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

COSTA RICA

PROJECT PAPER

NORTHERN ZONE INFRASTRUCTURE DEVELOPMENT

AID/LAC/P-146

Loan Number: 515-T-041
Project Number: 515-0191

UNCLASSIFIED

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 COSTA RICA	3. PROJECT NUMBER 515-0191
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4. BUREAU/OFFICE LA	<input type="checkbox"/> 05	5. PROJECT TITLE (maximum 40 characters) Northern Zone Infrastructure Development
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6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 04 30 87	7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4) A. Initial FY 83 B. Quarter 4 C. Final FY 83
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8. COSTS (\$000 OR EQUIVALENT \$1 = 240)						
A. FUNDING SOURCE	FIRST FY 83			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(450)	(50)	(500)	(450)	(50)	(500)
(Loan)	(6,908)	(7,292)	(14,200)	(6,908)	(7,292)	(14,200)
Other U.S.	1.					
	2.					
Host Country	-	5,059	5,059	-	5,059	5,059
Other Donor(s)						
TOTALS	7,358	12,401	19,759	7,358	12,401	19,759

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	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	133	210	210					500	14,200
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)	11. SECONDARY PURPOSE CODE 233
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12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each) A. Code BS EOTY	
B. Amount	

13. PROJECT PURPOSE (maximum 480 characters)

Provide a basis for the efficient and equitable socio-economic development of the area by increased access to market/services, agricultural assets (e.g. land) and by expanding community level infrastructure and the knowledge base required to plan and initiate productive investment.

14. SCHEDULED EVALUATIONS Interim MM YY 1 2 8 4 MM YY 1 2 8 5 Final MM YY 1 2 8 6	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input checked="" type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> Other (Specify) 935
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16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY	Signature <i>Bastian B. Schout</i> Title <i>acting Director</i>	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION Date Signed MM DD YY 017 01 83
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UNITED STATES INTERNATIONAL DEVELOPMENT AND COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20548

ASSISTANT
ADMINISTRATOR

PROJECT AUTHORIZATION

Name of Country: Costa Rica
Name of Project: Northern Zone Infrastructure
Development
Number of Project: 515-0191
Loan Number: 515-T-041

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Northern Zone Infrastructure Development project for Costa Rica involving planned obligations of not to exceed Fourteen Million Two Hundred Thousand United States Dollars (\$14,200,000) in loan funds ("Loan") and Five Hundred Thousand United States Dollars (\$500,000) in grant funds "Grant") over a one-year period from date of authorization, subject to the availability of funds in accordance with the AID OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. The planned life of the project is three years and ten months from the date of initial obligation.
2. The project ("Project") will provide a basis for the efficient and equitable socio-economic development of the Northern Zone by increased access to markets/services, agricultural assets (e.g., land) and by expanding community level infrastructure and the knowledge base required to plan and initiate productive investments.
3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with AID 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 AID may deem appropriate.

a. Interest Rate and Terms of Repayment

The Government of Costa Rica ("GOCR") shall repay the Loan to AID 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 GOCR shall pay to AID in U.S. Dollars interest from the date of first disbursement of the Loan at the

rate of (i) two percent (2%) per annum during the first ten (10) years, and (ii) three percent (3%) per annum 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 AID under the Loan shall have their source and origin in countries which are members of the Central American Common Market or in countries included in AID Geographic Code 941, except as AID may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have countries which are members of the Central American Common Market or countries included in AID Geographic Code 941 as their place of nationality, except as AID may otherwise agree in writing. Ocean shipping financed by AID under the Loan shall be financed only on flag vessels of countries which are members of the Central American Common Market or countries included in AID Geographic Code 941, except as AID may otherwise agree in writing.

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

Commodities financed by AID under the Grant shall have their source and origin in countries which are members of the Central American Common Market or in the United States, except as AID may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have countries which are members of the Central American Common Market or the United States as their place of nationality, except as AID may otherwise agree in writing. Ocean shipping financed by AID under the Grant shall be financed only on flag vessels of the United States, except as AID may otherwise agree in writing.

d. Conditions Precedent to Disbursement

(i) Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement for the Loan, the GOCR shall, except as AID may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID:

(A) evidence that a Project Coordinator, who will be stationed in Upala, has been designated; and

(B) evidence that a Project Engineer for the Road Improvement component of the Project has been designated by the appropriate GOCR agency.

(ii) Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement for the Loan, for the special accounts provided for under the Community Development and the Project Coordination/Area Development Studies components of the Project, respectively, the GOCR shall, except as AID may otherwise agree in writing, cause DINADECO and MIDEPLAN, respectively, to furnish to AID, in form and substance satisfactory to AID, evidence that such special account has been opened.

e. Covenants

The GOCR shall covenant that, unless AID otherwise agrees in writing, it will:

(i) cause MIDEPLAN to complete the tabulation of all data collected in the Rural Poverty Study survey undertaken in the Northern Zone in 1982; and

(ii) take such actions as are necessary to establish and consolidate a Cano Negro Wildlife Refuge along the lines of the Presidential Decree being proposed by the Division of Wildlife of the Ministry of Agriculture.



Acting Assistant Administrator
Bureau for Latin America
and the Caribbean

JUL 27 1983

Date

Clearances:

GC/LAC:RBMeighan *RBM* Date *7/15/83*
LAC/CEN:MSchwartz *MS* Date *7/25/83*
LAC/DR:DJohanson *DJ* Date *7/15/83*

GC/LAC:GMWinter *GM* 632-9248 7/15/83

NORTHERN ZONE INFRASTRUCTURE DEVELOPMENT

PROJECT PAPER

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(*) These Annexes will be found in LAC/DR and Mission Bulk Files. Annex 6 of the PP does not include the complete Report, this can also be found in the Bulk Files.

MAP: PROJECT AREA

PROJECT AREA



LIST OF ACRONYMS

ABS	Annual Budget Submission
ACDI	Agricultural Cooperative Development International
ADL	Arthur D. Little International
AID	Agency for International Development
BCIE	Central American Bank for Economic Integration
CAR	Regional Agricultural Center
CARE	Cooperative for American Relief Everywhere
CBI	Caribbean Basin Initiative
CDSS	Country Development Strategy Statement
DGC	General Directorate of Construction
DINADECO	National Community Development Organization
DOP	Direction of Public Works
EA	Environmental Assessment
ESF	Economic Support Funds
FAO	Food and Agriculture Organization of the United Nations
FAR	Fixed Amount Reimbursement
GDP	Gross Domestic Product
GOCCR	Government of Costa Rica
IBRD	World Bank
ICE	Costa Rican Electricity Institute
IDA	Agrarian Development Institute (formerly ITCO)
IDB	InterAmerican Development Bank
IFAD	International Fund for Agriculture Development (a United Nations Organization)
IFAM	Institute for Municipal Development and Assistance
IFB	Invitation for Bid
IGN	National Geographic Institute
IMF	International Monetary Fund
IRR	Internal Rate of Return
MAG	Ministry of Agriculture and Livestock
MIDEPLAN	Ministry of National Planning and Economic Policy (formerly OFIPLAN)
MOPT	Ministry of Public Works and Transport
OFIPLAN	See MIDEPLAN
PAAD	Project Assistance Approval Document
PACD	Project Assistance Completion Date
PDO	Project Development Office
PD&S	Project Development and Support Funds
PID	Project Identification Document
PSC	Personal Service Contract
RDD	Rural Development Division (USAID)
SEPSA	Executive Secretariat of Agricultural Planning
UN	United Nations
UNDP	United Nation Development Program
USAID	The Aid Mission in Costa Rica
USG	United States Government
WFP	World Food Program (a United Nations Project)

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B. Summary Rationale and Project Description

Overcoming Costa Rica's macroeconomic crisis will require a series of difficult policy and fiscal actions to stabilize the economy and restore investor confidence. If Costa Rica is to achieve economic recovery and regain the path of equitable growth a fundamental restructuring of the economy by increasing and diversifying exports will be necessary. The agricultural sector must play an important role in the long-term recovery effort by increasing the production of traditional/non-traditional agricultural exports and basic foodstuffs. The development of underutilized lands with agricultural potential will be an important factor in the recovery effort. Areas now devoted to traditional export crops cannot readily be shifted toward the production of either domestic foodstuffs or non-traditional crops without affecting foreign exchange earnings.

Costa Rica's Northern Zone has been designated as a priority region for development not only because it has extensive areas of underutilized lands with agricultural potential but for geopolitical reasons as well. The GOCR is concerned about the feelings of isolation and frustration expressed by the population and its proximity to and the constant destabilizing influence from Nicaragua.

The Mission and the GOCR have identified an area of the Northern Zone consisting of the cantons of Upala, Guatuso and La Cruz's Santa Cecilia district with the development potential to substantially contribute to the national economy and the long-term recovery effort. While the area has agricultural potential, it is characterized by low agricultural production and yields, extremely low standards-of-living, and lack of access to markets and services because of the absence of all-weather roads.

The selection of the Project components is a result of careful analysis of the agronomic potential of the Northern Zone, the major constraints which currently hinder its short and medium term development, the capacity of and most appropriate role for the public sector to address these constraints, and planned or existing efforts by other donors which the GOCR can utilize to develop the area. The results of the analysis were further refined by testing the potential components against the criteria of undertaking development of the area on a phased basis: i.e. what were the essential actions required now; which could and should wait until a later date.

The principal immediate problems which have emerged from this analysis and should be addressed are: 1) the lack of all weather roads which hinder access to markets and services and preclude increases in agricultural production reinforcing the low incomes and standards-of-living; 2) the lack of modest local community infrastructure which exacerbates social/health conditions and fosters feelings among the area's isolated rural populace that they are neglected by the government; 3) the need for more information, e.g. feasibility studies, on which to base further productive activities by the private and public sectors;

and 4) the need to increase the population in a manner which would permit greater utilization of land in intensive cropping. The Project is designed to address these problems and is consistent with Mission and GOCR strategies to achieve stabilization and economic recovery.

The goal of the proposed Project is the economic stabilization and recovery of Costa Rica through the more efficient use of its resources, including underutilized areas with agricultural potential.

The Project's purpose is to provide a basis for the efficient and equitable socio-economic development of the area by increased access to markets/services, agricultural assets (e.g. land) and by expanding community level infrastructure and the knowledge base required to plan and initiate productive investments.

The Project consists of the following components: 1) Road Improvements designed to create an internal network of all-weather gravel roads which will overcome the access problems within the Project area; 2) Community Development Fund which will provide grants to village level development associations for community initiated projects, primarily of a social infrastructure nature; 3) Project Coordination and Area Development Studies which will assist the GOCR in monitoring and coordinating Project activities as well as financing feasibility and area planning studies to guide and direct further investments in the Project area. A grant-financed Project Advisor will assist in these activities; and 4) Land Purchase and Titling activities which will be financed entirely by the GOCR. Large blocks of land with agronomic potential will be acquired for the purpose of future colonization. Titling activities will provide tenure security to small and medium sized farmers.

III. PROJECT RATIONALE AND DETAILED DESCRIPTION

A. Background

1. The Macroeconomic Crisis

The economic crisis which Costa Rica is experiencing has been monitored and thoroughly documented by the Mission during the past two years^{1/}. To date, the economy continues to deteriorate and will

^{1/} Analyses and documentation of the evolution, dimensions, and impact of the crisis have been presented (and are available in LAC files) in: a macroeconomic update prepared by Clark Joel for the November 1982 PAAD; Clarence Zuevas Jr., Costa Rica: A Review of Macroeconomic Conditions, with Projections to 1985, September 12, 1981; Academia de Centroamérica, Costa Rica: Una Economía en Crisis, December 1981; Clark Joel's macroeconomic assessments of February 1982 (for the CDSS) and October 19, 1982; Academia de Centroamérica, Costa Rica: Problemas Económicos para la Década de los 80's, December 1980; IBRD, Costa Rica: Current Economic Position and Prospects, November 1980; IBRD, Costa Rica: Trade Incentives and Export Diversification, November 1980; University of Costa Rica, Evolución de la Industria en Costa Rica durante el año 1981 y Perspectivas para 1982, December 1981, Costa Rica: Country Development Strategy Statements, FY 1983 and FY 1984; and Costa Rica Private Sector Study, 1982.

experience economic stagnation in 1983 as GOCR structural adjustments (The IMF Board of Directors approved a \$100 million Standby Agreement for Costa Rica on December 20, 1982) begin to take effect. The economy continues to be plagued by:

- a declining GDP (estimated to have dropped by 9.1% in 1982); with a further decrease of 2 to 3% anticipated for 1983,
- a massive public and private external debt,
- high unemployment and underemployment rates,
- a declining level of exports,
- a deterioration of real per capita income, which has been declining steadily since 1979,
- an annualized inflation rate presently estimated at 25% for 1983 (as measured by the consumer price index for low and middle income groups).

Costa Rica is embarking on a long-term and difficult recovery program to overcome a legacy of an expansionary public sector and anti-export biases which have weakened its productive sectors. Economic analysts do not anticipate substantial economic recovery in the near future. Costa Ricans will have to face a long period of stringent financial and fiscal discipline, characterized by high unemployment, eroded purchasing power, food shortages and cut-backs in public services as their economy undergoes a far-reaching structural adjustment. Costa Rica's economic crisis clearly poses serious challenges to the country's economic and political system, particularly when considered in the context of the disruption affecting all of Central America.

Recent Mission documents have thoroughly described the efforts being made by the GOCR to address the country's crisis. Consistent with the requirements contained in the GOCR agreement with the IMF, these efforts include:

- a rescheduling of the public and private sector debts,
- dramatic reduction in public expenditures,
- elimination of subsidized pricing structures for public utilities and petroleum products,
- diversification of the country's exports to reduce dependencies on traditional products; and

- analysis and revision of existing tariff, tax and incentive structures as part of an attempt to encourage exports and foreign investment.

Clearly most of these efforts are now directed at stabilizing and restoring confidence in the economy as well as bringing about fundamental policy changes to create a more favorable climate for private sector investment. However, Costa Rica cannot afford to neglect specifically targeted long-term development activities in the agricultural sector if the recovery program is to succeed.

2. Significance of Agriculture to the Recovery Effort

Costa Rica has long been and will continue to be an agricultural country. Its agricultural sector accounts for approximately 21% of its GDP, employs 30% of the country's labor force and generates roughly 65% of its export earnings. Agriculture's role as the mainstay of the Costa Rican economy is perhaps best reflected by the fact that historically the country's "boom and bust" cycles have been tied primarily to the price fluctuations of its commodity exports.

Costa Rica recognizes that it needs to increase and diversify all of its exports if it is to recover its former standard of living and embark again on a path of long-term dynamic growth. Given its relative significance in overall exports, this is particularly true of the agricultural sector. A USAID-commissioned study by Arthur D. Little (ADL) Inc. has identified the development of non-traditional agroindustry as one of the most important means of achieving the export growth and foreign investment levels which are essential to Costa Rica's recovery and long-term economic stability ^{1/}. Mission discussions with World Bank, IDB and IMF teams support the ADL study conclusions. Costa Rica must increase its exports of primary traditional and non-traditional agricultural products, and the agricultural sector must also provide the raw materials for processed and semi-processed agricultural exports. Similarly, in order to reduce its dependence on imports, Costa Rica must increase the production and yields per hectare of the agricultural products which it can produce efficiently, such as sorghum, fluid milk, and others.

Unfortunately, the sector is plagued by two fundamental problems which contribute directly to the economic crisis and which must be addressed during the structural adjustment process: (1) an overdependence on traditional agricultural export commodities and (2) the relative stagnation of value added by the agricultural sector. For example, the structure of agriculture production has not changed significantly during the past twenty years. In 1980, the traditional export

^{1/} Arthur D. Little International, CENPRO: In the Context of an Export Development Strategy for Costa Rica, October 1982

products (coffee, bananas, meat, sugar, and cacao) accounted for 65.2% of the value added in agriculture compared to 63.2% in 1962. Any declines in traditional export commodity prices have naturally had a severe impact on export earnings and on the economy in general. Thus, in 1981 while coffee, meat, banana and sugar export volumes increased by 34%, 28%, 3% and 1% respectively, total export earnings increased by just 3%.

The relative stagnation of agriculture and its inability to keep up with population growth is reflected by the sector's contribution to GDP. It grew at an average annual rate of 5.6% during 1962-73. But only by 1.4% during 1973-81 as the more easily accessible agricultural "frontier" diminished, the effects of soil and forest resource degradation began to be felt, and further increases in production began to require the use of additional inputs resulting in higher production costs. Similarly, while in 1962 Costa Rica was self-sufficient in corn, imported 6% of its beans, and only 2.7% of its fluid milk requirements; by 1980 it was importing 43% of its corn, 45% of its beans and 15% of its milk ^{1/}.

The "stagnation" which characterizes the sector will require concerted medium and long-term efforts particularly to increase yields per unit of land. Among the proposed solutions to the problem are: support for more effective crop specific research and extension activities by the Ministry of Agriculture and Livestock (MAG) under the Interamerican Development Bank's (IDB) pending Increased Agricultural Productivity Loan, utilizing private sector producers' associations as extension agents, and allowing market prices to provide the incentive to farmers to adopt improved technologies to increase yields.

3. Development of Areas with Agriculture Potential

For agriculture to play its all important role in the recovery effort, underutilized and underdeveloped land with agricultural potential will have to be brought into production. Much of the remaining agricultural "frontier" has the agronomic conditions which are apt for producing non-traditional export crops. For example, the Atlantic Basin, a fairly recent agricultural frontier, is making headway in the production of many of the non-traditional export crops such as: pejibaye for hearts of palm, ornamental plants; root crops such as tiquisque, malanga, yuca and ginger; coconut; plantains, macadamia and

^{1/} Interamerican Development Bank, Increased Agricultural Productivity Loan Paper, November 1982.

pineapple ^{1/}. While most of these crops as yet are not significant foreign exchange earners (currently they account for approximately 5% of export earnings), a start has been made in diversifying agricultural exports. In addition, some of these lands also have the potential to produce more basic foodcrops for domestic production, particularly corn, beans and rice.

The development of underutilized land with the agricultural potential to produce traditional and non-traditional agricultural products will require long-term effort. The phased development of these areas should be started now in order that they can equitably participate and contribute to long-term recovery. One of the areas which has received increasing attention for developmental as well as geopolitical reasons is the Northern Zone of Costa Rica.

4. Rationale for Geographic Focus

GOCR and AID interest in the Northern Zone is not new. In preparing the FY 82-86 CDSS, the Mission examined Costa Rica's rural cantons utilizing a composite index procedure to identify cantons with a high agricultural development potential and low levels of basic needs satisfactions. ^{2/} A group of cantons in the Atlantic Zone and in the Northern Zone (Upala, Guatuso, Los Chiles and La Cruz) were identified as being in the top third of all the rural cantons in development potential and the bottom third of rural cantons in satisfaction of basic needs. The Mission noted that these areas should, subject to further analyses, receive priority in future development assistance efforts because fewer trade-offs between growth and equity would appear to exist. The Mission's current Agrarian Settlement and Productivity Loan, targeted on the Atlantic Zone, resulted in part from this preliminary CDSS analysis.

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- 1/ Executive Secretariat for Agricultural Planning (SEPSA), Agricultural Sector Assessment, May 1982. These as well as other agricultural products are mentioned as having viable export potential by the World Bank, IDB as well as agronomists; e.g. University of Florida, Technical Report on the Prospects for AID Economic Assistance to ITCO Abentamientos in the Northern Provinces of Guanacaste and Alajuela, February, 1982; Russell Desrosiers La Posibilidad de Rehabilitar y Diversificar la Industria del Cacao en Costa Rica, June, 1981.
- 2/ Agency for International Development, Costa Rica: Country Development Strategy Statement FY 82-86, January 1980. These indices were developed utilizing available socio-economic data on health and education in the case of the basic needs index and value of product per hectare, in-migration and land use for the agricultural development potential index.

For geopolitical reasons, the GOCR is also emphasizing the Northern Zone as a development priority. Because of continuing difficulties and border incidents with Nicaragua, the GOCR considers the integration of the "border" cantons into the Costa Rican economy as being of the highest priority.

In sum, the selection of the Project area has a developmental as well as geopolitical rationale.

5. Description of the Project Area

The GOCR and the Mission have carried out a number of detailed studies on agronomic, environmental and socio-economic aspects of the Northern Zone (See Annex 14). The area with the more immediate and greater development potential consists of the cantons of Upala, Guatuso and La Cruz's Santa Cecilia district -- covering approximately 265,000 hectares and with a population of almost 35,000 people (See Map 1). ^{1/}

The area is characterized by a relatively dispersed population (averaging 13 persons/km²) with the majority of the inhabitants living in small communities of less than 500 people. During the early 1970's the area's 10% migration rate was second only to the 18% rate experienced by the Atlantic Basin cantons. According to local leaders in-migration continued through the 70's. ^{2/} The reader is referred to Annex 7, Social Soundness Analysis for a detailed description of the area's socio-economic conditions.

^{1/} The cantons normally referred to as the "Northern Zone" from west to east are: La Cruz, Upala, Guatuso, Los Chiles, San Carlos, Sarapiquí, and Pococi. The southern portions of San Carlos, Sarapiquí and Pococi are relatively well integrated into the Costa Rican economy. While the northern portions of these cantons and Los Chiles lack adequate roads, rural infrastructure and have a small dispersed population, they also suffer from ecological and agronomic problems such as poor drainage and soils which severely limit the agricultural potential of that area.

Most of La Cruz canton, because of its shallow soils and a pronounced dry season, has an agricultural economy based on extensive livestock operations. Except for a few isolated pockets of more intensive crop agriculture, the land cannot support a larger agricultural population.

^{2/} While current data in in-migration is not available, an ACDI team which interviewed area farmers and community leaders found some fairly recent migrants particularly from the Meseta Central. Agricultural Cooperative Development International (ACDI), Assessment of Cooperative Organizations in the Proposed Northern Zone Development Area and Strategies for their Incorporation into the Project, November, 1982.

The Project area has extremely low standards-of-living in comparison to the rest of the country. Infant mortality rates in Upala (40 deaths/1000 live births) and Guatuso (54/1000) are significantly above the national average (19/1000) and above the average for all rural cantons (27/1000). These cantons also consistently ranked in the bottom ten of the nation's 52 rural cantons in MIDEPLAN's indices measuring levels of health, education, and housing. Guatuso and Upala ranked last and third from last respectively as the worst rural cantons in an overall index measuring satisfaction of basic needs which MIDEPLAN used as a proxy for per capita income ^{1/}. Another recent survey of small farmers carried out by MIDEPLAN confirms the continuing socio-economic problems of the project area (See Annex 7, Social Soundness Analysis).

The major problem and constraint in the area which tends to reinforce the low income levels and standards of living and hinders further development, is the lack of adequate all-weather roads. Over 50% of the farmers recently surveyed by MIDEPLAN indicated that the repair and construction of roads was the principal activity that the GOCR should carry out in the area (See Annex 7, Social Soundness Analysis). With the exception of a stretch of all-weather road from Cajas on the Inter-American Highway to Upala, another from La Cruz to Santa Cecilia, and a third (recently constructed section) from El Tanque to San Rafael de Guatuso, existing internal roads in the area are impassable except for a brief period during the dry season (See Map in Annex 10). A study prepared by Bel Ingenieria S.A. revealed that the 359 kms of roads in Upala resulted in a road density indicator (hectares/kms. of road) of 446 has/km compared to the national average of 308 has/km. ^{2/} Moreover, 297 kilometers (83%) of the existing roads in Upala are dirt and gravel which Bel classified as in "bad" condition, i.e. unusable in the rainy season. MIDEPLAN calculated a composite index based on the length and condition of existing roads, population and other road variables to determine which rural cantons required upgrading or construction of roads. Guatuso and Upala again ranked as some of the worst rural cantons - placing second and third to last in the ranking.

The lack of adequate internal access has also had an impact on the land use patterns and level of agricultural production in the Project area. The 1973 Agricultural Census contains the last accurate data on land use. However, the Environmental Assessment team (Annex 9) conducted aerial reconnaissance and field visits in the area and found that significant changes in land use patterns had occurred since 1973, particularly in the amount of land in forest and pasture. Of the approximately 265,000 hectares, roughly 75% (199,000 hectares) has been deforested and two-thirds of this deforested area (131,000 hectares) has been converted into pasture. It is estimated that perhaps 15,000 hectares are currently in annual and perennial crop production.

1/ MIDEPLAN, Study of Rural Poverty in Costa Rica

2/ Bel Ingenieria S.A., Programa de Mantenimiento, Rehabilitacion y Mejoramiento de Caminos Vecinales - Informe Final, Octubre, 1982.

Thus perhaps 120,000 hectares are in a combination of forest, swamps, and unutilized land.

Annual and perennial crops such as rice, cacao, beans, corn and yuca account for 68% of the area's total value of production with livestock accounting for the remaining 32% -- the total value of agricultural production in 1983 was estimated at \$12.5 million (See Annex 8, Economic Analysis and Section VII. C.). According to local leaders and farmers interviewed during field visits by the Environmental Assessment and Economic Analysis teams, there is a trend towards extensive beef cattle operations in the area. Cattle farmers from other parts of the country are buying up and consolidating parcels in the Project area. Given the lack of all-weather roads, livestock operations are preferred because the risk of not being able to market the product due to transport problems is virtually eliminated. As farmers in the area say, "Cattle can wait and cattle can walk". Yields for existing crops and livestock operations are in most cases, lower than average national yields with the exception of mechanized rice and of cacao. While the low yields are due in part to a lack of agronomic knowledge, the more significant factor is the lack of adequate roads. This increases the risk, particularly of crop production farmers, and results in their limiting the area in production and the use of inputs ^{1/}.

The Environmental Assessment team confirmed the findings of other studies and analyses of area soils maps -- the Project area has significant agricultural potential. Approximately 130,000 hectares (50% of the land area) is suitable for intensive annual and perennial crop production. Indeed, approximately 10% of Costa Rica's land which is suitable for annual crop production can be found in the Project area (See Section VII. D. and Annex 9, Environmental Assessment). The trend toward increasing land concentration and extensive beef cattle operations is disconcerting. The Project area can support a larger population dedicated to more intensive agriculture and make a substantive contribution to domestic foodstuff production (See Annex 8, Economic Analysis).

According to 1973 census data, the project area was characterized by relatively equitable land distribution -- for example in Upala canton, farms under 100 hectares in size (87% of the farms) accounted for 43% of the total area in farmland. In a canton adjacent to the Project area (La Cruz), 72 percent of the farms were less than 100 hectares in size but they accounted for only 9% of the canton's total farmland. As discussed above, the current tendency is towards greater land concentration. Despite these land use trends, the Social Soundness

1/ The University of Florida's Technical Report on the Prospects for AID Economic Assistance to ITCO Auentamientos in the Northern Provinces of Guanacaste and Alajuela, February 1982, concludes that: "The causes of slow development of these lands are related more to infrastructure and socio-economic factors than to soil properties".

Analysis (Annex 7) finds that a critical squatting problem does not exist in the Project area although it is increasingly visible in the adjacent cantons of Los Chiles and La Cruz.

Many farmers do appear to lack tenure security. While the 1973 Agricultural Census showed that approximately 20 percent of the area farmers did not have title to their land, more recent informal surveys by MIDEPLAN and the MAG indicated that close to 50 percent of the farmers interviewed did not have title to their land. In summary, planned interventions in the Project area should focus not only on improving internal access but in supporting the maintenance of a relatively equitable and productive land distribution base.

B. The Project's Relationship to the GOCR Development Plan the CDSS, and Other AID Activities.

Section III.A. outlined how this project fits into the GOCR's stabilization and long-term recovery effort. The Project also fits within the Mission's assistance strategy during this difficult period. As discussed in the Mission's 1983 CDSS, FY 1984 ABS and the November 1982 PAAD, the Mission strategy places the highest priority on urgent measures that support the country's economic stabilization and recovery program in a manner intended to preserve the basic tenets of a democratic society and a free market economy.

While the bulk of current and planned USG assistance is ESF and P.L.480 Title I, the Mission recognizes that it must support carefully targeted activities carried out by the public sector which deal with medium and long-term development problems, are supportive of the productive sectors, and will assist the country's other efforts to achieve economic recovery. The Mission's existing D.A. Loans in the Agricultural Sector (Agrarian Settlement and Productivity, the Natural Resources Conservation and Commodity Systems Loans) emphasize the institutional development of some of the key agencies operating in the sector, i.e. MAG and IDA. The presently proposed Project focuses more on factors needed to bring about increased production. The improved institutional capacity resulting from existing loans will enable the concerned institutions to better play their part in the complementary actions required to develop the Project area.

C. The Project's Relationship to Other Donor Activities

Several donors -- the IDB, the United Nation's (UN) International Fund for Agricultural Development (IFAD), and the World Food Program -- have planned or existing projects in the Northern Zone. The IDB has the most significant number of on-going or planned activities encompassing roads, rural electrification, municipal facilities and services, and agricultural research/extension. All of these IDB activities are being undertaken via loans which have a nation-wide coverage. The IDB is financing the paving of roads in the Northern Zone, but not in the Project area, under the Ministry of Public Works and Transport's

(MOPT) Second and Third Stage Betterment Programs (See Annex 10). In addition, its Municipal and District Development Loan with the Institute for Municipal Development and Assistance (IFAM) will finance the construction of penetration roads and farm-to-market road upgrading. The Mission has discussed these road activities with MIDEPLAN, the IDB, the MOPT and IFAM to coordinate the road improvement activities proposed under this Project. As discussed in Section III E. 1. and Annex 10, the road improvements component of this Project complements the IDB efforts. The roads selected by the IDB provide points of entry into the Project area but do not address the area's internal access problem.

The IDB's \$26.5 million Rural Electrification Loan to the Costa Rican Electricity Institute (ICE) includes financing of transmission lines to and distribution networks around the towns of Upala, San Rafael de Guatuso and Santa Cecilia. It is expected that these activities will be completed by the end of 1985.

The IDB's \$26 million Increased Agricultural Productivity Loan, currently awaiting ratification in the Legislative Assembly will upgrade the research and extension activities of the MAG throughout the country. The Project area will be a focal point for these activities through the creation of a new Regional Agricultural Center located in Upala, the establishment of additional extension agencies, and crop specific research and extension programs. This Project will complement the IDB effort by improving access to markets and extension services which should result in increased receptivity by farmers to the technologies developed and disseminated under the IDB Project.

The COCR is now working on a project proposal to IFAD for a \$10 million loan to finance agricultural credit for small farmers, development of IDA settlements, marketing, and small agroindustrial modules. The detailed project document has yet to be developed. It is expected by the COCR that implementation of this proposed loan will begin in mid-1984. Because the AID project concentrates on initial infrastructure activities and the counterpart resources are to be used in part for land purchases and titling, this Project complements the proposed IFAD project. The MIDEPLAN office which is working on this Project is also coordinating the preparation of the IFAD project to ensure that this complementarity is maintained. IFAD staff plan to visit Costa Rica after the submission of the project proposal by the COCR.

Finally, the United Nations' World Food Program (WFP) is currently discussing a proposed two-year project titled Education and Basic Sanitary Infrastructure for Community Development in Rural Areas targeted at all of the Northern Zone cantons. The WFP would provide food to families participating in self-help community projects (e.g. latrines, potable water facilities); health/nutrition and literacy training programs; and small agricultural production and processing projects (e.g. small ruminants, solar dryers, etc.). While the Ministry of Health would be the institution with the most significant implementing and coordinating responsibilities under the WFP Project, other

institutions such as the Ministry of Public Education, the Costa Rican Institute for Aqueducts and Sewage, CARE, the Peace Corps, Municipalities and local community groups would also have implementing roles. The WFP will only finance the costs of the food and ocean shipping (\$2.2 million) with the remainder of the project costs (\$3.7 million), borne by the GOCR institutions or municipalities. Supplies and materials for the local projects would have to be provided or financed by the latter institutions. The Mission has discussed this Project with the UNDP representative and MIDEPLAN. The Project's Community Development Fund component, described in Section III.E.2., could complement some of the WFP community-level social infrastructure projects in the area by covering the costs of materials and equipment with the WFP providing food to the community volunteers. It was agreed that MIDEPLAN and DINADECO would coordinate with the proposed WFP project during its preparation and implementation -- the project is expected to start in late 1983.

D. Goal and Project Purpose

The reader is referred to the Logical Framework in Annex 2 which contains a thorough but concise statement of the project's design.

1. Goal

The goal of the proposed Project is the economic stabilization and recovery of Costa Rica through the more efficient use of its resources including underutilized areas with agricultural potential. The achievement of this goal requires that there be increased production of traditional crops and livestock as well as non-traditional crops. This in turn requires that underutilized areas overcome constraints which may limit increases in production.

2. Purpose

The Project's purpose is to provide a basis for the efficient and equitable socio-economic development of the area by increased access to markets/services, agricultural assets (e.g. land) and by expanding community level infrastructure and the knowledge base required to plan and initiate productive investments. The Project's purpose will be achieved by carrying out crucial and carefully selected road improvements and community level infrastructure activities which will provide the access to production areas as well as markets and services; and feasibility studies and pilot project activities which will provide the information basis for future investments. In addition, counterpart funds will be used to finance land purchases and titling activities addressing land tenure and distribution issues which will ensure equitable participation by small farmers in the area's development.

At the end of the Project some of the major initial constraints to further development will have been resolved. The end-of-project conditions anticipated are:

a. Some 40,000 people in the Project area will have all-weather access to markets and services as a result of the 152 kms of improved roads.

b. Approximately 65 community infrastructure development projects will have been completed benefiting approximately 20,000 people.

c. A body of analytic and feasibility studies and pilot projects will have been completed. Some of these studies should result in agroindustry and other agriculturally related investments.

d. An area of approximately 15,000 has. with agricultural potential will be available for colonization, which will be under-way for 700-800 families.

e. Titling activities will be completed for approximately 1,000 farm units.

E. Detailed Project Description

The Project consists of four components: Road Improvements, Community Development Fund, Project Coordination/Area Development Studies, and Land Purchase/Titling. This last component is totally financed with GOCR counterpart.

1. Road Improvements

There is general agreement among the GOCR, Mission, local leaders, area inhabitants and the various consultants who have analyzed the Project area that the lack of adequate all-weather roads is the major constraint to the development of the area. Without reliable access to production areas, markets, and economic and social services, the area will remain economically backward. Farmers will not expand the area in crop production or utilize improved technology. Underutilization of land with intensive agricultural potential will continue. Incomes and standards-of-living will remain low. Few, if any, significant additional investments by the public or private sector will make sense.

This component will finance a major road improvement program in the Project area to address this constraint. A total of 152 kms of existing dirt roads will be upgraded to all-weather gravel status. Section VII A. summarizes the design standards and technical specifications which are further detailed in Annex 6, Technical Report-Road Improvements.

The 152 kms of roads which will be improved consist of:

a. A trunk farm-to-market road from Santa Cecilia in the west to San Rafael de Guatuso on the east, covering a distance of 120.4 kms. with eleven permanent one-lane bridges. This trunk road will provide the primary internal access in the Project area and will also

connect with existing all-weather roads leading out of the area at Santa Cecilia, Upala and San Rafael de Guatuso (See Maps in Annex 10 and Annex 6).

b. Three spur road segments, totaling 31.4 kms, at the following points with a total of four permanent bridges:

Brasilia - Dos Rios (15.5 kms)
Cuatro Bocas - San Isidro (9.0 kms)
Canalete - Colonia Puntarenas (6.9 kms)

The selection of the roads to be upgraded was based on several factors. The first was a detailed analysis of the other existing and proposed road improvement activities in the Northern Zone (See Annex 10). The analysis showed that the Project's proposed roads complement several of these other road improvement activities. For example, the trunk road connects with two IDB financed road segments which will be paved. The second factor was an analysis of area soils maps, land use capability maps, and the proposed road segments by the Environmental Assessment team. The team concluded that the road segments detailed above provide access to areas with excellent agricultural potential (See Section VII D.). The final factor considered was that the improved roads should connect the major population centers and have a zone of influence that would incorporate most of the area's population. As indicated in the Section VII B. and Annex 7, Social Soundness Analysis, 95% of the population is located within 10 kilometers of either side of the trunk or radial roads.

The timely implementation of this component is crucial to the short and medium term development of the Project area and will influence to some degree the implementation of the other components. Therefore the Mission carefully considered the scheduling of road design and construction activities and the responsibilities of the implementing agency -- the MOPT. Currently the MOPT has significant supervisory responsibilities under existing road construction projects and a backlog of road maintenance work. In order to ensure the expeditious initiation and completion of the road improvements the following implementation arrangements have been agreed on:

a. The selection of an engineering firm to undertake detailed design and construction drawings and construction supervision will be made on a pre-qualification basis, with the notice published immediately after signing of the Project Agreement. Host country contracting will be used.

b. Actual road improvement work is proposed for host country contracting on a competitive basis. The road work IFB will permit a single contractor to bid for all of the road and bridge work or for either of the two separate sections as indicated in Annex 6.

c. The MOPT would assign a Project Engineer for this Project to monitor the road contractor(s) and supervisory contractor. (The supervisory contractor would be responsible for the day-to-day monitoring, testing and approval of the road work). The Mission has proposed the naming of a Project Engineer as a Condition Precedent to Initial Disbursement.

d. The contract for detailed design work and supervision will provide for the contractor to prepare draft construction IFBs and to assist in evaluating the resulting bids. It is intended to establish a working group with representation from MOPT and AID, to work with the contractor on the preparation of the IFB.

Section V, Implementation Plan contains a more detailed description of responsibilities and timing of events. It is expected that road upgrading work could begin in January, 1985 and be completed by December, 1986.

The total cost of this component is \$13,445,000. The AID loan funds totaling \$13,400,000 would be used to finance the road construction and design/supervision contracts.

This sum is based on the cost estimates of bridge construction, and physical movement of earth and gravel as indicated in Annex 6, Technical Report -- Road Improvements, with an upward adjustment of an additional 10% due to start up being almost a full year later than contemplated in the Consultant's report.

The GOCR would finance the counterpart supervision cost estimated at \$45,000.

The FAR system would not be used because of technical considerations and inflation concerns. Because of the heavy and prolonged rainfall patterns found in the Project area, contractors cannot be expected to completely finish work on discrete segments of road before moving on to other segments. Instead, major cuts and fills are often worked on when weather permits, with compaction, gravelling, etc. catching up many months later.

2. Community Development Fund

As described in Section III. A. 5. and Annex 7, Social Soundness Analysis, the project area is characterized by a low level of satisfaction of basic needs, e.g. housing, potable water, community centers, rural health services, sanitation facilities, etc. To some extent, these needs can be met by the inhabitants of the hamlets and

communities themselves, provided the population is organized and that suitable financial assistance is made available. Also, given the geopolitical considerations underlying the project as a whole, it seems desirable to stimulate participatory activities at the grass roots level, where the assistance of government can be directly and immediately perceived in a non-paternalistic fashion, thus fostering a spirit of cohesiveness in Costa Rican communities.

This component will finance the establishment of a Community Development Fund to grant-finance viable community projects. Operating much like the Mission's highly successful Special Development Fund (SDF), it would finance the purchase of materials and equipment while the community would contribute the land and labor for the project. Many of the small, dispersed communities lack basic community infrastructure. Small multipurpose community centers that serve as a school, health post, and meeting hall; small wells for potable water, and small bridges are good examples of the projects that would be financed. In addition to being an efficient and inexpensive way to establish some basic social services, the Community Development Fund will help solidify some weak community organizations scattered throughout the area. The existence and promotion of the fund would inevitably cause additional communities to organize and elect community leaders, demonstrating the benefits of democratic organizations in the area.

The nature of the Community Development Fund component is such that it is not possible to identify at this time all the activities that will be financed. However, the Mission has undertaken an analysis of demand, using various devices for this end, e.g., participating in town hall and community development association meetings, discussing with World Food Program officials the results of their inquiries on health related infrastructure needs in the project area, and consulting the survey and interview data gathered by MIDEPLAN in its 1982 Rural Poverty Study (described in Annex No. 7). All of these findings were discussed with DINADECO officials in terms of community capacity to provide their contributions to projects. DINADECO also informed the Mission as to project requests it has on hand that it has been unable to respond to because of lack of resources.

The above described analysis clearly demonstrates that the demand for the types of projects contemplated exceeds the \$500,000 proposed for the Community Development Fund.

Fortunately there is a suitable institution operating in the region which lends itself to implementing this component. The Dirección Nacional de Desarrollo de la Comunidad (DINADECO), established in 1967 and operating under the Ministry of Government, has a network of trained field staff who assist (and sometimes organize) community groups to identify community needs, legally incorporate themselves, and carry out specific development projects. As required, DINADECO field staff perform a catalyst/go-between role between the community and specialized

institutions to obtain technical assistance, and help the community get the job done. During the 1970's DINADECO and the Banco Popular operated a program similar to the USAID's SDF program under which local community groups could receive funds for small social infrastructure projects.

Currently, four DINADECO promoters are working in the project area. They are backstopped from a regional office in Ciudad Quesada (adjacent to the Project area). These promoters are currently working with and through 31 legally organized Community Development Associations, some of which cover several adjacent community groups. They have either completed or have in execution 25 infrastructure projects and 16 agricultural production projects. The principal constraint on expansion of this program is lack of resources to complement community self-help efforts. Mobility of the promoters is also a problem. This component of the project is designed to remove those constraints.

The AID Loan will finance the establishment of a \$500,000 fund to provide grants to communities for viable community development projects. An additional \$50,000 will be used to purchase motorcycles, other equipment for the promoters and to pay some of their operating costs (See Annex 12 for detailed cost estimates and discussion of inputs).

DINADECO will utilize the following criteria for selecting specific projects:

- a. The maximum value of the grant component of any one project will be \$7,500 equivalent.
- b. The grant component will not exceed 70% of the total cost of the project.
- c. All projects will be developed by legally organized Community Development Associations with the participation and/or full knowledge of a minimum of 50 householders.
- d. No single community group will be benefitted by grants in excess of \$10,000, in the event that there is more than one project in a given community.
- e. All land and manual labor, and to the extent possible, local materials will be provided by the community.
- f. All projects will be of a social infrastructure nature.

The MIDEPLAN Project Coordinator will approve the grants made under this component, assuring that selection criteria have been met, coordinating with the appropriate Ministries to assure that the project does not duplicate existing/planned activities of a similar

nature, and determining the public sector staffing implications, if any, of the project.^{1/} It is contemplated that a project request format similar to that used for the Mission's Special Development Fund would be developed. It will contain the relevant information on the community project and its costs (See Section V, Implementation Plan, for a detailed discussion of responsibilities).

DINADECO will open a special account, into which AID will make suitable deposits on an advance basis. All procurement, cash payments to Community Development Associations, payment of operational expenses of promoters, etc. authorized by the Loan Agreement will be made by DINADECO against this account.

It is estimated that by the end of the project approximately 65 social infrastructure projects will be completed. At least 40% of all the hamlets and villages in the Project area will be affected^{2/}. An estimated 20,000 people will benefit from these projects. The total cost of this component is \$854,000. AID loan funds totalling \$550,000 will finance the fund, equipment and some operational expenses. Local communities would contribute the equivalent of \$214,000 in the form of land and labor. DINADECO will finance salaries and other operating costs, estimated at \$90,000.

3. Project Coordination and Area Development Studies Component

It is agreed with the GOCR that a MIDEPLAN sub-regional office will be established in Upala, the largest city and commercial and transportation hub of the Project area. This office will become a unit in the system of regional planning offices established by MIDEPLAN and will be backstopped by the full range of services and technical departments found in MIDEPLAN headquarters in San José. The Upala office will be staffed initially by a three or four person MIDEPLAN team (a project coordinator, his professional assistant, a clerk/typist, and perhaps a chauffeur). The Office will be expected to maintain close and continuous contact with all developmental oriented entities, public and private, located in the Project area. This team will be assisted by an AID grant financed advisor, experienced in managing area development projects. The Advisor will report directly to the USAID Rural Development Division. He will assist the MIDEPLAN Project Coordination office in monitoring project implementation, assisting in the evaluation of proposed area development studies, and in the approval of community development projects.

^{1/} For example, the construction of a community center which can serve as a health post may require the mobilization of timely Ministry of Health personnel to service the center. This may or may not be feasible.

^{2/} Quite often, several nearby villages band together into one Community Development Association and share certain facilities.

The Loan Agreement will establish a legal basis for MIDEPLAN to issue an internal regulation under which: (a) terms and conditions of employment of the Upala office staff will be established; (b) the functions, organizational and administrative arrangements, etc. for the operation of the office will also be established. The principal functions of the office, to be embodied in the MIDEPLAN regulation, are as follows:

a. To monitor the implementation of all components of this Project, including approval of all grants from the Community Development Fund.

b. To initiate and monitor studies and pilot projects financed from the Pre-Investment Fund special account described below.

c. To represent MIDEPLAN in the planning and evaluating of GOCR and other donor activities, on-going and future, located in the Project area and to ensure proper coordination between this project and other efforts.

d. To provide Executive Secretariat services to a Sub-Regional Consultative Committee, described in Section VII. E.1.

The Pre-Investment Fund is a functioning entity, with its own statute and regulations. It is administered by MIDEPLAN (See Annex 17 for a description of the Fund). Under the umbrella of this fund, and thus taking advantage of its freedom from certain onerous aspects of Costa Rican public sector procurement regulations, a special account for work in the Project area will be established in the amount of US\$500,000 of which 50% will be provided from the loan component of this project and 50% will be in GOCR counterpart, deriving from P.L.480 Title I local currency generations. Individual studies and pilot projects financed from the fund and exceeding \$50,000 will be subject to Mission approval.

The analyses conducted thus far have uncovered a large number of potential areas for future investment, in both the private and public sectors, some of which will undoubtedly come into being on their own in response to the infrastructure investment now going into the region under AID, IDB and other donor auspices. Other investments may require new public sector financing or incentive financing to stimulate private enterprise investment. The purpose of the analytical/feasibility studies under the Pre-Investment Fund is to generate additional information on which to base future development activities by the private and public sectors, and thus prepare the way for the next round of post infrastructure investment. (See Annex 11)

Some of the topics which have been identified as possibilities for feasibility and other studies or pilot projects are as follows: grain drying installations, land preparation and harvesting machinery services, dairy processing plant, marketing arrangements for currently produced and new crops, small hydropower installations on the eastern slopes of the Guanacaste mountains, establishment of a nursery for improved cacao and other plants, and variety trials for crops with export potential (e.g. pineapple). Proposals for studies may originate with private individuals or firms. However, the results will be in the public domain and non-proprietary.

The Environmental Assessment (Annex 9) determined that it would be desirable to carry out biological and ecological inventories of the flora and fauna of the Project Area and also evaluate the hydrologic potentials of the forests and forest lands on the north slope of the Guanacaste cordillera. The Project Agreement will provide for the execution of these studies under the auspices of the Area Development Studies component of the Project.

The total cost of this component is estimated at U.S. \$1,210,000, of which the counterpart contribution will be US\$460,000 equivalent. The remaining \$750,000 from AID will be divided as follows: US\$500,000 grant and \$250,000 loan (See Annex 11 for expenditure details).

4. Land Purchase and Titling

As the Social Soundness Analysis, Section VII. B. and Annex 7, indicate, there is at present no appreciable squatter pressure on the land in the Project area from people living in the area. Also, as the Environmental Assessment points out, land with excellent potential for intensive cropping is increasingly being used extensively for beef cattle operations. The GOCR sees this as an opportunity to: (a) relieve some of the pressures for land that have been developing on the Central Plateau and in the Atlantic Zone; (b) to convert some under-utilized pasture land into intensively cropped production; and (c) to increase the population density in the area, drawing from more densely populated areas of the country.

As a result of the pattern which settlement of the Project area has followed to date, it is believed that there is a large, but unquantified, number of small/medium farmers who do not have title to their land and, consequently, have problems in providing credit guarantees acceptable to the banking system. Also, the commercial value of the land is depressed when there is no formal title, making these farm units more attractive to large cattle operators seeking to consolidate small holdings and convert them to pasture, than would otherwise be the case.

This component of the Project is designed to resolve the titling problem and to take the initial steps necessary to satisfy the GOCCR objectives. Both activities will be handled by one implementing agency, the Agrarian Development Institute (IDA), and will be financed exclusively from FY 1983 P.L.480 Title I local currency generations. No dollar funding is contemplated. Also, in order to permit the land purchasing to get underway without waiting for ratification of the Loan Agreement by the Costa Rican legislature, the funds will be made available to IDA under a discrete P.L.480 Title I Activity Agreement. These GOCCR funds will be counterpart to the Project Agreement. The implementation of the work by IDA will be monitored and coordinated by the Project Coordination Office in Upala to the same degree as other components of the Project. (See Annex 16 for a description of IDA's land purchase and titling procedures).

The equivalent of \$3,750,000 will be made available for land purchase. It is estimated that this will be sufficient to acquire approximately 15,000 hectares. Criteria for purchase will include the following:

- a. Land is to be purchased in large blocks;
- b. it is to be located within the Project area and to have soil and other properties suitable for annual crops use;
- c. preference is to be given to land presently in unimproved pasture or brush;
- d. procedures for determining value, testing soil conditions, and other factors that have been developed in connection with the implementation of AID's Agrarian Productivity and Settlement Loan will be applied;
- e. MIDEPLAN and AID approval will be required before any purchase is formalized.

It is hoped that the land to be purchased can be identified, prices agreed upon, and formalization of the transfers underway by the beginning of CY 1984. It is anticipated that seven to eight hundred families will eventually be provided with land. This would result in a 15% increase in population in the Project area. The actual settlement of colonists and financing of their establishment costs is not provided for under this Project.

No financial provision is being made at the present time for the costs of settling the colonists and getting them underway as producers. The GOCCR is hopeful that such costs can be included in the proposed IFAD project for the Northern Zone now under discussion. If

this does not work out, it is probable that local currency generations from future year P.L.480 Title I sales can be programmed for this purpose. Standard IDA procedures in selection of beneficiaries and administration of settlements will be followed.

The equivalent of \$500,000 will be made available to IDA for titling work. Farms eligible for this service will be limited in size to properties under 100 hectares. Lands adjudicated by IDA to colonists and others will be excluded, since title is subject to purchase arrangements. The funds should permit undertaking the necessary agrimeasurement, legal and registry work to provide full title to approximately 1,000 small/medium farmers.

Again, the procedures that have been developed under AID Loan 034 will be applied here. This program had been plagued with implementation problems -- primarily disputes between IDA and contractors carrying out the surveying work. It is believed that these have now been solved and that the Northern Zone Project can benefit from this experience.

IV. COST ESTIMATES AND FINANCIAL PLAN

The cost estimates for the Road Improvement Component reflect the road selection and design study by Bel Ingenier $\text{\$}$ a S.A. found in Annex 6, but increased by 10% due to a significantly later start up date than contemplated by the Consultants. It will be noted that allowances for contingencies and inflation have been made only for this component. The reasoning is that the remaining components can easily adjust the level of the activities undertaken to the amount of funds available. Given the nature of these activities (community level projects, studies, land purchase) it is in any case impossible to establish in advance an exact correlation between amount of specific activities to be undertaken and funding required.

The amount indicated for the Community Development Fund was based on discussions with DINADFCO regarding the types and costs of community projects they have funded recently. The amount shown for the Area Development Studies was determined on a somewhat arbitrary basis, as being "reasonable".

As concerns the Host Country contribution, it will be noted (Table 1) that all the funds except \$135,000 will be financed from local currency generations under P.L.480 Title I sales. It is intended to utilize generations deriving from the FY 1983 Sales Agreements.

The counterpart relating to the Road Improvement, Community Development and Project Coordination/Area Development Studies and Land Purchase/Titling components will be included in the Loan Agreement. The funds for the Land Purchase/Titling component will be handled as a separate agreement under the P.L.480 Program and will be obligated and

made available to the Implementing Agency as soon as possible, without waiting for Costa Rican Legislative Assembly approval of the Loan Agreement. The reason for this action, in addition to administrative simplicity, is to enable the land purchasing to get underway without delay before publicity on road construction forces prices upwards more than will inevitably be the case.

The P.L.480 Title I generations to be used for the Project Coordination/Area Development Studies component of the Project will be handled as a transfer to MIDEPLAN after the Loan Agreement is ratified by the Legislative Assembly.

The Project Agreement will provide that each of the two Implementing Agencies administering loan funds for local currency costs (DINADECO and MIDEPLAN) must open a special account for the management of these funds. AID will make suitable advance payments into each account, and will replenish same on a reimbursable basis against vouchers, paid invoices and other suitable documentation. All loan funds for local currency costs incurred under these components will be processed through these special accounts.

TABLE 1

SUMMARY COST ESTIMATES AND FINNANCIAL PLAN
(thousands of U.S.dollars)

<u>PROJECT COMPONENTS</u>	<u>A. I. D.</u>		<u>HOST COUNTRY</u>		<u>T O T A L</u>
	<u>FX</u>	<u>LC</u>	<u>FX</u>	<u>1/ LC</u>	
<u>1. Road Improvements</u>					
a) Engineering Design and Supervision	450	850	-	45	1,345
b) Construction Contracts	3,800	5,700	-	-	9,500
c) Contingency & Inflation	-	-	-	-	2,600
Sub-Total	4,250	6,550	-	45	13,445
<u>2. Community Development</u>					
a) Community Project Fund	-	500	-	214 <u>2/</u>	714
b) Equipment Purchases	8	3	-	-	11
c) Salaries and Operating Costs	-	39	-	90	129
Sub-Total	8	542	-	304	854
<u>3. Project Coordination and Area Development Studies</u>					
a) Studies and Pilot Projects	50	200	-	250	500
b) Equipment Purchases	25	-	-	10	35
c) Salaries and Operating Costs	375	15	-	200	590
d) Contingencies	50	35	-	-	85
Sub-Total	500	250	-	460 <u>2/</u>	1,210
<u>4. Land Purchase and Titling</u>					
	-	-	-	4,250 <u>2/</u>	4,250
<u>T O T A L S</u>	4,758	7,342	-	5,059	19,759

1/ Exchange rate used for calculating host country contributions: Q40 = US\$1.00

2/ Financed with P.L.480 Title I local currency generations.

TABLE 2

SUMMARY AID COST ESTIMATES BY LOAN AND GRANT CATEGORIES
(Thousands of U.S. Dollars)

<u>PROJECT COMPONENT</u>	<u>LOAN</u>	<u>GRANT</u>	<u>T O T A L</u>
1. Road Improvement	13,400	-	13,400
2. Community Development	550	-	550
3. Project Coordination and Area Development Studies	<u>250</u>	<u>500</u>	<u>750</u>
T O T A L S	14,200	500	14,700

TABLE 3

A.I.D. OBLIGATIONS BY FISCAL YEAR
(Thousands of U.S. dollars)

	<u>LOAN</u>	<u>GRANT</u>	<u>TOTAL</u>
FY 1983	14,200	500	14,700

TABLE 4

PROJECT OUTPUTS/INPUTS

(In U.S. Thousands of Dollars or equivalent)

	<u>AID APPROPRIATED</u>	<u>HOST COUNTRY</u>	<u>T O T A L</u>
1. 152 Km of Road	13,400	45	13,445
2. 65 Community Development Projects Completed	550	304	854
3. Body of Studies Completed	750	460	1,210
4. 1,000 Small Farmers Provided Title to Land	-	500	500
5. 15,000 Hectares of Land Purchased for Colonization	<u>-</u>	<u>3,750</u>	<u>3,750</u>
T O T A L S	14,700	5,059	19,759

TABLE 5

EXPENDITURE BY FISCAL YEAR
(Thousands of U.S. Dollars)

<u>FISCAL YEAR</u>	<u>A. I. D.</u>		<u>TOTAL</u>	<u>HOST COUNTRY</u>	<u>T O T A L</u>
	<u>LOAN</u>	<u>GRANT</u>			
1983	-	-	-	-	-
1984	500	100	600	4,220	4,820
1985	5,000	162	5,162	434	5,596
1986	6,700	163	6,863	355	7,218
1987	<u>2,000</u>	<u>75</u>	<u>2,075</u>	<u>50</u>	<u>2,125</u>
TOTALS	14,200	500	14,700	5,059	19,759

V. IMPLEMENTATION PLAN

A. GOCR Responsibilities and Administrative Arrangements

Four GOCR institutions will have Project implementation responsibilities: MIDEPLAN, MOPT, DINADECO and IDA. Section VII.E. contains a more detailed description of these institutions and their capability to handle those responsibilities.

1. MIDEPLAN

MIDEPLAN will have overall coordinating, monitoring and evaluation responsibilities for the Project. As indicated in Section III.E.3., a Project Coordination Office, located in the Project area, will be established to carry out these functions at the field level. The Director of the Office will be administratively and organizationally attached to the Regional Planning and Coordinating Division. On substantive matters he will report directly to the Minister. The Office will prepare regular quarterly reports for MIDEPLAN and AID detailing implementation progress and problems for each component of the Project and covering other relevant matters, e.g. meetings of the sub-regional Consultative Committee, and other donor activities.

In order to comply with these reporting requirements, the Office will have to establish suitable monitoring, coordination and informational system arrangements with each of the executing agencies, e.g. through monthly meetings. As indicated earlier, MIDEPLAN would handle its responsibilities regarding the analytical studies/pilot activities through the mechanisms established for the Pre-Investment Fund (See Annex 17), with the addition of an initiating and/or participatory role reserved for the Project Coordination Office.

2. MOPT

The MOPT will be responsible for supervising the implementation of the road improvement activities. As indicated earlier (Section III.E.1.) actual road work and its supervision would be contracted by the MOPT. The MOPT and the Mission will consequently be involved in the preparation and approval of the IFBs and pre-qualification of bidders. All payments to contractors will be made by the Mission on the basis of MOPT-approved vouchers and invoices.

The MOPT will assign a full time engineer to the Project, who would:

a. serve as one of the MOPT representatives on the IFB preparation working group. (See also Section VII.E., Administrative Analysis;

b. monitor the contractor supervising the road work and spot check road construction activities;

c. have authority to approve vouchers submitted by the contractors for payment by the Mission;

Payments made to contractors will be on a units of work accomplished basis, rather than the FAR system. The FAR system is not considered suitable for technical and inflationary reasons.

3. DINADECO

DINADECO will be responsible for managing the Community Development Fund. In keeping with the "bottom up" approach of this component, the DINADECO field promoters will be responsible for assisting the communities in preparing financing requests for projects meeting the selection criteria described in Section III.E.2. Once the project is approved, the field promoter will be responsible for assisting the community in its execution, e.g. obtaining funds and/or materials financed from the Fund, obtaining technical assistance from other agencies if necessary, monitoring progress on the project, and assuring that the community retains vouchers for expenses incurred and financed from the Fund.

The DINADECO Regional Supervisor in Ciudad Quesada will have overall responsibility for the field activities under this component including:

- a. supervising the field promoters;
- b. reviewing community project descriptions and financing requests, and forwarding them to the MIDEPLAN Project Coordination Office for final approval;
- c. helping the field promoters in obtaining technical assistance from other government agencies for a specific project;
- d. participating in MIDEPLAN Project review meetings as DINADECO representative;

DINADECO will open a Special Account in a bank to handle loan-financed disbursements under this component. DINADECO's Administrative Department will maintain the financial records for this account. Advances will be made to community development associations with approved projects to initiate work. Additional funds will be provided upon presentation of receipts approved by the Regional Supervisor. A small petty cash fund will also be made available to the Regional Supervisor to cover operating expenses.

B. Disbursement Procedures

No deviation from standard AID disbursement procedures is anticipated. Materials and equipment procured in the U.S. or other Code 941 countries will be paid using AID's standard disbursement procedures.

Disbursement for local currency costs will likewise be made in a manner acceptable to AID. These procedures will be transmitted to the Implementing Agencies via Implementation Letter(s).

C. Procurement Procedures

The selection of consultants and contractors, procurement of equipment and material, shipping and insuring will be done in accordance with standard AID procedures which will be detailed in the Project Agreement. It is anticipated that loan-financed equipment, materials and services will be procured directly by the implementing institution, or in the case of local community development associations, by them.

D. Schedule of Major Events

Disbursement of funds is scheduled over a four fiscal year period. The Project Assistance Completion Date (PACD) will be three years and ten months from the date of signing (planned for late July 1983). Ratification by the Legislative Assembly is not expected to occur until September 30, 1983. A detailed Schedule of Major Events is included as Annex 13.

VI. MONITORING PLAN

A. AID Project Monitoring Arrangements

Monitoring will be exercised by a Project Manager assigned from the USAID's Rural Development Division (RDD). He will have primary responsibility for monitoring the Project. The Mission will use Project Grant funds to finance a PSC Project Advisor to assist the MIDEPLAN Project Coordination Office and the RDD Project Manager in implementing the Project. The Project Manager will work closely with the MIDEPLAN Project Coordination Office, and the GOCR implementing institutions to insure that the provisions of the AID Project Agreement and Implementation Letters are met.

The Project Manager will also call upon other Mission offices as needed. This will include:

a. The Project Development Office (PDO), which will monitor Project implementation to assure that the terms and conditions of the Project Agreement are met. The Mission Engineer assigned to the PDO will have significant responsibilities in assisting the RDD Project Manager in monitoring the road improvement activities. This will include: monitoring the preparation of the detailed engineering and design plans, participation in the joint AID/GOCR IFB preparation and selection working group as well as site visits.

b. The Mission Controller, who will review disbursement and reimbursement requests for conformity with AID regulations and will ensure that adequate financial controls are exercised:

c. The Program Office, which will assist in carrying out internal AID-GOCR project reviews and evaluations.

d. The P.L.480 Title I Specialist in the RDD will provide information on compliance and disbursements for the Land Purchase/Titling component as required.

B. Assessment of AID Monitoring Capabilities

It is expected that with the planned expansion of Mission staff, there will be no difficulty in carrying out Project Monitoring responsibilities. However, the Mission will require TDY services from the LAC/DR Engineer in the preparation of the IFB's and approval of awards for the road construction and construction supervision contracts.

VII. SUMMARIES OF ANALYSES

A. Technical Analysis - Road Improvements

The Mission contracted Bel Ingenieria S.A., an established, local engineering consulting firm to prepare a report on the proposed road improvements. Portions of the Report are attached as Annex 6. The Contractor was asked to: 1) make recommendations on the selection of roads to be improved; 2) provide geometric standards and specifications; 3) estimate physical quantities of earth, gravel and other materials movement; 4) indicate the number of and provide preliminary designs for the required bridges; 5) analyze the possibility of labor-intensive road construction methods; 6) prepare costs estimates for the road improvements; 7) analyze the maintenance costs and capabilities of the MOPT; and 8) present an implementation schedule for the road improvement activities from the preparation of detailed design/engineering plans to the completion of road work.

The Contractor assembled a team composed of an experienced highway and bridge engineer; a soils and materials technician; and a surveyor which carried out field work during April 1983. The team covered the entire route of the proposed road improvements collecting information on: the amount of clearing required; earth movements; water course and drainage; available materials; and also took soil samples. This information was evaluated by additional professionals in San José and used in the preparation of structural bridge design and initial information for bridge foundation studies; road design criteria; quantity and unit cost estimates; and a construction implementation schedule.

The principal criteria used in preparing the designs and cost estimates were the following:

- The proposed roads improvements will follow the existing rights-of-way with only minor changes in grade and alignment.

- Because the type of terrain traversed varies from flat to rolling, two conditions were considered for grading and estimating earthwork: (a) on rolling terrain the balancing condition considered was cuts uphill and fills over culverts and (b) on flat terrain, lateral borrows to raise the grade line.

- Soils samples were tested by classification and group index methods to obtain their bearing capacity and in order to estimate gravel thickness.

- Gravel pits were tested to determine quantity and quality of material. Hauling distances were calculated from the three sources identified: Rio Pizote, Quebrada Chepa, and Rio Frio.

- The location of bridges and major culverts were determined taking into account mean water level, high water level marks, bank erosion, and other field information.

- The design standard criteria used were:

VARIABLE	ROLLING	FLAT
Design speed (Km/h)	50	60
Horizontal radius (m)	70	120
Maximum gradient (%)	6	3
Width of surfacing (m)	6	6
Width of one shoulder (m)	0.5	0.5
Total width of roadway (m)	7	7
Width of bridges (m)	4.30 *	4.30 *
Design-live loading, bridges	H15-S12	H15 -S12
Right-of-way width (m)	14	20
Cross slopes (%)	5	5

(*) Width of bridges can be reduced to 3.85 m if standard steel bridges are used.

The Report contains the following recommendations:

- Due to projected initial low volumes of traffic but with the probability of significant future increases because of the high agricultural potential, Bel recommends the use of low-volume road

technology for the planning, design, construction, and maintenance of the proposed roads. Furthermore, this is a unique opportunity to consolidate the use of stage construction. Use of stage construction as described by the Transportation Research Board, National Academy of Sciences, Synthesis 2, is appropriate due to the expected low speed and traffic volumes and the minor changes in grade and alignment proposed for these existing dirt roads. Final designs for road sections will be a straight line plan over a photo mosaic. Aerial photography is now being taken of the routes which will be used in the preparation of these mosaics.

- The use of labor-intensive construction methods is not recommended. The existing labor force is fully utilized in agricultural activities. Therefore, maximum use of equipment and machinery is appropriate.

- The construction implementation schedule calls for construction to begin in April 1984 with 24 months of construction time until completion. Taking advantage of part of the 1984 dry season will permit the contractor(s) to carry out major earth movement, mobilization of equipment, and initiate construction of bridge substructure (mainly footings), and extraction and piling of gravel, so that they can continue other work such as minor earth movement, grading and some bridge work during the rainy season. Any delay in the April 1984 starting date would result in construction activities not beginning until January 1985. (Note: the latter date is the one now being used for planning purposes).

- Bel recommends that the construction work be bid in its entirety including bridge construction. Due to the location of gravel pits and supervisory problems, the construction work can reasonably be broken down into at most two major sections (See Map in Annex 6).

The Report also contains annual road maintenance costs which were used in the Economic Analysis' benefit-cost calculations. As requested in the PID Approval cable, the Mission has considered the maintenance requirements for roads in the Project area. The improved roads will be considered as part of the national road system and be maintained by the MOPT. The Ministry of Public Works and Transportation (MOPT) is implementing an administrative road maintenance system financed by the World Bank, with the technical assistance of a joint venture of Bel - Jorgensen Consulting Engineers. The Mission is also assisting the MOPT through P.L.480 Title I local currency generations in repairing its road maintenance equipment. The Mission expects that, as a result of these maintenance improvement activities, the MOPT's capacity to maintain these and other roads will be considerably increased by the time this Project is completed and road maintenance is required.

B. Social Soundness Analysis

The Social Soundness Analysis examined existing information on the Project area contained in recent surveys, reports and analyses undertaken for this Project Paper. The topics evaluated are as follows:

a. the spacial/population characteristics of the area, and concludes that while still sparsely populated, settlement is occurring at a rapid rate; also that the overwhelming bulk of the population is concentrated in small villages and hamlets;

b. the citizenship patterns and relations between project area inhabitants and Nicaraguans, and concludes that while there are undoubtedly close relationships, there is a strong identification with Costa Rican nationality;

c. the occupational characteristics of the population (heavily agricultural) and the land use patterns from distributive, agronomic potential, and actual use viewpoints. The conclusions are that land which was unused 10 years ago is now largely in pasture, that the area has high agricultural potential, and that improved roads and other infrastructure improvements and inputs might very well initiate a movement towards more intensive land use;

d. the land tenure situation, including the efforts of the Agrarian Development Institute (IDA). It appears that to date IDA has been keeping pace with the pressures generated by illegal squatting, but that new pressures can be anticipated and, therefore, it would be prudent for IDA to acquire suitable tracts of land now on a "safety valve" basis.

e. the level and type of basic services, where it is found that on a comparative basis with the rest of the country, the project area is the least privileged. It was also found, that for some services (i.e. primary education, health and nutrition) there is a rudimentary network of services in place; the main area of deficiency in basic services is roads. It was also concluded that many of the other deficiencies lend themselves to remedial action at the village level. Consequently, the type of community development effort envisaged in this project can have a significant impact;

f. farming practices from the viewpoint of openness to change in cultural practices, and concludes that there is a reasonable chance that infrastructure improvements will find a productive sector ready to take advantage of the improvements;

g. family income, where the finding is that poverty is present in the project area, but not grinding misery; and the prevalence of poverty is not as widespread as is generally supposed.

Based on the above examination of the situation in the project area, as it relates to the components of the proposed project, the analysis finds that:

a. the road construction activity will benefit an estimated 95% of the total population in the Project area;

b. the Community Development Fund component will affect approximately half of the villages and hamlets in the Project area;

c. the land purchase component will introduce into the area via colonization approximately 800 families - equivalent to 15% of the present population, thus providing them with the means to improve their future status;

d. the titling work for existing small/medium farmers (under 100 hectares) in the area, will improve access to credit and the commercial value of the farms for 1,000 families.

The analysis finds that beneficiaries have participated, through surveys and town hall meetings, in the identification of area problems and development constraints. They will continue to participate actively through their community representatives in the execution of several of the Project components.

Socio-cultural feasibility and overall impact of Project Components were also considered. In this regard, the Analysis found that the proposed project:

a. responds to GOCR priorities for new development initiatives in the Northern Zone;

b. within the Northern Zone, responds to the investment priorities emphasized by the inhabitants of the region; and

c. because of its basic infrastructure nature, will impact broadly on all aspects of life in the region.

No socio-cultural types of problems are anticipated during implementation, unless there is a massive inflow of refugees from Nicaragua, an eventuality that cannot and should not be planned for in advance.

C. Economic Analysis

1. Methodology

The economic analysis compares quantifiable costs and benefits attributable to Project activities. Costs and benefits are defined in terms of national income objectives and are compared at net present value, at discount rates of 10% and 15% and through calculation

of the IRR. The approach is very conservative. Benefits which are non-quantifiable, highly speculative, or reliant upon other complementary changes in the zone are excluded. This approach assumes that a decision on whether or not the Project can justifiably be funded will take into account, in a qualitative way, these other benefits.

2. Benefits and Costs

The benefits measured for this analysis are limited to those resulting from the road improvement activity only. This is not intended to deny the importance of the other activities. They are considered complementary to road improvement, and will generate additional benefits from those measured here. The benefits are of a different nature than those of road improvement, however, and are difficult to predict and quantify. For the sake of a conservative analysis, all direct applicable Project costs are included (along with road maintenance costs).

Economic benefits of the road improvement can be expected from two sources: 1) savings in transportation costs during the dry season on agricultural products currently being marketed; and 2) increased agricultural production resulting from the opening of market access during the rainy season. However, transportation savings during the dry season are difficult to measure and probably not as significant as the benefits derived from the latter source (See Annex 8). The condition of the roads is so bad that vehicular traffic is virtually impossible during the rainy season, and area farmers are effectively excluded from markets during this most important harvest. For these reasons benefits will be limited to those derived only from the second source, market access.

The impact of opening market access during the rainy season is fourfold:

- a. The absolute limit on marketable quantity is removed.
- b. Marketing risks are reduced.
- c. Crop losses on current production are reduced.
- d. Access to inputs is improved.

The greatest impact of the road improvement will occur from existing farmers bringing new land into production (a. and b.). This analysis does not assume increased migration to the area, but instead makes a conservative estimate of farmers' reactions to year-around market access. Likewise, only a small increase in purchased input use is assumed. Benefits from increased production due to the introduction of new technologies or new crops are not estimated because they may imply the intervention of an extension program or other changes which are outside the scope of the Project.

An estimate is also made of the amount of current production now being lost because of lack of access to transportation at critical marketing times.

Because the analysis concentrates on changes in production accomplished by existing farmers and use of additional land, which currently have no productive alternatives during the rainy season, a zero opportunity cost is assigned to them. To the extent that capital is used to purchase productive inputs, resources are drawn away from alternative uses, and Project costs are incurred. The value of production is adjusted accordingly.

3. Prices

All costs and benefits are valued at current market price. Relative prices are held constant. Values are given in dollar equivalents of local prices at an exchange rate of C 44= US\$1.

4. Overview of the Agricultural Economy

Lack of interregional transportation has dictated the development of agricultural production in the zone. Livestock is the most important product (32% of the value of current total agricultural production), primarily because cattle don't require timely marketing and can walk to the market themselves. The major commercial crops - rice (23%) and cacao (30%) are produced very near to the market centers. Corn, bean, and traditional rice production are currently mostly for home consumption (85% of the corn and 70% of bean production is utilized for home consumption). Again, the reason is lack of market access during the rainy season (which is the best time for planting).

5. Production Constraint Analysis

a. Rice

Rice is produced under two distinctly different systems in the Project area. Commercial production is dependent upon modern machinery, certified seeds, fertilizer, herbicides, insecticides, and fungicides. Yields are high (3 M.T./ha.) and production is located very near to market centers. Traditional production is dispersed throughout much of the Project area, yields are low (1 M.T./ha.), and few purchased inputs are used.

For commercial rice, the main constraint to production is moving machinery and large quantities of inputs into the fields and large quantities of harvested grain out. Without all weather roads, the area in production can increase only marginally, at an estimated 2% annually for five years. With all-weather roads, the area in production is projected to approximately double within seven years after the roads are completed and again within the following ten years. No new technology or increase in yields is assumed.

Total and marketed production of traditional rice could increase from improved yields, increases in area, and reduced losses. Market access is the principal constraint, followed by labor. Without all weather roads, area in production is projected to rise proportionally with population growth (4% annually). With the roads, area in production is projected to increase 10% annually for seven years after the roads are completed and 7% annually thereafter. Yields will increase to the level of the 1980/81 national average (1.5 M.T./ha.) during the first seven years after the roads are completed.

b. Beans, Corn, Yuca

These are products which are currently grown widely in the region, with low yields, and primarily for home consumption. Access to markets is the principle constraint for increased production. The yields of corn and yuca are very low and could be raised significantly with increased market access and minimal input use. Without all-weather roads production will continue to be primarily for home consumption, and will increase only proportionally to population growth.

With the road improvements, the area in production for each crop is projected to approximately double within seven years after the roads are completed and again in the following ten years. Actual area used for each crop will depend upon prices and other incentives, but changes among the crops will not effect benefits significantly.

With all weather roads, corn yields are projected to increase from 0.9 M.T./ha. to 1.7 M.T./ha. Losses attributable to lack of transport, now estimated at 20% of production, are projected to fall to virtually zero. Bean yields increase modestly, from 0.4 to 0.5 M.T./ha. Current losses of 25% are reduced to zero. Yields of yuca production increase from the very low estimated average of 4.8 M.T./ha. to 8 M.T./ha. as better land is brought into production for commercial sale of yuca. Losses of 10% are eliminated.

c. Livestock

There are approximately 120,000-150,000 ha. of pasture in the Project zone. Although little reliable data is available, best estimates indicate a carrying capacity of 0.75-0.90 head per hectare and an extraction rate of 10 percent. Poor market access is not a big constraint to livestock enterprises because cattle can be marketed on foot and at any time. All weather roads, however, can be expected to raise the extraction rate by allowing better access for management, better culling of unproductive cows, and marketing at a more optimal weight. The analysis projects an increase in the extraction rate from 10% to 14% over a ten year period after the roads are completed.

d. Cacao

Although cacao is an important crop in the region, the analysis does not project any changes in production as a result of road improvement. Improved varieties and cultural practices (especially of monilia control) are the major production constraints. While all weather roads could be of long run benefit to cacao production, the major need is a program of technological change.

6. Results

As shown in Table 1, the Project has an internal rate of return of 22.2%. The B/C ratio at 15% (recently estimated opportunity cost of capital in Costa Rica) is 1.77, and increases to 2.81 if capital is assigned the lower opportunity cost of 10%. As mentioned earlier, the analysis does not measure: 1) transportation savings on current production during the dry season, 2) non-quantifiable or social benefits, or 3) production increases which might result from technological change or new products introduced by other development efforts which are complementary to road improvement. Rather, the analysis measures the very highly probable impact on existing farmers and unused land which will result from market access during the wet season. Taking only this very conservative measure of benefits and costs, the Project is economically justifiable. When the non-quantifiable benefits are considered, the justification is stronger.

From Annex 8, Tables 1-6 in its annex, it is seen that the greatest impact of the road improvement will be in bean production, where lack of transportation causes significant losses and market problems. Increased bean production will generate approximately 30% of the benefits. Mechanized rice production will increase considerably, as farmers are able to spread out from the narrow focus near market centers. This accounts for 24% of the benefits. Because it is such an important economic activity, livestock will account for 20% of the benefits even though projected changes have been held conservatively low. As a whole, traditionally grown field crops (non-mechanized rice, beans, corn, and yuca) account for 56% of the benefits of the improved road. Corn and beans, which are both heavily imported, account for 40% of the Project benefits.

Again, to emphasize the conservative nature of this analysis, it is seen from Annex 8, Tables 1-6, that land in production in 1993 is only 58% greater with the project than it would be without it. In 1993 the land area in crops is projected at 21,295 hectares, and by 2003 is projected at 41,888 hectares. This represents only 30% and 60%, respectively, of the available area suitable for crops. Given the quality of soils and potential of the area, it would not be unreasonable to expect these figures to be reached many years earlier, and the agricultural production and Project benefits to increase accordingly.

TABLE 1
COST-BENEFIT ANALYSIS

<u>YEAR</u>	<u>PROJECT COSTS (\$000)</u>		<u>BENEFITS</u> ^{3/}	<u>MAINT COSTS</u> ^{4/}	<u>NET BENEFITS</u>
	<u>ROAD</u> ^{1/}	<u>OTHER</u> ^{2/}	<u>(\$000)</u>	<u>(\$000)</u>	<u>(\$000)</u>
1	672	737	-	-	(1,409)
2	5,378	838	-	27	(6,243)
3	6,050	989	-	54	(7,093)
4	1,345	-	872	81	(554)
5	-	-	1,793	81	1,712
6	-	-	2,372	81	2,291
7	-	-	2,937	81	2,856
8	-	-	4,175	81	4,094
9	-	-	5,036	81	4,955
10	-	-	6,503	81	6,422
11	-	-	7,077	81	6,996
12	-	-	7,660	81	7,579
13	-	-	8,813	81	8,732
14	-	-	9,517	81	9,436
15	-	-	10,338	81	10,257
16	-	-	11,103	81	11,022
17	-	-	11,996	81	11,915
18	-	-	12,876	81	12,795
19	-	-	13,893	81	13,812
20	-	-	14,970	81	14,889

IRR=22.20% B/C (15%) = $\frac{19,382}{10,926} = 1.77$ B/C (10%) = $\frac{34,174}{12,148} = 2.81\%$

1/ Road Improvement costs are estimated at 5% year 1, 40% year 2, 45% year 3, and 10% year 4.

2/ \$854,000 Community Development, \$1,210,000 Special Studies (AID+GOCR) 33 1/3 % per year; \$500,000 million titling - 10% year 1, 30% year 2, 60% year 3. Land costs are excluded since IDA will purchase lands which have no current agricultural activity that is yielding a return (i.e. primarily unimproved pasture land). Therefore the value of the land is zero. Settlers will repay the cost of the land so this is merely a financial transaction (See Gittinger, Economic Analysis of Agricultural Projects)

3/ Summation of Net Benefits from Annex 8, Economic Analysis, Tables 1-6 in its annex.

4/ \$568/km./year for main road, \$410/km./year for feeder roads.

D. Environmental Analysis

As requested in the PID Approval cable, the Mission undertook an Environmental Assessment (EA) to analyze the environmental concerns related to the road improvement component of the Project, with special attention on the potential deforestation effects which might occur. The Environmental Assessment prepared by Dr. Gary S. Hartshorn is attached as Annex 9. The report is based on a review of soils and potential land use maps for the project area, analysis of the construction specifications and proposed routes for the road improvements prepared by Bel Ingenier¹a S.A., low-level aerial reconnaissance and extensive field reconnaissance. The EA team was composed of four individuals: an ornithologist/ecologist; a land-use capability classification specialist; an ecologist/geographer; and a forest ecologist/dendrologist. The report analyzed the potential deforestation effects of the proposed road improvements, soils and land use capability, the presence of endangered or threatened species, and includes recommendations on the proposed road improvements.

The EA team found that despite the difficult access to and within the project area considerable deforestation has already occurred. They estimate that the project area is approximately 70-80% deforested and roughly 2/3 of the deforested lands are in extensive pasture for beef cattle (although beef production is still low). The remaining lowland forests are scattered in small patches (less than 1,000 has.) that have little potential as functional conservation units. As one approaches the higher elevations of the Guanacaste Cordillera, which forms the southern boundary of the Project area, one finds established conservation units (National Parks or Forest Reserves) on the upper slopes of the four volcanoes - Orsi, Rincon de la Vieja, Miravalles, and Tenorio. Appreciable forests still occur on the higher elevations of these volcanoes (500 m. and higher) which are located within the conservation unit boundaries. However, the report concludes that no significant natural forests remain in close proximity to the roads proposed for improvement.

The Project area includes extensive areas of good and excellent soils. The report states that: "Outside of the Central Valley, the quality soils in the Project area are not only the best agricultural lands in the country, but also the least developed." In the Environmental Team's opinion, almost 10% of the country's lands suitable for annual crops can be found in the Project area. Two separate classifications of land use capability estimate 23-25% of the area as suitable for annual crops and 29% for perennial crops. Actual land use in the area is predominantly in extensive pastures for beef cattle. The report states that while, "...pasture is not a detrimentally nor ecologically unsound use of lands classified as suitable for annual crops..." it does represent an underutilization of the lands capability.

The report mentions several extensive areas adjacent to or within access of the proposed routes for the road improvements with

excellent soils suitable for annual crops including dry land rice, corn, beans, yuca and onions. These areas are located to the north and north-west of Upala and along the stretch of improved road between Santa Cecilia - Brasilia and Cuatro Bocas (See Map in Annex 9). Good soils which can support annual but preferably perennial crops such as plantains, cacao, pejibaye, black pepper and pineapple are found in the canton of Guatuso. Apt conditions and good soils for dairy operations can be found in the Dos Rios area near the Brasilia-Dos Rios spur road.

The project area is too poorly known biologically to compose a definitive list of endangered or threatened species. Located mostly outside the Project area, but within its zone of influence, the extensive swamps, marshes, sloughs, rivers, permanent lagoons and adjoining non-flooded forests in the Upala - Guatuso - Los Chiles triangle are critical habitats for many species threatened with extinction in Costa Rica. Particularly noteworthy are the permanent open-water lagoons (Cano Negro and Camelias) and the remnant forest known as "Bosque de Camibar," the last large lowland forest which is to the east of the Cano Negro Lagoon but outside the Project area.

The report states that road improvements and economic development in the Project area will stimulate population growth in the many towns of the region, causing increased demand for potable water and overloading existing sewage systems. The Community Development Fund Component will assist many of these communities in financing these types of projects. The increased agricultural activities may include the use of more pesticides and herbicides resulting in increased probabilities for contamination. However, the improved access by and to extension agencies should also increase the probability that farmers will have more information on the appropriate use of these agricultural aids.

The EA team makes four principal recommendations:

- two proposed spur roads (Santa Cecilia - La Virgen and San Rafael de Guatuso - Buenavista) be deleted and two others added (Dos Rios - Buenos Aires and San José - Victoria - México). The recommendation to drop the two spurs from the proposed road improvements based on poor soils in these areas was accepted. However because of planned road activities by IFAM in the Upala area the San José - Victoria - México road spur was not included. The Dos Rios - Buenos Aires segment is premature at this time since as indicated in the EA report this segment is contingent on the establishment of a milk processing facility;

- land use controls be implemented to lessen the dominance of extensive pasture for beef cattle and to ensure maximum use of the excellent agricultural soils for beans and corn. The Mission considers that alternative methods of promoting more intensive land use are among the topics that could be financed under the Area Development Studies Fund;

- fund biological and ecological inventories of the flora and fauna of the entire project area, and an evaluation of the

hydrologic potentials of the forests and forest lands on the north slope of the Guanacaste cordillera. The Project Agreement will specify that these investigations will be amongst the items that could be financed under the Area Development Studies Fund; and

- Financial support for establishing and consolidating the proposed Cano Negro Wildlife Refuge. The Cano Negro Refuge, while not within the Project area, is in the path of future development and should be preserved. It is proposed that the GOCR be required to covenant to take such steps as are necessary to establish and consolidate the Cano Negro Wildlife Refuge. Further, the Mission will consider favorably any GOCR requests to use future FY PL 480 Title I local currency generations to finance the costs of protecting the Refuge.

In summary, the report found no unavoidable environmental effects, principally because of: 1) the already extensive deforestation within the Project area boundaries, and 2) the proposed routes for road improvements follow existing dry season roads. The EA also found no problem with the preliminary design standards and cut and fill operations prepared by Bel Engineering. However, the construction firms should be required to adhere strictly to specifications and standards during cut and fill activities.

E. Administrative Analysis

Four GOCR agencies will be involved in Project Implementation. A brief discussion of the role and responsibilities of each follows:

1. MIDEPLAN

During PP preparation the Mission and the GOCR carefully structured the Project activities and analyzed the role and responsibilities of the implementing agencies to minimize interinstitutional coordination to that which was absolutely necessary. This was done with a view to avoiding extensive expansion of the current GOCR bureaucracy. Since the Project will limit itself to short-term activities, the requirements for coordination and administration during the life of the Project will be correspondingly limited. However, to assist the Mission in monitoring the Project, to provide the minimal interinstitutional coordination required, and for the GOCR to have an entity that could be the focal point for longer term development activities and coordinate other donor efforts, it was agreed that a Project Coordination Office in

MIDEPLAN be formed ^{1/}. Section III.E.3. describes its staffing and responsibilities.

MIDEPLAN is cross-ministerial in its authority and can appropriately be assigned the monitoring, coordination, future planning and evaluation responsibilities involved in this Project. MIDEPLAN is not an implementing agency as such and its role in this Project has correspondingly been limited to these responsibilities. One essential feature, however, of this Project Coordination Office will be that it will be located in the Project area which will permit its staff to have better understanding and feel for the area and future development activities as well as closer monitoring of Project activities. This is not new to MIDEPLAN which has regional planning offices in the country's 5 planning regions. The grant-financed Project Advisor will be field-oriented and work with the Project Coordination Office in carrying out its responsibilities.

The Project Coordination Office will also act as the Executive Secretariat to a Sub-Regional Consultative Committee, which MIDEPLAN will create as a dependency of the existing Regional Development Council for the North Huetar Region (a planning and not executing body). The membership and functions of the sub-regional committee will be detailed in the internal MIDEPLAN regulation described in Section III.E.3. Present thinking is that the Consultative Committee will have approximately 10 members: e.g. one representative of the municipalities from each of the 3 cantons in the Project area; one representative of the Community Development Associations from each canton; three or four representatives of national level agencies and/or Ministries concerned with infrastructure development and social services, who will be designated by the Regional Development Council; and one representative of MIDEPLAN (probably the Project Coordinator). Where indicated (e.g. for Community Development Associations within a canton), elections will be held to designate the cantonal representative.

The functions of the Committee will, as its title indicates, be advisory. They will include: developing and proposing to the administration of the Project and to other entities, actions relating to the development of the Project area; identifying and promoting the execution of studies on problems of sub-regional interest. The Committee will also serve as a forum for exchange of information and policy level coordination between local level and national level institutions active in development of the area, both as regards the components of this Project and as regards other activities.

^{1/} The establishment of a Regional Development Authority had been discussed initially but was discarded when it became obvious that creating such an entity would be a long, arduous and complicated legal process -- and was not necessary at this time to implement the Project.

2. MOPT

As was indicated in Section III.E.1., it is intended that construction work and engineering supervision thereof be implemented via host country contracts, but that payments to contractors be made by the Mission. The responsibilities of the MOPT will include participating in preparation of IFBs; pre-qualification of bidders; analysis of bids and awarding of same; negotiation of contracts with successful bidders; overall monitoring of the work of construction and supervision contractors; and authorizing payments to contractors.

The MOPT exercises its responsibilities in the highway sector through the Division of Public Works (DOP), which has five General Directorates, one of which is the General Directorate of Construction (DGC) and five Regional Directorates, which are independent of the DOP, but which coordinate closely with the DOP (See Annex 15).

The DGC is in charge of road and bridge construction carried out by contract and will, therefore, be the unit within MOPT most directly involved in the implementation of the Loan. It has a Tendering Department which prepares prequalification and bidding documents, evaluates bids, recommends, awards and prepares contract documentation. The supervision of construction work itself, when the project is financed by donor institutions, is normally handled by ad hoc offices at the sub-directorate level. The Condition Precedent to Disbursement, which calls for the MOPT to appoint a full time Project Engineer for the Road Improvement component of the Loan would appear to fit easily into this organizational/administrative framework.

3. DINADECO

All of the Headquarters units of DINADECO will be involved, in one way or another, with the implementation of the Community Development Fund component of the Project (See Annex 15). At the field level, Regional Directorate No.5, located in Ciudad Quesada, in San Carlos Canton, will be charged with responsibility for direct supervision of the social promoters working in the Project area and for the community projects themselves.

DINADECO has handled activities and funding arrangements similar to those proposed for this Project in the past. No problems of an administrative nature are anticipated. Also, it should be noted that in connection with AID Loan 028, Urban Employment and Community Development, the Mission has had considerable contact with DINADECO and is familiar with its personnel and method of operating.

4. IDA

IDA is a semi-autonomous institution governed by a 7 person Board of Directors. It is the implementing agency for the on-going AID Loan 034, "Agrarian Settlement and Productivity". A detailed description of its organization, personnel, etc. can be found in the Project Paper for Loan 034.

In connection with Loan 034, a full time grant financed U.S. advisor has been provided to IDA. His services will be called upon, as necessary, in the implementation of the Land Purchasing and Titling Component of this Project.

The detailed criteria and procedures to be followed by IDA in the Project area and the handling of P.L.480 Title I generated local currency, will be covered in the P.L.480 Title I Activity Agreement between MIDEPLAN and IDA. This agreement requires AID approval.

In sum, the Mission considers that each of the four implementing Agencies designated (MIDEPLAN, MOPT, DINADECO, and IDA) are not only well qualified to handle the responsibilities assigned them, but are the only possible candidates for these tasks.

VIII. CONDITIONS AND COVENANTS

A. Conditions Precedent to Initial Disbursement of Loan Funds

1. A legal opinion by the GOCR that the Loan Agreement is a valid and binding document;

2. naming of official representatives by each implementing agency, i.e. MIDEPLAN, MOPT and DINADECO (It is intended that all three of these agencies, as well as IDA, the Ministry of Finance and the Presidency, be signatories to the Agreement);

3. the appointment by MIDEPLAN of a Project Coordinator to be stationed in Upala;

4. the appointment by MOPT of a Project Engineer to be assigned full time to the Road Improvement component of the Project.

B. Conditions Precedent to Subsequent Disbursements of Loan Funds

1. Community Development Fund

Prior to any disbursement to DINADECO for deposit into the Community Development Fund, DINADECO will have submitted, in form and substance satisfactory to AID, evidence that a separate bank account has been opened for this purpose, together with information about how

withdrawals will be authorized, how the accounts will be kept and other pertinent information.

2. Area Development Studies Special Account

Prior to any disbursement to MIDEPLAN for deposit into a Special Account under the Pre-Investment Fund, MIDEPLAN will have submitted, in form and substance satisfactory to AID, evidence that a separate bank account has been opened for this purpose, together with information about how withdrawals will be authorized, how the accounts will be kept and other pertinent information.

C. Covenants

1. MIDEPLAN will covenant to complete the tabulation of all data collected in the Rural Poverty Study survey undertaken in 1982 in the Northern Zone.

2. The GOCR will covenant to take such actions as are necessary to establish and consolidate a Cero Negro Wildlife Refuge along the lines of the Presidential Decree being prepared by the Division of Wildlife (DVS) of the Ministry of Agriculture.

IX. EVALUATION ARRANGEMENTS

A. Base Line Data

Under the auspices of MIDEPLAN, and as part of a study of Rural Poverty in Costa Rica, in 1982 there was a comprehensive socio-economic survey performed of 401 small farmers and landless peasants in and around the Project area. The interview schedule of over 170 items covered housing, education, health, nutrition, family characteristics, income and expenditure, employment, land use and tenancy, farming practices, production costs and returns, input availability and use, knowledge of and participation in cooperatives and community organizations, and nationality/citizenship questions. The data has not been completely tabulated and it is intended to have the GOCR covenant to complete this work. We have already drawn heavily on the data which has been tabulated in preparing the Social Soundness Analysis of this paper. The results of this survey adequately meet the needs of the Project for base line data.

B. Measurement of Progress and Type of Evaluation Indicated

This Project is designed as the first phase of a long-term process of development of the Project area and is concentrated largely, in terms of inputs, on road construction and land acquisition for future agrarian reform endeavors. A four year period is planned for the life of the Project. This is much too short a period in which to expect changes in farming patterns, income, etc. resulting from the infrastructure improvement. The roads will become available for full use only as the Project is terminating. Thus, it does not seem a profitable use of evaluation resources to plan on another socio-economic survey during the

Project period for purposes of measuring change from the base line survey. Instead, we believe that the main thrust of the evaluation effort to be undertaken during the life of the present Project, in addition to the normal evaluation of progress through annual reviews, should be directed at analysis of the results of the special studies and community development components of the Project with a view towards the design and prioritization of future investment in the area, whether by AID or from other sources, and a refinement of the development strategy to be utilized in the area.

C. Availability of Data

This Project is designed to provide for a continuous flow of reports and day-to-day monitoring of project funded activities. It also includes provision for the establishment of a multi-element permanent committee to be concerned with the interaction between the Project activities and the broader policy aspects of development of the Project area. Regular, periodic meetings will be held and minutes of the discussions prepared. As indicated in sections III.E.3. and VII.E.1., the MIDEPLAN sub-regional office and its AID financed advisor will provide secretariat services to the Committee. This office will also either approve and/or administer community development work and studies oriented towards identifying future investment. For the type of evaluation contemplated, the records, documents and reports assembled in the sub-regional office will, it is believed, provide a suitable data base for the evaluation.

D. Evaluation Plan

On an Annual basis, two evaluations (towards the end of CY 1984 and CY 1985) will be conducted by a small AID/MIDEPLAN evaluation team to: (a) examine and evaluate the extent to which all actions planned under this project have been carried out; problems that arose and how they were or were not resolved; the degree to which performance was consistent with plans; (b) identify and assess any new factors that have made their presence felt in the Project area. A final, and more formal evaluation will be performed towards the end of CY 1986. In addition to examining the above topics, this evaluation will also: (a) analyze whatever studies and proposals for investment and/or other action in the Project area have been developed during the execution of the Project; and (b) make detailed recommendations as to the development strategy to be pursued and the nature of future investments to be made.

All reports should be presented to, and commented upon, by the permanent multi-sector Committee described above.

For the first two evaluations, regular AID and GOCR staff will be used. For the last, and more elaborate evaluation, outside personnel may be necessary. The AID sponsored members of the Evaluation Team will be financed from Operating or other AID funding sources available at the

time, outside of the funds obligated for this Project. If MIDEPLAN wishes to contract Costa Ricans for its representation on the team, rather than to designate officials from its regular staff, consideration should be given to providing AID financing. Alternatively, an AID financed institutional contract, covering the entire team, but with suitable provision for joint COCR/AID approval of individual members could be considered.

REGION AND WHETHER THERE WOULD BE THE DEMAND FOR PARTICIPATION IN THIS ACTIVITY BY PRIVATE INVESTORS. IT WAS ALSO SUGGESTED THAT THE MISSION CONSIDER STRUCTURING THE COMPONENT SUCH THAT INVESTORS WHO PROCEED WITH PROJECTS, REPAY THE COST OF THE FEASIBILITY STUDY. SUCH FUNDS WOULD IN TURN, BE USED TO PARTIALLY FUND ADDITIONAL FEASIBILITY STUDIES.

4. COMMUNITY DEVELOPMENT FUND. THE ELIGIBILITY CRITERIA FOR THE SELECTION OF COMMUNITY DEVELOPMENT PROJECTS SHOULD INCORPORATE REQUIREMENTS TO ENSURE THAT THE NECESSARY PERSONNEL WILL BE AVAILABLE TO STAFF ANY FACILITIES WHICH WILL BE CONSTRUCTED UNDER THE PROJECT.

5. ENVIRONMENTAL CONCERNS. IT WAS DETERMINED THAT AN ENVIRONMENTAL ASSESSMENT WAS THE BEST MANNER TO ADDRESS ENVIRONMENTAL CONCERNS RELATED TO THE ROAD IMPROVEMENT COMPONENT, WITH SPECIAL ATTENTION TO BE DIRECTED TOWARD POTENTIAL DEFORESTATION EFFECTS. MISSION SHOULD CONTRACT LOCALLY FOR ASSISTANCE; GARY HARTSHORN WAS RECOMMENDED AS A POSSIBILITY. IF HARTSHORN IS UNAVAILABLE, JIM HESTER, LAC ENVIRONMENTAL OFFICER, HAS THE NAMES OF OTHER CANDIDATES. IT WAS ALSO RECOMMENDED THAT THE MISSION CONSULT WITH ROCAP REGIONAL PEST MANAGEMENT SPECIALIST IN ADDRESSING PESTICIDE MANAGEMENT CONCERNS AS PART OF THE EXTENSION ACTIVITIES.

6. PROJECT ADVISOR. MISSION SHOULD LOOK CAREFULLY AT AMOUNT PROPOSED FOR PROJECT ADVISOR. BASED ON CURRENT CONTRACT COSTS IN COUNTRIES IN THE REGION, DOLS. 300,000 MAY BE INSUFFICIENT FOR PROPOSED ASSISTANCE FOR THREE YEARS.

7. SINCE MISSION ACKNOWLEDGES THAT LAND TENURE COMPONENT IS CRITICAL TO PROJECT SUCCESS, PLANS AND FUNDING SOURCES FOR THIS COMPONENT SHOULD BE DEVELOPED DURING INTENSIVE REVIEW AND SET FORTH IN THE PP.

8. WE UNDERSTAND THAT MISSION IS PLANNING TO SUBMIT THE PP TO AID/W IN JUNE AND THAT A FOURTH QUARTER OBLIGATION IS EXPECTED. PLEASE TAKE ALL REASONABLE EFFORTS TO SEE THAT PP SUBMISSION DATE IS MET.

9. AS A REMINDER TO THE MISSION, IT IS BUREAU POLICY THAT PID APPROVAL IS ONLY GOOD FOR ONE YEAR.

10. FYI, REPRESENTATIVES FROM IFAD SPOKE WITH LAC BUREAU REPRESENTATIVES ON JANUARY 25, 1993 TO DISCUSS COFINANCING POSSIBILITIES FOR SUBJECT PROJECT. IFAD'S MANDATE REQUIRES THAT THEIR FINANCING BE DIRECTED TOWARD SMALL FARMERS WITH EMPHASIS ON INVESTMENTS FOR FOOD PRODUCTION RATHER THAN CASH CROPS. IFAD HAS HAD LIMITED INVOLVEMENT IN FINANCING INFRASTRUCTURE/SOCIAL DEVELOPMENT ACTIVITIES AND THEREFORE, THEIR PROPOSED PARTICIPATION IN THE PROJECT WOULD BE IN PROVIDING RESOURCES FOR CREDIT TO SMALL AND MEDIUM SIZED FARMERS AND TO SETTLERS IN THE PROJECT AREA. WE ENCOURAGED IFAD TO CONTACT MISSION DIRECTLY TO DISCUSS COFINANCING

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project: 83 to FY 87
From FY _____ to FY 87
Total U.S. Funding \$14,700,000
Date Prepared: 6-27-83

PAGE 1

PROJECT DESIGN SUMMARY
SUPPLEMENT 1

Project Title & Number: Northern Zone Infrastructure Development, 515-0191

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes: (A-1)</p> <p>The economic stabilization and recovery of Costa Rica through the more efficient use of its resources including underutilized areas with agricultural potential.</p>	<p>Measures of Goal Achievement: (A-2)</p> <ol style="list-style-type: none"> 1. Increased production of existing crops/live-stock and non-traditional crops. 2. Increased economic activity. 3. Improvement in standards of living. 4. Increase in real income of the population. 	<p>(A-3)</p> <ol style="list-style-type: none"> 1. Official GOCR publications, censuses, surveys. 2. MIDEPLAN documents. 	<p>Assumptions for achieving goal targets: (A-4)</p> <ol style="list-style-type: none"> 1. Factors exogenous to the AID program permit continued economic growth. 2. Political stability in the country continues. 3. Producers respond to market access and incentives. 4. GOCR policies continue to be consistent with long-term economic recovery.

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PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Year of Project 83 - 87
Total IDB Funding \$14,700,000
Date Prepared 6-27-83

Project Title: Northern Zone Infrastructure Development, 515-0191

PAGE 2

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Purpose/Purpose (B-1) Provide a basis for the efficient and equitable socio-economic development of the area by increased access to markets/services, agricultural assets (e.g. land) and by expanding community level infrastructure and the knowledge base required to plan and initiate productive activities.</p>	<p>Conditions that will indicate purpose has been achieved: End-of-Project status (B-2)</p> <ol style="list-style-type: none"> 1. Some 35,000 project area people will have all-weather access to markets and services. 2. An estimated 20,000 people will benefit directly from approximately 65 completed and operating community projects. 3. Feasibility studies completed and new agriculturally related investments started. 4. An estimated 700-800 rural landless families become farmowners. 5. An estimated 1,000 farmers receive title to land they now occupy. 	<p>(B-3)</p> <ol style="list-style-type: none"> 1. Project reports and records. 2. Project reviews and evaluations. 3. Feasibility studies and informed opinion. 	<p>Assumptions for achieving purpose (B-4)</p> <ol style="list-style-type: none"> 1. Road improvements completed on time. 2. Weather conditions do not change adversely. 3. Communities will organize for a common cause and volunteer efforts. 4. Private sector demonstrates interest in area and willingness to make investments. 5. IDA continues to assign high quality people to carry out land purchases and titling activities in a timely manner. 6. Political stability continues in the area.

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PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project: 83 to FY 87
From FY 83 to FY 87
Total U.S. Funding \$ 14,700,000
Date Prepared: 6-27-83

Project Title & Number: Northern Zone Infrastructure Development, 515-0191

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1)</p> <ol style="list-style-type: none"> Roads upgraded to all-weather gravel status with permanent bridges in place. Community development associations legally established and community projects completed. Project Coordination Office operating and feasibility/area development studies completed and information disseminated. Land purchases completed and formerly landless families settled. Titling completed for non-IDA small and medium sized farmers. 	<p>Magnitude of Outputs: (C-2)</p> <ol style="list-style-type: none"> 152 kms of trunk and feeder roads upgraded to all-weather gravel status. Fifteen permanent one lane bridges constructed. 65 community projects completed. 55 new community development associations legally established. At least five major feasibility studies and pilot activities completed. Approximately 15,000 has. of land purchased and 700-800 families settled. Approximately 1,000 small and medium sized non-IDA farmers titled. 	<p>(C-3)</p> <ol style="list-style-type: none"> MIDEPLAN reports Site Inspections Project Reviews 	<p>Assumptions for achieving outputs: (C-4)</p> <ol style="list-style-type: none"> Political stability continues in the area. Weather conditions do not change adversely. Road construction schedule proceeds as projected. GOCR implementing institutions provide counterpart personnel required. Communities organize themselves and volunteer efforts.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORKLife of Project: 83 to FY 87
From FY _____ to FY 87
Total U.S. Funding \$ 14,700,000
Date Prepared: 6-27-83

Project Title & Number: Northern Zone Infrastructure Development - 515-0191

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project inputs: D-1	Implementation Target (Type and Quantity) D-2 (S000) A.I.D.	(D-3)	Assumptions for providing inputs: D-4
	<u>LOAN</u> <u>GRANT</u> <u>GOCR</u> <u>TOTAL</u>		
<u>Road Improvements</u>	13,400 - 45 13,445	1. MIDEPLAN Reports.	1. C.R. Legislative Assembly ratifies Loan Agreement.
<u>Community Development</u>		2. Mission Accounting Records.	2. P.L.480 Title I generations from FY 1983 available and agreed upon.
Contribution to C.D.Fund	500 - - 500	3. Project Reviews	
Community land and labor inputs	- - 214 214		
Equipment	11 - - 11		
Salaries & Operating Costs	39 - 90 139		
Sub-Totals	550 - 304 854		
<u>Project Coordination and Area Development Studies</u>			
Contribution to Fund for Studies and Pilot Projects	250 - 250 500		
Equipment	- 25 10 35		
Salaries & Operating Costs	- 15 200 215		
Long Term Technical Assistance (36 m/m)	- 375 - 375		
Contingencies	- 85 - 85		
Sub-Totals	250 500 460 1,210		
<u>Land Purchase and Titling</u>			
Land Purchase	- - 3,750 3,750		
Titling	- - 500 500		
Sub-Totals	- - 4,250 4,250		
TOTAL	14,200 500 5,059 19,759		

PROJECT CHECKLIST

Listed below are, statutory criteria applicable generally to projects with FAA funds, and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES:

IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN
REVIEWED FOR THIS PROJECT? Except
as noted below country checklist
in AID/LAC/P-123 is up to date; *
Yes.

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered;
FAA Sec. 634A; Sec. 653(b)

(a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)?

The committee on appropriations of the Senate and the House will be notified of this project through a Congressional Notification.

2. FAA Sec. 611(a)(1)

Prior to obligation in excess of \$100,000, will there be (a) engineering, financial and any other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

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?

High priority given to the project by Presidency.

(*) As of March 18, 1983, Costa Rica was in violation of 620 Q of the FAA; the Secretary of State has made an exception.

4. FAA Sec. 611(b); Continuing Resolution Sec.501

If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?

N/A

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 of 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.

N/A

7. FAA Sec. 601(a)

Information and conclusions whether project 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.

N/A - Project is largely devoted to infrastructure development. However, studies financed under the project may lead to later investment relating to (a), (b), (c), and (e).

8. FAA Sec. 601(b)

Information and conclusion 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).

N/A

9. FAA Sec. 612(b), 636(h); Continuing Resolution Sec. 508

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.

IFM imposed limitations on GOCR budget deficits preclude greater host country contribution than that indicated. The U.S. owns no Costa Rican 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?

N/A

11. FAA Sec. 601(e)

Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rule allow otherwise?

Yes.

12. FY 1982 Appropriation Act Sec. 521

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?

N/A

13. FAA 118(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)

Is 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)?

N/A

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project
Criteria

a. FAA Sec. 102(b), 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; and (e) utilize and encourage regional cooperation by developing countries?

Project provides for grass roots Community Development activities in villages and hamlets; studies will include feasibility of selected co-operative solutions to problems, e.g. electricity generation.

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)?

N/A

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

Recipient country will provide 31% of overall project cost.

(or is the latter cost-sharing requirement being waived for a "relatively least developed" country)?

e. FAA Sec. 110(b)

Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? (M.O. 1232.1 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than \$100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character.

No.

f. 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.

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 program supports Costa Rican initiatives, and is consistent with Costa Rican capabilities.

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.

The country is undergoing severe economic problems. Nevertheless it appears capable of repaying the loan.

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? N/A

c. ISIXA of 1981, Sec. 724 (c) and (d)

If for Nicaragua, does the loan agreement require that the funds be used to the maximum extent possible for the private sector? Does the project provide for monitoring under FAA Sec. 624(g)? N/A

3. Economic Support Fund Project Criteria

a. FAA Sec. 531(a)

Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FEA Section 102? N/A

b. FAA Sec. 531(c)

Will assistance under this chapter be used for military, or paramilitary activities? N/A

c. FAA Sec. 534

Will ESF funds be used to finance the construction of the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to nonproliferation objectives? N/A

d. FAA Sec. 609

If commitments are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? N/A



REPUBLICA DE COSTA RICA
MINISTRO DE HACIENDA

Recd. 6-27-83		
	Act.	Info
MDIR		✓
DDIR		✓
MO		
LO		✓
PO		
GDD		
RDO	X	
CONT		✓
OIS		
CHIRON		✓
RF		✓
Due Date: 7-11-83		

San José, 27 de junio de 1983

Señor
Bastian Schouten
Director a.i.
Agencia para el Desarrollo Internacional
S. D.

Estimado señor Schouten:

En representación del Gobierno de Costa Rica, por este medio solicito un préstamo de la Agencia para el Desarrollo Internacional, por un monto de US\$ 14.2 millones, para financiar el proyecto de desarrollo de la Infraestructura de la Zona Norte, el cual deseamos ejecutar durante los próximos tres años.

El proyecto tiene como finalidad mejorar los ingresos y los bienes de los habitantes de los cantones de Upala, Guatuso y del distrito de Santa Cecilia en el cantón de La Cruz. El préstamo financiará actividades de mejoramiento de caminos, obras de infraestructura comunal y estudios y proyectos pilotos dirigidos a inversiones futuras.

Ahora bien, en virtud de la crisis económica que atraviesa actualmente mi país, quisiera solicitarle que el préstamo se nos otorgue dentro de las mejores condiciones posibles, y especialmente, que el monto de la contrapartida se fije en la suma más baja que la factibilidad del Proyecto permita.

En espera de que esta propuesta reciba una consideración favorable por parte de la A.I.D., me suscribo de usted,

Atentamente,

FEDERICO VARGAS
MINISTRO DE HACIENDA



cc: Ing. Claudio A. Volio
Ministro Planificación Nacional

CERTIFICATION PURSUANT TO SECTION 611(e) OF THE
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Bastiaan B. Schouten, the principal officer (acting) of the Agency for International Development in Costa Rica, having taken into account among other factors the maintenance and utilization of projects in Costa Rica previously financed or assisted by the United States, do hereby certify that in my judgement Costa Rica has both the financial capability and human resources capability to effectively maintain and utilize the Project: NORTHERN ZONE INFRASTRUCTURE DEVELOPMENT.


Bastiaan B. Schouten
Acting Director
USAID/Costa Rica

II. THE PROJECT CONCEPTS

6. Scope of Proposed Project
7. Specifications
8. Description of Scope of Work on Main Items
9. Analysis and Recommendations on the Technology to be used for Construction: Intensive Labor vs Equipment and Machinery.
10. Project Organization and Administration
11. Maintenance
12. Cost Estimate
13. Implementation Plan
14. Information for Economic Analysis

ANNEX 1: DESIGN ENGINEERING *

ANNEX 2: SUBSECTION COSTS AND QUANTITIES ESTIMATE

(*) These sections not included in this Annex. Copies of the complete report and preliminary bridge designs will be placed in the bulk files of LAC/DR and in the Mission files.

II. THE PROJECT CONCEPT

6. Scope of Proposed Project

The proposed main trunk road will be an important improvement of the existing road infrastructure. This road will promote the execution of an agricultural process, that will modify the planting and collection of crops, transport and marketing. Also it will promote social advancement of the inhabitants of the region due to a permanent connection to services such as schools, health centers, judicial and political authorities, etc.

To stimulate better use of the system and because of socio-economic conditions and high rainfall, a number of radial county roads perpendicular to the main trunk road should be improved also. These additional county roads will connect with the national system of roads at Dos Ríos and San Isidro de Aguas Claras.

According to potential and actual land use investigations carried out by BEL INGENIERIA for MOPT in relation to a Nation Wide County Road Program, the location of trunk and radial roads serves, satisfactorily, the transportation needs of the region.

The main road was selected following well located existing roads, which could comply with certain geometric standards with small changes in grade and alignment. The road starts at Santa Cecilia and connects with the small towns of Brasilia, Bimania, Porvenir, Cuatro Bocas, San José, Santa Clara, Upala, Colonia Puntarenas, San Luis, La Cabaña, Samen and Buenos Aires, ending up at San Rafael de Guatuso.

Following are the radial county roads:

- Colonia Puntarenas - Llano Azul. This gravel road can be improved with a small investment, providing a link with the Cañas-Upala road, 3 kilometers south of the Zapote River Bridge. This link is important during construction, shortening the haul of select materials.

- Cuatro Bocas - San Isidro - Aguas Claras, joining the northern zone with the Interamericana at Bagaces, using MOPT project: Bagaces-El Torno-Guayabo-Guayabal. This link is very important because it is located midway between the Upala-Brasilia road, where connections also exist.

- Brasilia - Dos Ríos, connecting with the Interamericana at the Tempisque River Bridge, by means of the existing gravel road through Quebrada Grande and ending at Dos Ríos. It will shorten the access to Liberia; conditions in the area are suitable for vegetable production.

Inventory of work to be done on main trunk and radial roads was determined by actually traveling the existing roads and trails and estimating the quantities of work. All water courses were located by means of car odometer, and size of culvert and embankment elevation were determined.

The description of the method used to determine quantities is described for each item of works:

- Grading (earthwork) was estimated for three typical conditions.

First condition, in rolling terrain, fills over culverts where estimate balancing quantities with cut sections uphill, to provide a good grade line with minimum earthwork.

Second condition, in flat terrain, lateral borrow was indicated to raise the grade line.

Third condition corresponds to certain sections of road where small cuts are provided to shape the roadway and to supply fill over culverts.

- Bridges and major culverts. Size and type were determined in the field by structural and drainage engineers on all major waterways.

- High flood water level, erosion of the banks and scouring marks were determined. Position of rock or high bearing materials were visually determined.

- Select material for topping. Soil samples were obtained to estimate bearing capacity indirectly by means of classification and group index methods and thickness of cover material was determined.

- Gravel pits were studied to determine quantity and quality of materials and haul distances.

All trunk and radial roads were traveled by 4-wheel drive vehicles previous to inventory activities.

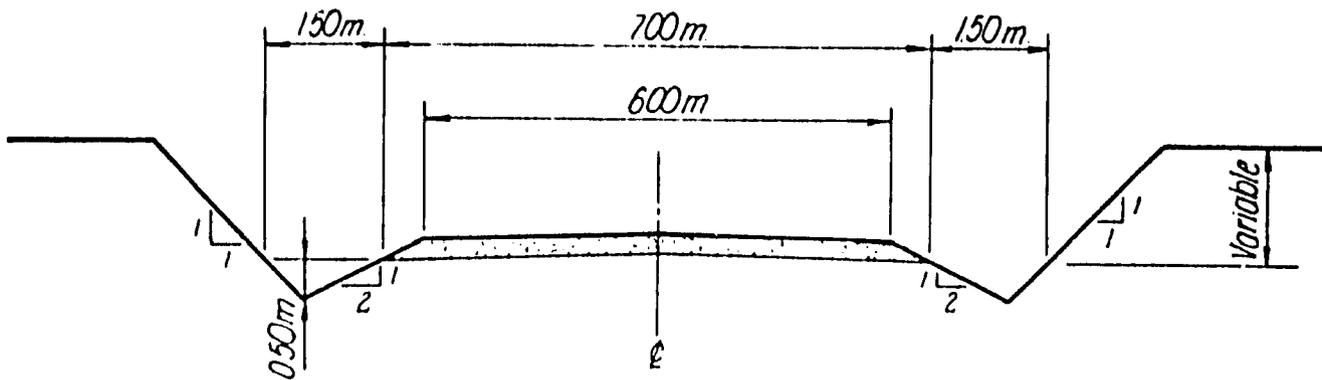
7. Specifications

The type of terrain traversed by the trunk and radial roads is flat to rolling. Natural drainage of the region originates at the Guanacaste volcanic range and runs toward Lake Nicaragua. Trunk road runs perpendicular to natural drainage.

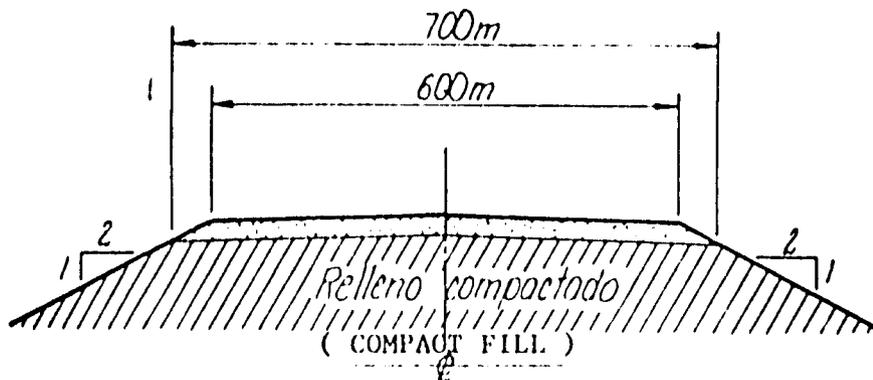
Under these condition only one set of standards will be adopted, with minimum values for rolling terrain and desirable values for flat terrain, as shown below.

	<u>ROAD STANDARDS</u>	
	<u>MINIMUM</u> <u>(Rolling)</u>	<u>DESIRABLE</u> <u>(Flat)</u>
Design speed (kph)	50	60
Horizontal radius (m)	70	120
Maximum gradient (%)	6	3
Conformation width (m)	7	7
Pavement width (m)	6	6
Width of bridges (m)	4.30*	4.30*
Design load, bridges	H 15-S 12	H 15-S 12
Right of way (m)	14	20
Cross slope (%)	5	5

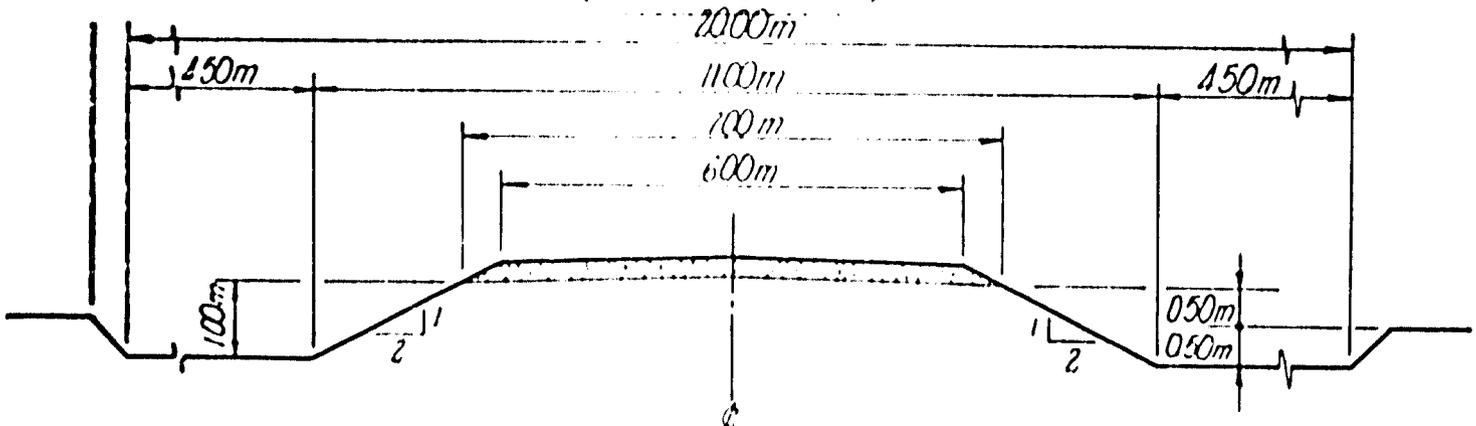
(*) Width of bridges can be reduced to 3.85 m if standard steel bridges are used. The cross section road design is illustrated in Figure 1.



SECCION EN CORTE (SECTION IN CUT)
CAMINO EN TERRENO ONDULADO
 (ROLLING TERRAIN)



SECCION EN RELLENO (SECTION IN FILL)
CAMINO EN TERRENO ONDULADO
 (ROLLING TERRAIN)



FILED IN LATERAL BORROW
SECCION EN PRESTAMO LATERAL
CAMINO EN TERRENO PLANO
 FLAT TERRAIN

8. Description of Scope of Work on Main Items

- Clearing and grubbing is not necessary due to the fact the road uses existing alignment. Only top soil removal and some vegetation will be required.
- Construction will use simple bulldozer techniques to shape the roadway and compact the small fills; layers will be extended by motor grades.
- Fills higher than 1 m (and on the last 50 cm of all fills) will be compacted by light rollers.
- Drainage will be provided by 60 cm concrete pipe culverts, precast in the region.
- Major drainage structures will be cast in place one or two celled box culverts. To achieve standardization only a few sizes will be used.
- Pavement width of both trunk and radial roads will be covered with gravel from Río Pizote, Quebrada Chepa and Río Frío. Material from Río Zapote near Upala requires crushing to reduce oversize.
- Major river crossings will require permanent one lane bridges, using pre cast or cast in place concrete beams, mass concrete for abutments and class A concrete for piers and superstructure. Also pony steel trusses will be considered for single span long bridges.
- All bridges will be one lane due to the low volumen of traffic predicted and the present economic situation of Costa Rica.
- Annex includes structure types and estimated quantities for each item of work.

9. Analysis and Recommendations on the Technology to be Used for Construction: Intensive Labor vs. Equipment and Machinery

The Northern zone is composed of La Cruz, Upala and Gutuso counties, with a high potential for the development of agricultural and cattle activities. Also its population is formed of families that own small parcels and medium size farms, a situation that is amply fostered by the Institute for Agrarian Development (IDA). The location of this region, far away from the major urban centers of the country, precludes the migration of peasants to the cities of the Central Valley. Even in large size farms dedicated to cattle ranching, the family group is the main support of this important activity that offers occupation to any out-of-work peasant.

From this it can be concluded that there is no idle labor in the influence area of this project that may lead to the possibility of orienting construction toward intensive use of idle labor in the area. On the contrary, the project must be oriented to the maximum use of equipment and machinery to lessen the impact on agricultural and cattle labor, which is of vital importance to the region.

10. Project Organization and Administration

Due to the bad economic situation that is affecting the country, investments in road infrastructure must be well analyzed in order to reach maximum benefits with minimum investment. However, in order to provide as much kilometers as possible within financial limitations, there is a procedure called "Stage Construction" that can be followed in the development and construction of low volume, low cost roads. Stage construction emphasizes the practical aspects of constructing the most economical and usable road that is adequate to meet the needs of the present and the immediate future. As rural development progresses and traffic volumes increase, the road can be upgraded or improved in stages in response to the greater needs.

The Northern zone of Costa Rica has a high potential for agricultural and cattle raising development, and perhaps is the most suitable area to apply stage construction of a trunk road, as described in the publication "Synthesis 2, Stage Construction", Transportation Research Board, sponsored by USAID. Existing earth roads in the area are used by farmers even during the rainy season, by means of animal traction or on foot, giving access to market areas. The flat to rolling topography is favorable, and local roads that follow this type of terrain have acceptable geometric standards suitable for improvement by stages, adding gravel surface, drainage, river crossings and one lane bridges on major waterways.

BEL Engineering is proposing the utilization of the linear plans technique, as described in the above mentioned publication, due to the fact that no major change in vertical and horizontal alignment will be made.

The linear plans will be prepared using the detailed inventory, over an aerial photo mosaic, showing earthworks and minor drainage. Detailed plans will be prepared only for box culverts and bridges.

Geometric specifications were selected following the suggested specifications of Table 1, Synthesis 2, "Stage Construction", and will provide reasonable costs and high benefits. This type of design work has been successfully used by BEL in several projects, including 200 km of county roads for IFAM; the oil pipeline located between La Garita and Puntarenas; and a 20 km access road for an oil drilling rig in Talamanca.

It is necessary to emphasize that the Engineer in charge of Supervising work must be completely aware of the new methodology to be applied and of the correct interpretation of linear type construction drawings. It is fundamental that the Supervising Engineer does not take initiatives leading to project modifications because this will produce an increment in costs without significant benefits. When the Supervising Engineer has any suggestions about the design, they must be submitted to higher echelons to be properly studied and acted on.

For construction engineering it will be required to stake out the line as shown on the linear type drawings (aided by photographic composition). The staking of the line must be maintained approximately one kilometer or more ahead of construction work, so that supervising personnel may take elevations on the stations and draw a profile in order to adjust the grade to the one

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estimated on the drawings, as much as possible. Cross sections will then be taken and slope stakes established, and earthmoving quantities calculated.

Culvert pipes must be marked on site by the Supervising Engineer and his assistants, closely following indications on lineal type drawings, but taking the responsibility for final length and alignment.

Bridge and box culvert structures must be marked strictly adjusted to specific construction drawings, and any change must be consulted with proper authorities.

Gravel pavement will be constructed following blue-top stakes, and payment will be made according to actual quantities placed and compacted on the site.

11. Maintenance

MOPT is carrying out a project to establish an administrative system for maintenance. Financed by the World Bank (IBRD), it is being implemented through technical assistance given by the joint venture of BEL/JORGENSEN consulting engineers.

The introduction of modern administration systems by MOPT, at the level of the National Systems of Roads, evidently will have a favorable demonstrative effect on maintenance processes for the County System of Roads.

Moreover, this technical assistance also has the objective of preparing a program for Maintenance, Rehabilitation and Improvement of the County System of Roads, at the same level that BEL ENGINEERING prepared for the National System of Roads, for MOPT in 1979.

By the time this project is to be completed, it is expected that such a maintenance program will have shown its beneficial results.

12. Cost Estimate

The capital cost of the project has been calculated in colones using applicable prices indexed to May, 1983.

This project cost is detailed in the summary of quantities which is presented in Annex 2; and shows: number of item, description, unit of measurement, quantity, unit prices and total. Cost of sections and subsections and total cost are shown in the following Table.

The items shown are the usual ones in road projects and are dealt with in Art. 8. Due to the methodology followed in the estimation of quantities (Art.6), a variation is expected in relation to real physical quantities; that depends on the type of activity involved. According to our experience we consider that a variation of $\pm 20\%$ in the quantities related to excavation, $\pm 10\%$ in those related to selected and sub-base materials, and $\pm 5\%$ in drainage and bridge structure quantities, is to be expected.

As we have included only the incremental possibility in quantities, the degree of conservatism applied is greater than would be necessary at a more advanced stage of this project.

The unit prices of contracts are based on on-going contracts and modified to take into consideration different conditions. They were checked by the unit quantity method.

To the total construction cost obtained, the following costs will have to be added: 1) Fees for performing engineering design, 2) Fees for project management, 3) Owner's administrative costs.

Contractor's administrative charges are included in unit price. Engineering and Management costs are estimated at 13%. Owner's administrative costs are not included.

Another factor usually considered in estimates is contingencies. In order to avoid over conservatism we estimate that the minimum 5% should be applied. Escalation costs were considered assuming 10% as the annual increment of cost, so that including contingencies, a total of 21% was added. Interest during construction is treated separately.

13. Implementation Plan

13.1. Project Schedule - The activities involved include: a) Study of this Report and decision formulation. 2) Engineering as described Art. 10.1, and preparation of Contract Documents, to be started no later than July 1, 1983. 3) Prequalification of possible Contractors to facilitate awarding of Contracts is assumed to be completed in 2 months. 4) Call for Bids, study of offers and awarding and signature of contracts, activity that should be completed during the first week of February, 1984. 5) Time allowed for completion of total work, road and bridges, is estimated in 24 months as shown in the Construction Schedule. 6) Project Management as described in Arts. 10.2 and 10.3, will be the responsibility of construction engineering and management of the contracts. Figure 2, shows the Project Schedule.

13.2 Construction Schedule - Is shown in Figure 3. Total work is divided in 4 sections and 7 subsections, and the possibility of having up to four contractors was considered. To obtain a good balance between road construction and bridge construction equipment it is considered that two contractors are preferable, with the advantage that project management will also be facilitated. The contractor will be responsible for road bridge work within each project. So it is recommended that two separate contracts be awarded, without eliminating in his manner the possibility that the two contracts may be awarded to one contractor. Note that major cuts and fills have to be scheduled for the dry seasons.

14. Information for Economic Analysis

The economic costs of projects is equal to the financial costs less sectorial transferences such as taxes, interest and rents. The sectorial transferences for this type of projects have been estimated at 20% of the total cost. Therefore, the economic cost is 80% of the total financial cost. The cost of road maintenance for different projects is:

COSTA RICA NORTHERN ZONE ROAD PROJECTCOST ESTIMATE

(in million colones of May, 1983)

Section	Sub Section	Constr. Costs (1)	Engr. Supervision (2)	Scalation 2 years (3) (1+2)x0.21	Engr. Design (4)	Total 1+2+3+4	Total \$
1	A	74.216	7.422	17.144	2.226	101.008	2.525
	Q	36.777	3.678	8.495	1.103	50.053	1.251
2	B	60.482	6.048	13.971	1.814	82.315	2.058
	R	22.855	2.286	5.280	0.686	31.107	0.778
3	C	55.817	5.582	12.894	1.675	75.968	1.899
	S	13.674	1.367	3.159	0.410	18.610	0,465
4	D	78.628	7.863	18.163	2.359	107.013	2.675
		342.449	34.246	79.106	10.273	466.074	11.651

NOTES:

- 1 Cost estimated to May 1983
- 2 Cost estimated to May 1983 (10% of 1)
- 3 $1.10 \times 1.10 = 1.21$
- 4 Cost estimated to May 1983 (3% of 1)

SUB-SECTIONS

A	Santa Cecilia - Río Pizote
B	Río Pizote - San José
C	San José - Upala - Colonia Puntarenas
D	Colonia Puntarenas - San Rafael
Q	Brasilia - Dos Ríos
R	Cuatro Bocas - San Isidro
S	Colonia Puntarenas - Llano Azul

ANNUAL MAINTENANCE COST

<u>Type of Road</u>	<u>Cost (Colones)</u>
Principal roads	¢ 25.000,00 /km/year
County roads	¢ 18.000,00 /km/year

The residual value of the investment at the end of twenty years has been estimated at 38.6% of the total cost of each project or section. The following tabulation is a resumé of the respective calculations:

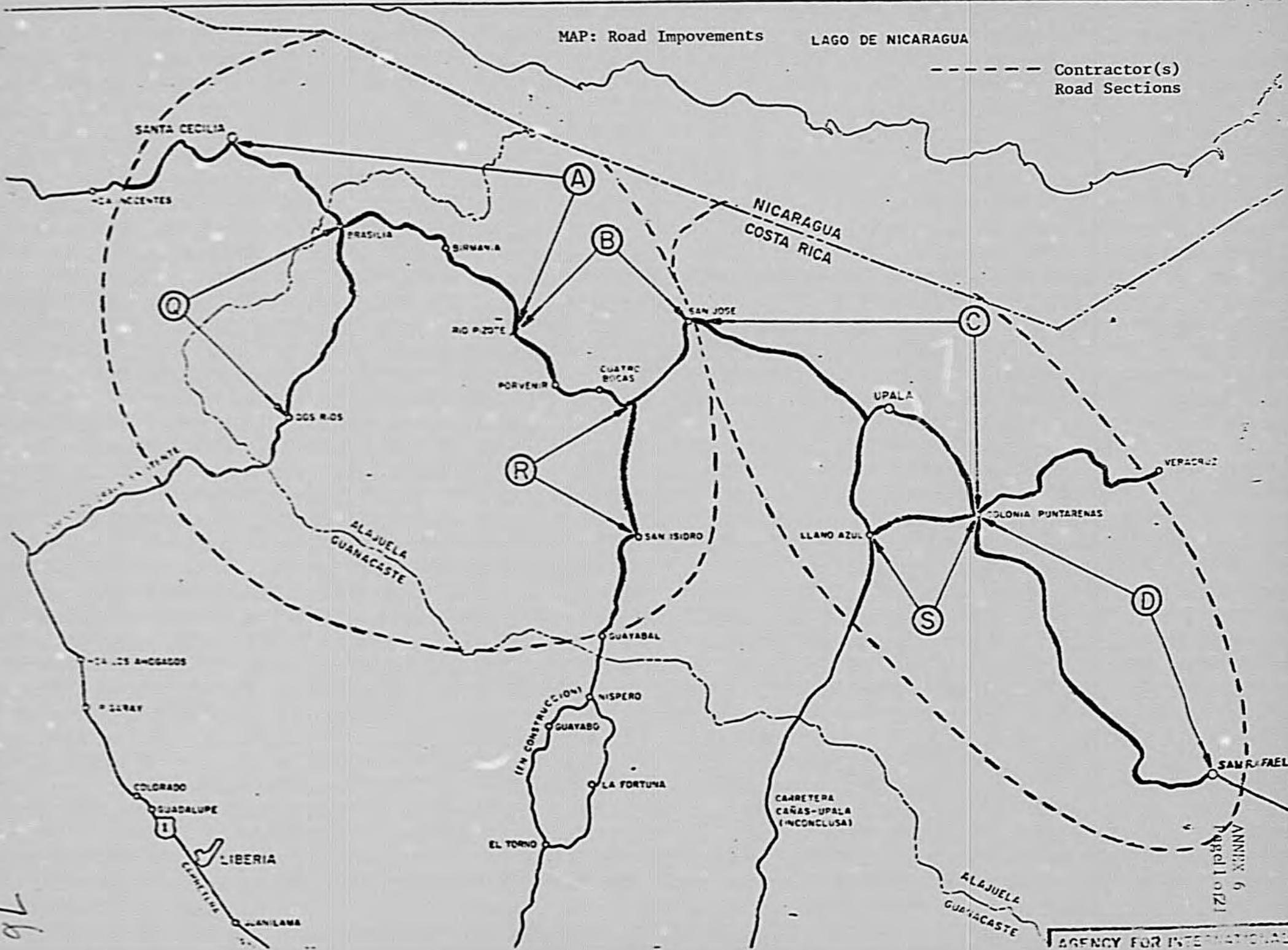
ANALYSIS OF THE RESIDUAL VALUE OF THE PROJECT

<u>ITEM</u>	<u>USEFUL LIFE PER ITEM</u>	<u>RESIDUAL VALUE PER ITEM</u>	<u>COMPOSITION OF PROJECT</u>	<u>RESIDUAL VALUE OF PROJECT</u>
Earthwork	40 years	50%	0.4%	0.2%
Pavements	30 years	33%	67.2%	22.2%
Structures	40 years	50%	32.4%	16.2%
				<u>38.6%</u>

MAP: Road Improvements

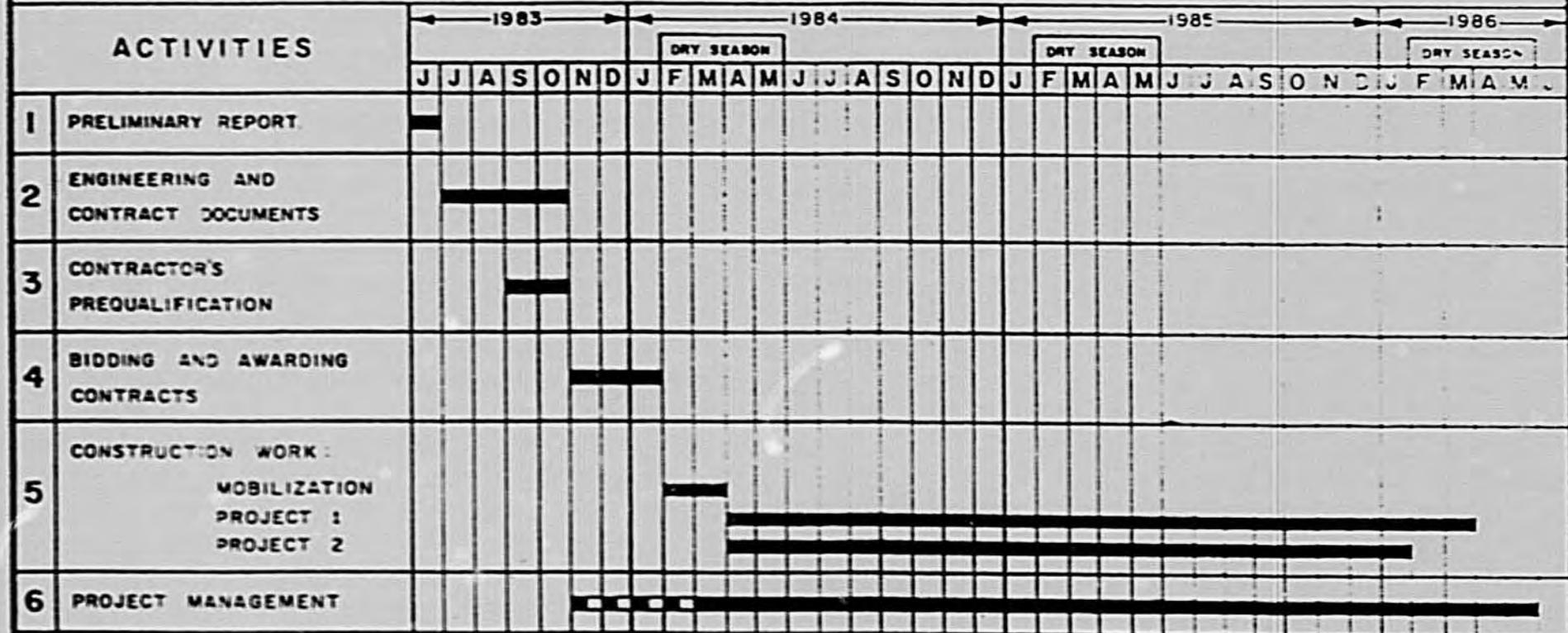
LAGO DE NICARAGUA

--- Contractor(s)
Road Sections



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IMPLEMENTATION PLAN PROJECT SCHEDULE



↑
U.S.A.I.D. LOAN

AGENCY FOR INTERNATIONAL DEVELOPMENT
 U.S.A.I.D.
BEL INGENIERIA S.A.
 INGENIEROS CONSULTORES-SAN JOSE, COSTA RICA.
 MAY - 1983

Figure 2

FIGURA 3

IMPLEMENTATION PLAN CONSTRUCTION SCHEDULE																											
DESCRIPTION	ITEMS	UNITS	YEAR QUANTITIES	← 1984 → ← 1985 → ← 1986 →																							
				DRY SEASON			DRY SEASON						DRY SEASON														
				A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
PROJECT 1 SECTIONS A + B + Q + R LENGTH 75.50 Kms	EARTH MOVING	m ³	467 515 50	—————																							
	SUB-BASE	m ³	259 350 50	—————																							
	CULVERTS	m	2 326 30	—————																							
	BRIDGES	#	8	—————																							
PROJECT 2 SECTIONS C + D + S LENGTH 76.25 Kms	EARTH MOVING	m ³	398 900 00	—————																							
	SUB-BASE	m ³	183 100 00	—————																							
	CULVERTS	m	1 939 00	—————																							
	BRIDGES	#	7	—————																							

AGENCY FOR INTERNATIONAL DEVELOPMENT
U S A I D

BEL INGENIERIA S. A.
INGENIEROS CONSULTORES — SAN JOSE, COSTA RICA
MAY — 1983

Figure 3

ANNEX 6
Page 13 of 21

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ESTIMATE

SUB-SECTION : Sta Cecilia - Río Pizote (A)

Long. 29 km

Item No.	DESCRIPTION	UNITY	UNIT PRICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	78.850	6.308
203(3)	Unclassified excavation	m ³	90	107.650	9.688
204(1)	Compacted subbase	m ³	400	99.653	39.861
206(1)	Structural Excavation (Pipes)	m ³	400	1.870	0.748
206(1)	Structural Excavation (Boxes)	m ³	400	1.085	0.434
206(1)	Structural Excavation (Cannals)	m ³	300	1.387	0.416
602A	Structural Concrete Class X	m ³	6.500	179.5	1.167
602A-1	Structural Concrete Class A	m ³	7.500	719.3	5.395
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 mØ	m	2.700	630	1.700
3C	0,91 mØ	m	5.000	21	0.105
3D	1.07 mØ	m	6.300	155	0.979
4G	Class IV 1,52mØ		15.000	24	0.380
604(3)	Collectors	c/u	9.500	88	0.840
602C(1)	Reinforcing steel	kg	40	48.400	1.936
	Road				69.938
	Orosi River Bridge				1.836
	Las Haciendas				2.442

TOTAL 274.216 x 10⁶

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ESTIMATE

SUB-SECTION : Río Pizote - San José (B)

Long. 22 km

Item No.	DESCRIPTION	UNITY	UNIT PRICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	59,850	4.788
203(3)	Unclassified excavation	m ³	90	105,256	9.473
204(1)	Compacted subbase	m ³	400	76,848	30.739
206(1)	Structural Excavation (Pipes)	m ³	400	1,305	0.522
206(1)	Structural Excavation (Boxes)	m ³	400	305	0.122
206(1)	Structural Excavation (Cannals)	m ³	300	683	0.205
602A	Structural Concrete Class X	m ³	6.500	124	0.803
602A-1	Structural Concrete Class A	m ³	500	230	1.722
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 mØ	m	2.700	544	1.468
3C	0,91 mØ	m	5.000	-	-
3D	1.07 mØ	m	6.300	198	1.245
4G	Class IV 1,52mØ		15.000	8	0.120
604(3)	Collectors	c/u	9.500	82	0.775
602C(1)	Reinforcing steel	kg	40	16,200	0.648
	Road				52.539
	Pizote River Bridge				3.358
	Caño Negro River Bridge				3.524
	La Quebrada River Bridge (La Chepa)				1.061

TOTAL. 459.482 x 10⁶

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-29-

ESTIMATE

SUB-SECTION : San José - Upala - Colonia Puntarenas (C)

Long. 26,35 km

Item No.	DESCRIPTION	UNITY	UNIT PRICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	71.700	5.736
203(3)	Unclassified excavation	m ³	90	90.500	8.145
204(1)	Compacted subbase	m ³	400	74.000	29.600
206(1)	Structural Excavation (Pipes)	m ³	400	1.430	0.572
206(1)	Structural Excavation (Boxes)	m ³	400	580	0.232
206(1)	Structural Excavation (Cannal)	m ³	300	630	0.189
602A	Structural Concrete Class X	m ³	6.500	129	0.839
602A-1	Structural Concrete Class A	m ³	7.500	356	2.670
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 mØ	m	2.700	626	1.690
3C	0,91 mØ	m	5.000	10	0.050
3D	1.07 mØ	m	6.300	109	0.687
4G	Class IV 1,52mØ		15.000	-	-
604(3)	Collectors	c/u	9.500	91	0.865
602C(1)	Reinforcing steel	kg	40	22.512	0.900
	Road				52.175
	Guncalito River Bridge				1.985
	Chimurria River Bridge				1.657

TOTAL € 55.817 x 10⁶

91

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ESTIMATE

SUB-SECTION : Colonia Puntarenas - San Rafael (D)

Long. 43 km

Item No.	DESCRIPTION	UNITY	UNIT PRICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	89.700	7.176
203(3)	Unclassified excavation	m ³	90	112.600	10.134
204(1)	Compacted subbase	m ³	400	95.300	38.120
206(1)	Structural Excavation (Pipes)	m ³	400	2.120	0.848
206(1)	Structural Excavation (Boxes)	m ³	400	840	0.336
206(1)	Structural Excavation (Cannals)	m ³	300	1.350	0.405
602A	Structural Concrete Class X	m ³	6.500	184	1.196
602A-1	Structural Concrete Class A	m ³	7.500	500	3.750
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 mØ	m	2.700	647	1.747
3C	0,91 mØ	m	5.000	77	0.385
3D	1.07 mØ	m	6.300	164	1.033
4G	Class IV 1,52mØ		15.000	-	-
604(3)	Collectors	c/u	9.500	97	0.922
602C(1)	Reinforcing steel	kg	40	32.918	1.317
	Road				67.369
	Buenvista River Bridge				2.976
	Guayabito River Bridge				1.564
	Samen River Bridge				1.362
	Frfo River Bridge				5.357

TOTAL. Q 78.628 x 10⁶

11

ESTIMATE

SUB-SECTION : Brasilia - Dos Rfos (Q)

Long. 15.5 km

Item No.	DESCRIPTION	UNITY	UNIT PRICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	42.100	3.368
203(3)	Unclassified excavation	m ³	90	41.000	3.690
204(1)	Compacted subbase	m ³	400	51.150	20.460
206(1)	Structural Excavation (Pipes)	m ³	400	840	0.336
206(1)	Structural Excavation (Boxes)	m ³	400	480	0.192
206(1)	Structural Excavation (Cannals)	m ³	300	360	0.108
602A	Structural Concrete Class X	m ³	6.500	84	0.546
602A-1	Structural Concrete Class A	m ³	7.500	368	2.760
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 mØ	m	2.700	368	0.994
3C	0,91 mØ	m	5.000	32	0.160
3D	1.07 mØ	m	6.300	53	0.334
4G	Class IV 1,52mØ		15.000	-	-
604(3)	Collectors	c/u	9.500	53	0.504
602C(1)	Reinforcing steel	kg	40	24.470	0.979
	Road				3'.430
	Pizote River Bridge				0.850
	Cucaracho River Bridge				1.497

TOTAL € 36,777 x 10⁶

97

ESTIMATE

SUB-SECTION : Cuatro Bocas - San Isidro (R)

Long. 9 km

item No.	DESCRIPTION	UNITY	UNIT RICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	24.500	1.960
203(3)	Unclassified excavation	m ³	90	46.200	4.158
204(1)	Compacted subbase	m ³	400	31.700	12.680
206(1)	Structural Excavation (Pipes)	m ³	400	600	0.240
206(1)	Structural Excavation (Boxes)	m ³	400	120	0.048
206(1)	Structural Excavation (Cannals)	m ³	300	360	1.080
602A	Structural Concrete Class X	m ³	6.500	53	0.345
602A-1	Structural Concrete Class A	m ³	7.500	74	0.555
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 mØ	m	2.700	231	0.624
3C	0,91 mØ	m	5.000	-	-
3D	1,07 mØ	m	6.300	42	0.265
4G	Class IV 1,52mØ		15.000	21	0.315
604(3)	Collectors	c/u	9.500	32	0.304
602C(1)	Reinforcing steel	kg	40	4.830	0.193
	Road				21.794
	La Chepa River Bridge				1.061

TOTAL € 22.855 x 10⁶

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ESTIMATE

SUB-SECTION : Colonia Puntarenas - Llano Azul (S)

Long. 6.9 km

Item No.	DESCRIPTION	UNITY	UNIT PRICE	QUANTITY	COST
201(3)A	Top soil Removal	m ³	80	18.700	1.496
203(3)	Unclassified excavation	m ³	90	15.700	1.413
204(1)	Compacted subbase	m ³	400	13.800	5.520
206(1)	Structural Excavation (Pipes)	m ³	400	840	0.336
206(1)	Structural Excavation (Boxes)	m ³	400	120	0.048
206(1)	Structural Excavation (Cannals)	m ³	300	960	0.288
602A	Structural Concrete Class X	m ³	6.500	84	0.546
602A-1	Structural Concrete Class A	m ³	7.500	42	0.315
603(21)	Reinforced Concrete Pipe Class III				
3A	0,61 m ³	m	2.700	116	0.313
3C	0,91 m ³	m	5.000	53	0.265
3D	1,07 m ³	m	6.300	95	0.598
4G	Class IV 1,52m ³		15.000	42	0.630
604(3)	Collectors	c/u	9.500	21	0.200
602C(1)	Reinforcing steel	kg	40	3.255	0.130
	Road				12.008
	Chimurria River Bridge				1.666

TOTAL . @ 13.674 x 10⁶

COSTA RICA NORTHERN ZONE DEVELOPMENT PROJECT (A. I. D. PROJECT)

**ESTIMATE OF QUANTITIES
(SUMMARY OF BRIDGES)**

Nº	RIVER NAME	STA.	LONG.	ITEM						OBS.	MAP SECTION	
				206 (1)	206 (2)	602A (1)	602C (1)	602D (1)	611 (1)			612 (2)
1	OROSI	4+900	22	330	80	51	5360	150		45	Slab	A
2	HACIENDAS	9+400	31	600	80	68	9080	185		63	S & T beam	A
3	PIZOTE	29+100	46	380	180	116	20100	150		93	T beam	B
4	CAÑO NEGRO	35+700	46	280	120	96	18500	270		93	"	B
5	LA CHEPA	41+900	15	200		24	5500	100		31	"	B
6	GUACALITO	57+350	24	330	100	58	6010	150		49	Slab	C
7	CHIMLEPIA	74+350	24	135	100	58	6010	100		49	"	C
8	BUENAVISTA	98+250	46	200	160	116	20100	100		93	T beam	D
9	GUAYABITO	100+150	15	210		24	5500	200		31	"	D
10	SIMEN	105+150	15	330		24	5500	150		31	"	D
	FRIO	112+250	45		440	152	14070		38900		Truss	D
2	SIMEN -Parcial San Rafael-	6+150	15	330		24	5500	150		31	T beam	
3	GUAYABITO "	9+600	15	210		24	5500	200		31	"	
4	CHIMLEPIA -Fodo: Colonia Purisima-	0+200	31	160	80	70	9320	60		63	S & T beam	S
5	CAÑO NEGRO "	8+900	12	110		17	4200	60		25	T beam	
6	PIZOTE -Parcial Brasilia-	5+000	16	60		27	5940	60		33	"	Q
7	CUCARACHO "	13+000	18	330		33	6790	150		37	"	Q
8	CHINGO -Parcial Sta Cecilia-	3+000	12	190		17	4200	150		25	"	
9	UPPER CHEPA -Parcial Cuatro Bocas-	0+300	15	200		24	5500	100		31	"	R
	Z		463 m.	4585 m ³	1340 m ³	1023 m ³	162680 kg.	2485 m ³	38900 kg	654 lm.		

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SOCIAL SOUNDNESS ANALYSIS

A. INTRODUCTION

Much of the quantitative data utilized in this analysis derives from two sources: the 1973 population census and a survey of 401 small farmers and daily wage agricultural workers, which was undertaken in March, 1982 in the Project area (298 interviews) and in a neighboring canton (Los Chiles). The data from both sources needs to be interpreted with considerable caution: As concerns the census data, there have been many changes in the past 10 years; as regards the recent survey data, it presents a good picture of the small farmer/landless agricultural worker segment of the population in the Project area, but is hardly representative of the area as a whole. For example, 82% of the farm operators interviewed had properties of less than 50 hectares; the census data indicates that only 20% of the farm properties fell into this category.

Other informational sources drawn upon are reports by Ministries and Agencies (e.g. the Agrarian Development Institute and the Ministries of Health and Education) in matters of their specific concern. All of the above was supplemented by impressionistic data from consultants' reports (e.g. the land use situation described in the Environmental Analysis section of this paper) and from interviews with officials and farmers in the Project area.

B. Socio-Cultural Context

1. Spacial Population Characteristics

Tables Nos. 1, 2, and 3 provide basic data about the Project area: population estimates; population density trends; urban and hamlet concentrations; etc. The significant features that emerge from this data is that we are dealing with a region that:

(a) is sparsely populated, but which -- for most of the area -- is being settled at a rapid rate;

(b) has the overwhelming bulk of its population concentrated in small villages and hamlets;

2. Citizenship

According to informal accounts, the initial colonization and opening up of the area occurred within the last 50 to 60 years, with many of the initial settlers coming from Nicaragua.

TABLE 1

POPULATION, HOUSING AND VILLAGE DISTRIBUTION BY

CANTON AND DISTRICT

	<u>1/</u> <u>POPULATION</u>	<u>2/</u> <u>NUMBER OF HOMES</u>	<u>2/</u> <u>NUMBER OF CITIES AND HAMLETS</u>
<u>Upala Canton</u>	<u>23,317</u>	<u>5,645</u>	<u>107</u>
Upala District	5,691	1,779	24
Aguas Claras District	3,716	924	13
San José District	4,538	944	18
Bijagua District	2,393	595	15
Delicias District	2,447	855	15
Dos Ríos District	2,073	548	17
Yolillal District <u>3/</u>	2,459	-	-
<u>Santa Cruz Canton</u>			
Santa Cecilia District	<u>3,204</u>	<u>656</u>	<u>14</u>
<u>Guatuso Canton</u>	<u>6,548</u>	<u>1,110</u> <u>4/</u>	<u>36</u> <u>4/</u>
San Rafael District	4,249	733	24
Buenavista District	1,167	189	7
Cote District	1,132	188	5
<u>PROJECT AREA TOTALS</u>	<u>33,069</u>	<u>7,411</u>	<u>157</u>

1/ Census Bureau Publication No.50; Population estimates as of July, 1982.

2/ Source: MIDEPLAN document: "Desarrollo Rural Integrado de la Zona Norte, Anexo 5 - Determinación de la Población Directamente Beneficiada por el Proyecto (Grupo Meta)". Data indicated as corresponding to 1980. No explanation of methodology or source of the figures.

3/ This district was recently created and separated from the Upala District. It is believed that the figures on homes and villages shown against Upala District include those of Yolillal District.

4/ Source: Ministry of Health, Rural Services Division

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TABLE 2
CHANGES IN POPULATION DENSITY BY DISTRICT AND CANTON

	AREA (Km) ² ^{1/}	POPULATION PER SQUARE KILOMETER	
		(1973)	(1982)
<u>Upala Canton</u>	<u>1,608</u>	<u>10</u>	<u>14</u>
Upala District ^{2/}	395	14	21
Aguas Claras District	405	7	9
San José District	297	10	15
Bijagua District	195	10	12
Delicias District	98	18	25
Dos Ríos District	218	5	10
<u>Santa Cruz Canton</u>			
Santa Cecilia District	258	8	12
	744	6	9
<u>Guatuso Canton</u>			
San Rafael District	297	9	14
Buenavista District	263	4	4
Cote District	184	5	6
PROJECT AREA TOTALS	<u>2,611</u>	<u>9</u>	<u>13</u>

- ^{1/} Source: Comisión Nacional de División Territorial Administrativo, 1977.
- ^{2/} Data corresponds to consolidation of Upala and newly formed Yolillal Districts.

TABLE 3
DISTRIBUTION OF HAMLETS AND OTHER POPULATION
CONCENTRATIONS BY SIZE

<u>NUMBER INHABITANTS</u>	<u>TOTALS</u>	<u>UPALA ^{1/}</u> <u>CANTON</u>	<u>GUATUSO^{2/}</u> <u>CANTON</u>	<u>STA. CECILIA ^{1/}</u> <u>DISTRICT</u>
Under 200	67	32	25	10
200-500	77	66	10	3
500-1,000		6	-	-
1,000-2,000	2	-	1	1
Over 2,000	1	1	-	-
T O T A L S	<u>155</u>	<u>105</u>	<u>36</u>	<u>14</u>

- ^{1/} Source: MIDEPLAN document: "Desarrollo Rural Integrado de la Zona Norte, Anexo 5, Determinaciones de la Población Directamente Beneficiado por el Proyecto (Grupo Meta)." Data indicated as corresponding to August, 1981. No explanation of source for figures or methodology.
- ^{2/} Source: Ministry of Health, Rural Services Division

The 1973 Census showed 13.5% of the population in the area as foreign residents. This compared to 1.9% nationally. The 1982 survey of 401 families would appear to indicate that the pattern of immigration has continued during the past 10 years, since for heads of household, it showed citizenship as follows:

Costa Rican by birth	74%
Costa Rican by naturalization	11%
Nicaraguan	15%
TOTAL	100%

There are, at present, only two all weather roads (and they are in bad condition), leading into the Project area (Cañas-Upala and Santa Cruz-Santa Cecilia). Their radius of influence covers perhaps 15% of the Project area population. On the other hand, there are several navigable rivers leading into Lake Nicaragua. Until recent political considerations interfered, a significant, but unquantified, percentage of trading and other commercial movement was carried on via the river system with Nicaragua.

As a consequence of this combination of family and commercial ties, there is undoubtedly a close relationship between the populations on both sides of the border. Nevertheless, impressionistic and/or indirect evidence (e.g. political party participation and attitudes towards governmental services) indicate that there is a strong identification with Costa Rican nationality.

3. Occupational Characteristics of the Population

Most of the economically active population, estimated at 16-17,000 people, is engaged in the primary sectors of agriculture and livestock. The 1973 census showed 86% of the PEA in Upala Canton in this category. While there may have been some marginal shifts since then in a few districts, it is likely that for the project area as a whole this occupational pattern persists today.

4. Land Use

Table No.4 indicates the land distribution pattern by numbers and size of farm properties as of 1973. It will be noted that the total area shown in the table corresponds to only 55% of the total hectares in the Project Area. The census indicated that, at that time, 11% of the area was in annual crops, 3% in perennial crops, 32% in pasture and 54% unutilized.

It is instructive to compare the above 1973 data with the estimations made by the Ecological Survey Team. They estimated that 75% of the total land area of 265,000 hectares (i.e. approximately 200,000 has.) has been deforested and that two-thirds of this deforested area is in pasture. This would mean that approximately 130,000 has is now in pasture -- almost triple the 1973 hectarage. One can perhaps conclude tentatively that:

- a) whatever land was free or unused 10 years ago is no longer in that condition;
- b) that most of the expansion in land use is in pasture; and
- c) there are probably more farm units now than the 2,047 shown on Table No.4, but that the increase is not proportional to the increase in population density over the past 10 years.

The Environmental Assessment Team (and other land surveys) also indicate that approximately 50% of the land area in the project zone is suitable for annual and perennial cropping. Thus, over the long run, as economic impediments to more intensive land use are removed and are replaced by incentives, one could anticipate gradual but substantial conversion of pastures to crop land.

In sum, we are dealing here with an area of high agricultural potential, low but increasing population density—now being utilized in extensive fashion. It would seem likely that improvements in basic infrastructure (primarily in the all weather road network) will initiate the development process. There are obviously other requirements. Some of these are being sponsored and financed by other donors, e.g. electrification, and agricultural extension and research work. Others can most appropriately be considered after the basic infrastructure is in place.

TABLE 4

LAND DISTRIBUTION PATTERNS BY CANTON ^{1/}

	<u>No. Farms</u>	<u>%</u>	<u>Area (Has.)</u>	<u>% of Area</u>
<u>Sta Cecilia District</u>				
Under 10 Has.	2	1.6	3.1	0.1
10-50 Has.	49	39.2	1,428.6	11.7
50-500 Has.	71	56.8	8,065.1	66.1
Over 500 Has.	3	2.4	2,700.0	22.1
Totals	<u>125</u>	<u>100.0</u>	<u>12,196.8</u>	<u>100.0</u>
<u>Upala Canton</u>				
Under 10 Has.	286	19.8	1,962.3	1.0
10-50 Has.	718	49.6	19,553.2	21.9
50-500 Has.	427	29.5	52,122.6	58.3
Over 500 Has.	17	1.2	16,794.5	18.8
Totals	<u>1,448</u>	<u>100.0</u>	<u>89,432.6</u>	<u>100.0</u>
<u>Guatuso Canton</u>				
Under 10 Has.	30	6.3	152.6	0.3
10-50 Has.	214	45.2	6,340.6	14.2
50-500 Has.	217	45.8	24,032.5	55.5
Over 500 Has.	13	2.7	13,145.0	30.0
Totals	<u>474</u>	<u>100.0</u>	<u>43,670.7</u>	<u>100.0</u>
<u>Total Project Area</u>				
Under 10 Has.	318	15.5	2,118.0	1.4
10-50 Has.	981	47.9	27,322.4	18.7
50-500 Has.	715	34.9	84,220.2	57.6
Over 500 Has.	33	1.7	32,639.5	22.3
Totals	<u>2,047</u>	<u>100.0</u>	<u>146,300.1</u>	<u>100.0</u>

^{1/} Source: 1973 Population Census as reported in IDA document, La Tenencia de la Tierra en la Región Norte del País, July, 1982.

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5. Land Tenure

Table No. 5 summarizes the status of settlement activities of the Agrarian Reform Agency (IDA) in the Project zone. Most of the land has been purchased and assigned to settlers (many of whom were squatters). There are some cases where the land has been acquired and is occupied by settlers whose rights are not recognized by IDA.

TABLE 5

LAND REFORM AGENCY (IDA) SPONSORED SETTLEMENTS BY DISTRICT ^{1/}

	<u>NO. OF SETTLEMENTS</u>	<u>AREA (HAS.)</u>	<u>NO. OF FAMILIES</u>
<u>Upala Canton</u>	<u>8</u>	<u>5,523</u>	<u>240</u>
Upala District	5	2,130	145
Aguas Claras District	2	2,745	69
Dos Ríos District	1	648	26
<u>Guatuso Canton</u>	<u>8</u>	<u>3,614</u>	<u>146</u>
Buenavista District	8	3,614	146 ^{2/}
<u>Total for Project Area</u>	<u>16</u>	<u>9,137</u>	<u>386</u>

^{1/} Source: Draft Report by IDA: "La Tenencia de la Tierra en la Región Norte del País", July, 1982.

^{2/} Corresponds to 4 of the 8 settlements. Number of families for other 4 not available.

Table No.6 indicates, on the basis of formal complaints by landowners, the number of families taking up illegal occupation of land by year during the period 1966-82. The IDA report from which this chronology is extracted does not indicate how many farms were affected in any given year. Thus, we cannot correlate this data with the Table No. 7 figures, which deals with the same 242 families and does show area and number of farm units affected on a cumulative basis. We are also unable at this point to correlate the data shown on Table No.5 with that on Table No.7. In other words, we do not know how many or which of the illegal occupation actions resulted in an IDA sponsored settlement. However, in aggregate terms it would appear that IDA has been keeping pace with the demand side of the equation, as evidenced by land owners complaints.

The above conclusion is supported by evidence from informal interviews in the Project area, where officials and farmers repeatedly stated that, at present, there was minimal land invasion activity or

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other evidence of pressure on the land from landless peasants. Rather, the tendency was for large cattle operators to purchase and consolidate small holdings. These findings have been corroborated by IDA.

This thesis is further supported by the evidence from the 1982 Poverty Survey. The 401 families interviewed comprised 92 daily wage laborers and 309 farmers. The tenancy status of the 309 is as follows:

	<u>No.</u>	<u>%</u>
Owned the land	236	76.5
Rented the land	31	10.0
Granted use of the land	35	11.3
Squatting	5	1.6
Other Arrangements	2	0.6
T O T A L S	<u>309</u>	<u>100.0</u>

It should be noted, however, that in the cantons to the East and West of the Project area (i.e. Los Chiles and La Cruz) the situation seems to be quite different and shows considerable illegal invasion pressure on the land. With the opening up of the Project area as a result of the proposed road construction, it is not inconceivable that some of these pressures will shift into Upala and Guatuso. It would seem prudent for IDA to have some land available to respond to such pressures as a sort of "safety valve". In any event the combination of low population density, extensive land use potential for intensive use, and absence of illegal settlement activity makes the area ideal for colonization efforts by landless farmers coming from other regions of the country where there is considerable pressure on the land.

TABLE 6
EVOLUTION OF ILLEGAL SQUATTING COMPLAINTS BY YEAR AND CANTON ^{1/}

	<u>NUMBER OF SQUATTER FAMILIES</u>		
	<u>UPALA CANTON</u>	<u>GUATUSO CANTON</u>	<u>TOTAL</u>
1966	7	-	7
1969	26	-	26
1972	-	22	22
1973	20	27	47
1974	2	-	2
1975	43	60	103
1976	3	-	3
1977	2	-	2
1978	1	2	3
1979	15	-	15
1980	-	10	10
1981	2	-	2
1982	<u>-</u>	<u>-</u>	<u>-</u>

^{1/} Source: Draft Report by IDA, La Tenencia de la Tierra en la Región Norte del País, July, 1982.

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TABLE 7
ILLEGAL SQUATTING BY DISTRICT 1/

	<u>NUMBER OF SQUATTERS</u>	<u>NUMBER OF FARMS AFFECTED</u>	<u>AREA (HAS.)</u>
<u>Upala Canton</u>	<u>121</u>	<u>13</u>	<u>1,823</u>
Upala District	80	7	473
Delicias District	1	1	30
San José District	20	1	990
Bijagua District	3	1	35
Dos Ríos District	1	1	87
Other Areas <u>2/</u>	16	2	208
<u>La Cruz Canton</u>			
Santa Cecilia District	49	5	776
<u>Guatuso Canton</u>	<u>121</u>	<u>6</u>	<u>2,907</u>
San Rafael District	22	1	1,000
Buenavista District	60	1	499
Other Areas <u>3/</u>	39	4	1,408
<u>Project Area Totals</u>	<u>291</u>	<u>24</u>	<u>5,506</u>

1/ Corresponds to formal complaints filed by land owners over past 17 years. Figures are cumulative and do not necessarily reflect current situation. Source: IDA Legal Department as reported in "La Tenecia de la Tierra en la Región Norte del País", July 1982.

2/ Identified as being located in "Tambor" and "Segundo".

3/ Identified as being located in "Guatuso", "Guayabo" and "Amapola".

6. Basic Services

There are two ways of approaching this topic: (a) how the project area compares to the rest of the country and to other rural areas; and (b) the situation per se.

From the comparative standpoint, there is little question but that the two cantons (Upala and Guatuso) that make up the bulk of the Project area are amongst the least privileged in the country. A basic services study done by MIDEPLAN in 1979, "Mapa de Pobreza Rural", covering the 52 rural cantons of the country, ranked Guatuso as 52nd. and Upala as 50th.

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In another study undertaken by MIDEPLAN in 1980 ^{1/}, appropriate GOCR Ministries and Agencies were asked to rate each of 105 villages and hamlets in Upala Canton on a scale of 1 to 10 (using San José as a point of reference for a score of 10) as concerns the adequacy of eleven basic services (water, sanitation, garbage, community services, roads, electricity, street paving, health facilities, housing, aqueducts, education facilities). The maximum possible score (i.e. the San José level) would be 110. The composite scores are shown in Table No.8. As can be seen, 89 of the 105 villages (85%) scored under 40.

TABLE 8
LEVEL OF BASIC SERVICES INDEX
UPALA CANTON, 1980

<u>POINTS SCORED</u>	<u>NUMBER OF TOWNS OR HAMLETS</u>	<u>PERCENTAGE</u>
70 or over	1	0.6
60-69	3	2.9
50-59	2	1.9
40-49	10	9.6
30-39	30	28.6
20-29	43	41.1
Under 20	16	15.3
	<u>105</u>	<u>100.0</u>

Another comparative indicator is infant mortality: for Upala Canton in 1977, 40 per 1,000 (down from 63 per 1,000 in 1973)^{2/}, compared to a national average of 19 per 1,000 and an average nationwide in rural areas of 27 per 1,000.

Looking at the area specific data on health and education facilities, and the use thereof, the situation does not appear to be quite as black as the comparative data indicate.

Table No. 9 gives recent data on school facilities and enrollment. As can be seen, the primary school situation is well in hand. In the 1982 Poverty Survey, over 90% of the 401 families interviewed reported easy access to primary schools. Secondary level schools are obviously insufficient and complaints about access problems to the two secondary schools in the Project area were frequent.

^{1/} As reported in MIDEPLAN document: "Desarrollo Rural Integrado de la Zona Norte, Anexo 5 - Determinación de la Población Directamente Beneficiada por el Proyecto (Grupo Meta)".

^{2/} OCAF Report

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An indicator of the change in the educational situation can be found by comparing the Table No.9 enrollment figures to the educational and literacy attainment data derived from the 1982 Poverty Survey. For Heads of Household, illiteracy ran about 50% ^{1/}.

Educational attainment by level completed was as follows:

	<u>Percentage</u>
No schooling	42.0
First and Second Grade	15.7
Third to Fifth Grade	25.7
Completed Primary School	14.2
Secondary or Higher Education	<u>2.2</u>

With the level of enrollment of children now being achieved, it is obvious that 10 years from now the illiteracy level for heads of household will have fallen dramatically.

^{1/} There may be some definitional problems here: the 1973 Census shows for the population over 10 years of age, the following illiteracy figures: 28% for Upala Canton, 29% for Guatuso Canton, and 38% for the Santa Cecilia District.

TABLE 9
EDUCATION INFRASTRUCTURE AND MATRICULATION BY DISTRICT, 1980 ^{1/}

	<u>PRIMARY SCHOOLS</u>		<u>SECONDARY SCHOOLS</u>	
	<u>Number</u>	<u>Initial Enrollment</u>	<u>Number</u>	<u>Initial Enrollment</u>
<u>Upala Canton</u>	<u>82</u>	<u>5,488</u>	<u>1</u>	<u>422</u>
Upala District	27	1,732	1	422
Aguas Claras District	14	957	-	-
San José District	15	976	-	-
Bijagua District	9	558	-	-
Delicias District	10	823	-	-
Dos Ríos District	7	442	-	-
<u>La Cruz Canton</u>				
Santa Cecilia District	<u>9</u>	<u>581</u>	<u>-</u>	<u>-</u>
<u>Guatuso Canton</u>	<u>33</u>	<u>1,260</u>	<u>1</u>	<u>145</u>
San Rafael District	23	832	1	145
Buenavista District	7	317	-	-
Cote District	3	111	-	-
<u>Project Area Totals</u>	<u>124</u>	<u>7,329</u>	<u>2</u>	<u>567</u>

^{1/} Source: Ministry of Education, Centros Educativos de Costa Rica, 1980.

Table No.10 provides data on health facilities in the Project Area. In the Poverty Survey interviews, 306 families (76.3% of those interviewed) reported that they used the health post and about 50% of those using the service found it was reasonably accessible; while the rest had access problems. There were some reports of existing facilities not being used due to lack of personnel, equipment or supplies (e.g. the maternity facility in Guatuso). There were also complaints about lack of ambulances and bad roads in connection with medical services.

The nutrition centers are apparently well utilized. Children from approximately 5% of the 401 families interviewed received meals at these facilities. There were, nevertheless, persistent reports of high levels of first degree malnutrition, based mostly on height measurement.

TABLE 10
HEALTH INFRASTRUCTURE BY DISTRICT 1/

	<u>Health Centers</u>	<u>Nutrition Education Centers</u>	<u>Rural Health Posts</u>	<u>Other</u>
<u>Upala Canton</u>	<u>1</u>	<u>3</u>	<u>10</u>	
Upala District	1	1	3	Mobile Dental Unit
Aguas Claras District	-	1	2	
San José District	-	1	1	
Bijagua District	-	-	1	
Delicias District	-	-	2	
Dos Ríos District	-	-	1	
<u>Santa Cruz Canton</u>	<u>-</u>	<u>1</u>	<u>1</u>	
Santa Cecilia District	-	1	1	
<u>Guatuso Canton</u>	<u>1</u>	<u>3</u>	<u>3</u>	
San Rafael District	1	2	1	
Buenavista District	-	-	1	
Oste District	-	1	1	
<u>Project Area Totals</u>	<u>2</u>	<u>7</u>	<u>14</u>	

At the household level, the survey showed that 88% of the families had latrines and 4% had septic tanks. However, most sources of potable water were unsatisfactory, as were garbage disposal practices.

Housing quality and overcrowding, as evaluated by interviewers in the Rural Poverty Survey, is shown in Table No.11.

The most serious deficiency in basic services, and the one that corresponds overwhelmingly to the top priority in the felt needs of the inhabitants of the region, is all weather roads, both of a connecting nature to the rest of the country, and internally within the Project Area. When remarks are made about political/social frustration in the area, the concern can usually be traced to the road and access problem.

A study prepared by Bel Ingeniería S.A. revealed that the 359 kms of roads in Upala resulted in a road density indicator (hectares/kilometers of road) of 446 has/km compared to the national average of 308 has/km ^{2/}. However, 297 kilometers (83%) of the existing roads in Upala are dirt and gravel which Bel classified as in "bad" condition. MIDEPLAN calculated a composite index based on the length and condition

1/ Most of the data reflects the situation in 1979, as reported in the draft report by MIDEPLAN, Estado de Necesidad Rural - Zona Norte, 1982.

2/ Bel Ingeniería, S.A., Programa de Mantenimiento, Rehabilitación y Mejoramiento de Carreteras Vecinales - Informe Final, Octubre, 1982

of existing roads, population and other road variables to determine which rural cantons required upgrading or construction of roads. Guatuso and Upala again ranked as some of the worst rural cantons - placing second and third in the ranking. At a recent "townhall meeting" in Upala attended by Mission personnel to discuss the needs of the northern zone area, extremely vocal participants indicated that adequate roads were the first priority for the area. They complained that harvested crops could not be brought to market during the rainy season because of the impassable roads. The University of Florida and the ACIDI reports both concur that without significant road improvements, the area will remain economically backward notwithstanding its agricultural potential ^{1/}.

Summing up the available data, several general conclusions can be reached as follows:

a) There is a rudimentary network of basic services. Better roads will make a significant difference in their utilization.

b) Many of the deficiencies, e.g. potable water, slaughter houses, garbage disposal, community centers, lend themselves to remedial action at the village level. The type of community development activity envisaged in this project can make a significant impact.

c) Some of the major infrastructure deficiencies, e.g. electricity and roads, will soon be remedied. Others, such as additional secondary schools, will probably have to wait.

^{1/} The 1982 University of Florida agronomic survey of the area concludes that: "The causes of slow development of these lands are related more to infrastructure and socio-economic factors than to soil properties".

TABLE 11
QUALITY OF RURAL HOUSING IN PROJECT AREA 1/

	<u>Number</u>	<u>Percentage</u>
<u>1. Type of Housing</u>		
Very poor	82	20.8
Poor	206	52.5
Modest	91	23.2
Comfortable	13	3.2
Very Comfortable	<u>2</u>	<u>0.3</u>
Total	394	100.0
<u>2. Overcrowding</u>		
Yes <u>2/</u>	110	27.4
No	<u>291</u>	<u>72.6</u>
Total	401	100.0

7. Farming Practices

The Economic Analysis Annex contains a rather detailed description of the crops grown in the area, cultural practices, yields, constraints, etc. This brief treatment of the subject attempts to evaluate the degree of openness to change.

The 309 farm operators interviewed in the Rural Poverty Survey divided into two groups:

	<u>NO</u>	<u>8</u>
Those using hired labor	34	11
Those using mostly family labor	<u>275</u>	<u>89</u>
	<u>309</u>	<u>100</u>

1/ Source: From MIDEPLAN 1982 Rural Poverty Survey of 401 families.

2/ More than 2 people per room.

The stratification of these farmers by farm size was as follows:

<u>FARM SIZE</u>	<u>NUMBER</u>	<u>PERCENT</u>
Less than 5 Has.	95	30.8
5-10 Has.	37	12.0
10-19 Has.	53	17.1
20-50 Has.	69	22.3
50-200 Has.	55	17.8
Totals	<u>309</u>	<u>100.0</u>

Over half of the farmers using hired labor had properties over 50 hectares in size.

Taking into account the high percentage of family labor operations and the preponderance of small units, it is surprising that 40% of those interviewed reported that they had had access to credit -- even if with difficulties. Thirty five percent reported that they used chemical inputs and/or purchased seed. Thirteen percent reported that they used machinery. While many reported that they had been exposed to technical assistance, there was a fairly unanimous feeling that the product being retailed was unsatisfactory.

The conclusion one comes to is that if the above situation prevails for what is essentially the subsistence farmer component of the farming community in the Project area, there is a reasonable chance that infrastructure improvements (e.g. the roads proposed under this project) will find a productive sector ready to take advantage of the improvements.

8. Family Income

The only data available on income is that which came from the MIDEPLAN 1982 Rural Poverty Survey. As indicated earlier, the families interviewed correspond to the poorest segment of the population in the Project area and, consequently, the data cannot be considered as representative of the area as a whole.

Table 12 summarizes the results of the survey. Applying as a criteria, the ability to purchase what is in the "canasta básica", i.e. supposedly the minimum food basket requirements for a family of five, the returns were ranked as follows, where "poor" is just under the value of the "canasta básica".

<u>CATEGORY</u>	<u>AVERAGE MONTHLY FAMILY INCOME (colones)</u>	<u>NUMBER OF FAMILIES</u>	<u>PERCENTAGE OF FAMILIES</u>
Very poor	1,135	115	29.0
Poor	2,129	99	25.0
Not poor	4,798	187	<u>46.0</u>
			<u>100.0</u>

The above bears out the impresionistic view we have of the Project area: namely, that there is poverty present, but not grinding misery, and that the prevalence of poverty is not as wide spread as is generally reported.

TABLE 12

	<u>FAMILY INCOME, 1981</u> ^{1/}	
	<u>AVERAGE MONTHLY INCOME</u> ^{2/}	
	<u>Colones</u>	<u>US\$ Equivalent</u> ^{3/}
Farmers Employing Paid Labor	4,900	123
Farmers Using Mostly Family Labor	4,200	105
Daily Wage Agricultural Labor	2,500	63

1/ Source: MIDEPLAN, Estudio de la Pobreza Rural, 1982. Survey of 401 small farmer families in Project area.

2/ Includes income in kind.

3/ Conversion at 1983 exchange rate of ₡40 = US\$1.00.

C. BENEFICIARIES

There are four components to the Project, although one -- Land Purchase and Titling by the Agrarian Reform Institute (IDA) -- is to be wholly financed with local currency generated by P.L.480 Title I sales.

The first and major component, road construction, will benefit an estimated 95% of the total population in the Project area under the assumption that the area of influence of the road extends 10 kilometers on each side. The nature of the benefits are many and varied, ranging from easier access to health and education facilities to improved crop production and marketing practices, resulting in higher income.

The Community Development Fund component of the Project will affect approximately half of the villages and hamlets in the Project area and a somewhat larger percentage of the population. Since it is intended to emphasize social infrastructure type projects, e.g. water supply, access roads, etc., all age and sex groups of the population should benefit equally.

The third Project component, special area studies and pilot projects cannot, by its nature, be related to beneficiary groups at this time.

The land purchase and titling component may be expected to benefit approximately 700-800 families who will be settled on the lands acquired by IDA and 1,000 number of families who will be assisted to legalize title to their properties, thus facilitating credit obtention and improving the capitalization status of the operations of the farms in question.

There does not appear to be any identifiable group of people who will be adversely affected by any of the activities planned under the Project. Neither is there reason to believe that the project activities will, in and of themselves, within the time frame of the Project, have any significant effect on income distribution, land tenure, and similar equity factors as concerns the present population of the Project area. The 1,000 families (equivalent to 18% of the current population) who will receive land under the in-migration colonization program related to the land purchase component of the Project will obviously cause a change in income distribution and other equity factors in the area.

D. PARTICIPATION

There has been no direct participation by residents of the Project area in the planning of the project. However, their assessment of needs and priorities as concerns government assistance has been consulted via a survey and in other fashions. The project takes these assessments fully into account, and responds to the overwhelming priority placed on improving the road system by all strata of population in the area.

As concerns beneficiary participation in project execution, it needs only to be pointed out that the entire Community Development Fund component will consist of projects decided upon and executed by community level groups.

E. SOCIO-CULTURAL FEASIBILITY AND IMPACT

This is a very simple and direct project which:

- a) responds to GOCR priorities for new development initiatives geographically;
- b) within the priority area, responds to the investment priorities emphasized by the inhabitants of the region;
- c) because of its basic infrastructure nature, will impact broadly on all aspects of life in the region.

We do not anticipate any socio-cultural types of problems arising during implementation.

F. ISSUES

The only social issue of any consequence with regard to project success that can be identified at this point in time relates to possible massive inflow of refugees from the civil conflict in Nicaragua. It is an eventuality that cannot and should not be planned for in advance.

10.5

ENVIRONMENTAL ASSESSMENT of the Project Area for the
USAID Northern Zone Infrastructure Development Project

SUMMARY

Dr. G. Hartshorn of the Tropical Science Center was contracted by USAID to conduct an environmental assessment of the Northern Zone Infrastructure Development Project. Hartshorn and TSC members Dr. G. Stiles, For. Eng. R. Bolaños and Dr. J. Tosi participated in the assessment. The proposed USAID project activities include road improvements, a community development fund, analytical studies and pilot activities fund for Upala and Guatuso cantóns and Santa Cecilia district.

1. The EA team estimates that the project area is approximately 70-80% deforested and roughly 2/3 of the deforested lands are in extensive pasture for beef cattle. Other actual land uses include dry land rice, corn, beans and cacao. The remaining lowland forests are scattered in small patches that have little potential as functional conservation units. No significant natural forests remain in close proximity to the roads proposed for improvements. The project area includes extensive areas of good and excellent soils. Two separate classifications of land use capability estimate 23-25% suitable for annual crops and 29% for perennial crops.

2. The project area is too poorly known biologically to compose a definitive list of endangered or threatened species. The extensive swamps, marshes, sloughs, rivers, permanent lagoons and adjoining non-flooded forests in the Upala-Guatuso-Los Chiles triangle are critical habitats for many species threatened with extinction in Costa Rica. Particularly noteworthy are the permanent open-water lagoons (Caño Negro and Camelias) and the remnant forest known as "Bosque de Cambar", the last large lowland forest in the project area.

3. Road improvements and economic development in the project area will stimulate population growth in the many towns of the region, causing increased demand for potable water and overloading existing sewage systems. Increased agricultural activities may include the use of more pesticides and herbicides, resulting in increased probabilities of contamination. The EA team noted an influx of Guatuso Indians colonizing land south of Caño Negro lagoon. Although their reserve is outside the project area, migration into the area will complicate land tenancy.

4. The EA team makes four principal recommendations: a) Two proposed spur roads (Santa Cecilia-La Virgen and San Rafael de Guatuso-Buenavista) be deleted and two others added (Dos Ríos-Buenos Aires and San José-Victoria-México); b) land use controls be implemented to lessen the dominance of extensive pasture for beef cattle and to ensure maximum use of the excellent agricultural soils for beans and corn; c) fund biological and ecological inventories of the flora and fauna of the entire project area, and an evaluation of the hydrologic potentials of the forests and forest lands on the north slope of the Guanacaste cordillera; and d) financial support for establishing and consolidating the proposed Caño Negro Wildlife Refuge.

5. No unavoidable environmental effects were identified.

principally because of the extensive deforestation in the project area lowlands and the proposed routes for road improvements follow existing dry season "roads".

6. The road construction firms should be required to adhere to the design specifications for cut and fill operations.

INTRODUCTION

The United States Agency for International Development (AID) mission to Costa Rica requested Dr. Gary Hartshorn of the Tropical Science Center (TSC) to conduct an environmental assessment (EA) of the project area for the Northern Zone Infrastructure Development Project. The area includes the district of Santa Cecilia (cantón La Cruz, Guanacaste Province) and the cantóns Upala and Guatuso (Alajuela Province), covering 2,611 km²; however, an area of 3,400 km² was considered for this environmental assessment, principally because of the extensive floodlands in the northeast corner of the project area. The proposed AID project activities include road improvements, a community development fund, analytical studies and pilot activities fund.

Objectives

"The purpose of the assessment is to describe the reasonably foreseeable environmental effects of activities proposed for the project area and, where necessary, reasonable alternatives to proposed project activities so that the expected benefits of development objectives can be weighed against any adverse short or long term impacts upon the human environment or any irreversible or irretrievable commitment of resources". (AID/PO No 515-0000-0-00-3149-00)

Hartshorn's summary report to AID is to include the following components: "(1) A description of actual land use patterns and land use capability in the areas which may be influenced by the proposed road improvements with special attention to be directed toward potential deforestation effects.

"(2) An ecological inspection of the project area to provide an assessment of the presence of any endangered or threatened plant or wildlife species, and a qualitative assessment of the status of the forests which may be in the zone of influence of the road improvements.

"(3) The reasonable foreseeable impact, both direct and indirect, of the proposed activities on the human environment in the project area.

"(4) Recommendations for factors which should be taken into consideration in planning environmentally sound activities in the project area and reasonable alternatives to the proposed activities.

"(5) Identification of any reasonably foreseeable adverse environmental effects which cannot be avoided.

"(6) Recommendations regarding runoff, cuts and field operations during road improvement to avoid stagnant water." (AID/FO)

Personnel Activities

The environmental assessment team assembled by Hartshorn included TSC members Dr. F. Gary Stiles, ornithologist and ecologist; For. Eng. Rafael Bolaños, specialist in land-use capability classification; Dr. Joseph Tosi, ecologist and geographer; and Dr. Gary Hartshorn, forest ecologist and dendrologist. This summary report was written by Hartshorn and reviewed by the other EA team members.

EA team activities included a review of relevant literature (see the attached list of pertinent references), discussion of construction specifications and proposed routes for road improvement with BEL Engineering Co. (under separate contract with AID), a low-level aerial reconnaissance of the entire project area (by Hartshorn, Bolaños, Stiles and Tosi), 18 person-days (by Hartshorn, Bolaños and Stiles) of field reconnaissance by jeep, boat and foot, and numerous post-reconnaissance discussions with officials of SPN, DGF and DVS, MN, as well as AID/RD and the AID/TDY economic team.

LOCATION OF PROJECT ACTIVITIES

The possibility of small hydropower electrical generation facilities would involve the numerous rivers flowing north from the Guanacaste Cordillera (consisting of Orosí-Cacao, Rincón de la Vieja-Santa María, Miravalles, and Tenorio volcanic massifs) through the project area to Lake Nicaragua. Virtually all towns in the project area are situated near a river or large creek, emphasizing the importance of navigation by small boats on the larger streams. The principal rivers, source area and major towns are listed below:

RIVER	SOURCE AREA	MAJOR TOWNS
Sucio	Volcán Orosí	Santa Cecilia
Orosí	Volcán Orosí	-
Las Haciendas	Cerro Cacao	Brasilia
Pizote(Niño)	Cerro Cacao	San José (Pizote),Cuatro Bocas, Birmania
Cucaracho	Rincón de la Vieja	Dos Ríos
Azul	Rincón de la Vieja	-
Pénjamo	Rincón de la Vieja	-
Jalapedras	Volcán Santa María	-
Aguas Verdes	Volcán Santa María	-
Caño Negro	Volcán Santa María	-
Negro	Volcán Santa María	-
Raudales	Volcán Miravalles	Aguas Claras
Frijoles	Volcán Miravalles	San Isidro, Chupulún
Guacalito	Volcán Miravalles	Moreno Cañas, Santa Clara
Canalete	Volcán Miravalles	Canalete
Zapote	Volcán Miravalles	Zapote, Canalete, Upala
Bijagua	Volcán Tenorio	Bijagua
Chimurria	Volcán Tenorio	Colonia Puntarenas, Chimurria Arriba and Chimurria Abajo

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Rito	Volcán Tenorio	Los Angeles
Mónico	Volcán Tenorio	-
Buenavista	Volcán Tenorio	Buenavista
Samen	Volcán Tenorio	-
Frío	Cordillera de Tilarán	San Rafael de Guatuso, Playuelas, Los Chiles

BEL Engineering Company proposes new roads and improvements to existing roads. Two types of roads are envisioned: a trunk highway (two lane, all-weather, gravel) and several spur roads departing from the trunk highway. The proposed trunk highway of approximately 100 km will connect Santa Cecilia de La Cruz and San Rafael de Guatuso, passing through or near the towns of Brasilia, Birmania, Porvenir, Cuatro Bocas, San José (Pizote), Upala, Chimurria Abajo, Colonia Puntarenas and Samen. The entire route follows or closely approximates existing, mostly dirt roads now only passable in the dry season.

The spur roads proposed for improvement to gravel, all-weather status are the following: (1) Santa Cecilia north to La Virgen (ca. 8 km); (2) Brasilia south to Dos Ríos (ca. 14 km); (3) Cuatro Bocas south to San Isidro (ca. 10 km); (4) Colonia Puntarenas west to the Río Zapote near Canalete (ca. 7 km); (5) Colonia Puntarenas northeast to Los Angeles (ca. 10 km); and (6) San Rafael de Guatuso north to Buenavista (ca. 10 km). Approximately 75% of the 60 km of proposed spur roads traverse existing dry-season "roads".

AID has not yet identified potential recipients of the proposed community development fund; however, the seven towns connected by the trunk highway and the five towns reached by spur roads will certainly experience a growth boom directly related to or perhaps even anticipating road improvements. Presumably, each of the 12 towns as well as others in the region will be considered as candidates for financial assistance through the AID-sponsored community development fund.

ECOLOGICAL CONSIDERATIONS

Life Zones (Bioclimatic Conditions)

Most of the lowlands in the project area are classified ecologically as Tropical moist forest life zone (TSC 1968; Tosi 1969), with mean annual rainfall ranging from 2,200 mm to 3,000 mm and mean annual biotemperature of 25-26°C. In this life zone the effective dry season (less than 100 mm/month) is usually three months (February-April). The relatively low annual rainfall, moderate dry season and mostly good to excellent soils (see below) combine to make this a unique region of Costa Rica.

The ascending northern foothills and lower slopes of the Guanacaste Cordillera bring more moist conditions due to advective rainfall and cooler temperatures. The wetter areas begin at the base of the northern foothills and are classified ecological-

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ly as Tropical moist forest life zone--cool, moist transition and Tropical Premontane wet forest life zone--warm transition. These two transitional areas have mean annual rainfall of 3000-4000 mm and biotemperature of 23-26°C.

Above about 400 m elevation non-transitional Tropical Premontane wet forest life zone covers an extensive area on the northern slopes of the volcanoes. Higher on the northern slopes (roughly at 600-700 m) a change occurs to Tropical Premontane rain forest life zone. Above about 1400-1500 m elevation occurs Tropical Lower Montane rain forest life zone that extends to the summit of each volcano.

The extensive areas of perhumid and superhumid life zones (with Potential Evapotranspiration Ratios of 0.50-0.25 and 0.25-0.125, respectively) are the critical watersheds of the many rivers flowing north (see p. 3). On a theoretical basis, 1/2 to 7/8 of the rainfall falling in the catchment area is discharged into the river systems. The proportionately high discharge of rainfall and the superb absorptive capacity of the forest ecosystems ensures adequate base flow in the region's rivers despite a 3-5 month dry season.

Only a few of the region's rivers flow into Lake Nicaragua (Orosí, Pizote, Zapote and Frío). The rivers east of Lomas Buenavista flow into the extensive marshlands south of Lake Nicaragua, some of which extend into Costa Rica. The most extensive area (about 200 km²) of seasonally flooded land occurs between San Jorge and Los Chiles and includes Caño Negro lagoon.

Status of Remaining Forests

Despite the difficult access to and within the project area, considerable deforestation has already occurred. Deforestation has resulted from dry-season access for timber extraction and the demand for farms in the non-swampy lowlands (less than 400 m elevation). Even though vast areas peripheral to the Caño Negro lagoon flood seasonally, these swamp forests are also being cut and burned--mostly to establish pasture.

The EA team was surprised to see how extensive deforestation is in the project area. From our aerial reconnaissance, EA team members concur that approximately 70-80% of the non-swampy lowlands (less than 400 m) have been deforested. Furthermore, the remaining forests occur as generally small (less than 1000 ha), scattered patches in a matrix of pasture and young successional vegetation. Only on the physiographically dissected low hills with infertile residual soils does the primary forest cover more than 50% of the land. The most extensive areas of forest in the lowlands occur in the eastern Montañas Las Marías, Lomas Buenavista, Fila Loma Blanca, Fila Caño Negro and Fila Las Armenias. However, most of these remnant stands have been high-graded of quality timbers such as caoba (mahogany, Swietenia macrophylla), cocobola (Vatairea lundellii), and cristobal (Platymiscium pleiostachyum), and are now being logged for timbers such as old-

growth laurel (*Cordia alliodora*), fruta dorado (*Virola koschnyi*), cedro amargo (*Cedrela mexicana*), cedro macho (*Carapa guianensis*), pilon (*Hieronyma oblonga*) and ojoche (*Brosimum alicastrum*).

Each volcanic massif of the Guanacaste Cordillera has a legally established conservation unit protecting the forest ecosystems on the upper slopes. Each unit's boundaries are straight lines drawn in the office and, with the exception of Rincón de la Vieja National Park, have not been established on the ground. The elevational range of the northern and eastern boundaries of each unit is given in parentheses: Drosí Forest Reserve (400-700 m), Rincón de la Vieja National Park (700-1000 m), Miravalles Forest Reserve (600-800 m), and Tenorio Forest Reserve (300-700 m). Where the boundary elevation ranges between 600 and 1000 m, appreciable forest still exists outside (generally north) of the conservation unit down to approximately 500 m in elevation. The forest ecosystems on the north and east slopes of the volcanic massifs play an extremely important hydrologic role in regulating stream flow by minimizing peak flow during heavy rains and maintaining base flow during the dry season.

Unfortunately, forest reserves are considered as reserves for timber exploitation by the Forest Service (DGF), rather than for their much more valuable hydrologic functions (Hartshorn et al. 1982). Although timber extraction from forest reserves is prohibited by the DGF, clandestine cutting continues. We saw several large logs along roads through the passes between volcanoes that could only have come from the forest reserves, given their proximity to and the paucity of large timber trees near the road.

Soils and Land Use

Visual inspection of the official land-use capability map (SEPSA 1978) permits the following ranking by area of the principal land-use capability classes: 2PF (greatest area), 3P, 4F, 5DN and 6S. Class 2PF soils (e.g., in the Colonia Puntarenas, Canalete, Moreno Cañas and Cuatro Bocas areas) are suitable for any agricultural use, although fertility ranges from medium to very low and some slope limitations exist. Class 3P soils (e.g., Upala, Chimurria Arriba, Aguas Claras and Dos Ríos areas) are similar to the preceding capability class, but with better soil fertility and more slope limitations. Subclasses 3Pm₂ and 3m₂ soils experience a dry season exceeding five months (e.g., La Virgen-Santa Cecilia-Brasilia region). Class 4F soils (e.g., San Rafael de Guatuso, Buenavista, Los Angeles and Caño Negro town areas) permit any agricultural use, even though fertility ranges from medium to very low. The class 5DN soils occur around the Caño Negro lagoon where the absence of drainage is limiting. Class 6S soils occur on the steep hills especially north of San Isidro; nevertheless, the classification permits permanent crops, pasture or forest exploitation.

The basis of the land-use capability classification mentioned above is the USDA-SCS system--a classification system not

It is important to note that pasture is not a detrimental nor ecologically unsound use of lands classified as suitable for annual crops, rather it is simply an under-utilization of land capability. However, when considered in a national context (i.e., the necessity to import basic grains such as beans and corn), every effort should be made to use the excellent soils for corn and bean production. The road improvements proposed in this AID project coupled with controlled land use could convert the lowlands of the project area into the basic granary of Costa Rica and sustain appreciable rural employment.

Some modest efforts on an individual farm basis have been made to drain seasonally-flooded land north of Upala. These extensive, poorly-drained flatlands were a major cacao-growing area, but the spread of monilia disease has caused widespread abandonment of the plantations. Cacao farmers are desperately in need of extension assistance with crop substitution for the abandoned cacao or technical assistance for control of monilia.

There is some local consideration of converting poorly-drained flatlands to paddy rice. Large areas are quite suitable for paddy rice, but the lack of drainage will require thorough and careful feasibility studies. The major constraint is that extensive flatland areas are at nearly the same elevation as Lake Nicaragua, hence digging canals for gravity drainage is nigh on impossible. This constraint is especially marked in the vast swampy area around Caño Negro lagoon.

A final comment on current land use addresses the impressive natural regeneration of laurel (*Cordia alliodora*) in corn and bean fields, as well as pastures in the Santa Cecilia-Brasilia-Birmania region. The shade-intolerant, fast-growing laurel trees regenerate vigorously on these excellent agricultural soils. The young laurel saplings are not cut by the farmers when preparing the land for corn or beans (native agroforestry!). However, many juvenile laurel trees are damaged or killed by the fires used to consume the debris or rejuvenate pasture. Given the compatibility of growing laurel with non-mechanized basic grain crops and the impending national shortage of wood, the locally-developed agroforestry practices should be strongly encouraged and expanded.

Endangered or Threatened Species

Largely because of inaccessibility and remoteness, the project area is clearly one of the more poorly known areas biologically in the country. To our knowledge, no systematic biological collections or inventories have been made in the project area. The Caño Negro lagoon has rightfully attracted the most biological attention; a list of 247 bird species of the lagoon and surrounding area was prepared by the DVS (Anon. 1983). As part of a prospectus on potential wildlands units of Costa Rica commissioned by the World Wildlife Fund-U.S., the Caño Negro Nature Reserve was proposed by Tosi (1973). In a more thorough and recent update commissioned by the Presidential Ministry (TSC

1982) the Caño Negro Wildlife Refuge is proposed. In response to recommendations of biologists and TSC the DVS is preparing a presidential decree to create the Caño Negro Wildlife Refuge. The proposed wildlife refuge centered on the Caño Negro lagoon will also include the only large area of natural forest remaining in the lowlands of the project area. Known locally as "Bosque de Camíbar", this remnant forest occurs on low hills surrounded by swamp.

An impressive number of endangered or threatened species occur in the unique types of ecosystems associated with the Caño Negro lagoon, its confusing tributaries and the Río Frío and the Bosque de Camíbar. Endangered species include puma (Felis concolor), jaguar (Felis onca), ocelot (Felis pardalis), giant anteater (Myrmecophaga tridactyla), jabiru stork (Jabiru mycteria), curassow (Crax rubra), muscovy duck (Cairina moschata), mahogany (Swietenia macrophylla), cocobola (Vatairea lundellii), cristobal (Platymiscium pleiostachyum), camíbar (Copaifera aromatica). Threatened species in the same area include tapir (Tapirus bairdii), white-lipped peccary (Tayassu tajacu), paca (Cuniculus paca), osprey (Pandion haliaetus), snail kite (Rostrhamus sociabilis), scaled pigeon (Columba speciosa), cayman (Caiman crocodilus), gar-pike (Lepisosteus tropicus) and the trees Enterolobium schomburgkii, Sloanea latifolia, and Ampelocera sp. novo.

The Playuelas (or Camelias) lagoon northeast of San José (Pizote) is much smaller than Caño Negro lagoon, but also has some endangered or threatened species. Particularly interesting are Heliconia metallica, a new record for Costa Rica, and the pinnated bittern (Botaurus pinnatus).

Our field reconnaissance was entirely too brief to attempt a preliminary listing of endangered or threatened species for the entire project area. Our brief inspection of patches of forest indicate that a more thorough and systematic study of the project area would produce a substantial list of endangered or threatened species for several reasons: a) many of the remnant forest patches in the lowlands of the project areas are Tropical moist forest life zone, of which only 0.36% is protected in existing national parks and equivalent reserves; b) species of northern affinities (e.g., Ceiba aesculifolia; the spot-breasted wren, Thryothorus maculipectus; grey-headed dove, Leptotila plumbeiceps; and the Nicaraguan grackle, Cassidix nicaraguensis) reach their southern limit in the project area; and c) the project area is extremely poorly known biologically.

Endangered or threatened species also occur in the forests on the wet, northern foothills of the Guanacaste Cordillera. Many of these species occur in the remaining forests all along the Caribbean slope of Costa Rica. For those species restricted to elevations below 600 m, the only legally protected area is the La Selva Protection Zone in Sarapiquí.

Human Aspects

Population increase in the area influenced by the AID road improvement project, especially the 12 towns (see p. 3), will cause greater demand for potable water and require new or improved sewage systems. Currently, foothill towns obtain potable water from nearby streams, whereas lowland towns generally depend on wells for potable water. In the former case, continued deforestation for agricultural purposes will lessen the quality of potable water. In the latter case, aquifers will be threatened with contamination from non-existent or over-loaded sewage systems, as well as from increased agricultural usage of pesticides and herbicides.

Although the Guatuso Indian Reserve is outside the project area, we noted an influx of Guatuso families colonizing land south of Caño Negro lagoon. It is unclear why Guatuso Indians are leaving the reserve, but the El Tanque-San Rafael de Guatuso highway goes through the reserve and extensive pasture is the only land use along the highway. The establishment of cattle ranches in the reserve could be a cause for Indian migration to the Caño Negro area. Regardless of the cause, Guatuso Indians are moving into the project area and the proposed rural development activities will put additional pressure on their traditional shifting cultivation means of subsistence.

PRINCIPAL RECOMMENDATIONS

Alternate Routes

The EA team concurs with the AID-BEL proposed route for the trunk highway between Santa Cecilia de La Cruz and San Rafael de Guatuso. Of the two potential routes between Cuatro Bocas and Upala, the northern route through San José (Pizote) is recommended because it would provide access to a greater area of agricultural soils and it is an ideal departure point for a spur road to the excellent agricultural soils north of San José (Pizote). The trunk highway will service the numerous existing dry-season "roads" as well as the proposed spur roads.

With respect to the six proposed spur roads, the EA team recommends deletion of two and the addition of two others. Although good agricultural soils occur in the Santa Cecilia area, soil fertility and agricultural potential decrease markedly north of the Quebrada Versay along the proposed spur road to La Virgen. For these reasons we recommend deletion of the proposed spur road between Santa Cecilia and La Virgen.

An additional spur road is recommended from San José (Pizote) north to Victoria (ca. 5 km) and northeast to México (ca. 10 km) to open up this extensive area of excellent agricultural soils.

Another additional spur is recommended from Dos Ríos to Buenos Aires (ca. 13 km), and possibly continuing on to San Isidro (another 15 kms), to improve access to the excellent soils for dairy farming. The latter should be conditional upon the development of a milk processing facility in Dos Ríos.

The EA team found that an adequate secondary road already exists to Buenavista (departing from km 11 on the Guatuso-Maquencal road), hence the construction of a new spur road is redundant.

The EA team concurs with the proposed routes of the other spur roads, Brasilia south to Dos Ríos, Cuatro Bocas south to San Isidro, Colonia Puntarenas west to the Río Zapote and Colonia Puntarenas northeast to Los Angeles.

Road design includes acceptable cut and fill procedures to prevent impeded drainage and stagnant water. The only recommendation is that the road construction companies should be required to adhere to the design specifications, perhaps by posting a significant bond.

Land-Use Controls

Extensive pasture for beef cattle is the dominant land use in the project area and will continue to be so unless heroic efforts are made to protect small farms and farmers. Unless administrative, legal and/or financial controls are placed on land use, the project area will shortly be devoted almost exclusively to beef cattle. A striking example of this pattern can be seen along the El Tanque-Monterrey-San Rafael de Guatuso highway now under construction. Except for one tiny patch of plantains, actual land use along the new highway is 100% pasture, regardless of land-use capability. Specific and innovative approaches will be required in the project area if small farmers and the country are to realize the agricultural potential of the soils suitable for basic grains such as corn, beans and rice. One suggestion is to zone the project area for land use capability at a scale no smaller than 1:50,000 and restrict credit programs according to zoned land use capability.

Flora and Fauna Inventories

Although numerous small patches of remnant forest remain in the project area, any one patch is probably too small to function as a viable conservation unit (except for the proposed Caño Negro Wildlife Refuge). Nevertheless, a systematic effort in biological inventories and collecting would provide a much more sound evaluation of species in the project area and an assessment of critical habitats for endangered or threatened species. A project in biological inventories should be able to provide recommendations for the establishment of some small biological reserves in the hilly regions, such as the Fila Caño Negro, Lomas Buenavista and Montañas Las Marías. Ecological surveys in the project area could also be used to adjust the forest reserve

boundaries or delineate protection zones of the hydrologic resources on the north side of the Guanacaste Cordillera.

There is sufficient biological and ecological expertise in Costa Rica to conduct the recommended inventories. It is recommended that TSC be contracted to coordinate the activities of participants from national universities and institutions, such as the Museo Nacional. The inventories should occur over at least a one-year period and preferably over two years.

Caño Negro Wildlife Refuge

Because of the outstanding ecological and biological features of the Caño Negro ecosystems and their uniqueness in the country, the DVS efforts to establish a wildlife refuge in the project area should be strongly supported through the AID Northern Zone Infrastructure Development Project. The Caño Negro region contains the only significant natural ecosystems remaining in the project area. However, continued forest cutting and burning will reduce the shrinking forests and could easily destroy remaining forests in one to two years.

AID support to DVS for consolidation of Caño Negro Wildlife Refuge could be modeled after the Peruvian Selva Central Project for the Palcazu valley or the SPN component in Project 032 for Braulio Carrillo National Park. The EA team concurs that without foreign financial assistance, the Caño Negro Wildlife Refuge will not become a functional conservation unit. Furthermore, failure to consolidate the Caño Negro Wildlife Refuge before commencement of the road improvement project would seriously jeopardize the few remaining natural ecosystems and the many endangered or threatened species in the Caño Negro region.

Ideally, all the seasonally flooded lands peripheral to Caño Negro lagoon should be included in the wildlife refuge. The refuge should also include the two peninsulas of firm ground separating Caño Negro lagoon from the Llanos El Marillal. The smaller and disjunct swamp areas to the west (including Camelias lagoon) could be incorporated administratively as satellite portions of the Caño Negro Wildlife Refuge. The EA team recommends the following priority ranking of areas to include in the wildlife refuge: (1) Caño Negro lagoon and Bosque de Camíbar; (2) seasonally flooded marshes serviced by Caño Patos, Río Mónico, Caño Betel, Caño Blanco and the Río Frío north and south of the lagoon; (3) Camelias lagoon; (4) extensive jobillo (*Raphia taedigera*) swamps; and (5) the disjunct swamps and marshes west of the core area.

Table 1. Comparative estimates of land-use capability for the cantóns Upala and Guatuso, Alajuela province, plus Santa Cecilia district, Guanacaste province.

Land-Use Capability	UPALA & GUATUSO CANTONS		Sta. Cecilia District	PROJECT AREA
	TSC (1968)	Pérez & Protti (1982)	Pérez & Protti (1982)	Pérez & Protti (1982)
	Area km ² (%)			
Annual Crops	732 (25)	516 (18)	251 (70)	767 (23)
Protected Floodlands*	266 (9)	315 (11)	-	315 (10)
Pasture	-	456 (16)	110 (30)	566 (17)
Perennial Crops	861 (29)	950 (32)	-	950 (29)
Production Forestry	833 (28)	365 (12)	-	365 (11)
Protection Forests	240 (8)	330 (11)	-	330 (10)
TOTAL	2,932 (100)	2,932 (100)	361 (100)	3,293 (100)

*Although proposed as a wildlife refuge, the seasonally-flooded flatlands and permanent swamps and lagoons have not yet been legally established.

MAP: ENVIRONMENTAL ASSESSMENT SOILS

Project Area



- Soils Areas
- E Excellent Soils
- VG Very Good Soils
- G Good Soils
- P Poor Soils

ESCALA 1:200,000

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SUMMARY OF EXISTING/PROPOSED NORTHERN ZONE ROAD ACTIVITIES

The proposed road improvement activities have been coordinated with the Ministry of Public Works and Transport (MOPT), the Interamerican Development Bank (IDB) and the Institute for Municipal Development (IFAM). Table 1 and the attached map show that there are a number of existing or planned road improvement activities in the Northern Zone—principally with financing from the IDB. The IDB road segments included in Table 1 are now transitable during the wet season and will be paved by the date indicated. The roads which will be improved under the Project do not duplicate but rather complement these other road improvement activities. Indeed, the Mission looked at the access problem in the Project area before deciding on the selection of the roads which would be upgraded in terms of a coherent and viable road system or network.

The Mission also discussed with IFAM the feeder road construction/improvement activities which would be financed under the IDB's \$9.75 million Municipal and District Development Loan. This Loan is currently in the Legislative Assembly awaiting ratification; construction on roads should begin in early 1984. IFAM's Engineering Section has tentatively allocated approximately 30 kms. of roads which will be constructed or improved in each of the following cantons of the Northern Zone: La Cruz, Upala, Quatuso, Los Chiles, San Carlos and Sarapiquí. IFAM has identified road sections in the cantons of Los Chiles and Upala which will be financed under the loan but none as yet in the canton of Quatuso or the Santa Cecilia district of the canton of La Cruz which form part of the Project area.

In Upala and Los Chiles the following road sections have been identified:

<u>ROAD SECTIONS (letter corresponds to Map location)</u>	<u>LENGTH (kms)</u>
(UPALA)	
a. Santo Domingo-La Palmera-Trunk Road	8.5
b. Las Delicias-Pavas-Santa Clara	8.0
b. Quebradas-Pavas	3.0
c. El Socorro-San Isidro-Chimuria Abajo	6.5
TOTAL	26.0
(LOS CHILES)	
d. Terrón Colorado-Medio Queso	6.6
d. Medio Queso-Pueblo Nuevo	11.0
d. Medio Queso-Obquitales	5.8
e. Terrón Colorado-La Virgen	3.7
TOTAL	27.1

TABLE 1
NORTHERN ZONE ROAD IMPROVEMENT ACTIVITIES

ROAD SECTION AND DESCRIPTION ^{1/ & 2/}	FINANCING ENTITY	LENGTH IN KM.	TOTAL COST ^{3/} MILLION		DURATION OF CONSTRUCTION AND STATUS - JUNE 1983
			(¢)	(\$)	
1. La Cruz - Santa Cecilia (Second Stage Betterment Program - to paved status).	IDB	26.5	180.0	4.50	January 1984 - December 1985 (ready for bids).
2. Bagaces-Guayabal (Third Stage Feeder Road Program - to paved status).	IDB	31.0	65.0	1.63	Under construction, to be completed June 1984.
3. Torno-Fortuna-Nispero (Third Stage Feeder Road Program to paved status).	IDB	13.7	49.0	1.23	Under construction, to be completed June 1984.
4. Cañas - Upala	Venezuelan Investment Fund (Pending)	63.6	90.0	2.25	Prime base/gravel completed. Would be Upgraded to paved status along the entire route.
5. Tilarán-Nuevo Arenal (Second Stage Betterment Program - to paved status).	IDB	29.4	170.0	4.25	December 1983-June 1985 (ready for bids).
6. Tilarán-Quebrada Grande (Second Stage Betterment Program - to paved status).	IDB	6.2	76.0	1.90	December 1983 - October 1984 (ready for bids).
7. Nuevo Arenal-Fortuna (Third Stage Feeder Road Program to paved status)	IDB	43.0	243.0	6.1	Under construction. 35% completed. Total completion expected by June 1984.
8. El Tanque - Guatuso (Third Stage Feeder Road Program - to paved status).	IDB	39.2	383.0	9.60	Under construction, completion expected by June 1984.
9. Tarrón Colorado - Los Chiles (to paved status)	BCIE	64.5	290.0	7.25	Under construction, to be completed in 1984.

10.	Muelle-Terrón Colorado (Second Stage Betterment Program - to paved status).	IDB	11.8	70.0	1.75	December 1983-December 1984 (ready for bids).
11.	El Tanque-Los Chiles (Third Stage Feeder Road Program - to paved status).	IDB	33.7	311.0	7.78	Under construction, 85% completed. Completion expected by December 1983.
12.	San Miguel-Aguas Zarcas (Third Stage Feeder Road Program - to paved status).	IDB	23.2	73.0	1.82	Under construction, completion expected August 1983.
13.	San Miguel-Chilemate (Second Stage Betterment Program - to paved status).	IDB	31.8	96.0	2.40	December 1983-June 1985 (ready for bids).

1/ Number corresponds to road section indicated on Map.

2/ Second Stage Betterment Program is financed by the IDB under Loan 603-SF and 364-OC
Third Stage Feeder Road Program is financed by the IDB under Loan 517-SF and 10 IC

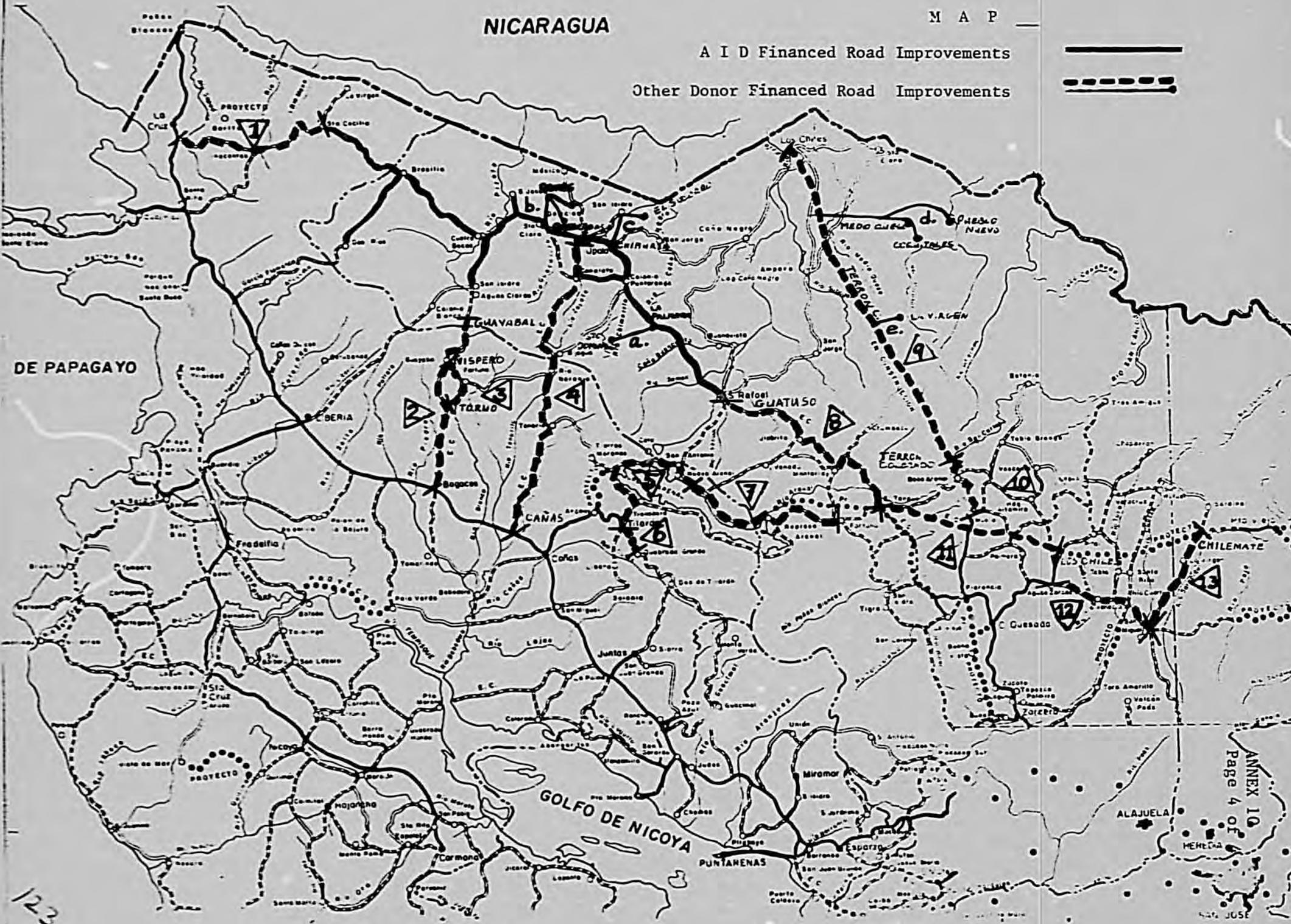
3/ Total cost includes loans and counterpart cost. Colones converted into dollars at the rate of ~~¢40=\$1.~~

NICARAGUA

M A P

A I D Financed Road Improvements

Other Donor Financed Road Improvements



DE PAPAGAYO

GOLFO DE NICOYA

ANNEX 10
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PROJECT COORDINATION AND AREA DEVELOPMENT STUDIES COMPONENT

BUDGET

(Three Year Cost) - (Thousands of Dollars)

	A. I. D.		GO CR ^{1/}	T O T A L S
	LOAN	GRANT	\$(000)	
Area Development Studies Fund	\$ 250	-	\$ 250	\$ 500
Project Advisor	-	375	-	375
Project Coordinator and Local Staff	-	-	140	140
Office and Housing Purchase or Rental	-	-	40	40
Vehicles (Two - 4 wheel drive units)	-	20	-	20
Office Furniture and Equipment	-	5	10	15
Operating Expenses (Gas, Oil, Repairs, per diems, etc.)	-	15	20	35
Contingencies	-	<u>85</u>	-	<u>85</u>
T O T A L	250	500	460	1,210

1/ P.L.480 Title I Generations.

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A variety of potential areas for future investment in both the private and public sectors have been identified in the reports on the Northern Zone (see Annex 14). However, because of a general lack of specific information pre-investment/feasibility studies are crucial to efficiently target future investments. The Tahal Consulting engineers' report contains some examples of agro-industry investments based initially on existing crops and livestock activities. Among the examples of studies worthy of funding under this component are the following:

1. Feasibility Study on Farm and Off-Farm Grain Drying and Storage Facilities - This study would analyze projected increases in the production of legumes and grains in the area and assess the requirements for and location of off-farm facilities. In addition, it would analyze the viability of on-farm drying and storage investments.
Level of effort - 6 person months
Estimated cost - \$60,000
2. Cassava Production and Processing Feasibility Study - This study would analyze the demand for cassava based animal feeds, the technical constraints to increased commercial production of cassava, costs of production and returns to farmers, and the feasibility of re-operating the cassava processing facility in Ciudad Quesada.
Level of effort - 8 person months
Estimated cost - \$90,000
3. Dairy Production and Processing Facility Feasibility Study - The purpose of this study would be to analyze the feasibility of expanding dairy production in the Dos Rios-Buenos Aires region and the viability of a dairy processing facility. Among the topics to be covered would be a demand analysis, technical constraints, credit requirements, etc.
Level of effort - 6 person months
Estimated cost - \$60,000
4. Small Hydropwer Feasibility Study - The purpose of this study would be to analyze the feasibility of constructing small hydropower installations on the eastern slopes of the Cordillera. The study would analyze suitable sites, stream and river flows, potential users, and costs of hydro-plants with varying electrical generating capacities.
Level of effort - 6 person months
Estimated cost - \$60,000
5. Flora and Founa Inventory Study - As indicated in the Environmental Assessment little is known about plant and animal species in the project area. The purpose of this study would be assess the existence of possible endangered species so that future development activities can take place with minimal environmental effects.
Level of effort - 6 person months
Estimated cost - \$60,000

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6. Land Preparation and Harvesting Machinery Services Study - This study would analyze the projected demand for the services and the possibility of establishing farmer cooperatives for this purpose.
Level of effort - 2 person months
Estimated cost - \$20,000
7. Marketing Analysis - this study would analyze the possibility of establishing cooperative organizations to handle marketing of existing crops such as cacao, corn, beans, and livestock.
Level of effort - 4 person months
Estimated cost - \$50,000
8. Variety Trials for Crops with Export Potential - a number of longer term (two-three years) studies would be financed to test new crop and varieties such as pineapple, cacao, cassava, etc. These studies would include site specific soils studies, pest and disease resistance and yields. Plant experts would be called in to prepare the research format and provide assistance to field personnel. It is estimated that approximately \$40,000/year would be required to carry out a crop specific study. Estimated total cost for these studies would be \$320,000.
9. Analysis of Additional Public Sector Infrastructure Investment - This study would analyze requirements for additional feeder road upgrading in the project area based on development induced by the trunk and radial roads.
Level of effort - 3 person months
Estimated cost - \$30,000

There is no doubt that a significant need and demand for feasibility and other studies exists. The total estimated costs for the illustrative examples described above is \$720,000. Additional areas for studies will undoubtedly be presented during the life of the project. The Project Coordination Office will have to carefully evaluate which studies should receive priority.

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COMMUNITY DEVELOPMENT FUND COMPONENT: DETAILED COST

ESTIMATES AND OTHER COMPONENT DETAILS

The Mission has discussed the inputs required to effectively implement the Community Development Fund Component. DINADECO would provide, as counterpart, the salaries of the four area promotors and their supervisor as well as a vehicle for use by the Regional Supervisor. The AID Loan would finance the purchase of four motorcycles, tape recorders and blank tapes, office equipment, field equipment and operating costs such as fuel and per diem incurred by the four area promotors. In addition, if necessary, these funds could be utilized to pay for some of the technical backstopping from other institutions should a particular community project require this type of assistance. The local communities would provide 30% of the total cost of a project by contributing land and labor while AID Loan funds would finance the remaining 70%. The limit of \$7,500 for any one community project was based on discussions with DINADECO management and field personnel and is based on the costs of the twenty-five existing social infrastructure projects in the area.

The Table below details the costs and funding sources for this component (in \$000).

<u>FUNDING SOURCE/ENTITY</u>	<u>Y E A R</u>			<u>TOTAL</u>
	<u>1984</u>	<u>1985</u>	<u>1986</u>	
<u>DINADECO:</u>				
<u>Salaries of promotors/supervisor</u>	25	25	25	75
<u>Vehicle</u>	5	5	5	15
<u>TOTAL DINADECO</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>90</u>
<u>A. I. D.</u>				
<u>Community Development Fund</u>	150	150	200	500
<u>Equipment</u>				
Four 125 cc motorcycles	8	-	-	8
Office Equipment	1	-	-	1
Four Portable Tape Recorders	0.5	-	-	0.5
Field Equipment (Saddles, ponchos, sleeping bags, etc)	1.5	-	-	1.5
<u>Sub-Total Equipment</u>	<u>11.0</u>			<u>11.0</u>
<u>Operating Costs (fuel/per diem and repairs)</u>	13	13	13	39
<u>TOTAL A. I. D.</u>	<u>174</u>	<u>163</u>	<u>213</u>	<u>550</u>
<u>Local Communities:</u>	<u>64</u>	<u>64</u>	<u>86</u>	<u>214</u>
<u>TOTAL COMPONENT</u>	<u>268</u>	<u>257</u>	<u>329</u>	<u>854</u>

Outputs from this component are as follows:

<u>OUTPUTS</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
Number of New Community Groups Organized	20	20	15	55
Number of Legal renewals of Community Development Associations	20	25	40	85
Number of Projects completed	20	20	25	65

SCHEDULE OF MAJOR EVENTS

<u>D A T E</u>	<u>A C T I V I T Y</u>
<u>1983</u>	
June 15	- Mission contracts for aerial photography of Project road sections.
July 15	- AID/W authorizes Project. - Aerial photography completed.
July 30	- Loan and Grant Agreements signed. - Pre-Qualification Notice published for firms interested in performing detailed design work and supervision.
August 5	- Loan Agreement forwarded to Legislative Assembly for ratification.
August 5-31	- P.L.480 Title I Activity Agreement for Land Purchase and Titling approved by AID. - Mission initiates action to purchase grant financed vehicles.
Sept.15-30	- IDA initiates land purchase activities.
Sept. 30	- Loan Agreement ratified by Costa Rica's Legislative Assembly.
Oct. 15	- Implementation Letter No. 1 sent.
Oct. 15-30	- P.L.480 Title I Activity Agreement for Coordination/Area Development Studies component approved by AID. - OOCR formally names MIDEPLAN Project Coordinator and MOPT Project Engineer. - OOCR satisfies condition precedent to initial disbursement. - Mission signs contract with grant-financed U.S. Project Advisor.
Nov. 1-30	- Implementing Agencies open Special Accounts and secure OOCR Budget modification approvals from Controller General.

- Dec. 1-31 - Initial Advances for Loan funds made to DINADECO and MIDEPLAN accounts.
- Engineering firm selected.

1984

- Jan 1-31 - Contract signed with Engineering firm. Detailed design work begins.
- DINADECO equipment purchased (off-shelf); field promoters instructed and begin work.
- Project Office opened in Upala.
- U.S. Project Advisor begins work.
- All land to be purchased by IDA identified, prices agreed upon and approved by AID.
- February - IDA begins titling work.
- March 31 - First quarterly report received from Project Coordination Office.
- May - IFBs for construction work published.
- August - Contract for construction work signed.
- December - First formal, annual evaluation exercise undertaken.

1985

- January - Road construction begins.
- December - Second formal annual evaluation exercise undertaken.

1986

- December - Road construction activities terminated.
- Project Advisor's contract terminates.
- Final evaluation undertaken.

1987

- April 30 - Project Assistance Completion Date.

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GOCR AND AID REPORTS ON THE NORTHERN ZONE

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Agricultural Cooperative Development International (ACDI), Assessment of Cooperative Organizations in the Proposed Northern Zone Development Area and Strategies for their Incorporation into the Project, November 1982.

Bel Ingeniería, S.A., Feeder Road Maintenance, Rehabilitation and Improvement Program, Final Report to the MOPT, October 1982.

Bel Ingeniería S.A., Costa Rica Northern Zone Development Project- Technical Report on Road Improvements, May 1983.

Costarican Electricity Institute, Rural Electrification National Plan, Second Stage 1980-1983 - Feasibility Report, March 1979.

Gary S. Hartshorn, Environmental Assessment of the Project Area for the Northern Zone Infrastructure Development Project, May 1983.

Leonard Kornfeld, Northern Zone Infrastructure Development Project - Social Soundness Analysis, June 1983.

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Ministry of National Planning and Economic Policy, Northern Zone Integrated Rural Development Project (La Cruz and Upala) and Annexes 1-16, San José, May 1982.

Ministry of National Planning and Economic Policy (MIDEPLAN formerly OFIPLAN), The Dimensions of Poverty - Study of Rural Poverty in Costa Rica, February 1981.

Municipal Development and Assistance Institute (IFAM), Operations Department, Survey Results of the Socio-Economic Study on Marketing and Feeder Roads for the Canton of Upala, May-June 1983.

National Rural Electric Cooperative Association (NRECA), Assessment of the Feasibility of a Rural Electric Cooperative for the Northern Zone Infrastructure Development Project Costa Rica, May 1983.

Office of the Presidency, Program Outline for the Development of the Northern Zone of Costa Rica (redrafted May 5, 1982).

Tahal Consulting Engineers Ltd., Development Program for the Northern Zone of Costa Rica, November 1982.

University of Florida (TSM), Technical Report on the Prospects for AID Economic Assistance to ITCO Asentamientos in the Northern Provinces of Guanacaste and Alajuela, February, 1982.

University of Florida (TSM), An Economic Analysis of the Proposed Northern Zone Infrastructure Project, June 1983.

IDA LAND PURCHASE AND TITLING PROCEDURES

Decisions on the part of IDA to acquire and redistribute property generally result from one of two basic situations. In the first case there is a policy decision to acquire properties in a given area as an element of the nation's development plans. The objective might be to achieve a more equitable distribution of the agricultural lands therein, to intensify or modify the use of the land resources, or to address a generalized or threatening problem of adverse land tenure conditions. In the second case, IDA normally acts on its own initiative to acquire a given property which due to partial or total abandonment or under-utilization has become extensively occupied by squatters who have attained certain legal rights to the parcels occupied. Over the past five years this type of problem has become increasingly common as the frontier areas of the coastal plains available for settlement rapidly diminish.

It should be noted that the rights of individuals occupying and actively developing unused portions of the public domain as well as privately held agricultural land have old, deep, and relatively sacred roots in Costa Rican law.

IDA may acquire land for redistribution to qualified beneficiaries either through a direct purchase procedure or through expropriation. Both processes are regulated by a series of legislative acts and each expropriation not voluntarily agreed to by the land owner of record must be approved by the National Legislature. All acquisitions are preceded by an appraisal carried out by IDA technicians employing standard criteria for the determination of market value. The declared value for taxation purposes prevails in the case of involuntary expropriation and must be paid for in full with the transfer of title.

The distribution of acquired property is normally by individual parcels. If the qualified beneficiaries so desire it may be in larger tracts to accommodate cooperative or communal development. The beneficiary selection criteria is set by the board of directors of IDA who must also approve each adjudication. Routinely this criteria includes Costa Rican citizenship, head of household status, agricultural vocation and dependency, credit worthiness, and need.

IDA and its predecessor agencies have redistributed approximately 100,000 hectares, an area equal to about 1/6 of the total area annually cropped. Sporadically, this agency has suffered from shortages of funding and inadequate capabilities to monitor the land tenure conditions of the adjudicated properties as stipulated by law.

TITLING

Growing recognition of the adverse effects and the widespread lack of land tenure security in Costa Rica have led to increasingly greater involvement in titling activities by IDA and its predecessor agency, ITCD, since the early 1970's. Although there are no current census data

on this subject, selected surveys and best current estimates are that at least two-thirds of the total farms and about one-fourth of the farm lands are currently untitled. This relationship is consistent with the prevalent view that the titling problem is particularly germane to the small farm sector and justifies IDA intervention. Recent surveys also indicate that the lack of title is particularly prevalent among the small farm sub-sector of the rapidly diminishing agricultural frontier areas which have been settled largely over the last ten to twenty years.

Land titling in Costa Rica does not enjoy the simplicity possible under a Torrens system relating ownership rights to defined land base. There is also no basis to assume such a transformation could be effected in the foreseeable future. It is perhaps best described as a recording system of the legal evidence of the ownership rights of individuals. Jurisdiction for the registration is vested in the office of the Registro Público, but the validity of the evidence submitted must normally be established within the local court system. By legislative law the role of the judiciary system has been occasionally vested in IDA and its predecessor agency for specific zones or projects. In the past ten years they have titled over 20,000 small farms (probably one-half of all titled farms) and developed procedures which tend to be both faster and cheaper for the new title holder than the standard process.

Most transfers of ownership in the small farm sub-sector do not become immediately "titled" or registered with the Pegistro Público due to the cost and complexity of the traditional process. The longer the individual waits however, the more costly and complex it becomes. For most, when the decision is finally made, the process can be summarized as follows:

a. The claimant must first engage a lawyer to assist him to prepare his request to the appropriate court. Both the lawyer and the court are located one hour away by bus; there is one trip daily each way. To the lawyer he must deliver all of the documentary evidence he can provide to reflect the manner under which he came into possession of or physically occupied the property in question. He must also validate his claim to open and peaceful possession since he first acquired the property or for a minimum of ten years immediately prior to the initiation of this procedure.

The adjoining land owners must appear before an official of the municipality in which the property is located and record their testimony supporting the claimants petition concerning the location and boundaries of the property. Copies of these testimonies must then be provided to the lawyer.

b. When the lawyer is satisfied that there is sufficient documentary proof of the ownership, and open and peaceful possession, a registered surveyor must be engaged to prepare a survey meeting the standards prescribed by the Registro Público. Few qualified surveyors are available outside the major cities. Still fewer find it worthwhile to accept small jobs in remote areas.

c. The documentary evidence plus the survey are filed in a petition to the corresponding court. When its review is completed by the assigned judge, he sends a representative to perform an inspection of the property. If no apparent contradictions exist, the court publishes an announcement of the petitioner's intent to title the described property on three separate occasions in the Gaceta Oficial.

d. If no counterclaims are duly filed with the related court, the judge issues an order to the Registro Público authorizing the registration of the petitioner's claim.

e. The Registro Público reviews the documentation for compliance with the regulatory requirements. Lacking a land based registry it is difficult to identify conflicting claims.

f. The lawyer finally advises the claimant that he possesses the certificate of registration. Final accounts are settled and the title is exchanged. The land owner may or may not be pleased; reportedly the process frequently requires two to four years to complete and is always quite expensive.

Much of the advantage of the IDA titling process is directly related to economies of scale. It also negates the need for extensive travel on the part of the beneficiary, as well as the assumption of a complex and cumbersome undertaking. IDA maintains a staff of inspectors, surveyors, lawyers, and other personnel thoroughly familiar with the procedures, as well as a small staff physically located in the Registro Público. With the permission of all untitled land occupants in a given area IDA can proceed to transfer all of the affected land to itself in a group or block transfer document. Working with the Registro Público it can then provide individual titles to the occupants. Such areas typically involve one or more large privately held properties which may or may not have been previously titled. They may also involve blocks of land purchased by IDA or acquired by expropriation. Much of the data on the claimant or occupant is routinely collected by IDA in its beneficiary selection or certification process. It may employ the advantages of photogrammetric techniques when possible. It can contract for conventional surveying; it also has an in-house capacity for the same if appropriate. Frequently, as in the case of the AID Loan 034 Project, the surveying performed or contracted by IDA may be used to expand or update the national cadaster of the IGN. Evidence to date indicates that whereas many of the individual registrations being processed at the Registro Público take an average of two or more years to complete, IDA generally has been able to process most of its transfers in less than one year through its grouping or block process. A forthcoming evaluation of the titling activities under the 034 Loan may well point to further improvements therein.

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THE PRE-INVESTMENT FUND

The Pre-Investment Fund was established in 1973 with financing from the IDB and is a suitable instrument for channeling the funds for the Project's area development studies. The Fund is designed to finance a wide variety of pre-investment studies and activities e.g. technical, engineering and economic feasibility studies of a program or project specific nature as well as regional and sectoral studies to identify priority investment areas. The Fund can receive financing from international organizations either grants or loans.

MIDEPLAN is the institution responsible for overall management of activities/studies financed under the Fund with the Central Bank of Costa Rica acting as the fiscal agent in charge of disbursements handling and maintaining financial records. MIDEPLAN's Pre-Investment Department is responsible for the evaluation of proposed studies and making recommendations to the Minister for approval. The Minister is authorized to sign contracts on behalf of the fund which do not exceed \$75,000. Studies surpassing that amount must be submitted to a Steering Committee composed of representatives from the private sector, the Central Bank and the Executive Branch. This Committee sets general policy guidelines and establishes the operating budget for the Fund.

A contract to carry out a study can be established between the Fund and a public sector entity or with the private sector. It is expected that the Project Coordination Office will initiate many of the topics to be studied. Funds for financing these studies will be channeled through Fund accounts which can be established in the Central Bank. This is an extremely flexible method for expeditiously carrying out the area development studies.