the lowest price and sends it to the
5. financial Section which verifies Purchase Order for funding, and prepares purchasing authorization; forwards to

6. the General Administrator who compares P.O. with request and signs the purchasing authorization which is then sent to
7. the Budgeting Section which assigns funds by component, prepares a disbursement control sheet, earmarks funds and transmits to
8. RENARE's Internal Auditor who verifies the procedures used for soliciting prices and funds, approves and forwards to the
9. MIDAs's Resident Auditor who then verifies codes and funding, and transmits it to
10. Finance Department, Payment Section which prepares checks and sends
11. to Accounting Section for posting and sends it to the
12. internal auditor and MIDA's Resident Auditor who again verify that all documents are attached, that check has been issued for the correct amount,
13. stamps the documents and signs the check, and sends it
14. to the Administrator who signs and forwards it to the payment section until the Supplies and Purchasing department withdraws it
15. and proceeds to purchase the equipment and materials.

(c) Large Amount Procurement

Procurement of commodities above \$50,000.00 and less than \$150,000.00 are made thru price quotations or Bids and must be approved by MIDA, HACIENDA and the COMPTROLLER GENERAL'S OFFICE as follows:

1. the area coordinator requests procurement to the Director who in turn requests MIDA's approval to begin a Bid processing
2. MIDA in turn requests the Controller's General and the Minister of the Presidency's approval to proceed with the Bid.
3. they concur with the request and return approval to MIDA.
4. MIDA in turn transmits approval to Director and UPE at RENARE.
5. UPE prepares Bid documentation in draft and sends it to the
6. legal advisor for legality and returns it to UPE who sends it to Management/Administration.
7. Management /Admin. requests information in local market to expand the technical specifications and returns to UPE.
8. UPE prepares final document and transmits to the Ministry of Finance who evaluates the legal and technical aspects, sets date for the bidding or quotations act.
9. Ministry of Finance returns document to UPE
10. UPE then prepares letter requesting MIDA's approval of the document and authorization to sell and publish the invitation for Bids.
11. MIDA approves; returns documents to RENARE, bid takes place and temporary adjudication is made. Evaluation committee makes definitive award and sends to

12. Legal advisor who prepares contract; contractor signs the document and is then forwarded to
13. MIDA for Minister's signature. Then sent to
14. Controller's General signature and for the Minister of the
15. Presidency's signature if over \$150,000.00. Then it is again sent to MIDA which transmits the document back to
16. RENARE which in turn prepares the order to proceed

Notwithstanding the long processing period for contracting and procurement procedures, the system mentioned above appears to be adequate. RENARE will be advised by USAID/PANAMA of the importance of maintaining documentation related to contracting actions and price quotation or bid documentation for possible AID review before and after the PACD.

3. RENARE's Payment Verification Procedure

(a) Payment verification for Personal Service Contracts

The Programming and Evaluation Unit maintains the signed contract on file and forwards copy to the department that requested the services which is basically in charge of the contractor. This department requests payment for services rendered by the contractor only on the basis of the contract without any invoices or indication that the services have been rendered. Checks are prepared, usually by-monthly or as determined in the contract, by the Finance Department within RENARE, prior approval of the Administrator and availability of funds. It then is forwarded to RENARE's internal auditor and to the Controller General Auditor who assures that payment is in accordance with the terms of the contract, signs the check, sends it back to the Administrator who signs and passes it on to the payment section which retains it until claimed by the contractor.

The payment verification for contract does not provide for either invoice submission nor certification by the administrative offices that services have been rendered as stated within the contract. To remedy this all AID financed contracts under the project will call for invoice submission by the contractor and certification of each invoice by the appropriate department where services are rendered, prior to payment. USAID/PANAMA will also assure that the Management/Administration Office is aware of the importance of maintaining invoices in the Contract file for possible USAID review before and after the PACD.

(b) Payment verification for Commodity Procurement:

The Administrator within RENARE signs an authorization for payment document which is sent to the budgeting and finance departments; they are recorded and cleared and then transmitted to the internal auditor and to the Controller General Auditor who assure that payment is in accordance with the purchase order or contract, that checks are issued for the appropriate amounts, sign check and returns to the Administrator who signs and passes it

on to the payment section. The purchasing department then withdraws the check and proceeds to purchase the quoted items. After purchase is made invoices and purchase orders are sent to the financing section where they are posted in the accounting books.

(c) Assessment of Commodity Purchase Procedure:

Contingent upon the establishment of the requirement for Administrative approval for the Personal Service Contractor's invoices mentioned above, the payment verification system for personal services contracts and commodity procurement appears adequate. The payment procedure for purchase of commodities appears to be adequate.

The Project will provide for audit by independent audit accountants in order to certify that procedures are been developed and implemented.

Document 5579n

ANNEX II
EXHIBIT F

BUDGET ESTIMATES

The following tables provide the breakdown of budget estimates by project components and by input categories. Grant and loan funding are indicated.

NATURAL RESOURCES MANAGEMENT PROJECT

Expected Disbursements by Component of USAID Grant and Loan Funds, and of GOP Funds by Year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GOP	TOTAL
Watershed Management														
AID Grant	35	509	791	494	237	87	10	36	36	0	2235			10779
AID Loan	46	763	1013	471	644	402	279	386	59	31		4094		
GOP	445	445	445	445	445	445	445	445	445	445			4450	
National Parks Management														
AID Grant	12	365	324	319	33	45	0	27	0	0	1125			7390
AID Loan	100	450	390	535	630	285	190	265	90	80		3015		
GOP	325	325	325	325	325	325	325	325	325	325			3250	
Natural Forest Management														
AID Grant	58	335	372	342	102	2	2	2	0	0	1215			6175
AID Loan	52	700	182	294	169	171	18	150	6	18		1760		
GOP	320	320	320	320	320	320	320	320	320	320			3200	
Farm Forestry														
AID Grant	5	23	31	39	36	28	15	15	5	5	202			1621
AID Loan	36	154	94	70	58	58	73	51	51	24		689		
GOP	75	75	75	75	75	75	75	75	75	75			750	
Private Forest Plantations														
AID Grant	186	198	215	228	226	41	0	0	0	0	1094			7594
AID Loan	300	600	700	700	700	700	700	700	700	700		6500		
Strengthened Field Operations														
AID Grant	331	345	212	157	117	287	177	155	155	165	2101			4491
AID Loan	69	1137	50	20	92	20	20	92	20	20		1540		
GOP	85	85	85	85	85	85	85	85	85	85			850	
Contractor Technical Assistance Support														
AID Grant	0	175	160	160	160	160	0	0	0	0	815			815
Project Component Subtotals														
AID Grant	627	1950	2105	1739	911	650	204	235	196	170	8787			38865
AID Loan	603	3804	2429	2090	2293	1636	1280	1644	926	873		17578		
GOP	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250			12500	
Project Management and Evaluations														
AID Grant	292	289	169	304	185	174	39	169	304	169	2094			2094
Project Totals														
AID Grant	919	2239	2274	2043	1096	824	243	404	500	339	10881			40959
AID Loan	603	3804	2429	2090	2293	1636	1280	1644	926	873		17578		
GOP	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250			12500	
Inflation @ 4%														
AID Grant		90	186	255	186	179	64	128	184	144	1415			6848
AID Loan		152	198	261	389	354	340	519	341	370		2925		
GOP		50	102	156	212	271	332	395	461	529			2508	
Contingencies @ 10%														
AID Grant	92	224	227	204	110	82	24	40	50	34	1088			2846
AID Loan	60	380	243	209	229	164	128	164	93	87		1758		
PROJECT GRAND TOTALS														
AID Grant	1011	2552	2687	2502	1392	1085	332	572	734	516	13384			50652
AID Loan	663	4337	2870	2560	2912	2154	1748	2328	1360	1330		22261		
GOP	1250	1300	1352	1406	1462	1521	1582	1645	1711	1779			15008	

(**18-Mar-86 **)

NATURAL RESOURCES MANAGEMENT PROJECT-OBJECTIVES OF EXPENDITURE BY YEAR

Expected Disbursements by Input of USAID Grant and Loan Funds, and of GDP Funds by Year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	Total
Technical Assistance (Long Term)													
AID-Grant	335	1161	1215	1030	476	275	130	130	130	130	5012		5012
Technical Assistance (Short Term)													
AID-Grant	0	262	374	280	190	37	22	0	0	0	1165		1165
USAID Personnel Services													
Long-Term	240	150	165	165	165	35	35	165	165	165	1450		1450
Short-Term	0	135	0	135	0	135	0	0	135	0	540		540
Training													
AID-Grant	146	337	327	278	144	187	42	95	56	30	1642		1642
Vehicle & Parts													
AID-Grant	16	0	0	0	16	0	0	0	0	0	32		32
AID-Loan	60	703	53	20	739	20	53	706	53	8		2415	2415
Equipment & Materials													
AID-Grant	33	1	1	1	1	1	1	1	1	1	42		42
AID-Loan	215	577	1058	581	338	410	361	152	112	124		3928	3928
Construction													
AID-Grant											0		0
AID-Loan	0	1340	270	498	270	180	90	40	20	20		2728	2728
Contract Services													
AID-Grant	146	190	189	151	101	151	10	10	10	10	968		968
AID-Loan	28	584	348	291	246	326	76	46	41	21		2007	2007
Reforestation Fund Loan													
AID-Loan	300	600	700	700	700	700	700	700	700	700		6500	6500
Operating Expenses	3	3	3	3	3	3	3	3	3	3	30		30
PROJECT SUBTOTAL	1522	6043	4703	4133	3389	2460	1523	2048	1426	1212	10881	17578	28459
Inflation	0	242	384	516	576	533	404	647	526	513			4340
Contingencies	152	604	470	413	339	246	152	205	143	121			2846
PROJECT TOTAL	1674	6889	5557	5062	4304	3239	2079	2900	2094	1846			35645

WATERSHED MANAGEMENT COMPONENT

Expected Disbursements by Activity of USAID Grant and Loan Funds, and of GOP Funds by year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GOP	TOTAL
Technical Assistance (Long-Term)														
AID Grant		370	555	370	185						1480			1480
Technical Assistance (Short-Term)														
AID Grant		60	105	45	15						225			225
Training														
AID Grant	35	79	131	79	37	87	10	36	36		530			530
Vehicle and Parts														
AID Loan	18	310	18		328		18	310	18			1020		1020
Equipment & Materials														
AID Loan		249	777	365	180	246	215	50	20	10		2112		2112
Construction														
AID Loan		90										90		90
Contract Services														
AID Grant														0
AID Loan	28	114	218	106	136	156	46	26	21	21		872		872
Government of Panama														
Personal	360	360	360	360	360	360	360	360	360	360				3600
Other	85	85	85	85	85	85	85	85	85	85				850
COMPONENT TOTALS														
AID Grant	35	509	791	494	237	87	10	36	36	0	2235			10779
AID Loan	46	763	1013	471	644	402	279	386	59	31				
GOP	445	445	445	445	445	445	445	445	445	445		4094		
													4450	

NATURAL FOREST MANAGEMENT

Expected Disbursements by Activity of USAID Grant and Loan Funds, and of GOP Funds by Year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GOP	TOTAL

Technical Assistance (Long-Term)														
AID Grant		185	185	185							555			555
Technical Assistance (Short-Term)														
AID Grant		60	120	105	75						360			360
Training														
AID Grant	58	90	67	52	27	2	2	2			300			300
Vehicle and Parts														
AID Loan		144			144			144				432		432
Equipment & Materials														
AID Loan	52	136	82	61	25	36	18	6	6	18		440		440
Construction														
AID Loan		150	100	158		60						468		468
Contract Services														
AID Grant											0			0
AID Loan		270		75		75						420		420
Government of Panama														
Personal	250	250	250	250	250	250	250	250	250	250			2500	2500
Other	70	70	70	70	70	70	70	70	70	70			700	700

COMPONENT TOTALS														6175
AID Grant	58	335	372	342	102	2	2	2	0	0	1215			
AID Loan	52	700	182	294	169	171	18	150	6	18		1760		
GOP	320	320	320	320	320	320	320	320	320	320			3200	
=====														

NATIONAL PARKS AND RESERVES MANAGEMENT

Expected Disbursements by Activity of USAID Grant and Loan Funds, and of GOP Funds by year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GOP	TOTAL

Technical Assistance (Long-Term)														
AID Grant		185	185	185							555			555
Technical Assistance (Short-Term)														
AID Grant		90	90	60	30						270			270
Training														
AID Grant		66	37	86	27	57		27			300			300
Vehicle and Parts														
AID Loan	15	165	15		175		15	160	15			560		560
Equipment & Materials														
AID Loan	85	85	85	95	85	80	80	60	50	60		765		765
Construction														
AID Loan			170	340	270	120	90	40	20	20		1070		1070
Contract Services														
AID Grant														0
AID Loan		200	120	100	100	85	5	5	5			620		620
Government of Panama														
Personal	260	260	260	260	260	260	260	260	260	260			2600	2600
Other	65	65	65	65	65	65	65	65	65	65			650	650

COMPONENT TOTALS														7390
AID Grant	0	341	312	331	57	57	0	27	0	0	1125			
AID Loan	100	450	390	535	630	285	190	265	90	80		3015		
GOP	325	325	325	325	325	325	325	325	325	325			3250	

FARM FORESTRY

Expected Disbursements by Activity of USAID Grant and Loan Funds, and of GOP Funds by year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GOP	TOTAL

Technical Assistance (Long-Term)														
AID Grant											0			0
Technical Assistance (Short-Term)														
AID Grant											0			0
Training														
AID Grant	5	23	31	39	36	28	15	15	5	5	202			202
Vehicle and Parts														
AID Loan	8	12	20	20	20	20	20	20	20	8		168		168
Equipment & Materials														
AID Loan	28	42	64	40	28	28	28	16	16	16		306		306
Construction														
AID Loan		100										100		100
Contract Services														
AID Grant											0			0
AID Loan			10	10	10	10	25	15	15			95		95
Government of Panama														
Personal	50	50	50	50	50	50	50	50	50	50			500	500
Other	25	25	25	25	25	25	25	25	25	25			250	250

COMPONENT TOTALS														1621
AID Grant	5	23	31	39	36	28	15	15	5	5	202			
AID Loan	36	154	94	70	58	58	73	51	51	24		669		
GOP	75	75	75	75	75	75	75	75	75	75			750	

PRIVATE INDUSTRIAL FOREST PLANTATION MANAGEMENT

Expected Disbursements by Activity of USAID Grant and Loan Funds, and of GOP Funds by Year (US\$ 1000)

	1	2	3	4	5	6	7	8	9	10	GRANT	LOAN	GOP	TOTAL

Technical Assistance (Long-Term)														
AID Grant	180	146	145	145	146						762			762
Technical Assistance (Short-Term)														
AID Grant		22	22	33	33						110			110
Training														
AID Grant	5	14	13	13	10						55			55
Vehicle and Parts														
AID Grant											0			0
Equipment & Materials														
AID Grant											0			0
Contract Services														
AID Grant		20	34	36	36	41					167			167
Reforestation Loan														
AID Loan	300	600	700	700	700	700	700	700	700	700		6500		6500

COMPONENT TOTAL														7594
AID Grant	185	202	214	227	225	41	0	0	0	0	1094			
AID Loan	300	600	700	700	700	700	700	700	700	700		6500		

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ILLUSTRATIVE EQUIPMENT LIST

1. AGRICULTURAL EQUIPMENT (EQUIPO AGRICOLA RODANTE)

- 3 Motocultor con motor diesel de 13 a 14 HP de 2000 a 2200 Rpm., arranque manual o eléctrico. De cuatro (4) velocidades hacia adelante y una (1) velocidad en reserva con azada rotativa de 22 hojas y protector de porta azadas, surcador y remolque para ser usado sin azada rotativa de doble filtro para lugares caliente.
- 1 Motocultor con motor de gasolina de 4 HP con moto azada de 25 cm. de ancho de corte.

2. MOTORIZED EQUIPMENT (EQUIPO AGRICOLA DE FUERZA)

- 9 Motor fuera de borda, pata corta, de 15 HP de gasolina, con consumidor y acople. Capacidad de cinco galones de combustible.
- 1 Generador Portátil de 4.5 kw. con arranque manual, motor a gasolina, 60 ciclos, 115 voltios AC. y 125 voltios D.C.
- 1 Bomba de agua eléctrica completa para pozo, de 3/4 HP, 115 voltios A.C. y 1 pulgada de salida.
- 3 Planta eléctrica de diesel completa de 1.5 kws., portátil, con arranque manual de 60 ciclos y de 115 voltios A.C.
- 3 Motosierra de 3/8 de paso de cadena y 24 pulgadas de sierra, con motor de gasolina y protector manual. Freno, silenciador e ignición con capacitador.
- 6 Motobomba diesel de 8 a 10 HP. Centrífuga y de alta presión, con rendimiento de no menos de 80 galones por minuto a 40 metros. Con entrada y salida de 3 pulgadas; acople de succión y descarga, succión completa de 3"x24' con válvulas Cheek de 3". Con colador y válvula de no retorno de ceba, colador y filtro para cada bomba.

- 1 Moto bomba diesel de 14 a 16 HP a 2,600 RPM. Centrífuga y de alta presión, con rendimiento de no menos de 160 galones por minuto a 60 metros. Con entrada y salida de 3"x24", válvula de Cheek de 3", colador y válvula de no retorno de ceba y filtro para cada bomba.
- 1 Bomba de agua eléctrica completa para pozo de $\frac{1}{2}$ HP., 115 voltios A.C. y 1 pulgada de salida.

3. AGRICULTURAL TOOLS (HERRAMIENTAS Y EQUIPOS AGRICOLA LIVIANO)

- 4 Docs. Carretilla de metal de 4 pies cúbicos, con mango de metal y llantas de caucho compacto.
- 3 " Piqueta de acero con mango de madera dura, no menor de 16" y hoja de corte de 4 $\frac{1}{2}$ ".
- 1 " Mazo con mango de madera dura de 15" de largo como mínimo y peso de cinco libras.
- 1 " Mazo con mango de madera dura de 34" de largo como mínimo y 8 libras de peso.
- 1 " Mazo con mango de madera dura de 34" de largo como mínimo y 10 libras de peso.
- 1 " Mazo con mango de madera dura de 34" de largo como mínimo y 15 libras de peso.
- 1 " Mazo con mango de madera dura de 34" de largo como mínimo y 20 libras de peso.
- 40 " Machete de 26" de largo, con mango plástico remachado y peso de 20 a 22 onzas.
- 9 " Machete de 18" con cubierta y mango de recina remachado.
- 9 " Lima plana para metal, grano fino, de 12 pulgadas de largo.
- 38 " Lima triangulares para metal, grano fino, de 8 pulgadas de largo.
- 4 " Lima redonda para motosierra de 5.5 mm. de diámetro y 20 cm. de largo.
- 2 " Lima de grano fino para motosierra, planas con borde redondeados de 6.3 mm.x20 cm. de largo.
- 4 " Trinche con diente de acero templado, con mango de madera dura y mango no menor de 42 pulgadas.

9	Docs.	Pala redonda de 8 pulgadas de ancho y 12 pulgadas de hoja, con mango no menor de 27 pulgadas de largo y empuñadura en forma de D.
4	"	Pala cuadrada de 27 pulgadas de largo, con hoja de acero de 7 3/8"x12", empuñadura en forma de D.
3	"	Pala de drenaje de 27 pulgadas de largo con hoja de acero de 4 3/4"x14" y empuñadura en forma de D.
6	"	Coa de 3" de hoja de acero con mínimo de 30 cm. de largo y agujero para mango de 1 3/4 a 2".
3	"	Palacoa con hoja de 5 3/8"x 9" y diámetro de 5 3/4" con mango de madera dura de no menos de 72" de largo y aproximadamente 10 libras de peso.
5	"	Azadón de 6 1/2" de ancho de hoja y 5 3/4" de alto. Hoyo para mango de 1 1/2" a 2" y peso aproximado a 5 libras.
6	"	Rastrillo de acero de 30 cm. aproximadamente, con mango de madera dura.
2	"	Pico de dos puntas con mango de madera dura, no menos de 36" de largo.
2	"	Hacha con mango de madera dura de no menos de 32" y peso aproximado de 5 libras.
2	"	Hacha con mango de madera dura de menos de 32" y peso entre 2.5 y 3 libras.
4	"	Martillo de carpintería con mango de madera dura y cabezal de 16 onzas.
1	"	Serrucho para trabajo pesado con mango de madera dura o metal y hoja de 26" de largo.
2	"	Piqueta de acero con mango no menor de 16" de madera dura, de 5 1/2" de largo de la piqueta y hoja de 4 1/2".
1	"	Arado de vertedero tiro animal largo, de corte de 25 cm., penetración de 13 cm., peso entre 17 y 25 kg. con regulador de altura.
1	"	Rastra de tiro animal con cuatro (4) discos de 12 pulgadas y limpia discos.
20	"	Bomba de fumigar manuales tipo mochila con capacidad de 4 galones y boquillas de aspersión tipo cónico. Presión de operación de 90 Psi. Cada una con sus repuestos básicos (empaques, boquillas, etc.)
2	"	Regadera manual galvanizada con capacidad de 3 galon.
2	"	Regadera manual galvanizada con capacidad de 2 galc

4. RESEARCH EQUIPMENT (EQUIPOS DE MEDICION PARA INVESTIGACION)

- 6 Medidor PH y porcentaje de humedad con electrodos que se inserten verticalmente en el suelo y que no requiera de reactivos quimicos, ni agua destilada. Que trabaje sin bateria o corriente externa, con escala para medir PH. de 3.5 a 8 y escala para medir mezcla de suelo de 0 a 100%. Peso aproximado de 3/4 de libra y 6 1/2" de largo. Con estuche y correas para colgarlos. Incluir manual de instrucciones.
- 10 Brújula "Suunto" con cuerpo de metal, con graduación en grados, estimación de 10 minutos, tabla de cotangente, compactas de aproximadamente 3"x 2"x 9"/16". Con estuche de cuero y cordón para colgar.
- 12 Brújula forestal montada en regla, graduada en pulgadas y milímetros, con compás de líquido, antiestático punto luminoso, punto de aumento y estuche de cuero con cordón para colgar.
- 6 Esteroscopio de bolsillo de precisión de 4 X de aumento, rango de ajuste entre pupilas de 55 a 75 mm., montura y patas de metal con estuche.
- 1 Tránsito de 12" de telescopio con potencia de 26X, resolución de 3", focos mínimos de 6.23", apertura de 15/16", Field de 1° sensibilidad de 137"/2 mm., arco vertical con lectura de ± 60°, graduación de 1° y Vernier de 5'. Incorporado, su estuche, plomada y tripode ajustable.
- 5 Clinómetro tipo "Suunto", con cuerpo de aluminio. Graduado en porcentaje y grados: de 0° a +90° y 0° a -90° a +150% y 0% a -15% con estuche y cordón para colgar.
- 6 Curviómetro de metal con botones para retornar el dial a cero, el dial debe estar en sistema métrico. Con estuche de cuero y cordón para colgar.
- 4 Juego de Carta "MUNSELL" colección básico de 7 hues (10R-5Y), tamaño aproximado 4.5"x7 1/2" (tamaño bolsillo con cartas suplementarias 7.5R para suelos tropicales y semi-tropicales.
- 100 Nivel de hilo de burbuja con enganches plásticos.
- 6 Cinta Métrica de metal de 30 metros de largo enrollables con estuche y graduación en pulgadas y centímetros.
- 6 Cinta Métrica de Nylon "coating" de 15 metros de largo enrollables con estuche y graduación en pulgadas y centímetros.

- 5 Cinta diamétrica, no metálica de 5 metros, en cms.
- 12 Plomadas de bronce de 12 onzas de peso y estuche.
- 1 Juego de aperos.
- 1 Molinete para medir caudales.
- 7 Mira Telescópica de aluminio con graduación en metros, centímetros y milímetros, con extensión hasta un mínimo de 3.60 metros.
- 16 Nivel tipo "abney" con estuche de cuero, con escalas separadas en grados y en % (de 0 a 90° y escala en grado de 0 a 100%)
- 6 Altimetro/Barómetro para altura hasta 5,000 metros con graduación cada 10 metros, escala barométrica de 553 a 790 mm. y escala milimetrada. Además con estuche y cordón para colgar.

5. FIELD EQUIPMENT (EQUIPOS DE EXPLORACION Y CAMPAMENTO)

- 6 Toldas de acampar de Nylon o Rayon, con capacidad para dos (2) personas, tamaño aproximado de 5' 3" X 7' 2", peso no mayor de 7 libras, color verde olivo, con mosquiteros y ventanas.
- 12 Tolda de acampar de Nylon o Rayon con capacidad para cuatro-(4) personas, tamaño aproximado de 7' 2" X 8' 9" peso no mayor de 10 libras, color verde olivo, con mosquitero y ventanas
- 5 Mochila tipo militar, impermeable y de lona por dentro.
- 40 Mochila de Nylon con porta mochila de aluminio, tamaño de 17" x 12" x 8" aproximadamente, con compartimiento principal y bolsillos laterales.
- 14 Casco de seguridad de aluminio ajustable, suspensión de 6" a 8" y visor removable.
- 32 Lámpara de cabeza para cacería con batería de 1.5 voltios, con cordón elástico o cinta ajustable y peso aproximado de 1 libra.
- 20 Linterna a prueba de agua de 4 pilas de 1.5 voltios cada una.
- 28 Linterna fluorescente de 360° con 4 baterías de 6 voltios, de plástico y resistente a impactos, dos tubos fluorescente de 6 watts, con agarradera manual, switch ajustable para la intensidad de la luz y resistente al agua.

- 15 Gafa o máscara de seguridad transparente con visor y ajuste para la cabeza.
- 46 Cantimplora plástica con estuche y correas, capacidad de un (1) litro.
- 28 Par de guantes de cuero reforzados.
- 15 Lámpara de gas, con agarradera, con regulador de iluminación, con mecha intercambiable (incluir una doc. de repuestos por lámpara) con tanque de gas STANDARD.
- 5 Mosquitero tipo militar, para dormir.
- 12 Equipo completo de primeros auxilios tipo maletín.
- 10 Impermeable o capotes grandes.
- 6 Binocular de 7x35 mm. con estuche protector y correa para cargarlo.
- 6 Binocular de 7x50 mm. con estuche protector y correa para cargarlo.
- 7 Bote de aluminio de 18' de largo con fondo plano y sus respectivos remolques.
- 25 Salvavidas de foam, tipo chaleco, con cubierta de plástico, color naranja, tamaño # 40.
- 14 Bolsa para dormir tropicalizada, tamaño 33"x 75", de Nylon con zipper de aluminio, lavable a máquina y peso aproximado de 4 libras.

6. MAINTENANCE TOOLS (EQUIPOS Y HERRAMIENTAS VARIAS)

- 3 Extensión eléctrica de 75 pies, monofásicas.
- 10 Alicates grande de 7" de mango aproximadamente. Con mango protegido contra descargas eléctricas.
- 36 Esmeril manual, ajustable a banco de madera de 3" aproximadamente, con manija de metal y piedra de amolar de 4".
- 2 Porta Segueta de metal.
- 1 Juego de herramienta mecánicas de 1/4" hasta 1"
- 6 Cuchilla para Rauter de 1/4" hasta 3/4".
- 10 Barreno para muestra de suelo tipo cuchilla, con diámetro de corte de 2" y mango no menor de 32" de largo.

- 8 Barreno para muestra de suelo con espiral y diámetro de 1.5", con mango no menor de 32" de largo.
- 2 Sizalla o cortador utilitario para corte de metales suaves de 12" de largo y peso aproximado de 3 libras.
- 1 Barbiquí metálico para brocas de madera.
- 2 Barretas o pata de cabra de acero de 5 pies de largo y 3/4" de grueso.
- 10 Rollo de malla tupida para protección de plantas y hortalizas contra el sol y aguaceros. Con un porcentaje de protección de 80% de sombra, en rollos no menor de 50 metros de largo y 2.4 de ancho, tratado químicamente para larga duración a la interperie.
- 12 Rollo de polietileno negro de 1.5 mts. de ancho, 100 yardas de largo y 0.01 mm. de grueso.
- 26 Rollo de alambre de ciclón de 6 pies de altura.
- 11 Rollo de alambre de púas de 300 metros.
- 100 Libra de alambre #20 para formaletas.
- 82 Libra de cuerdas de Nylon de 1/8" de diámetro.
- 60 Libra de Cuerda de Nylon de 3/16" de diámetro.
- 600 Pie de sogas de Nylon de 1/2" de diámetro.
- 50 Libra de grapas para cercas de 5/8".
- 10 Manguera de jardinería de 50' de largo con rosca Standard y de 1" de diámetro.
- 16 Termo plástico con capacidad de 5 galones
- 8 Termo plástico con capacidad de 1 galón.

7. COMMUNICATIONS EQUIPMENT (EQUIPOS Y ACCESORIOS DE COMUNICACION)

- 2 Estación Repetidora: de 65 vatios de potencia, totalmente transistorizada, con fuente de alimentación de 115 vatios AC y 12.5 Dc. (Incluye antenas, cable coaxial, conectores, plomadas, etc.)
- 3 Estación Base de 30 vatios de potencia, totalmente transistorizada, con capacidad de cuatro (4) canales y tres (3) canales operativos, micrófonos, bocina integrada y fuente de alimentación de 115 vatios AC y 126 voltios DC.

- 10 Radio portátil con 5 vatios de potencia, transitorizados, con capacidad de cuatro (4) canales operativos. Estuche de cuero reforzado, antena flexible y batería recargable de níquel-cadmio de 700 MAH. con sus cargadores de batería de carga rápida.
- 20 Tramo de torre de acero galvanizado de 10'.
- 10 Varilla de tierra
- 240 Alambre N°6 Franded.
- 260' Cable de 2 conductores, calibre N° 12
- 4 Antenas omnidireccional de 5 DB y 9 DB con un ancho de banda de 3 MHz.
- 8 Igsiales para estación base #P8126 (116180P22)
- 8 Igsiales para estación base #MC14028B (CL8119)
- 8 Igsiales para estación base #MC141638 (CPRQ8125)
- 24 Block para estación base
- 10 Cable de ignición para estación base
- 24 Diodo para estación base T/M #4340P₂ (8137)
- 10 Cordón para microfono-estación base.
- 10 Baterías para radio tipo maletín.
- 12 Diodo para radio tipo maletín #4340P₁ (B-23x119)
- 24 Resistencia para radio tipo maletín
- 12 Transformador para cargador tipo maletín
- 12 Resistencia para cargador tipo maletín.
- 8 Diodo para cargador tipo maletín #4340P₂ (8137)
- 60 Fusible de 25 amperio para cargador tipo maletín
- 20 Batería para radio portátil (Walkie-Talkie)
- 10 Cristal para radio portátil (Walkie-Talkie)
- 15 Diodo para radio portátil (Walkie-Talkie) #3440 P₁ (B-23x119)
- 120 Fusible para cargador radio portátil-(Walkie-Talkie)
- 1 Rollo de 1600' de cable coaxial RG-8 de alta calidad y blindaje bien tapado
- 6 Anclaje CFAW P-25
- 24 Conector tipo N para usar con cable coaxial RG-8 (hembra y macho)
- 250' Islián para transmisión y recepción
- 1 Pistola de soldar
- 1 Juego de destornilladores completo

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- 1 Alicata mediano
- 1 Una llave de presión mediana
- 1 Rollo de soldadura
- 48 Resistencia para estación base
- 1 Voltímetro - Amperímetro - Ohmímetro de 120 voltios y en escala de 2 y 6 watts.
Juego de llaves abiertas y cerradas de 1/8" hasta 1/2"
- 1 Pinza de presión mediana
- 1 Llave pico de loro
- 1 Juego de Racher chico
- 1 Nivel de construcción chico
- 1 Cuchilla mediana
- 1 Juego de cortador
- 1 Wattmeter, diodos de 100 a 200 MHz de 5 W, 25 W y 100 W y diodos de 200 a 400 MHz - de 25 W y 50 W.

8. AGRICULTURAL CHEMICALS (AGROQUIMICOS)

- 60 Diazinón: Litros de concentrado emulcificable al 57.8% o de 600 gramos por litro, en envase de 5 litros.
- 25 Delta-Metrina: Litros de concentrado emulcificable al 25% en envase de un litro.
- 5 Bentazone: Galones de concentrado emulcificable con con 4 libras de materia activa por galón.
- 2.5 Glifosfato: Galones de concentrado emulcificable al 41% en envase de 2.5 galones.
- 100 12-24-12: Quintales de mezcla física sin relleno, en

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- envase de poliuretano con propileno, en envase de 100 libras.
- 80 Urea: Quintales al 46% granulada revestida con formaldehído en sacos de 100 libras de poliuretano con propileno.
- 80 Abono Foliar: Kilogramos de 20-20-20 con elementos menores en envase de 5 libras.
- 95 Dasomet: Kilogramos de polvo mojable al 85% en envase de 25 kilogramos.
- 50 Meta-Sodium: Litros de concentrado emulcificable al 33% en envase de 1 litro.
- 150 Oxicloruro de Cobre: Kilogramos de polvo mojable al 85% en envase de 1 kilogramo.
- 40 Chlorocholonil: Kilos de polvo mojable al 75% o 500 gramos por litro en envase no mayor de 5 kilos.
- 60 Benomyl: Kilogramos de polvo mojable al 50% en envase de 1 kilogramo.
- 32 Bioagro: Litros de concentrado emulcificable al 5% de ácido fólico en envase de 1 litro.
- 15 Penetrante-Achterente-Dispensante: Galones a base de éteres polioxietilados y resinas especiales en estado líquido, en envase de un galón.

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ANNEX III. PROJECT ANALYSES

- A. Institutional Analysis
- B. Technical Analysis
- C. Social Soundness Analysis
- D. Financial Analysis
- E. Economic Analysis

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INSTITUTIONAL ANALYSIS

A. Introduction

The Project purpose is to improve conservation and use of the soils, water and forest resources of Panama in the public and the private sectors. Public sector activities will be implemented by RENARE as the principal agency of government with the mandate and capabilities to manage natural resources for multiple-use purposes. The private sector component, plantation forestry for industrial raw material supply, will require the promotion and development of new institutions through the Project.

During Project design, an analysis of the current status of RENARE operations and institutional authority led to the conclusion that it could not effectively implement the public sector components without: (1) technical and operational autonomy to plan and implement its field activities; (2) an increase in organizational hierarchy and authority to promote inter-ministry cooperation and collaboration; and (3) a firm basis of operational financing to permit effective planning and operational continuity. USAID determined that proposed legislation to establish RENARE as a semi-autonomous institute, under review in the Ministry of Agriculture, would satisfy these requirements and decided to require enactment of this legislation prior to signing a Project Agreement. The Minister of MIDA, and others in government, have agreed that semi-autonomy is appropriate for RENARE at this time, and believe that the proposed legislation will have political support. The law is scheduled to be submitted to the legislation at its next session in April 1986.

This institutional analysis examines: the present status of RENARE; the organizational changes required; and the private sector institutional development required for effective Project implementation.

B. RENARE Organizational Profile

1. Authority

MIDA was established by Law 12 (23/1/72) "to promote the socio-political and economic improvement of people and rural communities, and their integration into national life, and to define and execute policies, plans, and programs in the agricultural sector." This same law created RENARE as a General Directorate of MIDA "to exercise the functions of inventory, management and conservation of renewable natural resources." The functional manual of MIDA, issued in February 1984 (Resuelto No. ACP-08-ADM), redefined the mission and responsibilities of the directorates of MIDA. The objectives of the ministry were established as: (1) employment generation; (2) reducing the cost of the basic food "market basket" through increased productivity and efficiency; and (3) export promotion. These priorities ignore the issues of natural resources conservation and development.

The functional manual assigned to the ten Regional Executive Directorates of MIDA authority for the implementation of all MIDA activities and personnel including the conservation functions of RENARE. The Regional objectives of MIDA are: raising agricultural production and farm productivity, and placed in charge of all programs, activities and personnel of MIDA in

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their respective regions. RENARE, as a National Directorate within MIDA, was assigned authority to establish technical norms in its area of competence, but with implementation responsibilities for only two activities, the agrometeorology program and the specific USAID Watershed Management Project.

It is apparent that the conservation mission of RENARE is different from the program priorities of MIDA. In practice they may be in direct conflict to the extent that MIDA aims to "open the frontiers" to agriculture and grazing, while RENARE has the responsibility for conserving the natural environment and maintaining the forest cover and watersheds of the country.

2. Mandates

RENARE has legal responsibility for watershed management through existing legislation for water (Law 35, 22 September 1966) and for lands and forests (Law 39, 29 September 1966). Articles implying RENARE's authority for water resource management also appear in the law that created MIDA (Law 12, 25 January 1973). These laws are obsolete or deficient in many respects. Important issues such as water quality standards, reflecting the growing concern with the presence of agricultural chemicals in water (pesticides and fertilizers), suspended solids, silt and other contaminants, are not included in the legislation. Nor are there standards for assessment of the environmental impacts of development projects- urbanization, road construction, mining concessions and other land uses. In the existing forest laws the schedule of fines for infractions bear no relation to the damages or values involved, and many issues such as supporting private reforestation programs are inadequate.

RENARE has established an ambitious program to revise and update the legislation of soils and water, national parks and wildlife. Revisions of the forest law are already underway with a series of public workshops and inter-agency meetings to examine proposed changes. Once these laws are enacted implementing regulations will be written to provide the criteria and standards to carry out the legislation.

3. Linkages

It is widely recognized that the conservation of natural resources require the collaboration of many agencies of government, and the participation and support of the private sector and the general public. Thus far RENARE has not been effective in developing the linkages between these groups. Currently the programs of RENARE are affected by the actions of other agencies of MIDA and the GOP, and there is little inter-agency coordination or cooperation. For example, use permits of the Agrarian Reform Directorate are often issued without reference to, or consultation with, natural resources management plans. Mining and petroleum exploration concessions are granted by two different agencies without consideration of environmental impacts, and roads and mini-hydro projects are constructed by other government agencies without environmental considerations. The Maritime Resources Directorate of the Ministry of Industry and Commerce approves shrimp pond permits without regard to mangrove forest impacts.

The proposed new law to establish RENARE as an institute proposes the mechanism of inter-agency consultative committees on specific natural resource topics, and names RENARE as the technical secretariat of these committees. This will strengthen the agency in its efforts to build enabling linkages and procedures for inter-agency cooperation and collaboration. RENARE has recently been successful in promoting collaboration among agencies through the formation of a working group of technicians from several agencies in a study group on the issues of water quality. This group is expected to prepare new legislation that have the support of IDAAN, IRHE, and other ministries as well as RENARE. This work can lead to reactivating a moribund National Council on Water Resources.

In the past, without the implementation authority and the means for action RENARE has not been able to provide a service to the public. Beyond growing tree seedlings for distribution and sale its principal function has been that of control. The routine activities of issuing water and forest concessions, permits to export animals and limited policing functions do not develop a clientele for the services of the agency that develop public support. Similarly without a "product" RENARE has not been effective in developing the linkages with other agencies that would enable it to utilize its personnel more effectively and to establish a stronger national presence.

4. Programs

RENARE has management authority over specific projects and agrometeorology. Otherwise its role is "technical normative" technical advisory to the staff of the Regional Offices of MIDA. In theory the RENARE staff located in the Regional Offices carry out the responsibilities of the agency in coordination with the other MIDA regional staff. In practice they receive low priority for their natural resource protection/management functions in the regional offices which are different (and sometimes opposed) to the goals of opening new agricultural areas and increasing the intensity of crop production. This staff is administratively under the direction of the MIDA Regional Coordinator and must adapt RENARE technical instructions and strategy to the Regional operations. With a few exceptions RENARE regional personnel are underutilized.

The headquarters technical staff of RENARE is responsible for the maintenance of technical standards in natural resource use, and the granting timber and water use concessions, and permits to export animals and other control functions. Due to the lack of transportation these activities are largely an administrative procedure, as the means for field inspections and systematic testing or inventories was lacking. In the case of timber concessions the person requesting a concession is required to finance the forest inventory by the Forest Service. The result is that the agency is "reactive" to a timber concession request rather than actively promoting timber sales in accordance with a forest development and utilization plan, and unable to effectively supervise a concession once it is granted.

The only field operations of RENARE managed by the agency are the "investment projects" supported by external assistance and funding. At present (August 1985) these consist of the USAID supported Watershed Management Project with staff in the Panama Canal, La Villa and Caldera, an FAO supported reforestation Project (HASIEC) in Western Panamá. These

projects are area specific and therefore limit the ability of RENARE to establish a physical presence in the field to actively manage resources.

5. Institutional Resources

a. Finances

RENARE executes two budgets: an Operational Budget for permanent staff salaries and fixed expenses, and an Investment Budget for the counterpart costs of externally funded projects. As illustrated below, the Operational Budget has been stable over the last several years, and growth has occurred in the Investment Budget. However, about 85% of the Operations Budget and 75% of the Investment Budget represents the personnel salary costs. During periods of financial austerity reductions in allotments while maintaining staff salaries result in a significant reduction in operating funds. This has led to the underutilization of the staff since there is no financing for field expenses, supplies and fuel. Under these conditions vehicle repair and facilities maintenance is delayed. In times of crisis or special problems essential funds are doled out by MIDA, but in general there is no financial planning of funding continuity for effective operations.

TABLE I: RENARE BUDGETARY TRENDS
 (B/. 1,000)

	<u>Budget Expenditures</u>		<u>Approved</u>	<u>Approved</u>
	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
<u>Approved Budgets</u>	<u>3,000</u>	<u>4,134</u>	<u>4,051</u>	<u>4,112</u>
<u>Budget Implemented</u>				
Operations	1,478	1,312	1,289	1,562
Investments	<u>1,273</u>	<u>2,067</u>	<u>2,573</u>	<u>2,550</u>
Total Executed	2,751	3,379	3,862	-
Unfinanced Budget	249	755	189	-
% of Approved	8.3	18.3	5.6	-

RENARE receives additional income from the collection of fines, fees, rents and the sale of seedlings and services. Although in some cases the funds are diverted to other activities by the regional offices of MIDA, this income has exceeded B/.12,000 per month. Lack of budget financing has often caused these funds to be used for fuel and essential supplies at headquarters rather than for field operations as intended.

b. Personnel

A major contribution of the Watershed Management Project was to increase significantly the quantity and quality of the technical staff of RENARE. Staffing levels are presently near 850. However, many of these employees are in the central offices near Panama City, and only a limited proportion are experienced in field operations. Few have received in-service

and advanced training that they would be able to apply on the job. In general there are few job descriptions (mostly prepared by consultants for individual tasks) and no personnel management system. Since appointments to the staff and firings are often made outside of RENARE, and some people on the payroll are never seen (other agencies) it is difficult for RENARE to provide complete personnel statistics. Training planning is difficult under these circumstances.

RENARE listed 842 staff members (April 1985) which were categorized and assigned as follows:

TABLE II: Personnel Structure Summary

	Central Level	Regional Level	Study Leave	Support to Other Institutions	Total
Professionals	54	44	10	6	114
Administrative	82	45		12	139
Technicians	53	167	4	6	230
Forest Guards		83	1	1	85
Manual Laborers	<u>24</u>	<u>240</u>		<u>10</u>	<u>274</u>
TOTAL	213	579	15	35	842

Resource: MIDA/RENARE: Personnel Office

The field staff includes 181 assigned to the Regional Offices of MIDA, 268 to the Watershed Management Project, and 105 to the HASIEC Project. The staff is relatively inexperienced, 397 have less than 5 years service.

The majority of the staff, over 700, is financed by the Investment Budget and are contracted annually to work on projects. There is little job security for this personnel, and government proposals to reduce expenditures by cutting contracts have kept this staff in a state of uncertainty. Contracts are frequently extended on a monthly basis and arrearages in pay are frequent. In the past year there were delays in bi-weekly paychecks of up to a month, and the "thirteenth" month payment was delayed until March. When the RENARE staff went on strike to rectify the situation it was found that payment instruction in MIDA had been prepared and approved by MIDA, but was lost in the Minister's office and never sent to the Treasury. As the contracted staff consists of the young technically trained personnel used for projects, the non-renewal of these contracts would severely reduce the capability of RENARE. With few other opportunities for employment the staff of RENARE has a low turnover rate.

c. Facilities

RENARE's headquarters have changed three times since its establishment in 1973. It is now temporarily located in a large school building in Paraiso near Panama City. The buildings are the property of the Ministry of Education and are required to expand the school. The Ministry has repeatedly requested that RENARE vacate these premises. So far no alternative location for RENARE has been found.

While this present location is adequate in area, and has vehicle and wood working shop facilities, the location is too distant for the majority of the staff of RENARE. In addition people having business with RENARE find it inconvenient to make the trip to RENARE. To be effective in providing services a convenient permanent headquarters building must be found to house the various departments, laboratories, equipment, and maintenance facilities.

6. Organizational Structure

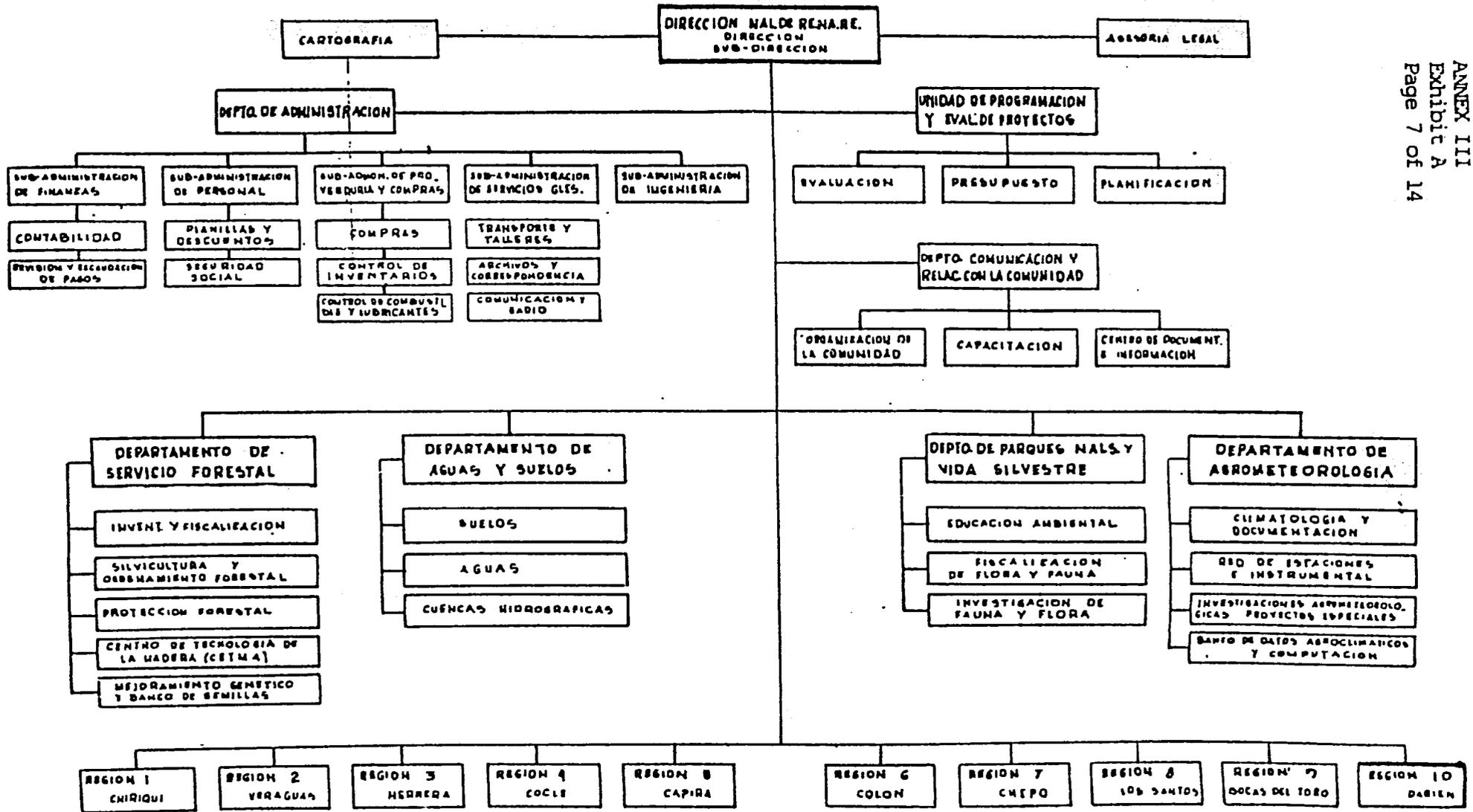
The following chart presents the nominal organizational structure of RENARE (April 1985). Not portrayed are the independent projects- Watershed Management and HASIEC-of RENARE which report to the Office of the Director. The chart bears little relationship to program activities or the operational responsibility of the agency, and some of the sections are non-functional or unstaffed. There is no organizational manual or description of unit functions that is generally accepted for the agency, although consultants have prepared them for two of the departments on different occasions.

This fragmented structure is not suited to RENARE's new role as an implementing agency, nor is it conducive to effective management of field operations and to intra-agency coordination. As a general rule a technical agency should have a span of control of three to five subdivisions, depending on the need for coordination, uniqueness of functions and the complexity of the assignments. The RENARE coordinators in the 10 regions, the chiefs of the six departments, three project leaders, and three units (a total of 22 units) report directly to the Director's Office.

7. Management

a. Continuity

There have been four directors of RENARE in the last three years. The Minister of MIDA has been changed even more frequently. Only one director had professional training in natural resources - a Phd in Forest economics - but little management or administrative experience. The new director, appointed Jan 20th, is an officer in the Panamanian Defense Force as was his immediate predecessor. The rationale for their appointments is the management experience and leadership qualities of these individuals, and the need for close coordination with the law enforcement aspects of natural resource protection. However, their assignments to RENARE can probably be considered temporary.



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The Deputy Director of RENARE has also rotated four times in the last three years. The individuals appointed have been career natural resources professionals of the agency. This has given some continuity to the leadership of RENARE by individuals familiar with operational problems.

b. Leadership

These frequent changes in the leadership of RENARE have not allowed management experience and capability to develop. This is compounded by the nature of the "technical normative" role of RENARE, as advisory to the executive agencies of MIDA. As a result the time of the leadership of the agency is spent on problem solving (crisis resolution), and there is little scope for the planning, organization and directing functions of management. While attempts to have regular senior staff meetings have been tried, they are generally postponed because of the absence of key individuals at MIDA or on some crisis management.

Leadership experience is stronger at the departmental level of RENARE where there has been less turn-over in the last three years. The chiefs of the departments of Soils and Water, the Forest Service, and Parks and Wildlife all have professional training at the Master's level (from CATIE), and have demonstrated their ability to manage the activities of subordinates. This experience is limited in scope as the activities of RENARE, with the exception of the Watershed Management Project, have not significantly evolved over the last few years. In effect there has been one year of experience repeated five times.

8. Training and Technical Assistance

Through the Watershed Management Project and other activities financed by USAID, and the programs of national and international agencies, there has been a substantial amount of short-term training provided to RENARE staff, largely through CATIE and IICA. It is interesting to note that most of the Forest Engineers received their professional education in Brazil, and they look to that country or Mexico as well as CATIE for advanced education. Other USAID international training courses have been offered to RENARE, but a limiting factor is that only four or five of the RENARE staff are competent in English or French. Therefore the number that can participate in international courses is limited.

This training can be characterized as supporting professional development of individuals rather than providing basic skills that can be applied on the job. Given the past advisory, non-operational role of RENARE it has been difficult to develop a sound training plan that would develop skills that would be applied on the job. The restructuring of RENARE for field operations, with the preparation of job descriptions for specific work assignments, will permit the assessment of skills required for effectiveness. Such training should be linked to technical assistance to be effective.

RENARE has received technical assistance through the Watershed Management Project over the last five years, as well as FAO and IICA technical assistance. The governments of France and Japan have also had missions on soil conservation and forest inventory. However, this technical assistance has been limited in its impact on the agency. Many of the missions have had the limited objective of problem study or investigation of specific issues. RENARE staff has been named as counterparts to this work, but often this is limited to acting as guides and data gatherers rather than developing competence in analysis. This type of assistance is not a substitute for skills training and professional experience, and the RENARE personnel have not had the program resources nor the support to follow through on the recommendations.

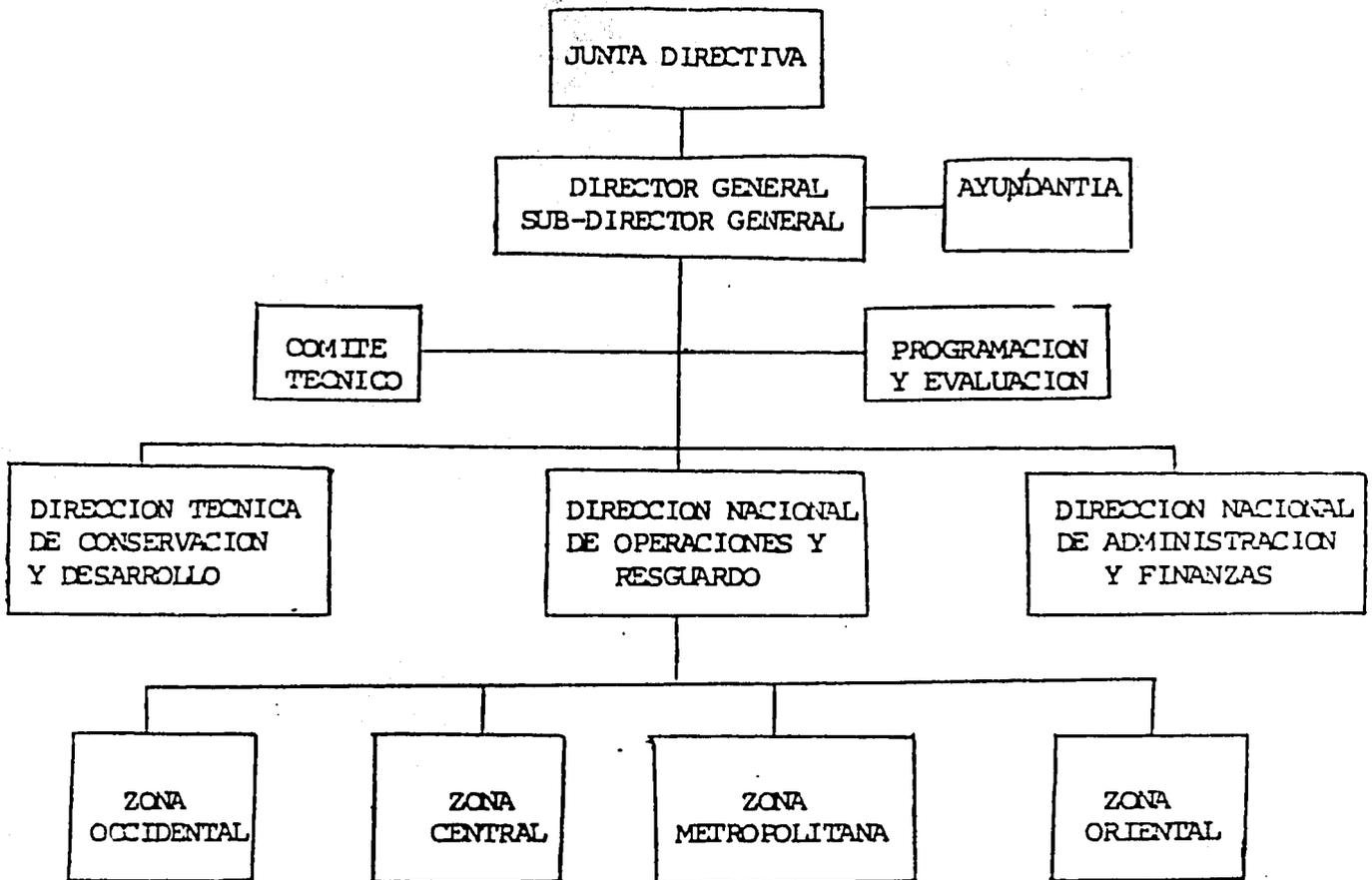
In those instances where technical assistance technicians have worked alongside RENARE in the field, notably in the Parks planning component of the Watershed Management Project, and the two year assignment of junior FAO foresters in the field, there has been a transfer of technology to counterparts. This experience was reflected in Project Design which provides short term consultants to support the work of longer term experts that will implement recommendations and provide a continuity of effort. The technical assistance will be linked to the training experiential at the applied skills level by the Project.

B. Organizational Development of RENARE

Prior to the implementation of the Natural Resources Management Project a law will be passed that will establish RENARE as an autonomous Institute within the Government of Panama. While the draft law in consideration (March 1986) may be modified during the legislative process, it does contain at this time the essential elements necessary to strengthen natural resources management in the public sector. The new institute will be recognized as the lead agency of government in renewable natural resources and environmental conservation, with a significant increase in authority and broader responsibilities. The field implementation responsibility of RENARE is a key change from the former largely advisory functions of the agency. The draft law also specifically authorizes the institute to receive income from the sale of public timbers and other use permits granted on public lands.

In anticipation of the law that will establish the Institute RENARE has prepared a draft manual of functions and organization. The new structure that is planned is illustrated in the following organizational diagram. This structure will reduce the number of offices reporting to the Director to six, three implementing directorates and three staff units, substantially reducing the span of control of management. It is planned to adopt a matrix system of management, concentrating field implementation responsibilities in four geographic zones that cover the entire country. Zone chiefs will be responsible for execution of all activities within their geographic areas, and for the coordination of protection activities with the management and development of specific watersheds, parks and forest reserves. The technical departments of Water and Soils, National Parks and Wildlife, and the Forest Service, will be responsible for the technical content and

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programming of the activities to be implemented in each zone, and for verification that operations are executed as planned.

To assist RENARE in the process of organizational development a management advisor will be provided by USAID for the initial two years of the Project. It is planned that this technical assistance will support the efforts of RENARE to organize operations in the geographic zones, to reassign personnel to field activities, and to develop the management and administrative systems and procedures required for effective field operations. This assistance is designed to establish the essential management and administrative systems in RENARE which that will enable the advisory services, training and material resources provided by the Natural Resources Management Project to be effective.

The Mission and the Government of Panama recognize that establishment of RENARE as a semi-autonomous institute will not of itself strengthen the operational capability of that agency. However, it does remove some of the structural impediments to effectiveness in natural resources management resulting from past MIDA policy and administrative practices. To be effective as an Institute the agency must make the change to an implementation agency with national responsibilities. This will require decisions on priorities and organization within the agency, the reassignment and training of personnel, and a plan for organizational development. Preliminary work has begun on these matters.

C. Private Sector Institutional Issues

Project design reflects USAID strategy of promoting private sector participation and investment in natural resources conservation and management. The Project will promote reforestation in Panama through the mobilization of private investment in industrial plantation forestry. Technical assistance and training to landholders in the establishment and management of forest plantations, and a line of credit for reforestation investments.

The technical assistance and training of the Project will initially work through local agricultural associations and organizations of ranchers and farmers such as the rice growers of Penonome. Where appropriate the formation of local reforestation associations will be promoted to make more effective use of technical assistance and training. The Project will provide assistance in the organization of these associations which will be self-administered and financed by the members.

1. National Reforestation Association

At the national level technical assistance will support the recently organized "Asociación de Reforestadores y Afines de Panama" (ANRAP). This association was formed with USAID encouragement by representatives of the forest industries and landowners who have planted trees. Its objectives are to:

- a. Promote the private landowner planting of trees on a commercial scale for industrial wood supply purposes;

b. Share experience and information among members on: the selection of tree species for planting, the appropriate silvicultural practices in plantation management, and the identification of markets for intermediate and final wood products.

c. Publicize the importance of the planting of trees, and the protection of these forest investments against fire, for the social and economic benefit of the country.

d. Represent landowners interests in the formulation of governmental policies, programs and fiscal incentives that will promote private sector investment in reforestation.

The association will also support and assist government and private programs in small land holder and communal forestry programs as well as the conservation movement in general. The initiatives of the private plantation program will enhance the importance to the public agencies such as RENARE working in forestry and conservation.

The organizational development program of ANRAP for the next year will concentrate on: building membership, generating income through member dues, formation of working groups on technical issues, legislation and publicity, and the development of an educational and technical public relations campaign. The Project will provide advisory assistance in the development of this organization.

2. Regional Reforestation Associations

With Project assistance ANRAP will promote the formation of provincial chapters and local cooperatives among landowners. The members of these groups can make their reforestation investments more efficient and cost effective if they can cooperate in the joint purchasing of planting stock and other inputs, and in contracting planting, management, harvesting and marketing.

At the operational level the local association will initially focus on assisting members in the development of their individual plantation programs - including obtaining professional counsel on the preparation of reforestation plans, loan applications, contracting or supervising the planting program, and on the tax and fiscal incentive facilities available. These services would be paid for by the individual receiving the service. The second priority would be organizing cooperation among members on fire control and forest protection services. This work should also include local public education program on the importance (and costs) of reforestation, and the support of local small farmer and communal forestry efforts. A third step would be cooperation on market identification and the sale of intermediate and final wood products from the plantation.

4. Reforestation Lending Program

The Project will support the establishment of a National Reforestation Fund (Fondo Nacional de Reforestación - FONARE) which will

provide long-term lending to private individuals and companies that plant trees with industrial timber supply objectives. FONARE will be established as a trust fund, under Panamanian law, by the Government of Panama in consultation with USAID. To advise the Government of Panama and USAID on the initial terms of the trust, and to periodically review progress and determine if policy changes are required, the two parties may form an ad hoc Advisory Board composed of representatives of the private banking sector, private reforestation associations, the forest industries and the Director of RENARE.

FONARE will be administered by a financial institution, experienced in trust management and lending, selected by the Government of Panama and USAID. Project loan funds of up to \$6,500,000 will be provided to FONARE as the demand for reforestation loans is generated. Participating commercial banks will lend the funds of FONARE to individual investors, in accordance with their normal credit procedures. The banks will have full responsibility for lending decisions: determining the credit worthiness of the borrowers, the technical feasibility of the proposed investment, and for conformance with the policies and objectives for which the Trust was established.

5. Governmental Support

Plantation forestry on an industrial scale can be best accomplished through the investment of private companies and medium and large landowners. The Government of Panama can create a favorable climate for these investments by adopting policies and fiscal incentives that extend to tree farming the same benefits offered to agriculture. In addition the enforcement of existing and new legislation to protect landowners from uncontrolled fires and trespass.

RENARE will have direct responsibility for seeing that government policies assist the private sector in plantation establishment and management. These actions will include identifying the legal and administrative constraints to private forestry development, and realizing to government the changes in policies and programs that will reduce the risks, costs and uncertainties of forest investment. Specific actions of RENARE that can promote plantation forestry are:

- o Continuing research in the identification of quick growing valuable tree species and the silvicultural practices needed to produce high quality timber products for the different ecological zones of Panama;
- o Dissemination of the results of the research efforts to the public through field days at demonstration areas of successful plantations, publication of instructional materials, and the promotion of tree planting in general;
- o Training of landowners and their workers in the techniques of plant nursery management, land preparation and planting, and in the silvicultural practices that have been found to enhance the growth and quality of the trees in the plantation;

- o Education of the public on the importance of private forestry to the social and economic benefit of the country, and the responsibility of all to prevent fire on both public and private lands.

- o Strengthening procedures for the issuance of fire permits and overseeing the subsequent burning to reduce the hazard to established forests and new plantations; organization and training of local fire control crews of public employees, the military and private individuals.

It must be recognized at the highest political levels that the execution of national policies and programs to stimulate private forestry is the responsibility of all government agencies, and is not restricted to RENARE. All agencies of state and local government must support the achievement of national goals and policies in the forestry sector.

Document 2799n

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TECHNICAL ANALYSIS

The objective of this analysis is to examine whether it is possible to implement the project in the form proposed and whether the methods are technically the most suitable and cost effective. Project design was examined to determine: (1) if proposed activities address the natural resource problem that was identified; (2) if the most suitable and cost effective technical alternatives were selected; and (3) if planned activities are technically feasible at this time in Panama. The linkages among the technical components of the Project and the institutional and social issues were also analyzed.

1. Watershed Management and Soil Conservation

The watershed management component is an expansion of the activities carried out under the current project. The challenge is not so much to develop the techniques but rather to spread their acceptance by the inhabitants of the watersheds. A large watershed cannot be managed by one entity. Proper management requires many public and private institutions working in concert. At present RENARE is the most appropriate institution for determining a strategy, implementing selected activities directly and influencing other institutions to participate in a long-term effort of improving land use.

The limits of RENARE's mandate is especially apparent in relation to improving the agricultural practices of farmers within the watersheds. No one will deny that to increase yields and improve soil conservation are essential to the achievement of appropriate land use. However, for soil conservation to be continued and expanded it must become part of farming practices. The past project as well as many others elsewhere in tropical America have demonstrated that soil conservation cannot be successfully implemented in isolation from agricultural extension. This implies that institutions with an agricultural orientation such as SENEAGRO and IDIAP must assume this role. To create a capacity for agricultural extension inside RENARE, a natural resource agency, would be duplication of functions. No doubt, encouragement of these agencies and others to collaborate inside the watersheds will demand skill and patience on the part of project management as well as leverage from the project.

Plans for management of the Canal, La Villa and Caldera watersheds have already been prepared under the past project. Although updating and improving such plans is a continuous process, the urgent need is to translate these general plans into detailed operational plans. This is best accomplished by those individuals in the Water and Soils Department (DAS) who

have direct field experience in the watershed and who will be involved in implementation. The creation of separate watershed planning entities is to be avoided, since experience shows their products to be impractical and seldom implemented.

Although soil and hydrologic information is needed for planning watershed management, this type of data is so fundamental that its collection is justified for innumerable other purposes ranging from the design of bridges to the planning of land improvement measures. RENARE is the only agency with a mandate to collect and process this kind of data on a national scale. Setting up management of such data bases in CAP/P is one of the objectives of the ROCAP/CATIE Regional Tropical Watershed Management Project and consequently it is expected to provide considerable guidance.

The introduction of stoloniferous grasses and their management has been one of the more successful innovations of the past project. However, this technology requires more documentation, especially on its financial aspects including incentive mechanisms, before it can be expanded on a massive scale. It is an intensive technique, requiring large investments, which is limited to good sites.

Those sites which are too steep or otherwise inappropriate for intensive uses will be candidates for reforestation or recovery of the natural vegetation. The brush that sprouts on previously bare hillsides after only a few months protection against grazing and fire is an excellent watershed cover, and by far the least expensive. Unfortunately it is often not respected by local inhabitants who consider such land as being available for clearing. Intensive, local campaigns will be needed to convince inhabitants to conserve this vegetation both on private and public land. This education must be judiciously combined with fire control, patrolling and enforcement of regulations. For the latter, the present legal framework is inadequate.

2. National Parks and Wildlands Management

The national parks and wildlands component (just as the natural forest management) has the sound strategy of "containment" followed by planned appropriate use. For many of the reserves especially those in the Canal watershed, the production of clean streamflow, well distributed throughout the year is one of the most valuable uses. Successful wildlands programs in many countries, including the U.S. and Costa Rica, have demonstrated that wise use is the best assurance of conservation. Simply protecting land by "locking up" large blocks would invariably cause pressures that could not be resisted. However, because of the fragile nature of the environments, the uses that are to be allowed must be very carefully planned and documented in management plans for each of the parks or reserves. The techniques of this kind of planning are well established in Latin America after having received support from FAO, CATIE, IUCN and other agencies for more than two decades. In Panama such management plans have already been prepared for the National Soberanía, Campana, and Volcán, Barú. Much of this kind of planning can be done by

short-term expatriate assistance. The real challenge of course will be implementation of these management plans, especially those under severe pressure of encroachment such as the Alto Chagres, and National Park. This is a job which not only requires guards, jeeps and field stations which are provided for in the project, but also an articulate team of technicians and managers who are able to influence policy and reach the public. Such leaders are not simply budgeted or routinely trained in this type of project, but the project can create an environment in which they have the opportunity to develop and can give them support. In this endeavor support is also expected from environmental groups that are becoming increasingly better organized and more vociferous, such as the National Commission on the Environment (CONAMA) and the Natural Resources Education Project (WWF/Fundación Panamá), the latter with AID support.

There is little doubt that with technical assistance the project will be able to draft realistic legislation for creation of additional reserves and to strengthen their management. Although the project can influence the process, passage of this legislation and its final form are largely outside of its control. Delays or weak laws could restrict progress of this component. Here again, the project will have to mobilize environmental institutions and public interest. If the new reserves proposed by the project are legally decreed, there is some risk that resources and trained personnel will be spread too thinly to manage or even protect them properly. After passage of legislation adjustments in the categories of some of the wildland areas (i.e. La Campana) might be advisable to reflect their current status more realistically.

The reserves cannot be protected only with guards, nor without them. The project correctly proposes a combination of police type vigilance by specialized guards and the development of good community relations. The details of how the neighboring communities are to be encouraged to respect the reserves remain to be worked out during project operations. One way is to hire local people whenever possible, rather than bring personnel from outside. The balance between strict respect for authority and collaboration with the local inhabitants is a delicate one requiring great sensitivity on part of the field staff. Especially difficult will be the relocation of squatters. Even though they do not have title to the land, social pressures are likely to require compensation for their perceived users rights and such funds will have to be found outside the project.

No major problems are foreseen in obtaining adequate technical assistance and organizing training. Sources are CATIE, the U.S. Parks Service, IUCN, WWF, several U.S. universities and consulting firms. Centrally funded AID/ST efforts such as the Environmental Management Project and the Fragile Lands Project will also be able to offer technical support.

3. Natural Forest Management

Of all the components, this is the one that will require the greatest effort to adapt and develop techniques. Although the management of natural tropical forests has a history going back for more than a century especially in Asia, nowhere in Central America has it yet been applied on a large scale. Social and financial obstacles have usually constrained attempts at rational management before they were able to accumulate technical experience. Certainly enough is known to initiate the simple kind of control that is foreseen during the first few years of this project.

However, to assure regeneration of the overmature forest so that it will contain a high concentration of commercial species, systematic studies and careful monitoring of the results of interventions will be required. It is by no means suggested that RENARE establish a research department. Experience with research units in other forest services of Central America are not encouraging. Much can be learned by observation and good record keeping during normal forest management activities, and systematic means of doing so should be set up near the beginning of the project (technical files documenting interventions and quantities removed, inventories, maps, continuity of personnel). More complex studies will require outside technical assistance some of which can probably be obtained from STRI, the University of Panama, CAIIE, U.S. universities, the ten-year AID/ST Forestry and Fuelwood Research Development Project and other sources. Efforts should be made to have some of these institutions take responsibility for the needed research, possibly through direct contracts. The challenge will be for project management to delimit problems amenable to research solutions and make the necessary contacts.

Another area requiring study is utilization of species currently not used. Management of the mixed tropical forest becomes financially more attractive as a greater proportion of the species are removed. Constraints to use are often custom or lack of knowledge. These can be overcome by compiling relevant wood technology experience from other countries and using it to educate managers of forest industries, a task which can be done through RENARE's Center for Wood Technology. This Center can also encourage more aggressive marketing of inadequately known species and even contract selected industries to construct prototypes using species previously not used. However, it is not foreseen that this Center get involved in elaborate testing which requires additional equipment. Studies surpassing its capacity will be contracted out. The problem of utilizing new species is especially relevant in the El Canglon Forest. The mangroves and the orey forests of Palo Seco are dominated by only few species and are therefore easier to manage. The prospects for forest management would improve radically if the cement plant were to retrofit so as to use biomass for energy, a possibility that has been discussed and which is being implemented by a cement plant in Costa Rica.

Because management of the natural forest is a complex and new activity for RENARE, a special effort must be made to prepare detailed annual work plans during project implementation, for which it is important to have technical assistance available punctually at the very beginning. Several existing studies, especially those prepared with the help of FAO for the Darien and for the mangroves, will serve at the outset. The phasing of initiation of management in the three forests will make it easier to learn from experience. The choice of these three forest areas is appropriate because each is a large block of relatively undisturbed commercial forest and they cover a wide range of conditions. Thus experience in these areas can be extrapolated to others. Because El Canglon and Palo Seco are contiguous with existing national parks, protection of the forests and parks will complement each other.

By far the most difficult problem to be faced by forest management is enforcement of management plans and regulations. Control of a high value, dispersed resource such as timber, that is part of the public domain, will invariably face enormous pressure from corruption. Established powerful vested interests will oppose many of the restrictions that are needed to manage the forest and the fees that are to be collected. This is primarily an institutional problem. However, a judiciously designed system of control can have an important impact on decreasing the opportunity for corruption. External technical assistance will be critical near the beginning of the project to develop a system of control in the woods, at road check points and in the sawmills. Such a system must not only discourage cheating, but must be simple and fair. Inability to implement such a system could make a farce out of any attempt at management.

The forest charges suggested in this project are partly arbitrary and logging and sawmill studies will need to be done by the Forest Service to determine more precise values. Acceptance of these charges by industry will require more than just a campaign to convince. Probably hard negotiations and some trade-offs will be needed initially to get such reforms to be accepted.

4. Farm Forestry

No major technical problems are foreseen for this component since the farm forestry work is really an expansion of an approach already used successfully by the Fuelwood Project in three provinces. After three years of field operations this project had more planting requests than it was able to fill.

Demonstration plots on their own land were found to be an effective tool to motivate farmers, but only if combined with intensive, personal extension. In the early stages, frequent visits by the extension agent and his good relations with the farmer were essential to initiation of tree planting. Continuous reliance on RENARE to provide these intensive extension services is costly, and risky because of the vagaries of government budgets. To reduce costs and increase continuity extension must be turned over to the para-technicians as rapidly as possible.

Several species have consistently performed well on some of the common sites in the areas where the project will work during its first three years, namely: Eucalyptus camaldulensis, Leucaena leucocephala, Guarumo ulmifolia, Acacia magnium. All of these are readily accepted by farmers. Besides for their wood, some of these species are also appreciated for forage production, shade for crops and animals, living fence rows, soil improvement through nitrogen fixation and other uses. Nursery techniques for these species are simple and well known in Panama. Growing sufficient plants on time is not a technical but an organizational problem. In the beginning existing RENARE nurseries can fulfill the need if inputs are provided on time. However, for greater security and continuity, local self-reliance in plant production is desirable. Community nurseries will function smoothly only with well organized groups such as cooperatives. Incipient commercial forest tree nurseries are operating in Panama and are a promising alternative judging from their experience and from that in Costa Rica and other countries. So far their expansion has been limited by low demand for plants, a situation the project intends to change.

The availability of land has not been found to be a serious constraint. Most farmers plant an area of less than one hectare, which is enough for self-sufficiency.

In training of field staff, provision of technical information and solution of technical problems, especially silvicultural ones, this Farm Forestry component will be assisted by the ROCAP/CATIE Tree Crop Production Project.

5. Private Industrial Plantations

Experience with large scale pine (Pinus caribaea) plantations in Panama goes back for more than 15 years when the World Food Programme began financing reforestation on public lands at La Yeguada and other areas in the central highlands. By now more than 4,500 hectares have been established, techniques have become routine and adequate yields have been demonstrated. On a more modest scale, old private plantations of teak and other hardwoods scattered around western Panama give evidence of which species are most promising for certain sites. (Results summarized in Romero et al. Evaluación de ensayos y selección de especies para reforestación en Panamá. Proyecto UNDP/FAO/PAN/79/00319 Documento de Trabajo No. 9. Panamá. 1980. 130p.). More recently the ROCAP/CATIE/RENARE Fuelwood Project has established and measured growth and yield on 16 trials, on 50 individual plots. In addition a total of 130 demonstration plots have been established.

This experience combined with that which will continue to accumulate from these and additional new plots is adequate to initiate a major reforestation program on certain sites in western Panama. However, there is always a risk in extrapolating experience to new sites. This risk will decrease as the number of plots and plantations increases and they mature

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during the next few years. Especially at the beginning choice of species, sites and techniques for new plantations under this component will require close attention by qualified foresters. A lot of the needed technical information and training can be derived from the Tree Crop Production Project and the Farm Forestry component, even though both are aimed at small farmers who tend to be interested in species that will yield a multitude of products after only a few years, rather than those species grown in industrial plantations for saw timber, which requires longer rotations.

Growth rates can vary tremendously, especially in hilly terrain. The growth rates used for the financial justification of the pine plantations are those measured on average sites at La Yeguada (based on ... sample plots yielding between 8 - 35 m³/ha/year). Landowners must be discouraged from planting their poorest sites since results there are likely to be discouraging. An AID/SCI sponsored study now in progress as well as CATIE research will help estimate site quality before planting Pinus caribaea.

The most important issues for this component are financial and organizational, not technical. The assumptions as well as the cost and revenue data used in the financial calculations are reasonable but need to be confirmed and continuously updated during project implementation. It is assumed that a market will be found for posts and other small dimension roundwood produced by early thinnings. It is conceivable that this market could quickly become saturated as large areas of plantations enter production. The establishment of small industries (boxes for agricultural produce, treated posts, charcoal) might have to be encouraged by the reforestation associations to absorb the wood from thinnings. The degree of concentration of the plantations by regions will be an important factor affecting such utilization as well as the expense of plantation management.

One of the key questions of course, will be whether enough landowners can be convinced to participate in the planting and credit program. This will require skillful extension aimed at a somewhat different audience than the one addressed by the Farm Forestry component and other RENARE efforts. However, this is where the two components will complement each other particularly well. The many small farm forestry plots scattered throughout several provinces will act as demonstrations which are expected to stimulate some of the larger landowners to invest in large plantations. Thus in any region there is a progression from the research trials and demonstrations established through the Tree Crop Production Project, to farm forestry plots, to industrial plantations as farmers and landowners gain confidence in the opportunities offered by tree planting.

For several reasons industrial plantations in Panama are more efficiently implemented through the private sector rather than RENARE: RENARE's capacity will already be strained with the other project components, in the past it has lacked a business orientation toward forest plantations, as a government entity it lacks the flexibility needed to deal with private investors and does not have their confidence. Therefore technical assistance required for industrial plantations will be supplied by private consulting

foresters certified by the reforestation associations. This has the advantage of stimulating the formation of decentralized private forest consulting companies directly responsible to the landowner, which in some cases might even sign long-term management contracts with some of the owners. Such an approach has been successful in Colombia, Brazil, Chile and other countries.

6. General considerations

All components share the need to motivate and educate rural inhabitants and make provision for some kind of extension activities. Communication requires a message and a medium. In the past RENARE has sometimes had difficulties combining both. Field projects have often lacked the means to carry out good extension (personnel, equipment). On the other hand, the Department of Communications and Community Development often has not had a message that was relevant to RENARE's field operations. This department has tended to focus on the urban consumer of natural resources rather than the rural producer of resources. An analysis and strategy for extension must be made early in the project. The results are likely to require some decentralization of extension and/or the reorientation of this department so that it provides a support service to field activities, for instance by providing communications equipment, offering training in communication techniques or preparing extension materials.

In summary, this Project is built on the technical foundations that have been created through years of experience of RENARE and Watershed Project operations. Almost all of the techniques to be used by this Project have been tried in Panama or elsewhere in tropical America under comparable conditions and are considered the most suitable and cost effective ones now available. The emphasis of the Project is to expand upon previous experience, not to innovate technology.

SOCIAL SOUNDNESS ANALYSIS

The social analysis was used to: (1) guide the design of Project components; (2) strengthen the technical and economic analyses; and (3) confirm socio-cultural feasibility of the proposed activities. The information for this analysis was developed through field interviews, previous social studies and the evaluation of other project activities. Additional detailed information on the social context of the Project, particularly in the Canal, La Villa and Caldera watersheds, is provided in the Watershed Management Project (Annex V) which is available in the Mission Library.

1. Geographical and Socio-Cultural Context

The Project will be implemented in two geographically distinct areas of Panama, each with a unique socio-cultural condition. The western Pacific provinces, Panama to Chiriqui, hold 80% of the rural population of the country. Continued population growth, currently 2.3% per year, has resulted in widespread deforestation and overuse of the land. As soil fertility is reduced land use has changed from annual cropping to extensive grazing. Eventually unpalatable grasses dominate, and large areas abandoned to scrub vegetation as has occurred in the Santiago-Tolé corridor of western Panama. Lower land productivity, and the lack of new agricultural lands, has forced an exodus from these provinces to the cities along the Canal, and to the relatively uninhabited Atlantic Coast and province of Darien.

The provinces of Bocas del Toro and the Darien contain the last extensive natural forests of Panama. On the Atlantic Coast high rainfall, steep slopes and lack of access have limited immigration and conversion of the land to agriculture. The high rainfall steep slopes of this area limit sustained agricultural use of these areas with traditional methods. In the Darien seasonal drought and poor soils will limit agricultural development. The forest cover of these areas should be maintained to supply industrial wood products through management and to preserve the unique ecological systems and biologic diversity they contain.

2. Beneficiary Profile

The rural population of western Panama, "los interioranos", is composed of: (1) farmers with holdings of less than 10 hectares (70% of the farms), and (2) small cattle ranchers with

landholdings under 40 hectares (15% of the ranches). These land holders are the among the poorest strata of Panamanian society. Their per capita income is about \$200 dollars yearly. Women are the heads-of-household on about 25% of these farms. Illiteracy is high, between 30 and 50%. Few farmers have legal title to their land. They rely on the time honoured system of property rights known as "derechos posesorios" or possessory rights. In rural areas these rights are generally respected. Small farmers livelihood is based on a combination of subsistence agriculture and wage labor for larger landholders. Small cattle ranchers produce beef and milk for the market on a limited scale and also engage in subsistence agriculture. Only sporadically do they engage in wage labour.

The Atlantic coast and the Darien are sparsely populated frontier areas. The inhabitants are mostly forest dwellers: indians (Kuna, Chocoe, Guaymie) and blacks (Darienitas, costeños, bayaneros, criollos). Their agriculture of mixed cropping of a wide array of annual and perennial root and tree crops is better adapted to the fragile forest environment. They seldom engage in ranching. The forest also provides them food and medicinal plants as well as construction materials. Among the indian groups land rights are based on traditional use by extended families. Literacy is rare and many indians, particularly women, do not speak Spanish.

The inhabitants of the forest frontier are threatened by the massive immigration of Interioranos. The newcomers receive use permits, or simply invade an area, and convert the forest to annual crops and ultimately to extensive cattle ranching. The conflict between these two groups is increasing as indian lands are invaded and forests destroyed.

3. Project Socio-Economic Impacts

Different Project components will be directed at the two geographic regions and cultural groups defined above. In populated western Panama the watershed management, farm forestry and industrial plantation components will be concentrated. These actions will change land use by introducing soil conservation practices, agroforestry, grazing management and tree planting. These innovations will improve land productivity, increase campesino incomes and enhance land values. Industrial plantation investments are estimated to provide new employment opportunities, equivalent to one worker year per 20 hectares of plantation, for rural men and women. As markets for plantation timber are developed small farmer tree planting will become profitable leading to replication beyond the life of the Project. This will reduce the pressure to migrate to frontier areas.

On the Atlantic coast and Darien the national parks and natural forests management components will conserve the traditional habitats of the indigenous population. Local employment in park protection and development, and in forest utilization will provide cash income on a sustained basis in these areas. Increased park and forest protection will help to contain the illegal encroachment of their reserves and traditional lands.

4. Public Support and Participation

Public attitudes on natural resource issues have changed in Panama in the last decade. There now exists a growing awareness that the destruction of the forests and land abuse will have severe consequences, and there is a feeling that "something should be done". Therefore, in terms of public support, the project's timing is propitious. This ecological awareness is largely confined to the urban areas. It must be extended to the rural areas where environmental damage is taking place, and alternatives must be offered to the campesinos. All Project components will require educational and community participation efforts to be effective. Environmental education will be a continuing responsibility of all RENARE field personnel. They will need the support of the Department of Environmental Education of RENARE to provide them with the information and techniques required for this effort. It is recognized that public participation in the planning of an activity is the best way to educate and gain support.

5. Socio-Cultural Issues

a. Institutional

Successful Project implementation will require the decentralization of RENARE activities and personnel to field stations managing parks, forest reserves and watershed management units. This will also require delegation of authority and responsibility to unit managers, a break from the organizational culture of public service that Panama has inherited. This style of management has to be learned by both the executives of the agency and accepted by the field staff. Delegation of authority requires consistent policies and guidelines to be effective, and the careful selection and training of field managers.

A recurring institutional pattern in Panama is the reluctance of institutions to collaborate. Project effectiveness will

require RENARE to work with and be supported by other public and private agencies. A campaign to involve other agencies in planning and supporting the work of RENARE must be implemented, and matched with a program to provide information and services to other agencies. Particularly in conservation law enforcement local authorities and police should be educated on the purposes and provision of conservation laws and regulations.

b. Conservation Law Enforcement

The protection of natural resources will require enforcement of existing and strengthened legislation. While RENARE park and forest patrolmen will have the responsibility for enforcement of legislation they will not be armed or have power to arrest. These functions will be handled by local political authorities, alcaldes or corregidores, or the local detachments of the Panamanian Defense Force (PDF). In the Canal Watershed a Forest Police has been established by the PDF to patrol jointly with the staff of RENARE to control access and use of the watershed. This is working successfully, and should be extended to other areas where pressure on a resource is high. RENARE staff also have authority to impose fines and to order the confiscation of forest products or game taken without permit. There is legal appeal from these regulatory and administrative decisions.

Enforcement of the laws will be resented by campesinos denied entry to reserved areas and by those interests who have traditionally exploited public lands. RENARE must vigorously and convincingly demonstrate the technical and legal basis for its programs. Public acceptance of conservation law enforcement will hinge on the perception that the law is equally applied to all, not just to the poor and powerless. This will require an effective relationship with other institutions also responsible for implementing the laws. For example, local authorities such as the Alcaldes or mayors, corregidores and regidores; and the defense forces. Frequently these authorities are not acquainted with the laws they are supposed to enforce. RENARE will have to educate local authorities, many of them barely literate, on the nature and scope of the nation's environmental laws that they are to enforce.

c. Existing Social Tensions

To improve Project success RENARE field units should be always on the alert for the undertow of social tensions, lying below the apparent tranquility of rural communities. In the countryside religion, politics and kinship go hand in hand. Political

and religious factionalism is strong. RENARE staff should avoid overt actions that would link their activities with a given political or religious group.

The management of natural resources will require enforcement of existing and strengthened legislation. This will be resisted by campesinos denied entry to public lands as well as by more powerful interests who have traditionally exploited the public lands. RENARE must vigorously and convincingly explain the technical and legal basis for its programs. Crucial to public acceptance of conservation law enforcement will be the perception that the law is equally applied to all, and not just to the poor and powerless.

6. Relocation of Reserve Occupants

The Project will place under management three ecologically critical areas where people might have to be relocated: Canglón, Palo Seco and the Panama Canal watershed. The magnitude of the problem varies in each case. While there have been several programs to relocate people, particularly when areas were to be flooded for dams (Bayano and La Fortuna), there has been little experience with relocating people for environmental reasons. The expense and difficulty of this type of action is beyond government resources in most cases, and one dam project (Tabasara) was been abandoned because of the estimated cost of relocation.

The Canal Watershed, specifically the 1000 or more occupants of the Alto Chagres national park, will be by far the most complex and difficult to relocate. The area is the largest physically and complex socially, having drawn people from all over the country. Each group has transplanted its distinctive cultural patterns and production systems. In some cases their land use is benign, in other cases it is destructive. As land values are high in the Canal watershed the possibility of purchasing their holdings or offering comparable land in compensation is expensive. These people are unlikely to accept agricultural land on the frontiers in exchange as they are accustomed to the nearby amenities of urban markets and public services. These people are also politically aware, and would be effective in resisting a relocation program. The only economic alternative at this time is to discourage further entry into these fragile areas, and to assist these people to convert their land use to practices compatible with the resources.

Since the forest areas of El Canglón and Palo Seco have been made accesible by roads only in the last four years the number of illegal

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occupants is small, less than 150 families in each case, and they are recent immigrants. They have not yet had the chance to make a substantial investment in land clearing and other improvements. In these two cases resettling the present squatters would be relatively easy due to their short period of residence in the area and the availability of land in the vicinity that would be suitable for agriculture. Efforts to relocate these people should begin immediately while further entry is halted.

7. Conclusions and Recommendations

The overall purpose of the Natural Resources Management Project is both to protect existing forests and watershed areas, and to introduce changes in the existing production systems. More specifically it aims to introduce forestry as a viable economic activity. The Project will demonstrate to a wide strata of panamanian society that the protection and proper management of natural resources is a sound ecological and economic investment. In a sense, it is not only a technological change, but a cultural change as well. Project design in general is judged to be appropriate to the socio-cultural context of Panama. The training of all RENARE staff in public information and community development skills is necessary to make their technical work effective.

FINANCIAL ANALYSIS

This analysis examines four issues: (1) the requirements of the public sector project components on RENARE budgets; (2) the impact of increased public revenues from higher stumpage rates proposed by the Project; (3) the financial feasibility of individual (private) investments in forest plantations; and (4) the financial soundness of the proposed reforestation lending program.

1. Public Sector Financing

Overall public budget levels approved for RENARE have been maintained over the last four years even though the government has had a policy of reduced budgets and fiscal austerity. From the table below it can be seen that the operational budget for permanent staff and fixed expenses has been reduced while the investment budget for special projects has been increasing. Natural resources activities are the largest item in the investment budget of MIDA other than credit funds for the Agricultural Development Bank (BDA). The significant increase in the 1986 budget is due in large part to the funding of counterparts for the Natural Resources Management Project.

TABLE I: RENARE BUDGETARY TRENDS
 (B/. 1,000)

Budget Source	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Operations	1,478	1,312	1,289	1,562
Investments	<u>1,273</u>	<u>2,067</u>	<u>2,573</u>	<u>2,550</u>
Total	2,751	4,134	4,051	4,112

The public sector components of the Project, watershed management, park protection and natural forest management, will be implemented by RENARE. The scale of these activities was limited in Project design to be achieved within the current personnel strength and budgets of the agency. Therefore, while the change in the functions of RENARE to a field implementation represents new responsibilities and activities, it is planned to staff field operations through the reassignment of current MIDA personnel nominally working in natural resources. Therefore, personnel costs of RENARE will not increase with the initiation of the Project. What will be required from RENARE is an increase of operating expenses, chiefly fuel, per diem, and other field costs.

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RENARE 1986 appropriations total B/.4,112,000 for all activities. Provision for for Project counterpart funding is included in the the approved 1986 Investment Budget of RENARE with an appropriation of B/.1,938,000 allocated as follows:

TABLE II: RENARE INVESTMENT BUDGET FOR PROJECT ACTIVITIES
(B/. 1,000)

Personnel costs (+fringes)	1,624
Field expenses	15
Fuel and othe consumeables	30
Supplies and other materials	7
Construction and maintenance	8
Replacement parts	4
Transport of materials and personnel	3
Financial and commercial expenses	36
Other cost items	<u>211</u>
TOTAL	1,938

The minimum required RENARE counterpart budget for Project activities is estimated at B/.12,500,000 (1986 cost levels) over 10 years, an average of B/.1,250,000 per year. While this is less than the amount approved for 1986, it must be noted that in the past appropriations were not fully funded, and that reductions in operating expenses were significant. However, the government (in January 1986) gave instructions that the budgets of RENARE would have priority for financing, and directed that all miscellaneous income from forest fees, the sale of plants from RENARE nurseries, etc. would be available to RENARE and not diverted to other MIDA agencies. This income was over B/.12,000 per month in January and February, an increase of 40% over budgeted amounts for oprational expenses. Additional income to the agency will be realized in the future from the increase in stumpage fees proposed below.

RENARE approved budgets have been increasing over the years, although the government financial situation has resulted in a significant percentage of each budget being unfinanced. As personnel and other fixed costs represent more than 75% of the budget, a 12.5% reduction in the financing of the agency results in a 50% reduction in operational expenses. Other income from fees and taxes, and the sale of planting materials and confiscated materials provide the operational funds that enable the agency to function. Measures to increase public revenues available for RENARE operations will be adopted as proposed in this Project.

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2. Public Sector Revenues

The Project proposes that the Government of Panama increase government revenues from the sale of publicly owned timber. Initially a flat rate increase equivalent to about B/.5.00 per cubic meter is proposed for all commercial tree species. At present cutting rates of about 168,000 m³/year (84,000,000 Board Feet), this would produce new revenues of B/ 840,000 annually. Subsequent increases in average stumpage revenues would be applied over the next three years to increase the average stumpage rate to B/.12.50/M³. This would produced annual revenes on the order of B/.2,700,000.

Current stumpage fees collected from the sale of public timber are payable to local governments and average less than B/1.00 M³. These fees have not increased since 1973 although the value of lumber has increased by a factor of 2. These fees should be raised to reflect the increased value of public timber. Assuming an average increase of B/2.00/M³ the amounts paid to local government would total B/ 336,000. The balance of stumpage revenues of B/ 1,764,000 per year would enable RENARE to finance expanded operational costs of natural resource management through and beyond the life of the Project.

3. Forest Plantation Investments

A model was developed of the costs of establishment and management of a pine plantation over a 20 year rotation to test the financial feasibility of a plantation investment. (The assumptions used in this analysis are displayed in the model below.) Studies of manpower requirements for plantation establishment and maintenance, and yield estimates from forest research in Panama, were used in developing this model, with current estimates of labor costs and other inputs. The average cost of planting one hectare of pine was estimated at \$398, and subsequent protection and plantation management costs at \$502 for a total rotation cost of \$900 per hectare. The predicted financial return on a one hectare pine plantation is:

Present Value of Revenues at 10%	\$1,660
Present Value of Costs at 10%	575
Net Present Value at 10%	\$1,086
Benefit/Cost Ratio	2.5
Internal Rate of Return	19.0%

INDUSTRIAL PINE FOREST PLANTATION MODEL - ESTIMATES FOR ONE HECTARE

PROJECTED YIELD & REVENUE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL	
Number of Posts & Poles								300				250				250				300	1100	
Value (a3) 82 Sawlogs												30				45				45	140	
Value (a3) 81 Sawlogs																30				130	140	
Sale of Posts & Poles (b)								8150				8125				8125				8150	1550	
Sale of 82 Sawlogs (b)												8750				8125				81,425	83,500	
Sale of 81 Sawlogs (b)																8706				83,900	84,800	
TOTAL SALES (b)								8150				8875				87,150				85,675	88,850	
LABOR INPUT (Worker days)																						
Management Expense	0.50	0.50	0.10	0.10	0.10	0.10	0.10	0.30	0.10	0.05	0.05	0.30	0.05	0.05	0.05	0.30	0.65	0.65	0.65	0.30		3.6
Access Improvement	2.0																					2.0
Surveys and Marking	2.0																					2.0
Site Preparation	6.0																					6.0
Planting of Seedlings	2.0																					2.0
Fertilizer Application	1.0																					1.0
Insecticide Application	1.0																					1.0
Protection & Improvement		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	19.0
Weeding	1.0	1.0																				2.0
Pruning								3.0				3.0										2.0
Thinnings								3.0				4.0										6.0
TOTAL LABOR (Worker Day)	15.5	2.3	1.1	1.1	1.1	1.1	1.1	7.3	1.1	1.1	1.1	8.3	1.1	1.1	1.1	5.3	1.1	1.1	1.1	1.1	1.3	55.0
Management Services Costs	38	23	8	8	8	8	8	23	8	4	4	23	4	4	4	23	4	4	4	4	23	225
Worker Labor Costs	105	14	7	7	7	7	7	49	7	7	7	56	7	7	7	35	7	7	7	7	7	364
Total Labor Costs	143	37	15	15	15	15	15	72	15	11	11	79	11	11	11	58	11	11	11	11	30	589
OTHER INPUTS (Costs)																						
Seedlings	222	22																				
Fertilizer	30																					244
Pesticides	4		4					30														60
Other Costs per hectare	0																					7
Total Costs of Inputs	256	22	4	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	311
TOTAL PLANTATION COSTS	398	59	18	15	15	15	15	102	15	11	11	79	11	11	11	58	11	11	11	11	30	900
CASH FLOW (Revenues-Costs)	(398)	(59)	(18)	(15)	(15)	(15)	(15)	49	(15)	(11)	(11)	777	(11)	(11)	(11)	2,093	(11)	(11)	(11)	(11)	5,646	7,950
CUMULATIVE CASH FLOW	(398)	(457)	(475)	(489)	(504)	(510)	(533)	(484)	(499)	(510)	(520)	276	265	253	246	2,336	2,326	2,315	2,304	2,304	7,950	
FORESTRY FUND LOAN																						
Loan Receipts	320																					320
Capitalized Interest	39	50																				90
Loan Balance Outstanding	359	410	410	410	410	410	410	362	307	245	173	92	0									
Interest Payments			57	57	57	57	57															
Debt & Interest Payments								105	105	105	105	105	105	105	105							287
NET CASH FLOW WITH LOAN	(178)	(59)	(175)	(172)	(172)	(172)	(172)	142	142	142	142	142	142	142	142	2,093	142	142	142	142	5,646	7,351

ASSUMPTIONS (Per Hectare)

Posts & Poles Prices (ea)	0.50
Sluapage 82 Sawlogs (a3)	25.00
Sluapage 81 Sawlogs (a3)	30.00
Management Services (Day)	75.00
Labor Costs (Worker Day)	7.00
Seedling Cost (per plant)	0.20
Other Costs	
Seedlings per Hectare	1111
Fertilizer/hectare	30.00
Pesticide Cost/hectare	3.50
Number of Hectares	1.00
Loan Interest Rate (i)	0.14
Amount of Cash Loaned	6320
Discount Rate (r)	0.10

FINANCIAL ANALYSIS

81,460 = PV of Revenues at 10%
8576 = PV of Costs at 10%
81,084 = NET PRESENT VALUE
2.88 = Benefit/Cost Ratio
18.89% = IRR of Establishment Costs
19.89% = IRR of Cash Flow with Loan

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To test the sensitivity of the IRR to changes in the underlying assumptions of the model "switching values" for the key variables were calculated. (A switching value is defined as the value of a variable at which the IRR is equal to the opportunity cost of capital, e.g. 10 percent). The base case estimates, and the computed switching values are:

	<u>Base</u>	<u>Switching Value</u>
Net Commercial MAI M3/Year	15	5
Stumpage \$/M3	30	10
Establishment Costs \$/HA	900	2600
Labor Costs at \$/Worker Day	7	46
Management Services \$/Day	75	775
Seedling Costs \$/Plant	0.20	1.20

As shown above, the IRR is not very sensitive to changes in any one of the underlying assumptions of the model. The costs of plantation management could nearly triple before the IRR was reduced to a cost of capital of 10 percent. Similarly the stumpage prices or the MAI would have to be reduced to a third of the estimated values to reach the "break-even" point of the investment.

Although the IRR is attractive, the high first year costs and the length of time (12 years) to the receipt of significant income are disincentives to private investment. To encourage plantation investment, the Project will lend to a Trust Fund that will be established to provide credit through private banks for forest plantation investments. The loan repayment schedules will be adjusted, as far as possible, to the revenues realized from harvesting the plantation.

4. Reforestation Fund Financial Analysis

The Project will establish a Trust Fund for reforestation lending through private banks to individual investors. A cost financial analysis was made to determine the capital requirements of an assumed lending program of 20,000 hectares if the average loan amount was \$320/ha. Also examined was the liquidity of the Reforestation Fund, and its ability to repay the amount loaned by USAID.

In the first approximation of the loan program it was determined that terms to the final borrower would be: term up to 13 years, interest to individual borrowers at the prevailing agricultural market rate of 14%, capitalization of the first two years of interest, five years grace on loan repayments. Private commercial bank transaction costs at 4%, and a 1% Fund administration fee was assumed, resulting in a 9% net interest income to the

ANNEX III. REFORESTATION FUND CASH FLOW ANALYSIS-USAID LOAN REPAYMENT

Years	Area Planted	Annual Loans	Loan Balance Outstanding	Interest Payments	Lender Fees	Fund Mgmt.	Fund Fee	Other Income	USAID Cash To Fund	USAID Loan Amount	USAID Interest	USAID Loan Pay	USAID Payments	Cash Flow Accumulated with Loan Fund Reserve
1	500	160.0		179.5	0.0	7.2	1.8	(1169.0)		274.0	274.0	0.2		96.8
2	750	240.0		473.0	0.0	19.0	4.7	(263.7)		371.6	645.6	19.4	8.2	196.8
3	1500	400.0		1,049.0	20.5	42.0	16.5	(504.0)		619.1	1,264.7	37.9	37.9	262.6
4	1750	560.0		1,753.0	71.3	70.1	17.5	(576.4)		693.7	1,958.4	56.0	56.0	321.1
5	2000	610.0		2,550.5	156.0	102.3	25.6	(611.2)		729.5	2,600.0	80.6	80.6	350.0
6	2250	720.0		3,466.3	257.0	138.7	34.7	(636.3)		769.3	3,457.2	138.3	138.3	353.5
7	2500	800.0	0.0	4,476.3	371.0	179.1	44.8	(652.1)		816.4	4,273.7	170.9	170.9	346.9
8	2750	880.0	24.0	5,544.5	501.0	222.6	55.6	(633.2)		829.5	5,103.2	204.1	204.1	339.1
9	3000	960.0	63.0	6,716.0	641.0	268.6	67.2	(591.0)		819.6	5,922.8	236.9	236.9	329.9
10	3000	960.0	143.5	7,799.5	789.5	312.0	78.0	(417.0)		670.6	6,593.1	263.7	263.7	319.0
11			247.5	7,762.0	940.3	308.1	77.0	802.7			6,693.1	395.6	500.2	226.6
12			378.0	7,324.0	1,077.0	293.0	73.2	1,068.0			5,562.9	365.6	530.2	193.0
13			539.3	6,784.8	1,024.0	271.4	67.8	1,224.0			5,000.8	333.8	562.1	419.6
14			682.0	6,102.0	949.0	244.1	61.0	1,325.9			4,405.1	300.0	595.8	328.2
15			830.3	5,272.5	854.0	210.9	52.7	1,420.6			3,773.5	264.3	631.5	177.8
16			932.5	4,340.0	735.0	173.6	43.4	1,450.5			3,104.1	226.4	669.4	524.8
17			1,022.8	3,317.3	601.8	132.7	33.2	1,458.6			2,395.5	186.2	709.6	554.7
18			955.5	2,361.0	459.0	94.5	23.4	1,256.4			1,642.4	143.7	752.2	562.0
19			854.0	1,507.0	326.5	60.3	15.1	1,105.9			845.1	98.5	797.3	400.6
20			712.0	795.0	206.0	31.0	8.0	879.0				50.7	845.1	210.1
21			519.0	276.0	111.0	11.0	2.8	616.2					895.0	116.0
22			276.0		39.0			315.0					895.0	616.2
														315.0

CHECKS ON CALCULATIONS

Sources of Funds:	
USAID Loan	0,593.3
Borrower Interest	10,140.0
Loan Repayments	8,100.0
Total receipts	24,913.3
Uses of Funds:	
Loans to Investors	6,400.0
Lending Bank Fees	3,192.0
Fund Management Fees	750.2
USAID Payments	10,177.2
Total Fund Disbursements	20,560.2
ENDING FUND BALANCE	4,345.2

ASSUMPTIONS ON INTEREST RATES

AID Interest Rates(5 yrs.	0.03
5-10 yrs	0.04
> 10 yrs.	0.06
Fund Management Fee	0.01
Fund to Cooperating Banks	0.10
Banks to Borrowers	0.14

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ECONOMIC ANALYSIS

1. Public Sector Components

The public sector components of the Project, with the exception of the farm forestry, have as their basis the conservation and management of natural resources. These actions were not analyzed for economic returns due to the impracticality of quantifying and assigning benefits.

The design of the natural resource conservation and management components is based, to a large extent, on the less cost alternatives learned by RENARE in implementing the Watershed Management Project, and on the studies conducted by that agency with the assistance of FAO and other donors. For example, monies spent to encourage tree planting by small landholders is a more economical means of establishing forests than public land reforestation programs. The restoration of protective vegetation to degraded areas can be accomplished by the control of fire and grazing more cheaply than through tree planting in most cases. Protecting an area against encroachment and destruction is cheaper than any kind of rehabilitation effort. Likewise, the management of natural forests for sustained timber production is more economical than the establishment of plantations since the costs of site preparation and planting are avoided, and the length of time to the realization of revenue is reduced.

It has also been found public investments in promoting improved pasture have a higher economic return when combined with the introduction of grazing management. Similarly, the introduction of soil conservation practices are more cost effective if combined with agricultural extension work. This experience was incorporated in Project design to make public investments in natural resources management as economic as possible..

Establishing a higher minimum stumpage price, and improving the economic productivity the natural forest, will have a significant impact on public revenues. It will also provide an incentive for better utilization of the trees that are harvested, and encourage the commercialization of other species not presently utilized. The economic issue is whether an increase in the minimum stumpage price to B/.15.00/m³, as recommended, would severely significantly increase the costs of lumber to the consumer and reduce demand. From TABLE IV-2 it will be seen that the 1985 price of lower quality lumber, used in concrete forms and other temporary construction was B/.152/m³, of about ten times the proposed stumpage rate. If sawmillers and distributors were to pass through the full cost of the stumpage to the consumer the increase in lumber price would be about 10%. However, for more valuable species which command prices of up to B/.400/m³ the increase would be on the order of 3%. Projected shortages of industrial timber in the future will have more serious impacts on consumer prices than the increase in minimum stumpage price proposed.

In the case of the Farm Forestry Component, World Bank studies have identified small landholder tree plantations as a relatively low cost operation, e.g., less than \$250 per hectare of which as much as 70% can be attributable to family labor. This work can be done during the seasons that do not necessarily conflict with farm labor. These investments are reported to "yield higher economic rates of return" than government plantation investments. Government programs cost between \$800 to \$1,300 per hectare, and produce economic rates of return of 10 to 15 percent. By contrast, in most of the farm forestry projects financed, total establishment costs range from \$200-\$500 (1983), with rates of return in the order of 25 to 30 percent. This is mainly a reflection of lower infrastructure, overhead and reduced transportation costs.

2. Private Forest Plantations

The economic feasibility of the industrial plantation project component was examined on the basis of a total planting of 20,000 hectares during the ten years of the Project. (See Table I: Economic Analysis of Forestry Plantation Program) In this illustrative example labor was costed, as in the financial analysis, at B/ 7/worker day, which includes wages, social security contribution, transportation, and other benefits. (This overestimates economic costs if the opportunity cost of labor is lower.) The opportunity cost of land was estimated at B/ 10/hectare. The revenue from the sale of timber was valued at 1.5 times the stumpage rates used in financial analysis in order to better reflect the cost to society of importing timber and the growth in real prices of lumber estimated at 2% per year. Technical assistance of \$900,000 was assumed for the first five years of the Project and included in the overall cost stream.

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TABLE 1: ECONOMIC ANALYSIS OF FORESTRY PLANTATION PROGRAM
(US\$ 1000)

Years	Area Planted (Hectares)	Technical Assistance (\$)	Sum of Years Costs (\$)	Sum of Years Revenue (\$)	Net Cash Flow (\$)
1	500	200	204		-404
2	750	150	341		-491
3	1,500	150	678		-828
4	1,750	150	851		-1,001
5	2,000	130	1,009		-1,139
6	2,250	120	1,172		-1,292
7	2,500		1,342		-1,342
8	2,750		1,557	113	-1,388
9	3,000		1,758	169	-1,505
10	3,000		1,902	338	-1,395
11			769	394	-178
12			684	1,106	976
13			703	1,491	1,533
14			767	2,531	3,030
15			795	2,916	3,579
16			849	4,913	6,520
17			869	6,047	8,201
18			675	8,119	11,503
19			694	9,253	13,186
20			734	14,644	21,231
21			743	17,578	25,625
22			550	20,831	30,697
23			538	23,766	25,111
24			520	26,700	39,530
25			484	28,828	42,758
26			279	21,281	31,643
27			233	23,409	34,881
28			182	25,538	38,125
29			120	25,538	38,186
30					
TOTALS	20,000	900	22,000	265,500	375,350
PV AT 10%=		669	7,910	29,868	21,289
IRR=	24.13%				

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Using the above assumptions, the IRR of the industrial plantation component has been estimated at 24%. The switching values are:

	<u>Base</u>	<u>Switching Value</u>
Stumpage		
Posts and Poles (\$/unit)	0.75	0.21
No. 1 Sawlogs (\$/m3)	45.00	12.80
No. 2 Sawlogs (\$/m3)	37.50	10.70
TOTAL COSTS (\$million)	22.00	55.10

As in the financial analysis, the internal rate of return is not very sensitive to changes in the underlying assumptions.

The estimated stumpage prices used in the economic and financial analysis are conservative as they are based on 1985 markets. The first sawlog sales from the project will occur in Year 12 - about 1998. As sawnwood (lumber) prices are forecast to increase at about two percent per year in real terms for the remainder of this century, the real stumpage price at that time would be in excess of \$45/m3. World Bank projections of future softwood lumber prices (in current dollars) indicate that by the year 2000 the international price of utility timber, defined as US Southern pine No.1, would reach US\$ 210/m3 f.o.b. US ports. The import parity stumpage price (IPSP) of plantation grown timber at that date is estimated in the following table.

TABLE 2: ESTIMATE OF IMPORT PARITY STUMPAGE PRICE IN YEAR 2000
 (Dollars per cubic meter)

	Sawnwood	Roundwood
Price of sawnwood, FOB U.S.	210	
Freight, insurance & port charges	70	
Transport to retail outlet	10	
Delivered imported lumber costs	290	
Distribution to retailers	10	
IPSP of plantation lumber ex mill	280	
Processing costs	40	
IPSP of lumber before processing	240	
IRSP of logs before processing		110
Transportation forest to sawmill		20
Logging costs		20
IPSP of standing timber		70

From the above analysis the estimated stumpage value of plantation grown timber in constant dollars, by the year 2000, would be \$70/m3. This is more than two times higher than the current stumpage price estimates used in the financial and economic analysis of the returns on plantation investments.

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The opportunity costs of the land that will be used in the plantation program are considered to be negligible. It is assumed that the land is already owned by the participants and therefore the issue of purchase or rental does not arise. Further it is assumed that the areas planted to trees are fallow or otherwise unused, so that there will be no loss to the landowner or to the economy as a whole of agricultural production. Where there is an obvious alternative use, such as grazing, then the returns from the alternative use must be compared with those that can be realized through forestry. However, this opportunity cost may not be as significant as would appear. The spacing proposed for tree planting makes it feasible to continue grazing under the trees, or to undercrop with coffee or other crops. In this case the costs of plantation thinning and harvesting may increase, as extra care is taken to avoid damage to the alternative crop, but the costs of weeding and protection would decrease. This multiple use may enhance yields of the adjacent crops, through nitrogen fixing by certain tree species, or the amelioration of wind and other climatic factors.

The environmental impacts of plantation establishment have been excluded from this analysis as they cannot be quantified. However, the environmental effects of forests are generally beneficial depending on the species, soil type, and the slope of the land. Recovery of abandoned or degraded unutilized lands to production would be an important economic benefit. Forestry represents, from an ecological point of view, a better use of a large proportion of Panama's land resources. Additionally, it is expected that the future availability of plantation timber at competitive prices will reduce pressures to harvest the natural forest in areas that should be maintained for watershed protection and soil conservation.

A direct benefit of the Project will be the generation of a new source of employment in those rural areas where other alternatives are not available. The average industrial forestry plantation is estimated to require a total of about 52 worker days of direct employment over a 20 year rotation. In addition, three days of direct professional technical services and supervision would be required for each hectare. Additional employment would be generated in the harvesting of the plantation, and ultimately by the sawmill or other wood processing industry.

The following estimate of the employment impacts of the private reforestation component is based on the Project objective of 20,000 hectares of industrial forestry plantations. Assuming a fifty percent underemployment of labor factor, and a 20 year rotation, permanent employment of one person for every 20 hectares of forest plantations is estimated below.

TABLE 3: ESTIMATE OF DIRECT EMPLOYMENT GENERATED

	<u>Total Equivalent Worker Years</u>	<u>Annual Employment 20 Year Rotation</u>
Management 60,000 days at 250 days/year	240	12
Nurseries 24 million plants at 50,000/w.y.	4800	240
Plantation Management 20,000 has. at 52 days/ha.	4160	208
Harvesting 6 million m3 at 940m3/worker year	<u>6382</u>	<u>319</u>
Total Rural Employment in work years	15582	779
Sawmilling (6 million m3 at 250 m3/worker year)	<u>24000</u>	<u>1200</u>
Total	39,582	1,979
Underemployment factor	.50	.50
Equivalent new jobs	20,000	1,000

To assess total employment impacts of this program the assumption is made that the goal of 20,000 hectares will be reached in Year 10 of the project, and further that a reforestation rate of 3000 hectare per year can be sustained through Year 20. A total of 40,000 hectares under continuous production should generate at least 2,000 work years. The actual total would probably be higher since the existing underutilized sawmill capacity would be exceeded, and new industries and full time jobs created.

b. Seasonality of Employment

In assessing employment impacts the seasonality of labor must be considered. The planting of seedlings should commence with the beginning of the rainy season to take full advantage of the better rooting and growing conditions. This is the time when rural labor is often in short supply, even in areas of underemployment, because of the planting of food crops on their own or other land. However, of the 52 worker days per hectare required to plant and manage one hectare only 4 days are directly involved in planting. The other activities, particularly the stand protection and improvement work should be done during the dry season when the danger of loss by fire is greatest. Forestry has an advantage over other agriculture since most work, particularly harvesting, can be delayed or scheduled around other activities.

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Reforestation Fund. Assumed was USAID lending at 20 years, 10 years of grace on USAID loan repayment, interest at 3% during the first five years, 4% for the next five years, and thereafter interest at 6% for the last 10 years. Under these assumptions the amount of financing required by the Reforestation Fund would be about \$6.5 million. With a \$100,000 in initial capitalization, and interest income and debt repayments, the Fund would be able to meet the interest payments due on the USAID loan and amortize the debt in Year 20. The spread between Reforestation Fund interest payments received of 9% and interest paid to USAID, will remain in the Fund as paid-in capital. This will total \$4,350,000 at the end of 22 years. This capitalization will enable the loan program to continue beyond the life of the Project. It is worth noting that the IRR of the individual investor utilizing this credit facility, at the 14% rate of interest, rises from an estimated 19% to 22 %.

The Reforestation Fund Cash Flow Analysis used in this analysis is presented in the preceding table. Cash flow will change substantially if there is a higher demand for reforestation credit in the first years of the program. This would result in higher interest income and repayments being received by the Fund, prior to beginning to service the USAID loan.

A Panamanian firm with experience in economic analysis and banking legislation was retained to test the "bankability" of the Reforestation Fund proposal, and to determine the interest of private banks in participation in the program. After reviewing the Reforestation Fund cash flow analysis the consultants prepared a prospectus of the fund, and presented the proposed credit program to five Panamanian banks. In all cases the banks expressed interest in handling the re-lending program of the Reforestation Fund, and indicated a willingness to call the facility to the attention of their clients that have land suitable for industrial forestry plantations.