Report No. 1220-GU

Guatemala: Earthquake Reconstruction Project Technical Annex

(a) Housing Component; (b) Education Component; (c) Port Component

June 24, 1976

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CURRENCY EQUIVALENTS

Currency Unit	=	Quetzal (Q)
US$1	=	Q 1.00
US$1 million	=	Q 1,000,000

WEIGHTS AND MEASURES

1 hectare (ha)	=	10,000 square meters (2.470 acres)
1 square vara	=	0.699 square meters
1 square meter	=	1.43 square varas = 10.76 sq ft
1 manzana (mz)	=	10,000 square varas (0.699 has)
1 meter (m)	=	3.28 feet (ft)
1 kilometer (km)	=	0.62 miles (mi)
1 liter (l)	=	0.26 U.S. gallons
1 cubic meter (m^3)	=	264 U.S. gallons
1/3 paja de aqua	=	20 cubic meters of water per month

ABBREVIATIONS/ACRONYMS

AID	- Agency for International Development
BANVI	- Banco Nacional de la Vivienda
BG	- Banco de Guatemala
CABEI	- Central American Bank for Economic Integration
CEURI	- Centro Urbano Integrado
EDOM	- Esquema Director de Ordenamiento Metropolitano (Master Development Plan for Guatemala City)
EMPAGUA	- Empresa Municipal de Aqua de la Ciudad de Guatemala (Municipal Water Agency)
EEGSA	- Empresa Electrica de Guatemala, S.A. (Power and Light Company)
FHA	- Instituto de Fomento de Hipoticas Asequradas (National Mortgage Bank)
FIDEICOMISCO	- Trust Fund
INTECAP	- Instituto Tecnico de Capacitacion y Productividad (Training Institute)
INVI	- Instituto Nacional de la Vivienda (National Housing Institute--BANVI's Predecessor)
NRC	- National Reconstruction Committee
ICIV	- Instituto Cooperativo Interamericano de la Vivienda (Interamerican Institute for Housing)

FISCAL YEAR

January 1 -- December 31

(A) HOUSING COMPONENT

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

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GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

I. INTRODUCTION

1.01 The Government of Guatemala has requested Bank assistance in financing a reconstruction project following a massive earthquake on February 4, 1976 which severely damaged the nation causing upwards of 23,000 dead, nearly 77,000 injured and one-sixth of the country's 5.6 million population rendered homeless. In its wake the earthquake also devastated about 40% of the health facilities, 25% of the schools, and 40% of community and social facilities. Because the quake inflicted a disproportionately heavy blow to areas housing the urban poor -- where the preponderance of homes and facilities were constructed of relatively fragile materials -- disparity in wealth and income, which was extreme even before the disaster, has become more pronounced. As a consequence, social tensions are becoming increasingly pressing. These have been manifested especially through invasions by about 28,000 families of private and publicly owned land. Such a large-scale phenomenon is without precedent in Guatemalan society.

1.02 Discussions with the Government during a Bank reconnaissance mission (February 19 to 27, 1976) indicated that Bank assistance in the housing reconstruction program can be appropriately focused on Guatemala City and selected urban centers to support Government's efforts in establishing institutional capability and suitable standards for future urban development programs. This Technical Annex incorporates an appraisal of the urban sites and services development project component which is part of the Earthquake Reconstruction Project.

1.03 The Government has given a high priority to the reconstruction of housing and has mobilized assistance from a number of domestic and foreign sources. Guatemala is negotiating loans from several international and bilateral agencies: IDB, CABEI, AID, and is considering possible loans from the Governments of the Federal Republic of Germany and Canada. The estimated total from these sources is approximately US$160 million. In addition, during the emergency period and subsequent rehabilitation phase, it has received grants from the Governments of Venezuela and the U.S. Numerous private organizations are continuing to contribute funds and materials through religious organizations, the Fundacion del Centavo and

the Red Cross of Guatemala. The housing program of about US$20 million, financed with IDB assistance, is exclusively for rural areas. The AID program is partly directed towards the provision of building materials also in rural areas. AID is contemplating assistance for middle-income housing through its Housing Investment Guarantee Program.

1.04 The project, as proposed, is designed to achieve two major objectives:

(a) creation of housing through new construction or reconstruction and rehabilitation of dwellings for those rendered homeless by the disaster who cannot afford to build or buy new homes themselves; and

(b) establishment of an institutional framework for rational urban development in the future, with the needs of the growing numbers of urban poor in Guatemala as a prime consideration. To achieve these purposes as quickly and economically as possible, the proposed project would:

(i) assist in financing sites and services projects in the metropolitan area of Guatemala City;

(ii) provide loans for the purchase of building materials and technical assistance for repair and reconstruction of damaged homes in ten urban centers;

(iii) promote expansion of local production of home building materials through assistance to small producers; and

(iv) promote self-help and mutual-assistance efforts, particularly in sites and services projects as a means of reducing costs and increasing employment opportunities.

1.05 The Banco Nacional de la Vivienda (BANVI), a semi-autonomous agency of the Government of Guatemala, with experience in the housing field, would establish a Project Unit to handle all phases of project development.

1.06 The main component of this project would build about 10,000 low-cost housing units, provide building materials loans in the metropolitan area of Guatemala City and extend construction loans to ten other urban centers most damaged by the earthquake. The project also provides assistance for developing small businesses to deal with housing-related opportunities and a loan program to expand the capacity of the building materials industry.

Finally, the project would provide operational and management assistance to BANVI to strengthen its capability as a financial intermediary in urban development.

1.07 For the magnitude and scope of reconstruction and housing development in the metropolitan area, the sites and services concept is particularly well suited. Sites and services projects provide essential accelerated and simplified implementation of basic infrastructure and core-dwellings that offer permanent low-cost, far-reaching shelter solutions to serious housing problems. In the metropolitan area of Guatemala City, where extensive earthquake damage intensified an already severe housing problem, project sites will be the framework from which the individual lot and basic-core can be progressively developed and expanded to meet the owner-builder's priorities and requirements. Through the proposed program, which would generate 10,000 serviced plots in Guatemala City, it is anticipated that 60,000 people, mostly the lowest 20th percentile of income--the sector most severely affected by the earthquake--will be housed within 3-1/2 years. Equally important is the introduction with this program of a large-scale approach to effectively overcome the existing acute urban housing deficit which is forecast to reach 800,000 in the next 15 years in Guatemala City's metropolitan area. This progressive development approach will establish a mechanism for supplying the basic shelter needs of 14,000 people by mid-1977 and 27,000 persons annually--from the lowest-income levels who do not now have any formal way of obtaining permanent homes. The major initial impact of the program will be to provide affordable solutions to this sector of the population.

1.08 Given these circumstances, the Appraisal Mission which visited Guatemala City from April 19 to May 2, 1976 assisted the Government (principally BANVI) in the formulation of a project consistent with the general framework established by the National Reconstruction Committee. Project preparation was carried out by BANVI and its consultants with advice and assistance from the Appraisal Mission. This report is based on the findings of the mission, consisting of Messrs. R. A. Sison (Chief of Mission), G. Gattoni, H. Singh, J. Freedman and Miss R. Duncan of the Bank and Messrs. K. Strong, A. Tapia, B. Goldstein, D. Flowers and T. Vietorisz (Consultants). Messrs. D. A. Strombom and G. Castaneda, also of the Bank, assisted the mission part of the time.

II. BACKGROUND

The Earthquake and its Effects

2.01 On February 4, 1976 at 3.02 a.m. local time, Guatemala was struck by a major earthquake which measured 7.5 on the Richter Scale. The epicenter was placed about 115 km (80 miles) northeast of Guatemala City. This earthquake was followed by hundreds of aftershocks. The largest aftershock measuring 6.0 on the Richter Scale occurred on February 6 at 12.19 p.m. local time (see Map IBRD 12273).

2.02 The earthquake was caused by the interaction between the Americas and Caribbean crustal plates in which the part of Guatemala north of Motagua fault zone is slowly (on a geological time scale) moving westward with respect to the southern part of the country (Map IBRD 12273).

2.03 The total population affected by the earthquake is estimated to be over 2.5 million. More than 23,000 people lost their lives and nearly 77,000 were injured, some 258,000 housing units were wholly or partially destroyed. As a result, a million people--approximately one-sixth of the population of Guatemala--were left either completely homeless or without adequate housing.

2.04 Throughout the affected areas of Guatemala the loss of housing caused by the quake made an already stringent housing shortage even worse. Nationwide, prior to the quake, an estimated 300,000 dwelling units out of a total of 800,000 were so defective as to need replacement or rehabilitation. Thus the post-quake housing deficit can be estimated as at least 500,000--probably more.

2.05 The situation in Guatemala City is particularly grave. About 58,000 housing units--25% of the housing stock--were severely damaged. Of this total about 80% housed the urban poor, at least a quarter of them rental tenants, who now have neither houses nor land.

2.06 Most of the houses damaged or destroyed were of adobe and brick construction. Their fate depended very much on their location. Where the earthquake effects were most severe destruction was almost complete. Some reinforced concrete construction also suffered due to poor earthquake design, or construction.

2.07 Preliminary estimates calculate the monetary loss in all sectors of the order of US$1,021.0 million of which cost of housing reconstruction is estimated at US$600.4 million. The housing damage caused to the Guatemala City metropolitan area alone is estimated at US$295.4 million.

Housing and Urbanization Trends

2.08 The problem in housing following the earthquake is different in the capital from that in the smaller urban areas and rural zones. The metropolitan region of Guatemala City presents an example of strong

"primacy" in relation to a normal distribution of city sizes. It receives the brunt of rural-urban migration, contains 47% of the country's industry--including a much higher proportion of modern, dynamic manufacturing industries--57% of construction and 65% of services. It is the only city which has a substantial marginal population living in rented or squatters' quarters. Compared to the size of its metropolitan region, of some 1.2 million, the next city, Quezaltenango, is of an entirely different character, given its population of barely sixty thousand, as are the even smaller cities that have received the most severe impact of the quake. Outside of Guatemala City, the problem is to aid the reconstruction effort of families whose houses, however modest, stood on a family-owned plot. In the capital, however, the collapse of rental housing has left a large group of low-income population without a roof creating further economic and shelter instabilities.

Government Reconstruction Efforts and Programs

2.09 The extent of damage caused by the earthquake was initially evaluated and reconstruction policy was formulated by the Government very quickly. 1/

2.10 The Government received assistancce from experts of the United Nations Economic Commission for Latin America. On the basis of fairly complete information, the housing damage was estimated at 258,000 units. The key findings of damage assessment is that the productive capacity of the country has remained essentially untouched, but that very serious damage in loss of life, injuries, and material losses has been inflicted on the very social groups least able to sustain it. The adobe construction whose collapse caused much of the loss served primarily the lower-income groups both in the direct form of housing, and indirectly via health, education, and social service centers. The Government has endeavored to cope with the housing needs of the squatters by allowing them to build temporary dwellings and providing them with minimal services (e.g., municipal-owned trucks deliver water daily). Workers from the Municipality of Guatemala have also provided some technical assistancce which consists essentially of advising leaders of the new community on rational layouts for the temporary dwellings. In some sites where the squatters do not have adequate building materials, the Government has constructed temporary "barracks" type row dwellings which can accommodate 20 to 25 families per building.

2.11 In the Government's evaluation and reconstruction document, responsibility for housing reconstruction in the capital and major urban centers is assigned to BANVI. This document also contains the proposed financing structure of the reconstruction effort. Over a four-year period, the funds

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1/ Government of Guatemala. Evaluacion de los Danos Causados por el Terremoto, su Impacto y Lineamientos para un Programa Immediato de Reconstruccion. (Evaluation of the damage caused by the earthquake, its impact on economic and social development, and guidelines for an immediate reconstruction program), March 1976.

assigned to this task amount to Q 600 million, with one-third of the amount projected for each of the initial two years. Of the estimated funds required Q 250 million could be public funds, including Q 150 million from foreign assistance in the form of loans and grants; and Q 350 million from private sources.

2.12 Based on the damage estimate and the Government's proposed scale of the reconstruction effort, a total of Q 600 million would be needed to cover the requirements of 258,000 dwelling units; an average of Q 2,325 each. A more detailed breakdown of the projected reconstruction program is as follows:

	Units '000	Estimated Cost Q million
Metropolitan Area	58	295
Departmental Centers	12	47
Municipal Centers	46	111
Rural	141	147
All Housing Reconstruction	258	600

2.13 While the financial estimates and unit cost levels are for an average standard dwelling and appear reasonable, the allocation of Q 350 million (58%) as originating from private sources seems unrealistic because less than 25% of families that lost their homes, belong to income groups that can afford to obtain a loan from private sources.

2.14 In addition to assigning a pivotal role to BANVI for the reconstruction of housing and related infrastructure in Guatemala City and the principal urban centers in the country, the Government's National Reconstruction Committee has prepared guidelines for all agencies called upon to execute the reconstruction program. In addition, the National Reconstruction Committee is looking into a number of areas where possible bottlenecks could exist including the provision of adequate building materials; construction manpower; land for suitable housing projects, and the overall capacity of the construction sector.

2.15 A number of agencies involved in the reconstruction program have defined in more detail their respective roles in the execution of the program. The Consejo Nacional de Planificacion Economica (National Planning Council) has recently published some guidelines designed to relate the efforts toward reconstruction to national economic and social development programs. One of the most interesting suggestions of the Planning council is the establishment of an institution whose main responsibility would be to integrate urban andd rural housing problems into a larger framework of a policy for human settlement. The Council also proposed a general strategy in the housing sector which has both a spatial dimension and a program content.

Bank Assistance

2.16 In the formulation of the proposed project the appraisal mission's main concerns were the development of a project that would be consistent with the framework developed by the National Reconstruction Committee and would insure the strengthening of the main institutional agency--BANVI which would carry out a program that would reach the urban poor who have been affected by the natural disaster. Bank assistance within this context would be to work with Guatemalan technicians in initiating a national program for low-income housing emphasizing appropriate and affordable standards. Along with the objective of reducing costs and thereby making housing available to a larger segment of the urban poor, the project would create jobs calling for upgraded skills as well as self-help and mutual-aid techniques in the construction and improvement of housing units and requisite community facilities. Consequently, the project would not only replace or restore about 17% of the damaged housing units in Guatemala City and about 70% of those destroyed in ten urban centers outside of the capital, but it would also act as a catalyst in strengthing an ongoing institution to implement and supervise future urban programs designed to serve the needs of the urban poor.

III. THE PROJECT

A. Project Description

3.01 The project, which would be implemented in three and one-half years, forms part of the Government's reconstruction program designed to provide housing for families affected by the earthquake. The project is also a means for demonstrating that by applying appropriate and affordable design standards, using self-help and mutual-aid in construction, and organizing the community served, it is possible to provide housing that reaches down to the population in the 10th percentile of the income distribution scale. The project constitutes a viable and attractive approach to meeting the large housing deficit in Guatemala. It also demonstrates the beneficial effects of a balanced community, wherein job centers and adequate community facilities are provided as integral parts with residential sites.

3.02 The project supports the Government's intiative to build up and strengthen the institutional capability in BANVI as one of the most important institutions in the housing and urban sector throughout the country.

3.03 The project, details of which are listed in Appendix 2, consists of:

(a) Sites and Services--for about 10,000 housing units to be developed in three new locations in the Guatemala City metropolitan area. The first, already in advanced planning, would provide about 2,400 sites, and include community facilities; day-care centers; elementary schools and playfields; community multi-purpose centers; bus shelters and open space for public activities; off-site infrastructure mainly for access roads and water distribution;

(b) Construction Materials Loans--to individual families for the construction or expansion of housing units;

(c) Credit Program--for 10 urban centers severely affected by the earthquake that would benefit about 8,000 families;

(d) Small Business Development Program--provision of commercial sites for small business enterprises in each of the three Guatemala City project sites and extension of credit to producers of building materials for housing construction; and

(e) Technical Assistance and Equipment--provision of four specialists in engineering, business development, urban planning and management to assist BANVI in the implementation of its program and in strengthening this institution's overall planning and programming activities. Equipment and vehicles would also be provided.

B. Detailed Features

Sites and Services

3.04 The proposed sites and services program consists of a phased 3-1/2 year program producing between 2,500-4,000 plots annually. These will be developed in 500 to 3,000 plot project sites in three areas within a 9 km radius of the city center (Map IBRD 12227), all being accessibly by inexpensive public transportation. It has also been agreed that, subject to prior approval of the Bank, the sites and services component may include units to be developed in one or more of the departmental capitals described in para 3.21. Sites have been selected in terms of present and potential employment areas of the city; all are in close proximity to industrial and commercial development areas. The proposed project site in the Northeast sector of the city is immediately adjacent to existing BANVI sites and services projects; in the Northwest area, the selected project site is within 200 m of a new BANVI sites and services project; and, in the Southwest location, the proposed sites are in close proximity to BANVI housing projects. All identified project sites are within the developed areas of the city, and may be readily provided with water access streets, lighting and other urban services (see Appendices 1 and 2 for site selection and service details).

3.05 Water is available to all identified project sites: the North-East sites--San Rafael La Laguna--would be supplied by an extension of the Empresa Municipal de Aqua de la Ciudad de Guatemala (EMPAGUA) lines already

serving the area--it is not anticipated that major additional infrastructure will be required; for the other areas--Northwest and Southwest BANVI would insure that the provision of water and other utilities would be in accordance to a schedule agreeable to the Bank. Additional water sources to those supplying these areas are scheduled for operation in 1978-79. Abundant groundwater is also available for all project areas. Storm and water-borne sanitary sewerage will be collected on-site by means of a trunk network with outfalls to rivers that now drain the city's sewerage. Individual sites will be provided with basic infrastructure-- water, water-borne sanitary sewerage, paved footpaths, streets, storm drainage, public lighting , open space, community centers, schools, markets, as well as special plots with structures to house small-scale commercial and manufacturing industries. These small industries would also offer training and employment in useful trades. The result of all these activities would be the integration of the basic community infrastructure essential to long-term physical and economic development of the individual and the community.

3.06. Specifically, each project site would offer options (service levels) that range from a serviced site to a basic, partially completed, one room dwelling. A range of plot sizes would also provide more development flexibility and cost options for the user (see service level description costs and details, Appendix 2). Coupled with these options, a construction materials credit and technical assistance program would be provided to enable and encourage self-help completion/expansion of basic plots. Layouts and basic cores are designed to facilitate efficient and flexible expansion.

3.07 Construction of the projects is programmed in three stages over a 3-1/2 year period (Chart WB 16092). Stage I is to be implemented in two phases, the first 800-1,000 plots to be allocated by mid-April 1977, followed by 1,400 to be completed by August 1977. An additional 1,400 units would be completed by October 1977 in Stage II. Stages II and III in other areas are to be developed in 1978-1979.

3.08 An accelerated implementation program is proposed in order to provide the first 800-1,000 plots ready for occupancy by mid-April 1977 before the rainy season. In this regard, land for the San Rafael La Laguna site, consisting of 50 hectares for Stages I and II should be acquired prior to the presentation of the loan to the Board. During negotiations agreements were reached to this effect. Likewise, agreements were obtained that BANVI would acquire the additional sites within a timetable acceptable to the Bank. To further accelerate the construction process, the materials credit program would be available two months prior (February) to lot allocation thereby enabling self-help dwelling construction to be well advanced by the arrival of May rains.

3.09 This accelerated first phase would also provide valuable design information and execution experience and feed-back to better adjust procedures and criteria for the balance of units in Stages II and III--1978-79.

3.10 Design Features and Innovations of the Program: Specific design criteria and concepts are proposed to accelerate and simplify construction, reduce unit costs and provide a more flexible and functional layout. Emphasis is on the provision of lot/dwelling unit options that provide a range of sizes and costs that are affordable by the lowest 10 to 40 percentile of the metropolitan Guatemala City population.

3.11 BANVI has constructed low- and middle-income housing units since 1973. About 2,715 of these are priced at a range of Q 3,500 to Q 13,000. BANVI has also constructed 3,200 lower cost units ranging in cost from Q 1,850 to Q 2,500. These are based on a sites and services concept of which the lowest level of service is a basic core unit (24 m^2) with finished floors, doors, glass windows on 90-95 m^2 lots. Unit densities for these projects range from 35-50 units/ha. While expansion of the basic unit is anticipated, no technical or financial assistance has been provided for the self-help process. Land has been reserved within these project sites for schools, but no formal plans or arrangements have been made to provide permanent buildings.

3.12 Modifications to the standards used for previous sites and services experiences have been introduced in the project's design and reduction in costs of about 25% are being realized. Most important is the provision of two lower service level options. These consist of an 82 m^2 (average) lot with (a) on-site installations (pipes) for individual sewerage, water and storm drainage hookups; and (b) the serviced plot with a 5.6 m^2 sanitary core unit (see Appendix 2). A "test mix" of these service levels is proposed such that each project site would have approximately 10% Service Level I plots--a serviced plot; 50% Service Level II plots--a plot with sanitary core; and 40% Service Level III plots--a plot with basic core dwelling. The distribution and location of these service level options within the project layout assures an integration of types and strategic placement of the larger Service Level I lots (2% of total) with potential commercial/residential development. A prototypical configuration is illustrated in Appendix 2, Chart WB 16127.

3.13 This "mix" proportion emphasizes the self-help, owner-builder, concept in that 60% of the plots will be of the lower-service levels. It is anticipated that in later stages and in future projects, BANVI will increase the proportion of serviced plots and decrease the percentage of plots with basic core dwellings. These reduced level options not only achieve lower user costs and simplified and accelerated implementation, they provide the owner a serviced lot to which a temporary unit--an existing "champa" or improvised dwelling of discarded materials--can be installed in a day and serve as a base of operations for the gradual process of constructing the permanent dwelling (see Appendix 2). The progressive

development stages of self-help construction will be aided by a constrtuction materials credit program and technical assistance available to the owner-builder. The participant will be able to draw selected construction materials, as needed, on a credit account for up to Q 400, from an on-site warehouse. Assistance in design, construction, use of materials, etc., will be provided during the eight-month "self-help" stage of the program. Experienced construction foremen will supervise and advise on-plot as required and use "models" constructed within the project to demonstrate safe and efficient construction techniques, designs, costs and room options to the owner-builder. This social promotion/construction advisory staff would form an important part of the Project Unit and the emphasized self-help concept of the program.

3.14 Sanitary core and basic dwelling units will be contractor built with provision of finishing by the owner. Electric and water installations and meters will be by contractor and meet the utility company requirements. Expansion of the basic electrical installation may be by self-help. Off-site infrastructure to service the project sites will be designed and implemented by the respective utilities companies with financial arrangements by the Government.

3.15 In addition, an on-site program for the organization and development of individual or small group enterprises (see section 3.24) would be designed to provide essential employment and training. Emphasis would be on manufacturing of simple, basic construction components--with cement block, concrete pipe, etc.,--and standardized prefabrication of economical elements such as doors, windows, etc. Outlets for these products could be city-wide, but the immediate on-site market would benefit and augment the materials credit component of the project. Flexible buildings and open space for these would be reserved in strategic locations on each project layout, and optionally, could be integrated to the materials credit warehouse.

3.16 Residential lots would be organized in groupings (see Appendix 2, Chart WB 16127) to provide evenly distributed and easily accessible open space, while providing reduced infrastructure length and unit densities of between 75-80 units/ha. Larger (90-120 m^2) serviced lots would be provided in commercially desirable locations--corners with highest volume of pedestrian--vehicular traffic--that have the potential flexibility to be developed as commercial/residential units. The range of lot sizes--75.5 m^2 (5.4 x 14 m) to 94 m^2 (6.3 x 15 m) would permit selection based on family size (range: 3-12 persons), costs and capacity to pay.

3.17 The social promotion/construction advisory staff would organize community construction projects designed to (a) complete and maintain public areas; (b) build specific community structures--community centers, sports fields, etc.,--by mutual-help; and (c) generate community involvement, decision-making and on-going project operation and maintenance responsibility.

3.18 Unit Design and Cost: Three service levels and four lot size options are provided (see Appendix 2 for detailed descriptions and costs):

(a) Service Level I--is a 75.6 m^2 , 88.2 m^2 or 130.5 m^2 plot with individual water, sewerage and surface drainage connection to the main network. Cost = Q 765 net of land, Q 952 with land;

(b) Service Level II--is an 81 m^2 or 94 m^2 plot with a 5.6 m^2 sanitary core consisting of a water toilet, shower, laundry sink (pila), electrical fixtures, enclosing walls and roof. Cost = Q 1,244 net of land, Q 1,431 with land; and

(c) Service Level III--is an 81 m^2 plot with a basic one-room core dwelling. Total area is 26.8 m^2 inclusive of the sanitary core (b) above. This core dwelling is a partially enclosed space that is to be completed or expanded by the owner. Cost = Q 1,898 net of land, Q 2,085 with land.

3.19 Selection of Households: The social department of BANVI's Project Unit will screen and evaluate eligible applicants. Selection criteria would include:

(a) displacement of household due to loss of dwelling/shelter in earthquake or residency in squatter settlement or inadequate housing conditions for at least 2 years prior to the earthquake;

(b) a maximum household aggregate income of Q 150 per month;

(c) capacity of the household to pay Q 9-Q 24 per month for shelter and other utilities;

(d) intention to live on assigned lot with the understanding that the housing unit provided will not be a completed dwelling; and

(e) willingness and ability to undertake completion of the housing unit.

In addition special construction/leadership skills may be identified by the selection committee. Candidates interested in taking part in the small business development loan program will also be considered.

3.20 Final selection of the applicants will be made by lottery. The allottee will be required to sign his mortgage before occupation.

Credit Program for Selected Urban Centers

3.21 Out of a total of 16 Departmental Capitals (Cabeceras de Departamentos) BANVI has analyzed and recommended assistance for ten urban centers that have been damaged by the earthquake for assistance in the reconstruction

program (Appendix 3). The rates and percentage of destruction list the town of Chimaltenango and El Progreso as 100% destroyed, Salama with 75% of its housing units severely damaged, three western urban centers (Solola, Quiche, Totonicapan) and two eastern urban centers (Jalapa and Zacapa) were 45-50% destroyed. Only Puerto Barrios with a population of about 28,000 and Antigua (population 18,800) reported damage of 15% and 25%, respectively, of its housing stock. The total number of housing units severely damaged is about 11,000 (Map IBRD 12261).

3.22 Under the project it is proposed to extend supervised credit to about 8,000 households (or 42,000 people) with each credit ranging in size from Q 200-Q 1,000. The effective impact of this component is considerable in view of the small populations of these cities. In the urban centers where BANVI does not presently have a branch office, credit extension to individual families would be carried out through commercial banks and other suitable credit institutions. Agreements with individual banks and credit institutions including specific responsibilities with respect to the provision of credit inspectors, percentage of commission, reporting systems, and supervision of the loan need to be entered into between BANVI and the banks or credit institutions involed. Contracts between BANVI and these institutions would have to be reviewed and approved by the Bank.

3.23 Based on preliminary surveys conducted by BANVI, utilization of the loan would be primarily for reconstruction or rehabilitation of damaged housing. A major part of the loan would be utilized for building materials and skilled labor and, in some instances, the credit would be used for rehabilitation of workshops or stores.

3.24 BANVI's Project Unit would monitor this program and provide the inspectors necessary to insure efficient utilization of the credit program.

Small Business Development Program

3.25 This component of the project comprises financial and technical assistance to BANVI for:

(a) the provision of commercial sites (about 6 ha) in project sites and technical assistance for the development of a small business capability in BANVI to deal with housing-related business opportunities; and

(b) provision of credit and technical assistance to the building materials manufacturing sector with special emphasis on support of small businesses.

3.26 The main objective of the program is to maximize job creation and skills training for the poor through entrepreneurial development, emphasizing the broadest involvement of low-income persons in the economic processes of Guatemala. It is also planned to maximize housing-related opportunities within a comprehensive and integrated overall plan for the sites and services area and to identify any other opportunities which are job-creating and consistent with the skills, lifestyles and needs of the residents of the sites and services areas.

3.27 Commercial sites would be developed integrally with residential sites and community facilities. On the average, about 2 ha of land would be set aside for each project site for commercial purposes. Based on 200 m^2 of land and standard building space of 60 m^2 about 100 stores/shops can be constructed. These units would be leased to prospective entrepreneurs for terms varying from 5 to 10 years with an option for sale. Rental levels would be determined by the Project Unit which would cover the capital cost (estimated at Q 3,750 per unit) plus coverage for administrative cost, insurance and default. The Project Unit with assistance of the staff from the Banking Department and qualified consultants from the Instituto Tecnico de Capacitacion y Productividad (INTECAP) would be responsible for the execution of these elements of the project.

3.28 Based on surveys conducted by the mission in the San Rafael La Laguna site, where about 3,800 sites would be occupied by the end of this year, there appears to be sufficient business services required (i.e., building supplies for expansion of homes, textiles, food services) which would provide economies and savings for homeowners.

3.29 Detailed analysis of the survey information confirms that the following business opportunities could be promoted in the sites and services areas:

(a) a retail and service complex containing either stores or stalls for dry groceries, fresh meats and produce, drugs and medical and health supplies and services, food or small eating places, specialty groceries, some family-type apparel and shoes, and convenience and personal services including laundries, beauty and barber shops, etc.;

(b) a community-owned and operated procurement, maintenance and management business organization to warehouse and supply building materials for home expansion and improvement and to maintain and manage private and public areas to achieve economies for individual homeowners in the procurement of wanted items such as cement blocks, doors, windows, hardware, and appliances;

(c) repair shops for vehicles, plumbing, electrical and other maintenance needs of homeowners; and

(d) light manufacturing and assembly plants in clean, low-skill operations in the sites and services area with 10-50 employees in each enterprise to assemble electric and other components, and manufacture construction-related doors, windows, hardware, etc.

3.30 Building Materials Manufacturers' Loan Program: Under its present loan portfolio BANVI extends financial assistance to the building materials industry. In 1976 it proposes to extend at least Q 2.0 million for loans up to five years at an interest rate of 9.75%. BANVI utilizes its Credit Section to promote business opportunities. The objective of this element of the project is to assist small-and medium-producers of building materials to meet the requirements of the housing sector and to generate employment opportunities for a large segment of semi-skilled workers.

3.31 BANVI has streamlined its procedures to cope with the demand for funds from building materials manufacturers. About 60 prospective borrowers have expressed definitive interest although the potential exists for a demand from 150 small entrepreneurs. Proposed loans could vary from Q 5,000 to Q 15,000 and would carry an interest of 9.75% for a term of 5 years. Most subloans would be for capacity expansion and primarily for fixed assets including buildings and workshops. Under BANVI guidelines, entrepreneurs can obtain up to 70% of the value of the loan on "signature," 90% with a mortgage, and 100% based on chattel mortgage. The Project Unit would work closely with the Credit Section in BANVI in the economic evaluation of proposed subloans and particular emphasis would be given to proposals that directly enhance the project sites.

Technical Assistance

3.32 Consulting services would be required for operational, planning and management assistance during the implementation of the project. Consultants to the Project Unit would assist both the Vice President for Reconstruction and Project Administrator with project implementation, engineering and technical supervision, promotion of small business opportunities, training, and project monitoring and evaluation. It is estimated that four advisers would be needed for a total of 108 man-months. Advisory assistance would be provided, generally, in the fields of engineering, architecture, urban planning, business development and community organization and training. Specific terms of reference for each specialist-adviser are shown in Appendix 4. During negotiations, agreement was reached that consultants under the above technical assistance would be employed on terms and conditions satisfactory to the Bank by December 31, 1976.

3.33 To assist the Project Unit in its operations outside Guatemala City and because of the location of sites, a few vehicles will be provided. Likewise, some equipment (e.g., audio-visual, communications, machinery for construction purposes, etc.) will also be provided.

IV. EXECUTING AGENCY

A. Implementation Responsibilities

4.01 The Borrower will be the Government of Guatemala. On March 18, 1975 the Government established a National Reconstruction Committee (NRC) which would coordinate projects and activities that form part of a general reconstruction program. The National Reconstruction Committee is headed by General Ricardo Peralta Mendez, who was appointed by the President and who has a reputation for honesty and for being a solid administrator. He is assisted by senior staff with many years of experience in both public and private enterprises and all appear to be of a high caliber. NRC is an executive agency which can take decisions and would provide the necessary coordination among governments and private agencies. Both the Banco de Guatemala (BG) and the Secretariat of the Consejo Nacional de Planificacion Economica (Planning Council) would assist NRC in an advisory capacity. The Government also established a trust fund initially with US$28.0 million which would be administered by BG. With respect to the activities for housing reconstruction, the Banco de Guatemala and BANVI have entered into an agreement in which BANVI will execute projects utilizing funds from the trust fund.

4.02 BANVI will be the executing agency for the project. As mentioned in para 2.11, the Government has designated BANVI as the agency in charge of housing reconstruction for the capital city and urban centers which are capitals of Departments (provinces). BANVI is the only major housing and urban development institution in Guatemala with experience in large scale housing development of the magnitude envisaged in the reconstruction program. However, as a young institution (established in late 1973) and having inherited the assets and problems of Instituto Nacional de la Vivienda (INVI) it is undergoing adjustments in its overall program and operations. Nowhere have difficulties in the process of adjustment been more pronounced than in its organizational and financial operations. Although the Bank loan will be made to the Government, the association of BANVI in the implementation of the project will substantially aid in its institutional development. One of the important steps needed in carrying out the project is the establishment of an office for a Vice President for Reconstruction who will direct the operations of a Project Unit (para. 4.16), also to be established to insure due diligence and efficiency in project implementation. The appointment of a Vice President for Reconstruction whose qualifications and experience are satisfactory to the Bank and the creation and staffing of the Project Unit satisfactory to the Bank are conditions for loan disbursement. At the same time, BANVI has agreed to carry out a management study primarily to clarify the functions to be executed in response to the reconstruction efforts as well as provide the necessary direction for carrying out its normal functions in the housing field. With these arrangements plus a number of conditions designed to strengthen BANVI's financial operations and with assistance of consultants financed under the project, BANVI will have the technical and administrative capacity to execute the project efficiently.

B. Banco Nacional de la Vivienda (BANVI)

Function

4.03 The Banco Nacional de la Vivienda (BANVI) is a state-owned and a semi-autonomous agency of the Government of Guatemala which commenced operations in July 1973. At that time BANVI took over the assets, liabilities and staff of INVI, which was a government controlled housing agency created in 1956 (Appendix 5).

4.04 BANVI was given broader functions than INVI and now has the following areas of operations:

(a) accept checking and savings deposits and provide other banking services;

(b) carry out housing construction and infrastructure projects, either directly or through private contractors;

(c) promote and carry out urban renewal projects;

(d) provide loans to individuals for both BANVI projects and houses to be built by individual owners;

(e) promote and participate in the organization and expansion of companies involved in the housing industry; and

(f) raise funds, with government approval, from external loans and from other banks and financial institutions.

Share Capital and Ownership

4.05 The Government of Guatemala is the sole owner of BANVI and when BANVI was created it absorbed all of the Government's capital in INVI. The law creating BANVI also authorized a Q 6 million increase in BANVI's capital over a six-year period. To date Q 2 million has been paid in by the Government.

Management

4.06 BANVI is governed by a five-member Board of Directors consisting of the Ministery of Economy (Chairman of the Board), the Minister of Finance, the President of Instituto de Fomento de Hipotecas Aseguradas (FHA), a representative of the National Association of contractors and the President of BANVI. There are also provisions for Alternate Directors to attend board meetings in place of the regular members. BANVI's Vice Presidents also attend board meetings as non-voting members. The Board makes the policy decisions for BANVI on the recommendations of BANVI's President.

4.07 The President of BANVI, Lic. Oscar Mauricio Gonzalez, is appointed by the President of Guatemala and is reponsible for the operations of BANVI.

Organization

4.08 The President has created a five-man technical committee to assist him in studying and planning policies and assisting in legal and other requirements. Also attached to the President is a Credit and Trust Committee which sets pricing policy for housing developments and approves loans from Q 10,000 to Q 75,000. Loans over Q 75,000 require approval of the Board of Directors.

4.09 Under the President are three Vice Presidents who are delegated authority in the areas of Banking, Housing Production and Administration (Chart WB 16022). The President and the three Vice Presidents have adequate experience in banking and housing and appear to possess the skills and capacity to execute programs.

4.10 BANVI presently has 502 employees, which is an increase of 149, or 42% since June 1974. They are organized into the following areas:

	No. of Employees
President's Staff	5
Internal Auditor	16
Banking	132
Administration	274
Production	75
Total	502

4.11 The largest increases were in the Administration and Production divisions which increased by 86 and 39 employees respectively. These increases do not appear justified in terms of the pre-earthquake level of operations of BANVI. However, it appears that the tasks assigned to BANVI have changed the scope and nature of the staffing requirement of the institution.

4.12 The mission left with BANVI a request that a management study be initiated to increase its efficiency and effectiveness in carrying out a program for reconstruction and lay the foundation for its future work in urban development. The management study should, inter-alia:

(a) define specific programs, tasks and personnel required to undertake the reconstruction program;

(b) provide policy guidelines and obtain approval for a plan of action to evaluate the impact of reconstruction efforts on BANVI's normal functioning;

(c) insure the mechanics necessary for adequate coordination; and

(d) streamline and review BANVI's organization with a view to improving its accounting, cost determination and reporting, collections and economic and financial planning.

The terms of reference of the study was reviewed during negotiations. Agreement was reached that BANVI would review with the Bank the recommendations of the study prior to the implementation of such recommendations. Agreements were also reached during negotiations that this study will be substantially completed as a condition of disbursement.

Banking Operations

4.13 BANVI has its main office and two branch offices in Guatemala City and one branch office in Quetzaltenango. Apart from its banking operations this department is responsible for the implementation of credit policies and collections. It coordinates closely with other sections within BANVI responsible for dealing directly with borrowers (e.g., Community and Home Extension Workers who provide assistance to loan beneficiaries to insure that they make their mortgage payments promptly and also assist families with employment opportunities). BANVI's banking operations showed a large increase in 1975 with deposits providing a large portion of the additional funding for projects and loans.

4.14 Besides having mortgages, BANVI had commercial loans outstanding on December 31, 1975 of Q 0.5 million. BANVI is expected to expand this portion of its business by another Q 2.0 million in 1976. The Credit Analysis and Collection sections under the Banking Department are responsible for providing support services to housing projects and in the promotion of business opportunities for the manufacture of building materials. Both these sections would play important roles in the implementation and efficient execution of the project especially as they provide needed assistance to the Project Unit. Likewise, under the Administration Department, the Development section is responsible for the processing of applications and and interviewing prospective applicants (para 4.23).

Production Department

4.15 The Production Department of BANVI is responsible for defining and implementing housing programs. It presently supervises more than 6,000 housing units all at various stages of construction. This department sets design standards, reviews cost estimates, reviews bids, awards contracts and monitors costs. BANVI contracts out to the private sector most of the production of project designs and construction drawings, actual on-site construction and supervision of works.

Project Unit

4.16 To carry out BANVI's reconstruction program and insure efficient implementation of the Bank-financed project, BANVI would establish a Project Unit reporting directly to a Vice President for Reconstruction, a position which the President has agreed to create. The Vice President for Reconstruction would also be responsible for liaising with relevant agencies involved in the reconstruction programs as well as coordinate with other sections within BANVI for logistical support. The specific scope of work of the Project Unit is now being detailed. Its duties are expected to include implementation of the project from the preliminary engineering stage through construction and supervision. One important function of the Project Unit will be the organization of the communities to be served, provide training, initiate self-help and mutual aid works and promote opportunities for small business enterprises. It is contemplated that a large number of the positions in the Project Unit would be filled by personnel already employed by BANVI and that additional staff, as needed and support services (e.g., accounting, land acquisition, credit check on applicants, etc.) would be made available from other departments in BANVI.

4.17 Under the proposed organization the Project Unit would consist of:

(a) one Project Administrator;

(b) one Senior Engineer for project supervision and control and liaison with the consultants;

(c) one Architect/Planner to review materials loans needs, review design, etc.;

(d) one Accountant/Financial Analyst to be directly responsible for project accounting and maintain liaison with the Accounting Department;

(e) one Business Promotion Specialist to promote the organization and development of small-scale (artesian) businesses;

(f) one construction Manufacturing Specialist to organize and train settlers in appropriate techniques of construction;

(g) one Senior Social Worker to develop basic criteria for selection of settlers, to conduct interviews, and to set up self-help and mutual aid groups;

(h) one Community Development Worker to organize work groups and train groups for cooperative efforts;

(i) one field Engineer resident for each project site for supervision; and

(j) one Architect/Contractor to prepare expansion plans and work with the Unit to define various techniques and materials for expansion of site facilities and structures.

The Project Unit will also be assisted by technical assistance consultants as described in para 3.32 and Appendix 4.

Lending Operations

4.18 BANVI makes loans for housing and as a commercial bank, to individuals and to suppliers and contractors in the housing industry. The main area for BANVI's lending is housing, however, as the following table giving balances outstanding at December 31, 1975 shows:

	Number	Amount in Millions of Q
Housing project loans	14,580	22.00
Individual mortgage loans	289	2.48
Other loans	478	0.78
Total	15,347	25.97

4.19 Loans made by BANVI for housing are usually for a 20-year term with a 10% down payment required. Interest rates are currently 11% but on occasion reduced by the President and Credit and Trust Committee of BANVI to 8% or 10% for low-income projects. BANVI also adds .9% to the interest rate for a 20-year mortgage (and less for a shorter mortgage) as mortgage insurance.

4.20 Commercial and other loans are usually short term, currently carry an interest rate of 9.75%.

4.21 One of the weakest areas of BANVI's operations, inherited from INVI, is loan collections. Timely and regular reports are not produced regarding amounts in arrears, with the last report available being of December 31, 1974. Of BANVI's 14,024 housing loans outstanding on that date, 6,570 were in some degree of arrears and that 5,015 or 36% were more than 3 months behind in payments. The total amount in arrears was Q 891,328 or 4% of the loans outstanding. Although the arrears situation is acceptable, the mission has expressed its concern to BANVI's management and measures to reduce arrears as well as better operational control will be undertaken in the course of project implementation. All loans are protected by BANVI's right to reposses a house in case of default.

During negotiations, agreements were reached that BANVI would strengthen its collection procedures so that the number of accounts more than three months in arrears would be no more than 25% by December 31, 1977.

4.22 BANVI has three different loan categories for its housing projects:

	Family Income Requirements Per Month
Low-income	Q 60-150
Middle-income	Q 150-300
High income	Q 300 +

4.23 To qualify for low-income housing, a prospective borrower must first fill in an application form and open a savings account with BANVI, to be used for legal expenses related to acquiring the house and saving for the down payment. Following this the applicant then has an interview with a social worker from either BANVI's staff or a firm retained by BANVI. The social worker determines the ability to pay, verifies the family income reported, reviews present living quarters and does a credit check. If the applicant is accepted, his name is added to a waiting list which at the present time contains 4,000 processed applications. When an applicant does finally reach the top of the list, he is allocated a house within a project by means of a raffle. To meet the earthquake needs and to select people for the various programs in this project, the credit department of BANVI must be strenghtened and its procedures streamlined.

Accounts and Audits

4.24 BANVI charges the cost of its Production Department plus one-third of some administration costs to its housing projects. The allocation of these charges appears arbitrary and BANVI does not have a formal cost monitoring and budget reporting system. Their overhead charge of 20% seems to be high in light of the fact that the Production Department contracts out a lot of its work. Much tighter control of these costs is required.

4.25 BANVI has an Internal Audit Department reporting to the President which is required to verify all accounting transactions and financial statements produced by the Accounting Department. BANVI also utilizes external auditors who report on the financial statements and other information required under previous IDB loans. The 1974 auditors included comments and recommendations on BANVI's accounting system and organization and the 1975 auditors are also planning to make comments, although their report was not ready at the time of the mission. During negotiations, agreements were reached that a separate account would be maintained by BANVI and quarterly project cost statements would be submitted to the Bank. Agreements were also reached that annual audited financial statements for BANVI plus an audited project cost statement and such other information as the Bank may require would be available to the Bank not later than six months after the end of BANVI's fiscal year.

Insurance

4.26 BANVI requires the owners of houses on which it holds the mortgage to carry insurance against fire, lightning, earthquake and volcanic eruptions.

Financial Position

4.27 When BANVI took over the operations of INVI in July 1973 there were questions regarding both the existence and valuation of the assets and liabilities of INVI. The Government appointed a special committee to resolve these problems and its work is to be completed by December 31, 1976. The major item outstanding according to BANVI, is the documentation of present book value of fixed assets which had an original cost of Q 5 million.

4.28 As of December 31, 1975 BANVI had total assets of Q 43.0 million which is an increase of Q 7.7 million or 22% over the previous year.

	Balance				
	Dec. 31, 1974		Dec. 31, 1975		Increase
	Q thousands				
Cash and Investment	2,793	8%	4,825	11%	2,032
Loans	21,787	62%	25,977	61%	4,190
Housing Projects in Progress	9,477	27%	9,757	23%	280
Other	1,258	3%	2,414	5%	1,156
Total	35,315	100%	42,973	100%	7,658

4.29 The large cash and short-term investment balances show a high liquidity position for BANVI against its deposits of Q 8.3 million. BANVI is required to keep 40% of its current account and 10% of its savings account balances on reserve at the Central Bank, which the December 31, 1975 cash balances greatly exceeded.

4.30 BANVI has 23% of its assets in housing projects under construction. As of December 31, 1975 this was the situation:

	Q thousands
Planning, urbanization and housing in progress	3,153
Houses repossessed	92
Urbanization completed	769
Military housing completed	622
616 houses completed and not sold	1,939
252 apartments to be sold	1,099
Land	2,009
Sundry	74
Total	9,757

4.31 BANVI derives its funds to finance its growth in assets from four sources: deposits, long-term debt, provision and capital. The following table shows the relationship of these sources:

	Balance				
	Dec. 31, 1974		Dec. 31, 1975		Increase
	Q thousands				
Deposits	2,962	8%	8,272	19%	5,310
Long-term debt	8,816	25%	8,412	20%	(404)
Provisions	1,437	4%	2,137	5%	700
Paid-in Capital	22,202	63%	23,358	54%	1,156
Other	(102)	--	794	2%	896
Total	35,315	100%	42,973	100%	7,658

4.32 Deposits increased by Q 5.3 million last year providing 70% of the funds used by BANVI. No interest is paid on checking accounts while 8% is paid on savings accounts.

4.33 The long-term debt represents two loans from IDB. Terms and conditions were:

(a) Loan 39-TF/GU-amount Q 5.3 million; interest and commission 2.0%; amortization in 54 semi-annual installments commencing July 3, 1964; and

(b) Loan 219-SF/GU-amount Q 4.6 million; interest and commission 3.0% amortization in 51 semi-annual installments commencing April 23, 1974.

4.34 An employees' indemnity fund and life insurance fee charged monthly by BANVI to its mortgage loan holders amounted to Q 2.1 million. BANVI provides this insurance itself through this provision.

4.35 Paid-in capital of Q 23.4 million represents 54% of the present funding for BANVI's operations. This comes about from large amounts of past Government financing for INVI. It will continue to provide an important source of funding for new projects in the future as repayments are made of existing mortgage loans.

4.36 The large amount of paid-in capital, the low interest rates on the IDB loans, no interest on checking deposits, and 8% interest on savings accounts combine to give BANVI a present cost of capital of 1.2% which is very low.

Financial Results

4.37 Between 1974 and 1975 BANVI's revenue increased by 30% from Q 1.6 million to Q 2.1 million as against expenditures of Q 2.0 million to Q 2.4 million respectively (Appendix 5, Table 1). Operating expenses were high and BANVI showed a net loss for the year of Q 300,000. However, the return on average total assets was 5.4% and which gives BANVI a gross spread of 4.2% on average total assets. Clearly, since BANVI reports income on cash basis and interest receivable increased by Q 300,000 in 1975 a greater effort in collection would have eliminated the loss.

Financial Projections

4.38 BANVI's forecasts show that net assets will increase by Q 61.8 million from Q 43 million in 1975 to Q 104.8 million in 1982 (Appendix 5, Table 1). The increase results from reconstruction loans made by BANVI, and from BANVI's regular loans which will increase by Q 25.8 million from Q 26.0 million in 1975 to Q 51.8 million in 1982. The increase in net assets is financed from three main sources: deposits, funds provided by the Bank of Guatemala for the project and capital. BANVI's deposit:debt: equity ratio which was 21/22/57 in 1975 is forecast to be 27/42/31 in 1982.

4.39 Deposits are forecast to triple from Q 8.3 million to Q 26.1 million and would provide about 70% of the funds required for the increase in BANVI's normal loan program. Loans under the project would have a balance of Q 36.2 million at the end of 1982. Government capital would increase by Q 8.6 million to Q 32.0 million in 1982 and includes Q 4 million at a present Government commitment to provide BANVI with Q 1 million per year in capital until 1979. The continuation of this arrangement was confirmed during negotiations.

4.40 The forecast cash flow (Appendix 5, Table 2) shows BANVI's regular lending program decreasing during the period for reconstruction project from Q 4.2 million in 1975 to Q 2.2 million in 1979 and then increasing to Q 5.5 million in 1982.

4.41 BANVI's operating losses are expected to decline and by 1980 it will start showing a profit (Appendix 5, Table 3). These gradual changes are the result of loans for reconstruction, greater staff efficiency as well as higher interest rates in BANVI's commercial operations. Additionally, administration costs for the reconstruction program have been assumed to be covered by the Government grants during the implementation phase of the project. Thus, BANVI's operating ratio is projected to decline from 113% in 1975 to 96% in 1982.

Operating and Financial Targets

4.42 The management study that BANVI has been requested to carry out should establish performancce targets for BANVI commencing with the 1977 fiscal year (para 4.02). The targets should cover such items as relating the number of employees in various areas of BANVI's organization to the number of houses constructed and to the number of loans made, and controlling administration costs as related to average total assets.

4.43 The President of BANVI sees the institution's role in the future as that of a "secondary lender" dealing primarily with savings and loan associations, housing coopertives, mutuals and other organized groups. This reorientation of BANVI's functions would require a broadening of its financial base and greater involvement, albeit indirectly, in urban development works.

V. COST ESTIMATES, FINANCING ARRANGEMENTS

PROCUREMENT AND DISBURSEMENTS

A. Cost Estimates

5.01 Cost estimates are detailed in Appendix 2 and summarized in the following table:

Project Components	In Millions of Quetzales			%Foreign Exchange
	Local	Foreign	Total	
A. Sites and Services in Guatemala City				
1. off-site infrastructure	1.054	0.496	1.550	32
2. community facilities	0.365	0.135	0.500	27
3. on-site infrastructure	2.536	1.194	3.730	32
4. core unit construction	5.596	2.633	8.230	32
5. land	2.500	--	2.500	00
6. materials loans	3.200	0.800	4.000	20
Subtotal	15.251	5.258	20.510	26
B. Credit Program for 10 Urban Centers				
Subtotal	4.000	1.000	5.000	20
C. Small Business Loans				
1. land	0.150	--	0.150	00
2. commercial sites in projects	0.562	0.208	0.770	27
3. loans for building materials producers	2.774	1.306	4.080	32
Subtotal	3.486	1.514	5.000	30
D. Technical Assistance and Equipment				
Subtotal	0.165	0.935	1.100	85
TOTAL	22.902	8.707	31.610	27
E. Contingencies				
1. Physical	1.517	0.700	2.217	32
2. Price 1/	5.002	3.468	8.517	40
Subtotal	6.519	4.168	10.687	38
TOTAL PROJECT COST	29.421	12.875	42.297	30
TOTAL COST NET OF LAND	27.041	12.922	39.646	32

1/ Price contingencies compounded annually on base cost plus physical contingencies as follows:

	1976	1977	1978-79
Local	15% p.a.	15% p.a.	12% p.a.
Foreign	14% p.a.	13% p.a.	12% p.a.

5.02 Cost estimates are shown net of land and with land (which will not be financed by the Bank) based on preliminary designs prepared for the Stage I project in San Rafael La Laguna and on similar BANVI sites and services designs. The direct and indirect foreign exchange costs will be equivalent to about US$12.9 million (30%). Costs are computed on May 1976 prices for labor and materials plus 15% physical contingencies. Physical and price contingencies together comprise about 25% of total project cost. These estimates are considered realistic and appropriate.

Monthly Charges and Affordability

5.03 Based on estimated unit costs for the sites and services component total loan obligation and monthly charges are as follows:

Loan Obligation	Level I	Level II	Level III
Land	187.15	187.15	187.15
Urbanization	395.00	395.00	395.00
Core construction	115.00	594.38	1,248.80
Installation charges, meters, etc.	255.00	255.00	255.00
Total Loan	952.15	1,431.53	2,085.95
Monthly Charges			
mortgage payment	6.19	9.30	13.56
monthly payment on materials loans (Q 400-)	2.60	2.60	2.60
water and sewerage	1.48	1.48	1.48
electricity	4.03	4.03	4.03
Total Monthly Charge (with materials credit of Q 400-)	14.30	17.41	21.67

5.04 The average monthly costs to households for the three service level options would be Q 11.70, Q 14.80 and Q 19.07 respectively, net of a building materials loan. With the Q 400--materials loan, the average monthly costs would be Q 14.30, Q 17.41 and Q 21.67 per service level.

5.05 Based on the assumption that 20% of household income is alloted to shelter, the lowest decile would have a potential capacity to pay Q 14.70 per month. Service Level III (basic core dwelling unit) plus a Q 400 construction

materials credit will be affordable (Q 21.67) to the lowest 2nd decile of metropolitan Guatemala's population.

Cost Recovery and Pricing

5.06 Based on para 5.01, the total development costs for the sites and services component is Q 29.35 million (i.e., Q 20.5 million as base cost plus contingencies amounting to Q 8.85 million). The beneficiaries would be charged for these costs plus installation, power, and other surcharges amounting to Q 3.95 million.

5.07 Pricing of sites for sale and housing units are normally determined by BANVI as sections of project sites are completed. During negotiations agreements were obtained that BANVI would set the selling price of lots and housing units to insure satisfactory recovery of costs which would include, inter alia, the cost of land, site development, on-site infrastructure, community facilities materials loans, core housing (where appropriate), and a proportionate share of off-site infrastructure plus requisite administrative and capital surcharge for infrastructure.

B. Financing Arrangements

5.08 The Bank loan will be made to the Government of Guatemala. The loan of US$20.0 million represents 47% of total project costs. The Government will contribute US$22.3 million or 53% of total project costs. The Bank loan will be on standard Third Window (TW) terms. There will be a project agreement between the Bank and BANVI. The Government will bear the foreign exchange risk.

5.09 The Government will on-lend Bank funds to BANVI on the same terms and conditions as the Bank loan. The Government's contribution (US$22.3 million equivalent) for the project will be made available to BANVI in the form of a trust (called FEDEICOMISO) at no interest. Moreover, the Government through the Bank of Guatemala (Central Bank) will provide grants to BANVI to cover its administration costs related to the project. With these agreements, BANVI's cost of loanable funds will be about 2.35%.

5.10 BANVI's loans to individuals for sites and services, materials loans, and credits will be for 20 years including 2 years of grace at 4% interest. As this loan is exclusively for reconstruction and no further loans of this type are envisaged and because the preponderance of beneficiaries are low-income families the proposed interest rate appears acceptable.

5.11 As loans are repaid to BANVI the funds will be accounted for as follows:

(a) the amount necessary to pay the principal and interest on the Bank loan will be repaid to the Bank of Guatemala;

(b) the balance will be retained by BANVI as a capital contribution by the Government.

5.12 These financing arrangements were agreed upon with the Government and BANVI during negotiations.

C. Procurement

5.13 BANVI, through the Project Unit, would act as the primary procurement agent. It will invite, evaluate bids and award contracts in accordance with Bank guidelines for Procurement dated August 1975.

5.14 Contracts for civil works would be awarded to prequalified bidders on the basis of international competitive bidding. Since most of the civil works are relatively small, foreign contractors are not expected to participate; but they would not be precluded from bidding. Works would be grouped to the extent possible to encourage competitive bidding. Procurement of building materials and equipment for the ten urban centers and three sites in Guatemala City would also be made on the basis of competitive bidding.

5.15 In accordance with the Central American Agreement on Fiscal Incentives for Industrial Development, domestic and other C.A.C.M. member countries manufacturers would receive a preferential margin of 15% at c.i.f. base costs of imports or 50% of the applicable import duties, which ever is lower.

Building Industry

5.16 Since the satisfactory execution of the project depends to a large extent on the availability of building materials, skilled manpower, and the nature and scale of the contracting industry, the mission reviewed relevant aspects of the building industry.

5.17 Architectural and Engineering Services: Guatemala has over 1,000 engineers, architects and geologists who adequately meet the needs of the building industry.

5.18 The "Architects and Engineers Association" has set rules for professional fees which vary according to the work performed and the total value of the project. Fees related to housing could vary from 5% to 12% of the total cost of construction. The quality of design, working drawings and supervision of construction is generally satisfactory.

5.19 Building Codes: Guatemala has no effective Building Code and enforcement comparable to that found in the U.S. Each design professional is allowed to establish his own design criteria and supervise his own construction without independent scrutiny on the basis that he is a registered professional. This practice does not preclude good construction; neither does it place limitation on the extent of poor construction.

5.20 As Guatemala is on a seismic zone, for structural safety, the building codes mostly used are American, European or Japanese; the San Francisco (California) Building Code being the most widely used.

5.21 Government is anxious to carry out a study of construction materials and prepare a building code suitable for Guatemala. Funds for consulting services are included in the project which can be utilized for these purposes.

5.22 Materials: Guatemala produces cement, bricks, blocks, cement tiles, asbestos roofing, asbestos and PVC piping, wooden components for windows and doors, aluminum windows and ceramic tiles, etc. PVC piping, aluminum windows and door frames, a variety of ceramic tiles, sanitary fixtures, etc., are imported from the Central American Common Market countries. Reinforcing steel, electric cables, pipes and hardware are imported from the USA and Europe.

5.23 For the Government's reconstruction program to be successful it would have to import considerable amount of building materials and equipment until such time as the demand returns to normal levels.

5.24 Skilled Manpower: Before the earthquake Guatemala had adequate skilled manpower to carry out its construction requirements. Shortages in manpower due to abnormal reconstruction would be met by recruiting suitably experienced and skilled technicians from the neighboring countries and no difficulty is anticipated.

5.25 Building Contractors: There are approximately 80 building contractors registered by BANVI and at least ten are considered large, well financed and experienced enough to undertake any housing development required. Most are members of the Guatemalan Association of Construction Contractors and the National Association of Home Builders, which in 1975 reported a construction capacity of about US$70 million. These firms normally build for the public sector and BANVI through open competitive bidding. On occasion they also act as developers-builders-owners taking full risk of their housing ventures. On the whole, their performance has been adequate.

D. Disbursement

5.26 The Bank will disburse against:

(a) 50% of civil works by contractors;

(b) 50% of amounts disbursed under the credit program to individual households in the sites and services projects;

(c) 50% of amounts disbursed under the credit program to individual households in the ten selected urban centers;

(d) 50% of BANVI's disbursements for loans to building materials manufacturers; and

(e) 100% of foreign expenditures or 85% of local expenditures for consulting services and vehicles and equipment for the Project Unit operations.

5.27 Disbursements will be fully documented. BANVI will process all documentation through the Bank of Guatemala which would set up a project account and would monitor withdrawal applications received. The estimated disbursement schedule is shown in Appendix 6. Documentation for disbursements under the credit program will not be submitted to the Bank but retained by BANVI for periodic review by Bank project supervision missions. Any surplus arising from the completion at a lower than the estimated cost (including contingencies) of the project would be used, with the prior approval of the Bank, to provide additional "basic" sites and services plots. In order to facilitate project implementation and insure a reasonable schedule of construction, retroactive financing mainly for detailed engineering of proposed works and consulting services of up to US$100,000 is recommended.

E. Supervision

5.28 In view of the complexity of the project and the urgency to carry out specific elements of the sites and services project component it is proposed to allocate 95 man-weeks for supervision during the three and one half years of project implementation.

5.29 About 35 man-weeks will be needed during the first year specifically to review progress in the establishment and operations of the Project Unit, acquisition of land for project sites, detailed engineering of the sites and services project component, and review other project components. Likewise, the appointment of consultants, selection of households and organization of self-help and mutual-aid works need careful monitoring.

VI. SOCIAL AND ECONOMIC JUSTIFICATION

6.01 The social benefits of a reconstruction program are not easily susceptible to quantification, but they would certainly be greater than the economic benefits. For most of those rendered homeless especially the squatters on ravines or renters whose dwellings were demolished, the provision of affordable and appropriate shelter is of high priority. For a majority of the low-income people the loss of property and other valuable assets was accompanied by the destruction of social facilities and services normally used by the people thereby exacerbating disparities in wealth and opportunities.

6.02 With the proposed sites and services program, the project will contribute directly to the shelter reconstruction program. Of the total estimated number of dwelling units (58,000) destroyed in the capital about

45,000 units housed the urban poor. The proposed project will thus cover slightly better than 20% of this need over a three and a half year period. For the ten urban centers outside of Guatemala City, based on the replacement needs of about 11,000 units the project would meet about 70% of the needs. Perhaps more importantly, the project serves as a prototype for broader government action during and after the reconstruction period. The project also includes a market-oriented element. Through rational self-help and mutual-aid the project participants could increase their real incomes through construction-related businesses and cooperative activities. Thus project progress could lead ultimately to upgrading the participants' level of living in both a qualitative and quantitative sense. This, in turn, could offer guidelines for government sponsored action along similar lines that will reach more poor families in more areas of the country than the modest resources of this single Bank-financed project permits.

6.03 Income Generated: Given the proposed investment of US$16.1 million for direct construction, about US$6.44 million of labor income will be generated over a three and a half year period. In addition, the project will create about 15,000 man-months of temporary construction jobs in this period. A simultaneous investment of US$5.0 million in a small business program could be expected to generate total investments of US$14 million. Based on capital investment per job created of US$4,000, the total number of jobs which will be created could approach 3,500.

6.04 Even if a moderate fraction of these jobs goes to outsiders, the generation of this number of jobs for a project comprising ten thousand families will have an enormous beneficial impact, and will, in all probability, rapidly raise the average level of living to well above that of the lowest income groups.

6.05 The contribution of other self-help and mutual-aid activities to real income generation can, likewise, be significant.

6.06 Rate of Return: The economic rate of return was estimated solely for the sites and services component of the project which constitutes 64% of total project investment. As in previous Bank-financed sites and services projects, the benefits are measured primarily on the basis of imputed rental values which were obtained from BANVI. Costs of the project included land development, infrastructure, core units, other on-site costs, engineering, materials loans, and the opportunity cost of land plus physical contingencies of 15%. Wages for self-help were valued at 50% of the going rate. Based on the calculations, the rate of return was about 16.0%.

Sensitivity Analysis

6.07 A sensitivity analysis was carried out to determine the impact on the rate of return of variations in benefits and costs. The results are as follows:

Assumption	Rate of Return
15% increase in costs	13.8%
25% increase in costs	12.5%
15% increase in benefits	18.7%
25% increase in benefits	20.4%

Project Risks

6.08 Although BANVI's housing projects throughout the metropolitan area escaped any serious damage--4 houses out of 4,000 required minor repairs--the fact remains that the magnitude and occurrence of earthquakes are unpredictable and their probable effects on the project are not measurable. To reduce project risks, BANVI has incorporated in the project design more stringent standards of construction, building materials, land preparation and technical supervision (para 5.21).

6.09 Another type of risk inherent in the project is the extent to which BANVI will be able to execute the project expeditiously and efficiently. Delays in implementation caused either by delays in land acquisition or constraints in the construction industry could materially affect project costs. Cost overruns could, in turn, affect the number in the lowest decile who can effectively participate in the program. These risks have been properly discussed and reasonable safeguards are being included in the Project. BANVI is aware of the steps to be undertaken and will strengthen the Project Unit as circumstances require. With appropriate technical assistance, monitoring and close supervision from Bank staff it is envisaged that the project can be successfully executed.

VII. RECOMMENDATIONS

7.01 During negotiations, agreements were obtained from the Government and BANVI that:

(i) land acquisition of about 50 ha for the San Rafael La Laguna site would be acquired before June 30, 1976 and that the Government would provide the Bank with a schedule and timetable for the acquisition of land for the remaining sites (para 3.08);

(ii) agreements between BANVI and individual banks or credit institutions for carrying out the purposes of the credit program for selected urban centers should be arranged to include assignment of specific responsibilities with respect to the provision of credit inspectors, supervision of the loan, percentage of commission, and reporting systems (para 3.22);

(iii) appoint consultants whose qualifications and terms of employment would be on terms and conditions satisfactory to the Bank by December 31, 1976 (para 3.32);

(iv) BANVI would strengthen its collection procedures so that the number of accounts more than three months in arrears would be no more than 25% by December 31, 1977 (para 4.21);

(v) a separate account would be maintained by BANVI and quarterly project cost statements would be submitted to te Bank (para 4.25);

(vi) annual audited financial statements for BANVI plus an audited project cost statement and such other information as the Bank may require would be available to the Bank not later than six months after the end of BANVI's fiscal year (para 4.25);

(vii) the Government will continue to make its capital contributions to BANVI of Q 1.0 million per year until 1979 (para 4.39);

(viii) BANVI would set the selling price of lots and housing units to insure satisfactory recovery of costs (para 5.07); and

(ix) the Government will provide the funds for the project to BANVI at the required terms and conditions (para 5.09).

7.02 As conditions for loan disbursement, BANVI would:

(i) appoint a suitably qualified Vice President for Reconstruction (para 4.02);

(ii) substantially complete the management study (para 4.12); and

(iii) establish a Project Unit with qualified and experienced personnel (para 4.02).

7.03 As conditions of loan effectiveness, the Government and BANVI would certify that:

(i) that the execution of the Project Agreement on behalf of BANVI has been duly authorized or ratified by all necessary corporate and governmental action;

(ii) that the execution of the Subsidiary Contract and the Fideicomiso Contract on behalf of the Borrower, BANVI and Banco de Guatemala, respectively, have been duly authorized or ratified by all necessary corporate and governmental action;

(iii) that the Project Agreement has been duly authorized or ratified by BANVI's Junta Directiva, and is legally binding upon BANVI in accordance with its terms; and

(iii) that the Project Agreement has been duly authorized or ratified by BANVI's Junta Directiva, and is legally binding upon BANVI in accordance with its terms; and

(iv) that the Subsidiary Contract and the Fideicomiso Contract have been duly authorized or ratified by the Borrower, BANVI and Banco de Guatemala, respectively, and are legally binding upon the Borrower, BANVI and Banco de Guatemala, in accordance with its terms.

7.04 Subject to the above agreements the project is suitable for a Bank loan of US$20.00 million equivalent on standard Third Window terms.

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

Site Selection and Location

1. BANVI's--and previously INVI's--lowest-cost housing projects have been developed in three peripheral areas of the city. The largest, Primero de Julio--over 4,000 complete, US$3,000 units--was built four years ago in the northwest sector of the city. A newly completed sites and services scheme, Bethania Norte (500 units) is also located in this area. In the southern section of the city, BANVI is constructing about 3,500 low-middle cost units.

2. BANVI's major sites and services program has been focussed on the city's northeastern industrial and manufacturing area. Serviced by the highway north to Puerto Barrios, the area has become a natural growth corridor. Three sites and services projects have been completed here; a fourth is being constructed totalling over 3,800 lots (see Maps IBRD 12227, 12274).

3. Site selection for the proposed sites and services program was based on further development of these major growth poles within the city. The areas are served with basic urban infrastructure and services or these can readily be expanded to meet the demands of the projected new populations. BANVI has investigated land availability in these areas and prepared a preliminary feasibility study based on purchase offers. Sites were evaluated in these areas for development of project sites in three stages.

Programming

4. Preliminary discussions with BANVI officials indicate that a possible staged-development of the identified sites can proceed as follows:

	Units to be Built in 1976-1979			
	Stage I	Stage II	Stage III	Total
NE Sector	2,400	2,300	--	5,700
NW Sector	--	500	1,800	2,300
SW Sector	--	500	1,500	2,000
TOTAL	2,400	4,300	3,300	10,000

Availability of Water for the Project Sites

5. San Rafael de La Laguna area (NE sector) can be supplied by water from the EMPAGUA water supply system. This will require an interconnection with the trunk main and the installation of main lines.

6. Bethania Norte (NW sector) will be supplied from three wells drilled by BANVI. The wells have an estimated yield of 3,000 pajas (6,000 m^3/day) adequate for approximately 9,000 lots. A 6" main from the well field, and a groundstorage at Bethania are being built by BANVI. From the tank the water will be fed into the distribution system

7. Belo Horizonte (SW sector) will require the drilling of a well, storage tank, and connection to the distribution network. The estimated depth of the well is approximately 800 feet. Ample supplies of groundwater are available, and wells producing 30 lps (300 m^3/day) have been constructed in the area.

Sewerage, Surface Drainage and other Utilities

8. The NE and NW sectors have natural drainage flows to the north. The lands identified for the sites and services projects are not planned to be sewered for several years. Provisions for future link-ups to trunk mains and treatment will be provided for in each project site.

9. Storm drainage is available to each project site by direct discharge into existing natural barrancos (ravines).

10. Power and public lighting may be readily provided for each site.

Northeast Sector

11. Sites have been selected for Stage I (1976-1977) of the program in the northeast area--San Rafael La Laguna. The land identified for the first 2,400 units is immediately adjacent to the existing BANVI sites and services projects and will be integrated into infrastructure and community facilities already in place. Stage II (1977-1978) would be an extension of 1,000 units to Stage I in addition to an area known as El Limo which has about 26 ha of usable land where another 1,300 units are proposed. This is adjacent to the San Rafael La Laguna project sites.

12. Area: Over 400 ha are available for development in this sector. The lands identified as best suited for Stage I are three plots totalling 51 ha (see Appendix 2 and Map IBRD 12274). An additional 48 ha would be developed in Stage II.

13. Land Use: The San Rafael La Laguna area has substantial development of industrial/commercial as well as residential uses. Numerous industries ranging from bus body manufacturing to food processing are located on the highway north, only a 10 minute walk from the identified sites. In addition to the almost 3,000 BANVI housing units, there are three large (1,000-1,500 families) marginal to low-income settlements in the area.

14. Terrain: The sites identified have gently sloping terrain up to about 8%; all have steeper drainage slopes that will not be usuable for dwelling construction but may be used for cultivation, manufacture, recreation, etc.

15. Access: The sites in Stage I have paved, double carriageway roads directly to each. The Stage II sites have unpaved, but all-weather gravel surfaced roads.

16. Bus service is available to all areas.

17. Employment Linkage: The area has numerous industries and businesses adjacent to the site. It is one of the most important industrial zones of the city. The area is 15 minutes by bus (Q .05 per trip) to the city center.

Bethania Site--NW Sector

18. The site is approximately 4 km northwest of the central area of the city via the Anillo Periferico. Bethania lies in subsector 1-A of the Centro Urbano Integredo (CEURI) development plan northwest of the city. The area's proximity and accessibility to the city center (15 minute walk) by a new peripheral highway and bridge make it particularly well suited to housing for the sector that is dependent on services employment.

19. Area: The overall sector as identified by BANVI contains 342 ha of which approximately 128 ha are usable. An existing low-income project (118 houses developed in 1963 by INCIV)--Colonia Bethania--and a recent BANVI sites and services project planned for about 840 DU on 23 ha are located in the southern portion. The middle portion is owned by the Antialcoholica Center and used for athletic fields. The northern section is the identified subject site, comprised of two large fincas, El Amparo and El Granizo, which total nearly 200 ha. It is estimated that about 35-40%, or 75 ha, would be suitable for economical project development, with the remainder in steep slopes.

20. Land Use: Lower-income housing already occupies the southern portion of the Bethania. Recreation uses (eight soccer fields) are located in the middle part. For purposes of site definition and flexibility in planning, the existing athletic fields might be incorporated into the project area with a redistribution of open space in the area's overall development plan.

21. Land to the north and west of the site across major barrancos, is now in agriculture use although it's use would be changed to medium density residential under the proposed CEURI plan. To the south along the peripheral highway BANVI has reserved sites of about 20 ha for middle-income apartments (760 units). This land has been invaded by families left homeless by the February earthquake. An estimated 1,300 families have installed themselves in make-shift shelters. An additional 600 families have been housed in Red Cross tents on the sports fields north of BANVI's sites and services project. At the present time, almost 2,500 marginal income families are living in this area. The reconstruction committee is studying a plan of action for the area.

22. Terrain: The proposed site area is flanked on the three sides by steep barrancos (ravines) 100-150 meters deep. The usable portion is a ridge of gently rolling land, with a drainage swale passing through in the middle. The land drains primarily to the north. Vegetation in the site is concentrated mostly on the western side where a few farm buildings remain, and in the sharply sloping sides of the barrancos. There is a mature pine grove of about 2-3 ha on the southern edge of the identified site.

23. Access: Bethania has excellent access via the Anillo Periferico. The existing entrance ties into 13 Avenida, an ample boulevard which can be extended and upgraded for access to the proposed project site. Once paved this divided street could adequately serve the existing BANVI project and new development in Fincas Amparo and Graniza. Internally the site would be served by a spine or loop road configuration as suggested in the CEURI plan.

24. Bus service is now available to Bethania and would easily be extended into the subject site.

25. Employment Linkage: Due to its proximity to downtown and employment centers around the Aniullo Periferico, the site would have exceptionally convenient access to jobs, within 20-30 minutes travel time for most workers. Considerable employment would be generated within the community related to commercial, institutional, maintenance functions and small industry.

Southwest Sector

26. Location: The site is located approximately 8 km southwest of the city center, and only 3-4 km from the Unviersity of San Carlos, the airport and the new ring road route. The site area lies in Zones 12, 13 and 22 between three radial highways (Calzada Aguila Batres, Avenida Petapa, and Avenida Las Americas) and along the principal railroad line to the south.

27. Area: The general sector identified by BANVI contains approximately 1,300 ha of which 400 ha is already developed, including 300 ha in lower-income housing, principally the Colonia Ciudad Real to the north along Av. Petapa, and Los Guajitos to the East. Within this sector, 5 site areas have been identified by BANVI including parcels totalling 147 ha for possible acquisition.

28. Land Use: Over half the land in the sector remains vacant or in agricultural use with some grazing in lowlands to the south. Other than the existing colonias of marginal housing, there are two major BANVI projects: Justo Rufino Barrios to the east, containing over 2,000 units for moderate-income families, and Belo Horizonte, a complex of 1,700 2-story apartment type units, now under construction. There is considerable industry along Avenida Petapa south of the University, and Calzada Batres is a major commercial/industrial corridor southwest toward Villa Nueva, a town of 45,000 population about 3-4 km south of the area.

29. Proposed land use for the subject sites is residential recommended for "immediate expansion" in the 1972-2000 General Plan (EDOM).

30. Terrain: The site area defined by BANVI contain fingers of flat land and intervening ravines (barrancos) particularly between the two radial roads. Land to the east between Belo Horizonte and Justo Rufino Barrios is less segmented but has considerable slope (approximately 10-15%). Some vegetation is found in the lowlands to the south and the barrancos that penetrate the site. Good drainage can be assumed through the Villalobos river basin to the south. Petapa avenue fords the meandering river bed without a bridge. During the dry season there is no surface flow. A broad floodplain flanks the river south of the subject site.

31. The topography drops 60-80 meters through the site area. Along the west side there is a steep bluff over the highway with access farther up through Castanas.

32. Access: The site area is well served by the two radial roads to downtown. Paving for Avenida Petapa should be extended at least 2-3 km. Cross routes through the site area are segmented due to major barrancos east of Justo Rufino Barrios and between Avda. Petapa and Route CA-9 on the west. Access from Petapa avenue to the western parcels will be difficult and costly due to the deep ravines, but lands adjacent to Belo Horizonte are easily accessible.

33. Bus transportation is existent in the area serving Ciudad Real and Justo Rufino Barrios and may be upgraded as required.

34. Employment Linkage: Route CA-9 has been a major commercial corridor with numerous industries. Petapa avenue is also becoming an industrial corridor. New manufacturing plants, chemical and textile firms are locating on spacious sites, some served by rail. Also building materials firms have located near the Belo Horizonte site. The university campus with 26,000 students enrolled, would provide employment opportunities for many area residents.

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

Detailed Costs and Relevant Information for Sites and Services Component

Land Costs

1. Land values in the areas identified for the development of the sites and services projects in metropolitan Guatemala City range from Q 0.50 to Q 2.00 per m^2. Average costs for all lands investigated was Q 1.17 per m^2 gross. Net usable land costs are estimated at Q 1.90 per m^2, with the assumption that 60% of usable land will be for residential plots. Land for the average 81 m^2 plot plus 40% of public land charged to each (130 m^2 total per plot) will cost about Q 250.

Serviced Lot and Core Options

2. A range of unit options will be available to the project beneficiaries. Three service level options are provided: I, the plot with water and sanitary drainage hook-ups; II, the plot with a sanitary core containing a toilet/shower compartment, a traditional laundry/kitchen sink (pila), enclosed and roofed--5.6 m^2 of construction--with water and electric meters and installations; III, the plot with a basic core dwelling consisting of a partially enclosed multi-purpose area--26.8 m^2--that is to be completed--i.e., addition of doors, windows, finishes, etc.,--or expanded by self-help (see Chart WB 16128).

3. The proposed service level mix is: I--10%; II--40%.

4. Each service level option is provided with construction materials/component loans that will enable the owner to build the basic dwelling or expand the service level option. Estimated finished construction costs for additional rooms is Q 40-per m^2 inclusive of labor. A 9 m^2 bedroom extention would cost less than Q 400.

5. Contractor built cores will be of machine-made hollow brick walls with structural steel reinforcing, asbestos-cement, self-supporting roofing; soil-cement and tile flooring; reinforced concrete foundations; and concrete laundry fixtures.

6. Each project layout will also have lot size options (see Chart WB 16127). These are as follows:

Approximate Cost of Land Per Lot	Frontage	Depth	Area	Approx. %	Location/Use
Q 185	5.40 m	14.00 m	75.6 m^2	(18)	Residential
Q 200	5.40 m	15.00 m	81.0 m^2	(70)	residential
Q 230	6.30 m	15.00 m	94.0 m^2	(10)	commercial/ residential or extended households
Q 320	8.70 m	15.00 m	130.0 m^2	(2)	commercial/ residential in prime location

The larger lot options are to better accommodate extended households--over ten persons in some cases--and small commerce/trades--convenience groceries, sewing/tailoring, repair services, etc.,--that require larger, more flexible and better located sites.

Seismic Construction

7. All suprastructure contractor-built will be designed and constructed to earthquake resistant standards. Construction under the self-help/construction materials program will be under the recommendations of the technical assistance team advice and demonstrations (through actual building of models) of sound construction practices, using appropriate materials, which will be a major part of the materials credit program.

8. The Project Unit will generate and distribute recommendations for appropriate self-help constructin practices for the project participants.

Construction Materials Credit Program

9. Credits of an average of Q 400 will be available to each plot owner. Construction materials and components will be made available to the participant 1-2 months prior to lot occupancy so as to permit accelerated construction or completion of the dwelling. Most self-help construction will be week-end work; the distribution of materials will be arranged for and stored on each project site.

10. A staff of technical advisors/supervisors (experienced construction foremen) program would be selected--possibly from project applicants--to provide on-site assistance to the individual owner-builders.

11. Temporary warehouses and compounds would be constructed to house the materials on site. The program would be available for an eight-month period.

Infrastructure and Urbanization Designs

12. Specific consideratin has been given to infrastructure and urbanization designs that will assure efficient use of land, reduce infrastructure costs and provide maximum flexibility for progressive development.

13. A prototypical layout (Chart WB 16127 and Map IBRD 12275) incorporating the proposed service level mix, lot size options, infrastructure networks, land uses and densities has been used as a basis for project design and cost estimates. Efficiencies in this layout are reflected in high (68%) residential lot areas, open space (13%) and reduced circulation areas (19%) and network lengths. A density of 81 plots/ha (480 persons/ha) is achieved.

14. Vehicular streets and limited parking areas are provided central to the project areas, and separate from the primarily pedestrian interior circulation. Footpaths will be surfaced, local storm drainage by surface cannals. The sanitary sewerage network will be water-borne. Fire hydrants will be provided.

Detailed Costs

15. Based on the prototypical layouts for San Rafael La Laguna "V" (see Map IBRD 12275 and Chart WB 16128) and core units, average unit costs are detailed in estimate tables 1, 2 and 3, and as follows:

	LEVEL I	LEVEL II	LEVEL III
Land	187.15	187.15	187.15
Urbanization	395.00	395.00	395.00
Plot infrastructure connections and core construction	115.00	594.38	1,248.80
Materials credit	400.00	400.00	400.00
Installation charges, meters, etc.	255.00	255.00	255.00
TOTAL	1,352.15	1,831.53	2,485.95

16. These costs include physical contingencies, design and supervision costs, administration, surcharges for water and power installation, etc., and represent costs to the project beneficiaries.

17. Off-site infrastructure costs are estimated to be an average of Q 178 per plot inclusive of physical contingencies, administration, design/ supervision.

18. The total development cost of the sites and services component (inclusive of contingencies as shown in para 5.06) is Q 25.9 million. This represents 61% of the total project cost. Q 1.395 million development cost for power will be provided by EEGSA.

19. Project beneficiaries would incur installation charges of:

(a) surcharge for water service (1/3 paja de aqua = 20 m^2 per month) = Q 180;

(b) water meter, installation and inspection = Q 55;

(c) electric meter, installation and inspection = Q 15;

(d) legal titling and notarial fee for property deed = Q 5; and

(e) total per lot = 255.

20. This represents about Q 2.55 million in additional beneficiaries' costs.

Facilities and Services

21. Refuse collection, multipurpose community centers (each with small outpatient health clinic), and schools will be provided to each project site. Fourteen primary schools will be built on the project sites as part of the education loan component.

22. Costs for these facilities (exclusive of school buildings) is estimated to be Q 50 per unit.

Project Implementation

23. Implementation of the sites and services component will be in three stages over a three and a half year period 1976-1979 (Chart WB 16093).

24. Stage I--2,400 units--is programmed for the San Rafael La Laguna area. Existing infrastructure and development in the area will facilitate the accelerated execution of these project sites (see Map IBRD 12274 and Chart WB 16093).

APPENDIX 2

Table 1

OFERTA PARA: PROYECTO SAN RAFAEL LA LAGUNA "V" -- APRIL 1976

OFERENTE _____

"AREAS Y VOLUMENES"

EDIFICIO: UNIDAD BASICA - ALTERNATIVA 2 -- 26.8 m2

RENGLON NUMERO	DESCRIPCION Y PRECIO UNITARIO EN QUETZALES ESCRITO EN LETRAS	PRECIO EN QUETZALES	
		UNITARIO	TOTAL POR RENGLON
1	CIMIENTOS	4.429/ML	78.61
2	MUROS	8.279/M^2	289.35
3	DRENAJES	9.086/ML	63.60
4	AGUA	5.143/ML	36.00
5	PISO	4.100/M^2	89.36
6	PUERTAS	38.00/u	76.00
7	ARTEFACTOS	12.00/u	48.00
8	ELECTRICIDAD	16.35/u	65.00
9	ACERA	4.00/M^2	11.88
10	TECHO	6.299/M^2	173.47
11	VENTANERIA	23.00/M^2	55.20
	COSTO DIRECTO		986.47
	COSTO TOTAL (1.36 C.D.)		1341.60

NOTA:

- El costo directo incluye: Materiales, Mano de obra, Prestaciones laborales. (Precios actuales).
- 1.36 incluye: Gastos generales, imprevistos - utilidad, Fianzas, etc.

VAN _____ Q.

APPENDIX 2

Table 2

OFERTA PARA: _____

OFERENTE _____

"AREAS Y VOLUMENES"

EDIFICIO: URBANIZACION -- SAN RAFAEL LA LAGUNA "V" -- 2795 Lots

RENGLON NUMERO	DESCRIPCION Y PRECIO UNITARIO EN QUETZALES ESCRITO EN LETRAS	PRECIO EN QUETZALES	
		UNITARIO	TOTAL POR RENGLON
1.-	CALLE PRINCIPAL (12.00 Mts) 3000.00 ML.	103.15/ML	309,450.00
2.-	ESTACIONAMIENTOS 900.00 ML X 5.40	5.50/M^2	26,730.00
3.-	CALLES DE PENETRACION 720.00 X 3.00 M.	48.85/ML	35.172.00
4.-	CALLES PEATONALES 13,000.00X 1.50M.	33.87/ML	440,293.00
	COSTO DIRECTO		811,645.00
	COSTO TOTAL (1.36 C.D)		1,103,837.20

NOTA:

- Costo directo por V-^{2} de lote urbanizado = Q.2.80/ Vr^2. (1.99 m^2)
- El costo directo incluye: Materiales, Mano de obra, Prestaciones laborales. (Precios actuales).
- 1.36 incluye: Gastos generales, imprevistos Utilidad, Fianzas, etc.-

(Q395--Per Lot.)

VAN _____ Q.

APPENDIX 2
Table 3

OFERTA PARA: PROYECTO SAN RAFAEL LA LAGUNA "V" -- APRIL 1976

OFERENTE _____

"AREAS Y VOLUMENES"

EDIFICIO: UNIDAD SANITARIA -- 5.6 m^2

RENGLON NUMERO	DESCRIPCION Y PRECIO UNITARIO EN QUETZALES ESCRITO EN LETRAS	PRECIO EN QUETZALES	
		UNITARIO	TOTAL POR RENGLON
1	CIMIENTOS	4.429/ML	30.78
2	MUROS	8.279/M^2	109.06
3	COLUMNA	3.547/ML	9.15
4	VIGA	4.388/ML	7.90
5	DRENAJES	9.086/ML	63.60
6	AGUA	5.143/ML	36.00
7	PISO	4.100/M^2	25.83
8	~~[illegible]~~	~~30.00/u~~	~~30.00~~
9	ARTEFACTOS	12.00/u	48.00
10	ELECTRICIDAD	25.50/u	51.00
11	TECHO	6.50/M^2	60.06
12	VENTANERIA	23.00/M^2	20.70
			462.08 ~~492.03~~
	COSTO DIRECTO		
	COSTO TOTAL (1.36 C.D.)		669.23

NOTA:

- El costo directo incluye: Materiales, Mano de obra, Prestaciones laborales. (Precios actuales).
- 1.36 incluye: Gastos generales, imprevistos, Utilidad, Fianzas, etc.-

VAN _____ Q.

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

Supervised Credit Program

1. The analysis of ten urban centers outside of Guatemala City-department (provincial) capitals-for the proposed credit program presents considerable diversity among small cities in the affected area-from the mountain areas of the central and western regions to the low-lying eastern region. Although all are largely dependent on an agricultural base, industry and tourism are significant in some of the cities. Some are easily accessible by major roads and rail lines while others lie in remote mountain valleys. Indigenas populations are most common in the cool highlands while ladinos (mixed Spanish/Indians) predominate in the warmer lowland areas.

Regional Groupings

2. For purposes of BANVI's diagnostic survey, three area groupings have been proposed: (i) Solola, Quiche and Totonicapan; (ii) Antigua, Chimaltenango and Salama; and (iii) El Progreso, Jalapa, Zacapa and Puerto Barrios. This analysis is based on "Regionalization" by the Secretaria de Planificacion Economica.

Earthquake Damage

3. Estimates of the damage were made by national and local officials. 1/ Preliminary count on housing lost was based on estimated percentages of dwellings destroyed multiplied by the number of dwellings (from census figures in 1975). The range in percentage of destruction in dramatic, with housing in Chimaltenango and El Progreso listed as 100% destroyed. Salama was reported at 75% while the three western cities were 45%-50% destroyed, as were Jalapa and Zacapa in the east. From the standpoint of serious housing need, Chimaltenango, Jalapa and Zacapa standout with 1,300-2,600 units destroyed. Most of the other cities lost 600-900 units (see Table 1).

4. The total number of units destroyed in all ten cities is reported at about 11,000. With an average loan range in size from Q 500 to Q 800 the loan assistance would cover 8,000 families or 73% of the units destroyed.

1/ Government of Guatemala. Evaluacion de los Danos Causados por el Terremoto, su Impacto y Lineamientos para un Programa Inmediato de Reconstruccion. (Evaluation of the damage caused by the earthquake, its impact on economic and social development, and guidelines for an immediate reconstruction program), March 1976.

City Size and Demographic Characteristics

5. Among the ten urban centers under study there is broad range in size-from 4,000 up to 28,000. Solola, Salama El Progreso are the smallest. Quiche and Totonicapan have populations of about 8,000; Chimaltenango, Jalapa and Zacapa have 13-14,000; Antigua and Puerto Barrios are the largest with 18,000 and 28,000 respectively (Table 2).

6. Growth rates vary from less than 1% in Solola to over 10% in Puerto Barrios. Most are between 2% and 5%. As for demographic mix, there is considerable variation and credit programs should be tailored to the particular needs and preferences of the indigenas or ladinos in each area. In the Western region indigenas make up a large part of the urban population and 90-100% in the rural areas of each municipio. Thus Chimaltenango and Antigua have little in common, although located in the same general area. The former is predominantly indigenas (60-80%) and the latter is 95% ladino (65% in rural area). Salama is predominantly ladino, urban and rural (80-65%).

7. The four cities identified by BANVI in the eastern region (Area 3) are almost entirely ladino (90-100%). This assessment is from data published about 1960 in the Diccionario Georgrafico de Guatemala based on the 1950 census. It can be updated but the general mix should hold, depending on migration patterns. Such a study has been done recently by the Instituto de Investigaciones Economicas y Sociales of the University of San Carlos.

Economic Base

8. Agricultural and industrial base is described generally for each city. There is little published data available for most of the cities, although income distribution can be obtained from the 1973 census. (Direccion General de Estadisticas). Growth in Gross Product is given for the period 1965-72 for each departamento as well as Product per capita. The lowest is El Progreso, while Sacatepequez and Isabal rank highest. This may be an indicator of the general level of prosperity, but "capacity to pay" in the urban centers would be better than in their respective departamentos.

9. A brief description of the ten urban centers follows:

SOLOLA

Centro Urbano: 1975 Population -- 4,002

Municipio: 1973 Population -- 42,360

Area of Municipio: 94 km^2 (approximately 1.5 km^2 urban). Includes 11 aldeas; largest is San Jorge La Laguna.

Location: Solola is located in the "Region Occidente" as defined by the Secretaria de Planificacion Economica, and is closely linked with Santa Cruz del Quiche, Totonicapan and Quetzaltenango (about 80 km to the west). It lies on National Route 1 between the Interamerican Highway and Lago Atitlan (3 km to the south of centro), and is 121 km (75 miles) from Guatemala City.

Description: The town lies at an altitude of 2,100 meters at the edge of a mesa extending to mountains on the north, and bordered on both east and west by deep barrancos, through which flows Rios Panajachel and Iboya.

Population: Growth has been less than 1% per year, the lowest of the ben cabeceras, although the departamento has grown at the rate of 2.3%. The urban population is nearly half ladinos, while in the rural area of the municipio 98% are indigenas. (Predominant indian language is Cakchiquel).

Economy: The municipio depends mostly on agriculture but also typical fabrics are produced and flour is ground. There is some tourist business due to its proximity to Lake Atitlan, a major attraction. The gross product of the departamento has grown 45% (1965-72) and per capita income is about Q 240 per annum. The Federal Agency for Community Development is quite active in Solola.

Earthquake Damage: According to the Government evaluation report (March 1976)' 50% of the total housing stock were destroyed.

SANTA CRUZ DEL QUICHE
(Depto. Quiche)

Centro Urbano: 1975 Population -- 8,059

Municipio: 1973 Population -- 34,471

Area of Municipio: 128 km^2 (approximately 1.5 km^2 urban). Includes 5 aldeas; and 37 caserios (all rural).

Location: Santa Cruz del Quiche is located in the "Region Occidente" defined by Planificacion and is closely linked to Totonicapan and Solcla which are within 35 to 45 km by road. It is 157 km (97 miles) from Guatemala City. Principal access is by National Route 15, but State routes 1, 2, 4 and 5 also converge on the city. It is only 18 km from Chichicastenango, a major tourist attraction.

Description: The city lies at an altitude of 2,000 meters in a beautiful valley with a cool healthy climate and abundant water. Nearby there are some mineral springs, supposedly with medicinal properties. Rio Cucuba passes through a barranco just east of the city. All flat land is in agricultural use with trees only in the ravines and on hilltops.

Population: the city (centro) has grown about 3.5% per year since 1950 while its departmento has grown at a slightly slower pace of 3%. The urban population is 70% ladinos while the surrounding rural area is over 90% indigenas, with predominant language of Quiche.

Economy: The municipio depends mostly on agriculture and there has been an abundance of bambu. This may serve as a common building material (bajareque). As an important crossroads community, it would also provide considerable commercial and service employment. The Federal Community Development Agency is quite active in Quiche and small industry and handicrafts are probably increasing. Gross product of the Departamento grew 48% (1965-72) but per capita product remains low at Q 220.

Earthquake Damage: The Government survey reported about 45% of the houses were destroyed.

TOTONICAPAN

Centro Urbano: 1975 Population -- 8,788

Municipio: 1973 Population -- 24,390

Area of Municipio: 328 km^2 (approximately 1 km^2 urban). Includes 10 aldeas; and numerous caserios which appear to be semi-urban.

Location: Totonicapan is located in the "Region Occidente" and is closely linked to Solola and Quiche, 55 km and 35 km respectively. It is 165 km (102 miles) from the Capital via Route CA-1, the Interamerican Highway Principal access is from CA-1 via Route 1 eastwards about 10 km. Secondary roads (unpaved) link to Quiche and CA-1 on the east.

Description: The city lies at an altitude of 2,500 m and has a cool climate. It lies in the valley along Rio Chimoral, with rather steep, broken terrain immediately to the south and some flat agricultural land to the northwest. Mountain slopes and ravines are heavily wooded with pine, cypress and oak. Fertile valley land produces wheat, corn, beans and oats.

Population: The city has grown about 1.5% per year since 1950, while its departamento has grown at twice the rate (3%). The urban population is only 25% ladinos, with three quarters indigenas (over 99% in the rural areas). The indian language is Quiche.

Economy: Although agriculture is dominant, there are some industries such as carpentry shops producing wooden tables and chairs, ceramic plants, textile mills and shirt factories, two flour mills and two rum distilleries (as of 1960). Much of the wooded mountain land is owned in common by the indigenas, an unusual case in Guatemala. The Federal Community Development Program is quite active in Totonicapan. The departamento's gross product grew 50% (1965-72) and per capita product is Q 269 per year.

Earthquake Damage: The Government survey reported about 50% of the houses were destroyed.

ANTIGUA
(Depto. Sacatepequez)

Centro Urbano: 1975 Population -- 18,822

Municipio: 1973 Population -- 72,367

Area of Municipio: 78 km^2 (approximately 2.5 km^2 urban). There are 12 aldeas; including sizable towns of San Felipe de Jesus on the north and San Juan del Obispo and San Pedro Las Huertas about 3 km to the south.

Location: Antigua lies in the Central Region and is closely linked with Chimaltenango and the Capital. Principal access roads are Routes 10 and 14, with minor roads extending in all directions. Distance to Guatemala City is only 40 km (25 miles).

Description: Antigua is a historic center founded in 1527 which had prospered and grown to 60,000-70,000 inhabitants by the 17th century when it was the Capital. It is now much smaller but remains a major tourist attraction with over 30 colonial churches and other landmarks. The fertile valley produces primarily coffee where considerable woodland remains. Volcanoes rise to the south and west of the city. Antigua lies at an altitude of 1,500 meters.

Population: The city has grown about 3% per year since 1950, the same rate as Depto. Sacatepequez. Nearly 95% of the urban population are ladinos, as well as 65% in the rural areas.

Economy: The municipio has considerable industry producing wood products, hardware, spinning, textiles, bricks and concrete blocks, ceramics and liquors. Gross product in Sacatepequez increased by about 45% (1965-72) and per capita product is about Q 290 per year. In the city it would be somewhat higher. Tourism is perhaps the most important activity.

Earthquake Damage: According to Government survey about 25% of houses were destroyed.

CHIMALTENANGO

Centro Urbano: 1975 Population -- 13,714

Municipio: 1973 Population -- 74,129

Area of Municipio: 212 km^2 (approximately 1.5 km^2 urban). Includes 2 aldeas and 9 caserios.

Location: Chimaltenango lies in the "Region Central" as defined by Planificacion, and is linked to Antigua (23 km SE) and Sumpango, Sacatepequez, Mexico and Guatemala City, which lies only 50 km (31 miles) to the east. The Interamerican Highway passes through the city providing its principal access. National Route 14 links to Antigua.

Description: The city lies at an altitude of 1,800 meters in an extensive valley with considerable flat land devoted to agriculture. The center drains southward through Quebrada de Rastro to Rio Guacalate. Woodland remains only in the ravine and on surrounding hills.

Population: The city center has grown rapidly at about 4.8% per year since 1950, while its departamento increased at a rate of only 2.6%. The urban population is about 40% ladinos, and the rural area is over 80% indigenas, whose predominant language is cakchiquel.

Economy: Chimaltenango is important as an agricultural center serving its large valley, but also has developed a substantial industrial base, including several textile mills and small shops making typical embroideries. Also building materials production is important, with sawmills, tile and bricks works. The gross product of the departamento grew 36% (1965-72) and per capita product was low at Q 218 per year. It would be higher within the municipio and urban center.

Earthquake Damage: The Government survey reports about 100% of the housing stock were destroyed.

SALAMA
(Depto. Baja Verapaz)

Centro Urbano: 1975 Population -- 5,873

Municipio: 1973 Population -- 18,852

Area of Municipio: 776 km^2 (approximately 1.5 km^2 urban). Divided into 10 barrios with 38 aldeas.

Location: Salama lies in "Region Verapaces" in north central Guatemala. It lies halfway between Coban, Cabecera of Alta Verapaz (65 km north) and El Progreso (64 km southeast). Principal access is from National Route 5, via a newly built road 5-A which shortens the distance to the Capital from 125 km to only 85 km, by way of El Progreso.

Description: Salama lies at an elevation of about 950 meters in a beautiful valley, largely wooded with fields for grazing cattle. The city is built on rough land with slopes of 15%-50%. Nearby forests abound in pine suitable for building, and other woods such as mahogany, cedar and "liquidambar". Several rivers converage in or near the city with drainage to the northwest through Rio Salama.

Population: The city has grown rapidly at about 4.4% per year since 1950. Baja Verapaz is sparsely populated with a population of 107,000 1973. Ladinos make up 80% of the urban population and two-thirds in the rural areas of the municipio. The indigenal language is Kekchi.

Economy: Agriculture in the area is dominated by cattle raising and food processing, particularly milk products. Urban industries include ceramics, textiles and straw hats, made of palm and "hilama". Also production of lime and adobe is important. The gross roduct of Baja Verapaz has increased about 45% (1965-71) and is about Q 238 per capita. Salama is also a tourist attraction, due to its setting, colonial churches and handicrafts.

Earthquake Damage: According to the Government survey some 75% of its total housing stock were destroyed.

EL PROGRESO

Centro Urbano: 1975 Population -- 4,188

Municipio: 1973 Population -- 19,182

Area of Municipio: 262 km^2 (approximately .5 km^2 urban). Includes 12 aldeas of which Casas Viejas and Santa Lucia are most important (1 km east).

Location: El Progreso lies in the "Region Central" defined by Planificacion. It is a part of the same "urban system" as Guatemala City which is 67 km (42 miles) to the west via the principal Ruta al Atlantico CA-9, soon to be upgraded. Salama lies 64 km to the northwest and Jalapa 61 km to the south. The railroad line to Puerto Barrios passes through El Progreso.

Description: The city has a hot climate, being situated at an altitude of only 500 meters in a small valley along Rio Guastatoya. There agricultural land is excellent, and there is considerable thicket or "monte bajo" in the area. The urban center is compact, but expanding mainly along roads to the south and west.

Population: El Progreso has grown at a rate of about 2.8% annually since 1950, while its departamento increased at 2.3%. The population of both the urban center and municipio is almost 100% ladinos. Even the departamento has been only about 10% indigena.

Economy: Despite its semi-arid land, the area has a rich agricultural base, producing fruit and yucca, etc. There is little industry, accounting for rather low per capita income in the urban area. The gross product of the departamento has grown only 20% during the 1965-72 period, which is the lowest of the 10 cities under study. Per capita product was only Q 210 in 1973.

Earthquake Damage: The Government survey reports that almost 100% of the housing stock were destroyed.

JALAPA

Centro Urbano: 1975 Population -- 14,701

Municipio: 1973 Population -- 32,628

Area of Municipio: 544 km^2 (approximately 2.5 km^2 urban). Includes 33 aldeas with 98 caserios, which are mostly rural.

Location: Jalapa lies in "Region Oriente Sur" as defined by Planificacion and is linked with Jutiapa some 57 km to the south. Principal access is via Route 19 an all weather road although unpaved, from the Atlantic Highway to the north between El Progreso (61 km) and Guatemala City, which is 97 km (42 miles).

Description: The city is located in an extensive mountain valley at an altitude of 1,630 mts., surrounded by low picturesque hills and scattered vegetation. Agriculture is abundant with coffee, quality tobacco, sugar cane, grain, fruit and honey as the chief products. Cattle raising is also very important. The city lies along Rio Jalapa which flows north through the valley.

Population: Jalapa has grown rapidly at about 4.7% per year since 1950. The urban population has been about 90% ladinos, and nearly all the inhabitants are property owners. In the rural areas of the department over half the people are indigenas (55% in 1950).

Economy: Jalapa has a rich agricultural base with 39% growth in the departamento's gross product between 1965 and 1972. Per capita product remains low, at about Q 209 in 1973. The grain farmers are organized in a cooperative there, and cattle raising is quit significant along with coffee, fruit, etc. There is little industrial activity.

Earthquake Damage: According to Government survey reports about 50% of the housing stock were destroyed.

ZACAPA

Centro Urbano: 1975 Population --

Municipio: 1973 Population -- 30,402

Area of Municipio: 517 km^2 (approximately 3 km^2 urban). There are 35 aldeas including sizable towns of La Fragua (1 km) and Llano de Piedras (4 km) to the west; Santa Rosalia (4 km), Santa Lucia and Tumuzna (6-8 km) to the south.

Location: Zacapa lies in "Northeast Region" defined by Planificacion and is linked to Chiquimula only 24 km south, and to Puerto Barrios, some 171 km NE. It is 141 km (87 miles) from Guatemala City. Principal access is from CA-10 which intersects the Atlantic Highway (CA-9) about 15 km to the north. National Route 20 also passes through Zacapa. The city lies at the junction of two railroad lines connecting Guatemala City with Puerto Barrios on the NE and Salvador on the south. With excellent road and rail access it would appear to be important as a transportation center.

Description: The city lies at an elevation of 185 mts., in an extensive valley used primarily for cattle. Other crops are grown in the area such as corn, beans, yucca, bananas, coffee, pineapple and sugar cane but the land is not so fertile and lacks irrigation. Milk products and tobacco are also important. The city lies just east of the Rio Grande de Zacapa, and there is considerable flat, open land for expansion.

Population: Zacapa has grown at a moderate rate of 2.3% annually since 1950, about the same as its departamento. The urban population has been about 95% ladinos.

Economy: The city itself depends largely on commerce and services for its large agricultural hinterland. Principal industries include textiles, straw hats, and food processing including "puros", cheese, rum and "panuela". There is considerable mining potential in the departamento with deposits of silver, copper, iron, gold, lead and quality marble and limestone. Chrome ore was previously exported as well as marble. Gross product increased modestly at 36% (1965-72) but per capita product was relatively high at Q 275 in 1973.

Earthquake Damage: The Government survey reports that about 50% of the housing stock were destroyed.

PUERTO BARRIOS
(Depto. Isabal)

Centro Urbano: 1975 Population -- 28,248

Municipio: 1973 Population -- 31,316

Area of Municipio: 1,292 km^2 (approximately 3.5 km^2 urban). Including 4 aldeas, the most important being the port of Matias de Galvez (Santo Tomas) located about 10 km to the southwest.

Location: Puerto Barrios lies on the Bay of Amatique and is Guatemala's only Atlantic port. The Atlantic Highway CA-9 and railroad terminate there. It is about 300 km (185 miles) from Guatemala City.

Description: The city is at sea level and has a hot, humid climate. Its hinterland is agricultural, producing bananas for export, corn, beans, rice and yucca, as well as "abaca" fiber.

Population: Puerto Barrios has experienced rapid growth since 1950, at the rate of over 10% per year--by far the highest of the cabeceras under study. Depto. Isabal has also rapidly grown, at about 9% a year. Nearly all the urban population are ladinos (over 95%) as well as in the rural area of the municipio.

Economy: Puerto Barrios is a major port city, but services a large agricultural base. New port facilities have been developed in Santo Tomas to provide for increasing trade, with large warehouses and container loading facilities. The departamento has some mineral wealth, and oil exploration was undertaken in the 1960's but without much success. Timber is also exported and a plywood mill began functioning before 1960. Economic growth in the Departamento has increased by 65% (1965-72) due to both agricultural and port activity. Per capita product is relatively high at Q 286 (in 1973).

Earthquake Damage: According to Government survey destruction was relatively light in Puerto Barrios, with about 15% of the housing stock destroyed.

APPENDIX 3
Table 1

SUMMARY OF DATA ON LOCATION, POPULATION AND EARTHQUAKE DAMAGE

Cabecera (Urban Center)	Distance from Guatemala City	Persons Per DU	(*) Estimated 1975 Population	Total Units		
				Number	% Destroyed	Destroyed
Solola	121 km 75 mi	5.2	4,022	775	50	385
Quiche (Santa Cruz de)	157 km 97 mi	5.2	8,059	1,550	45	700
Totonicapan	165 km 102 mi	5.2	8,788	1,690	50	845
Antigua	40 km 25 mi	5.3	18,822	3,550	25	890
Chimaltenango	50 km	5.1	13,714	2,690	100	2,690
Salama	85 km 53 mi	4.8	5,873	1,225	75	920
El Progreso	67 km 42 mi	4.5	4,188	930	100	930
Jalapa	97 km 60 mi	4.9	14,701	3,000	50	1,500
Zacapa	141 km 87 mi	4.9	13,159	2,685	50	1,345
Puerto Barrios	298 km 185 mi	5.4	28,248	5,230	15	785
				23,325		10,990

Note: Puerto Barrios population includes Matias de Galvez

(*) Source: "Population Projections for Urban Centers of 2,000 or more inhabitants 1975-2000," from Informe Final Sobre Estudio de Regionalizacion y Desarroll Metropolitano, Universidad San Carlos (Nov., 1975).

POPULATION AND ECONOMIC GROWTH BY CITY AND DEPARTAMENTO

City/Departamento	City (*) Pop. 1973	Growth Rate 1950-1973	Departamento (**) Pop. 1973	Departamento (**) Gross Prod. Q	1965-72 Prod. Growth	Per Capita Prod. 1973
Solola	3,960	.85%	127,268	30,385,900	45%	239
Quiche	7,651	3.55%	298,686	65,820,300	48%	220
Totonicapan	8,568	1.47%	166,809	44,911,900	50%	269
Antigua (Sacatepequez)	17,994	2.93%	99,988	29,043,500	43%	290
Chimaltenango	12,860	2.76%	194,735	42,489,200	36%	218
Salama (Baja Verapaz)	5,529	4.36%	106,957	25,442,300	45%	238
El Progreso	4,009	2.83%	73,122	15,410,100	29%	210
Jalapa	13,788	4.74%	118,074	24,692,000	39%	209
Zacapa	12,680	2.31%	105,739	29,109,500	36%	275
Puerto Barrios (Isabel)	26,930	3.18%	169,818	48,596,900	65%	286
Guatemala	700,504	3.57%	1,208,174	983,908,400	49%	814
Quetzaltenango	53,021	3.97%	312,787	97,375,400	31%	311
Escuintla	33,205	10.46%	277,031	112,009,400	59%	404

(*) Source: From census data for "Centros Urbanos" (includes only urban population of Municipio).

(**) Source: Producto Geografico Bruto Por Regiones 1965-72 from "Informe Final Sobre Estudio de Regionalizacion y Desarrollo Metropolitano," Universidad San Carlos (Nov., 1975).

APPENDIX 3
Table 2

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

Consultants' Terms of Reference for Operational and Management Assistance to Project Unit in BANVI

1. Consultants' services would be needed over a three-year period to assist BANVI in the implementation of the project. The primary responsibility of the consultants is to advise and assist the Project Unit for reconstruction and BANVI in the execution of key elements of the Project. The consultants would report to the Vice President for Reconstruction through the Project Unit Coordinator/Administrator.

2. Advisory assistance totalling about 108 man-months commencing in September/October 1976 would be needed in the fields of engineering, architecture, urban planning, business development and community organization and training. BANVI would be responsible for reviewing qualifications, experience and employment of the above consultants on terms and conditions satisfactory to the Bank.

3. More detailed terms of reference will be prepared by BANVI, but would include the following:

(a) Senior Engineer--would be responsible for the coordination of the other advisors and advise the Vice President for Reconstruction and Project Unit Coordinator/Administrator on technical and engineering aspects of the project. He will be responsible for setting up adequate procedures for monitoring progress of implementation including physical works, costs, selection of settlers, inspection of supervised credits in the 10 urban centers, promotion of small business development subprojects, etc.;

(b) Urban Planner--would be responsible for the review and analysis of BANVI's housing program and the requirements of low-income families especially those severely affected and displaced by the earthquake. He will advise the Project Unit on site selection for future projects and analyze alternatives in terms of costs, preferred settlement patterns, employment effects and overall impact on the proposed plans and programs for squatter families who have "invaded" publicly owned lands;

(c) Architect/Planner--would advise and oversee the design and detailed engineering prepared by the design consultants. He will coordinate and supervise the preparation of tender documentation, contractual arrangements, cost estimates and bidding evaluation. The advisor would assist in the identification of project sites, and liaison with municipal agencies with respect to off-site infrastructure and services. In addition, he would assist the Project Unit in the identification and preparation of design standards, construction with particular emphasis on earthquake resistant techniques. In coordination with the Urban Planner and BANVI staff he would define and organize the construction materials credit program and community development efforts; and

(d) Business Development Specialist--would be responsible for the promotion and development of small businesses in the project sites, supervise the utilization of materials loans for project beneficiaries and assist BANVI staff in the overall appraisal of proposed subloans to building materials manufacturers. Specific duties would also include the preparation and execution of a training program to upgrade skills in BANVI and provide technical assistance to community organization groups in project sites involved in self-help and mutual-aid assistance programs. He will also monitor subloans to building materials manufacturers and prepare quarterly reports which would include: subproject commitments disbursements, components financed (e.g., machinery, equipment, materials for expansion, modernizatin or new enterprises), economic impact of subprojects on employment creation and general performance and financial operations of the enterprise.

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

Banco Nacional de la Vivienda (BANVI)

Background

1. In 1956, the Instituto Cooperative Interamericano de la Vivienda (ICIV) was organized. Its purpose was to develop social interest housing programs under the system known as "Self-Help and Mutual Assistance", consisting in the participation of the beneficiaries in the construction of their housing units. ICIV financed 6,852 housing units with these funds, having an average value of approximately US$1,000.

2. Subsequently, the Instituto Nacional de la Vivienda (INVI) was organized by virtue of Decree No. 345 dated May 13, 1965, for the purpose of planning and implementing Government housing programs, having taken over ICIV's assets and liabilities.

3. INVI received new funds from two loans from Inter-American Development Bank (IDB):

Loan IDB 39-T/F	US$5,300,000
Loan IDB 219-SF/GU	US$4,600,000

When BANVI was organized, the second loan had not been fully utilized, there being a balance of approximately US$815,000.

4. The Guatemalan Congress approved BANVI's Organic Law by means of Decree No. 2-73, dated January 24, 1973, and ratified by the Executive Power on February 21, 1973.

5. Article 65 of the mentioned Decree stipulated that BANVI would take over INVI's rights and obligations, assuming the latter's assets and liabilities and Article 70 decreed that BANVI "should initiate its operations on July 1, 1973."

6. In the period included between approval of the Law (February 1973) and initiation of operations (July 1, 1973), the necessary Regulations and Manuals were prepared, enabling BANVI to undertake the duties stipulated by Law. This work was under the direction of Lic. Oscar Mauricio Gonzalez, who was appointed BANVI's first President.

7. Article 2 of the Organic Law indicates that the purpose of BANVI is to undertake Urban Development and Housing Construction Programs to satisfy the necessities of lower-income groups. BANVI has been granted the broadest faculties by its Organic Law; i.e., Article 5 indicates that BANVI should, among other things:

- assist in the solution of the country's housing deficit
- create the necessary mechanisms and incentives permitted by the banking and financial law, to stimulate and attract savings, particularly intended for housing construction
- promote and carry out its own urban renewal programs
- carry out construction works directly or through contractors to supply adequate housing facilities as well as carry out those works which will supply the main public services

It is likewsie provided in Article 45 that BANVI may carry out commercial banking and mortgage operations, directly related to its main objective as indicated in Article 2 of its Organic Law.

Organization

8. In accordance with its Organic Law, BANVI's highest authorities are:

(a) The Board of Directors

(b) The President

(c) The Credit and Trust Committee

9. The Board of Directors is made up of the following:

(i) President -- Minister of Economy

(ii) Directors

a. Minister of Finance

b. President of the Instituto de Hipotecas Aseguradas (FHA)

c. A representative of the Guatemalan Chamber of Construction

d. BANVI's President

(iii) Alternative Directors

a. Vice-Minister of Economy

b. Vice-Minister of Finance

c. Manager of FHA

d. Representative of the Guatemalan Construction Chamber

e. One of BANVI's Vice Presidents, appointed by the President

10. The President is assisted by three Vice Presidents. The President is appointed by the President of the country, who is the only one who can remove him. The Vice Presidents are appointed by the Board of Directors, following the President's recommendation. The important role of BANVI's President should be emphasized as the majority of the actions of the Board of Directors are taken following the President's proposal.

11. A Credit and Trust Committee is composed of:

(i) The President

(ii) Banking Vice President

(iii) Executive Vice President; and

(iv) Chief of Credit Analysis

12. The Chief of Credit Analysis acts as advisor to the Committee.

Management

13. The Board of Directors meets at least once a week and the Vice Presidents meet regularly with the President for the purpose of coordinating resolutions to be taken by the Board.

14. The Executive Vice President is responsible for BANVI's basic administrative functions including budgeting, personnel, accounting, legal, general maintenance of furniture and equipment and real properties of BANVI, supplies, janitorial and security services, etc. Under the Executive Vice Presidency a special program has been created known as Community and Home Extension Educators, for the purpose of making beneficiaries of the housing projects financed by BANVI aware of the importance of making their payments on time and in order to help strengthen the family income through employment of wives in artisan-type work.

15. The following Departments are under this Vice President:

(a) Systems and Procedures

(b) Operations Administration

(c) Technical Administration

(d) Legal

16. The Banking Vice President is responsible for BANVI's banking operations, granting of loans, collections, foreign operations, agencies, savings accounts, checking accounts, etc.

17. The Banking Operations Department is under this Vice President's supervision and has the following sections:

(a) Portfolio

(b) Collections

(c) Analysis

(d) Foreign Operations

(e) Bonds and Securities

(f) Treasury

18. There are two additional employees under this Vice President, known as Business Executives. It is planned to increase their number to six, their functions being to assist credit applicants informing them about BANVI's services, and to follow up credit applications once they have been received. It is also the duty of these Executives to attract more clients, especially those opening checking accounts.

19. The Production Vice President is responsible for planning and carrying out BANVI's housing programs, either directly or contracting with private companies. The following Departments are under this Vice President's supervision:

(a) Planning

(b) Supervision and Control

20. There is also a unit charged with promoting and counseling Housing Cooperatives. To date it reports directly to the Production Vice President although in the organizational chart its level is lower than that of a subsection.

Personnel

21. The most important positions in BANVI are held by persons who previously held positions in INVI and who are experienced in the preparation, implementation and supervision of housing programs, i.e., the President, Production Vice President and Executive Vice President. The Banking Section is headed by an official who previously held a position in the Banco de Guatemala.

22. Presently BANVI has the following qualified personnel:

Business Administrators	1
Economists	7
Public Accountants and Auditors	4
Attorneys and Notaries	6
Architects	5
Civil Engineers	7
Industrial Engineers	1
TOTAL	31
Community and Home Extension Educators	21

Operational Policies

23. BANVI's present policy is described in the information contained in the report for fiscal year 1975 presented to the Board of Directors by BANVI's President. This report shows that loans granted by the commercial sector (Banking Vice Presidency) amounted to Q 3.3 million and collections were in the amount of Q 654,000. The development sector (under the Production Vice Presidency and is primarily responsible for sites and services project) constructed housing equivalent to Q 2.3 million and its collections from clients was Q 3.3 million. The Development Sector has been unable to construct and sell housing units at the same rate it is making collections.

24. The cost of housing units financed by the commercial sector averages about Q 9,000.

25. In connection with the Development Sector, programs are presently carried out by consultants and supervised by technical personnel from the Supervision and Control Department. Each project has its own construction supervisor, whose obligation is to visit the construction site daily and make the corresponding observations, entering them in a "construction book" kept by the contractor. This book is reviewed by BANVI's supervisors.

26. The cost of this supervision is estimated to be 2% of the cost of construction and is deducted from each payment made to the contractor.

27. Payments to contractors are made through presentation of a breakdown which should carry the approval of the Inspector and BANVI's Supervisor.

28. The cost of each housing unit delivered by the Development Sector in 1975 was approximately Q 3,000.

Housing Policy

29. The policy for adjudication of housing and loans to individuals or firms was adopted by the the Board of Directors on October 23, 1975.

A. Housing for Low-Income

BANVI's Programs contracted with Private Parties

30. Housing units are available for low-income families with 10% downpayment and payable in 20 years in equal monthly payments including an 8% interest p.a. In addition, there is a 0.9% payment (fondo de prevision) which is equivalent to mortgage insurance (in case of the beneficiary's death, the debt is cancelled).

B. Housing for Middle-or High-Income

Construction Loans to Individuals

31. Loans for up to 80% of the total cost of the project, including land, are granted by the commercial sector of BANVI, the minimum being Q 800, and the maximum Q 20,000.

Interest: 11% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Loans to Individuals for Purchase of Lot and Construction

32. Amount: Up to 90% of total value.

Land Cost: According to appraisal carried out by BANVI.

Interest: 11% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Loans to Individuals for Lien Substitution

33. These loans are granted to persons who have received mortgage loans from individuals and are paying a high interest rate. When the loans have been granted by other banks BANVI does not interfere.

Amount: Up to 80% of appraisal made by BANVI.

Term: Up to 15 years.

Interest: 11% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Purchase of Home

34. Amount: Up to 80% of appraisal carried out by BANVI.

Term: Up to 15 years.

Interest: 11% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Expansion and Improvements

35. Amount: Up to 80%.

Term: Up to 15 years.

Interest: 11% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Loans to Companies Engaged in the Manufacture and Sale of Construction and Related Materials

36. Purpose: Working capital.

Amount: Up to 100% of value of goods offered in guarantee.

Term: 1-5 years.

Interest: 9.75% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Loans to Cooperatives

37. Amount: Up to 90% of total project investment.

Term: 20 years.

Interest: 9%

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Loans to Construction Companies

38. To finance urbanization works.

Amount: 70% of total cost.

Term: 1-5 years.

Interest: 11% per annum. During construction interest is deducted from each payment.

Supervision Expenses: 2% of the value of the construction, deducted from payments.

No charge is made for credit analysis although fire, earthquake and related insurance is required.

Urbanization and Construction

39. Amount: Up to 80% and in some cases 90% of total project investment.

Term: 1 year, renewable.

BANVI reserves the right to designate beneficiaries. The cost of housing units financed by the commercial sector is Q 5,000 - Q 15,000. The family income required is Q 200-Q 500.

Acquisition of Other Funds

40. BANVI pays a 4% interest on savings accounts carrying a balance of Q 1 to Q 100. Accounts with balances over Q 101 receive an 8% interest.

41. In spite of the fact that the savings accounts balance (of Q 5.5 million) as of December 31, 1975 was 250% over that for 1974, there appears to be no aggressive campaign intended to attract new savings accounts. During 1975 BANVI started a campaign to attract funds from fixed-term deposits (not less than 90 days) and on December 31, 1975 it had received deposits amounting to Q 1,156,000.

42. BANVI also keeps checking accounts. In the future this may prove to be a valuable tool to expedite payments to contractors.

43. The history of checking accounts is as follows:

	As of December 31 (In Quetzales)
1973	395,000
1974	372,000
1975	1,156,000

Future Policy

44. BANVI's President has stated that the institution should carry out its credit operations without dealing directly with beneficiaries, the reason being that since BANVI is a government entity, there is strong pressure against actions taken to deal with delinquent customers, and the beneficiaries themselves adopt a passive attitude concerning their payments.

45. BANVI's future activities would be oriented to extend credits in Guatemala City through Housing Cooperatives which it would promote and advise. The members of these cooperatives could be low-income groups.

46. BANVI would, likewise, encourage organization, both in Guatemala City and in the "cabeceras departamentales", of Housing Savings and Loan Associations wherein private enterprise would participate holding 50% of the shares, the other 50% being held by BANVI. Such associations would service the middle-income groups with their own funds and with funds from savings accounts. While lower-income groups would be serviced with BANVI's funds, with the exception of Guatemala City, where this sector would be organized in Cooperaives.

47. The creation of a savings and loan system, however, would in practice inhibit it from direct participation in the attraction of public savings as BANVI would virtually be competing with the Housing Savings and Loan Associations, where it would be a shareholder and direct supervisor.

48. Due to the fact that BANVI would not compete directly in the attraction of public savings funds, for the purpose of increasing its resources, a "captive market" is under consideration whereby workers who would receive an increase in wages and salaries could deposit this BANVI in the form of compulsory savings. However the feasibility of this proposal and other plans to create other means for raising funds, such as insurance company reserves, indemination funds, compulsory acquisition of bonds, etc., remains to be studied.

49. In accordance with the foregoing, BANVI would adopt the role of fostering institutions specialized in the financing of housing and institutions specialized in the administration and maintenance of housing programs through Savings and Loan Associations and Cooperatives.

GUATEMALA

BANCO NACIONAL DE LA VIVIENDA

BALANCE SHEETS

FOR THE YEARS ENDED DECEMBER 31
(thousand Q.)

	Actual		Forecast						
	1974	1975	1976	1977	1978	1979	1980	1981	1982
ASSETS									
Current Assets									
Cash	597.7	3,247.1	2,080.3	1,772.6	2,960.5	3,688.6	3,174.8	3,241.0	4,600.9
Short-term investments	2,195.3	1,577.9	1,000.0	1,000.0	1,000.0	1,500.0	1,200.0	1,200.0	1,200.0
Interest receivable	157.1	424.2	475.0	500.0	525.0	550.0	550.0	550.0	550.0
Contractor advances	96.1	549.8	659.8	791.8	950.2	650.2	450.2	450.2	450.2
Other current assets	528.8	990.1	1,089.1	1,198.0	1,317.8	1,449.6	1,449.6	1,449.6	1,449.6
Total current assets	3,575.0	6,789.1	5,304.2	5,262.4	6,753.5	7,838.4	6,824.6	6,890.8	8,250.7
Long-term loans	21,786.7	25,977.2	30,165.2	33,055.2	35,305.2	37,525.2	41,514.2	46,262.2	51,787.2
Reconstruction loans				7,359.0	20,680.0	42,105.0	40,786.0	38,928.0	36,209.0
Housing projects in progress	9,477.1	9,757.2	9,490.1	15,255.1	21,258.1	10,940.1	10,440.1	9,440.1	8,440.1
Fixed assets - net	455.5	417.4	404.9	387.4	364.9	313.7	260.0	203.8	145.1
Other assets	30.7	32.3	24.4	16.5	8.6	0.7	-	-	-
TOTAL ASSETS	35,315.0	42,973.2	45,388.8	61,335.6	84,370.3	98,723.1	99,824.9	101,724.9	104,832.1
LIABILITIES									
Current liabilities									
Deposits	2,962.0	8,271.8	9,926.2	11,911.4	14,293.7	17,152.4	19,725.3	22,684.1	26,086.7
Deferred interest income	157.1	424.2	475.0	500.0	525.0	550.0	550.0	550.0	550.0
Other current liabilities	535.9	953.7	1,049.1	1,154.0	1,269.4	1,396.3	1,396.3	1,396.3	1,396.3
Total current liabilities	3,655.0	9,649.7	11,450.3	13,565.4	16,088.1	19,098.7	21,671.6	24,630.4	28,033.0
Long-term debt									
IDB	8,815.8	8,411.7	8,005.4	7,596.8	7,186.0	6,772.9	6,357.5	5,939.7	5,519.6
Bank of Guatemala contribution				13,124.0	32,448.0	42,105.0	40,786.0	38,928.0	36,209.0
Deferred profits	12.5	492.8	473.3	453.8	434.3	414.8	395.3	375.8	356.3
Provisions	1,437.2	2,136.9	2,386.9	2,646.9	2,916.9	3,196.9	3,486.9	3,786.9	4,096.9
Capital									
Paid capital	22,201.7	23,357.7	24,357.7	25,357.7	26,847.7	28,862.7	28,862.7	29,656.1	31,994.4
Retained earnings (deficit)	(807.2)	(1,075.6)	(1,284.8)	(1,409.0)	(1,550.7)	(1,727.9)	(1,735.1)	(1,592.0)	(1,377.1)
	21,394.5	22,282.1	23,072.9	23,948.7	25,297.0	27,134.8	27,127.6	28,064.1	30,617.3
TOTAL LIABILITIES	35,315.0	42,973.2	45.388.8	61.335.6	84,370.3	98,723.1	99,824.9	101,724.9	104,832.1
AVERAGE TOTAL ASSETS (ATA)	-	39,144.1	44,181.0	53.362.2	72,853.0	91,546.7	99,274.0	100,774.9	103,278.5
CURRENT RATIO	1.0	.7	.5	.4	.4	.4	.3	.3	.3
% increase in total assets	-	21.7%	5.6%	35.1%	37.6%	17.0%	1.1%	1.9%	3.1%
Deposits/Debt/Equity	9/27/64	21/22/57	24/20/56	21/37/42	18/50/32	18/53/29	21/50/29	24/47/29	27/42/31

APPENDIX 5
Table 1

GUATEMALA

BANCO NACIONAL DE LA VIVIENDA

Cash Flow Statements for the Years Ended December 31
(Thousand Q.)

	ACTUAL		FORECAST						
	1974	1975	1976	1977	1978	1979	1980	1981	1982
SOURCES									
Net income (loss)	(389.0)	(268.5)	(209.2)	(124.2)	(141.7)	(177.2)	(7.2)	143.1	214.9
Depreciation and amortization	81.2	60.3	70.4	75.4	80.4	84.1	79.4	81.2	83.7
Deferred profit amortization		(19.5)	(19.5)	(19.5)	(19.5)	(19.5)	(19.5)	(19.5)	(19.5)
Internal Cash Generation	(307.8)	(227.7)	(158.3)	(68.3)	(80.8)	(112.6)	52.7	204.8	279.1
Increase in deposits	1,623.6	5,309.8	1,654.4	1,985.2	2,382.3	2,858.7	2,572.9	2.958.8	3.402.6
Increase (decrease) in other current liabilities	(53.3)	417.8	95.4	104.9	115.4	126.9			
Increase in deferred profits		499.8							
Increase in provisions	232.3	699.7	250.0	260.0	270.0	280.0	290.0	300.0	310.0
Paid capital	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0			
Bank of Guatemala contributions				13,124.0	19,636.0	10,331.0			
Other capital increase	22.4	156.1							
Reconstruction loan payments					490.0	1,015.0	2,029.0	2,920.0	4,442.0
LESS--IBRD loan payments							(1,728.0)	(1,728.0)	(1,728.0)
BANVI revenue							(301.0)	(398.6)	(375.7)
Retained as capital					490.0	1,015.0		793.4	2,338.3
TOTAL SOURCES	2,517.2	7,855.5	2,841.5	16,405.8	23,812.9	15,499.0	2,915.6	4,257.0	6,330.0
APPLICATIONS									
Increase (decrease) in short-term investments	387.0	(617.4)	(577.9)			(500.0)	(300.0)		
Increase (decrease) in contractor advances	(481.1)	453.7	110.0	132.0	158.4	(300.0)	(200.0)		
Increase (decrease) in other current assets	(542.5)	461.3	99.0	108.9	119.8	131.8			
Increase in long-term loans--net	623.6	4,190.5	4,188.0	2,890.0	2,250.0	2,220.0	3,989.0	4,748.0	5,525.0
Reconstruction loans				7,359.0	13,633.0	22,099.0			
Housing projects--net	1,548.8	280.1	(267.1)	5,765.0	6,003.0	(10,318.0)	(500.0)	(1,000.0)	(1,000.0)
Fixed asset additions	109.1	24.3	50.0	50.0	50.0	25.0	25.0	25.0	25.0
Costs relating to INVI	418.2								
Repayment of IDB loan	309.2	404.1	406.3	408.6	410.8	413.1	415.4	417.8	420.1
Payments to Bank of Guatemala									
Increase in other assets	2.7	9.5							
TOTAL APPLICATIONS	2,375.0	5,206.1	4,008.3	16,713.5	22,625.0	14,770.9	3,429.4	4,190.8	4,970.1
Increase (decrease) in cash	142.2	2,649.4	(1,166.8)	(307.7)	1,187.9	728.1	(513.8)	66.2	1,359.9
Cash, beginning of year	455.5	597.7	3,247.1	2,080.3	1,772.6	2,960.5	3,688.6	3,174.8	3,241.0
Cash, end of year	597.7	3,247.1	2,080.3	1,772.6	2,960.5	3,688.6	3,174.8	3,241.0	4,600.9

GUATEMALA

BANCO NACIONAL DE LA VIVIENDA

INCOME STATEMENTS

FOR THE YEARS ENDED DECEMBER 31
(thousand Q.)

	Actual				Forecast				
	1974	1975	1976	1977	1978	1979	1980	1981	1982
Revenue									
Interest and commissions	1,357.2	1,734.9	2,258.0	2,486.0	2,709.0	2,946.0	3,306.0	3,680.0	4,134.0
Other	279.5	390.3	429.3	472.2	519.4	571.3	628.4	691.2	760.3
Reconstruction loans							301.0	398.6	375.7
	1,636.7	2,125.2	2,687.3	2,958.2	3,228.4	3,517.3	4,235.4	4,769.8	5,270.0
Expenses									
Interest and commissions	210.9	477.2	755.4	772.7	877.6	1,005.0	1,137.5	1,272.6	1,429.4
Salaries and other personnel costs	902.0	1,043.9	1,200.5	1,320.6	1,452.7	1,598.0	1,917.6	2,109.4	2,320.3
General expenses	823.7	791.1	870.2	913.7	959.4	1,007.4	1,108.1	1,163.5	1,221.7
Depreciation and amortization	63.3	55.2	70.4	75.4	80.4	84.1	79.4	81.2	83.7
	1,999.9	2,367.4	2,896.5	3,082.4	3,370.1	3,694.5	4,242.6	4,626.7	5,055.1
Operating income (loss)	(363.2)	(242.2)	(209.2)	(124.2)	(141.7)	(177.2)	(7.2)	143.1	214.9
Other expenses - net	25.8	26.3							
Net income (loss)	(389.0)	(268.5)	(209.2)	(124.2)	(141.7)	(177.2)	(7.2)	143.1	214.9
Total revenue as % of average total assets (ATA)	-	5.4	6.1	5.5	4.4	3.8	4.3	4.7	5.1
Financial expenses as % of ATA	-	1.2	1.7	1.4	1.2	1.1	1.2	1.3	1.4
Gross spread as % of ATA	-	4.2	4.4	4.1	3.2	2.7	3.1	3.4	3.7
Other expenses as % of ATA	-	4.9	4.8	4.3	3.4	2.9	3.1	3.3	3.5
Net income as % of ATA	-	(.7)	(.4)	(.2)	(.2)	(.2)	-	.1	.2
Net operating ratio (%)	123.8	112.6	107.8	104.2	104.4	105.0	100.2	97.0	95.9
Interest & commission income as % of average loans outstanding /a	-	7.3%	8.0%	7.9%	7.9%	8.1%	8.4%	8.4%	8.4%
Financial expenses as % of average deposits and borrowings /b	-	2.9%	4.4%	4.1%	4.3%	4.4%	4.5%	4.7%	4.7%
Return on equity	-	-	-	-	-	-	-	.5%	.7%

/a Excluding Reconstruction Loans.
/b Excluding the Bank of Guatemala contribution on which there is no interest charge.

Annex IV
Table 3

GUATEMALA

APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT

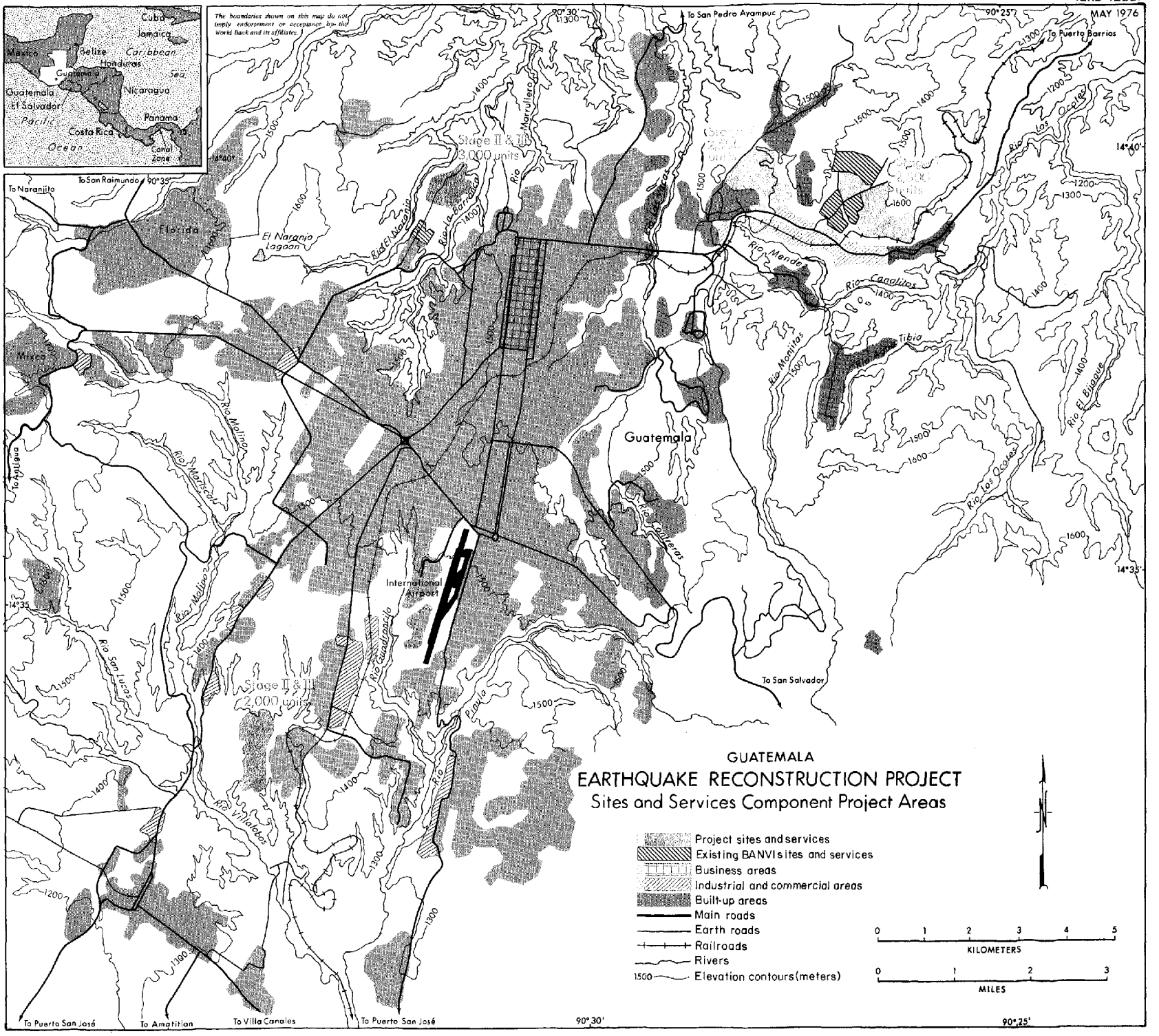
TECHNICAL ANNEX: URBAN SITES AND SERVICES DEVELOPMENT PROJECT COMPONENT

Estimated Schedule for Disbursements

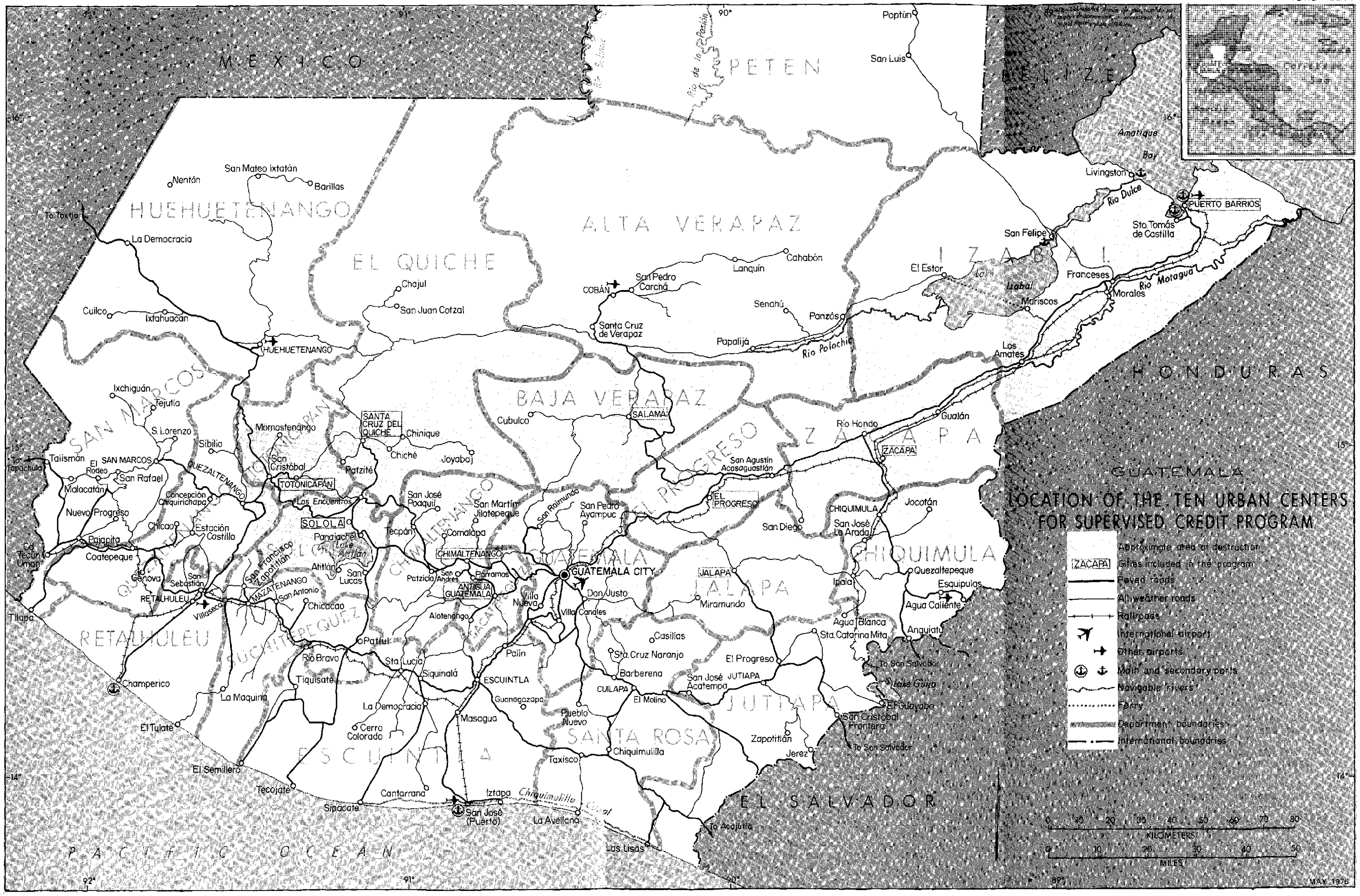
IBRD Fiscal Year and Quarter	Cumulative Disbursements At End of Quarter
	(US$ Thousand)
1976-1977	
December 31, 1976	300
March 31, 1977	1,500
June 30, 1977	3,000
1977-1978	
September 30, 1977	4,500
December 31, 1977	6,400
March 31, 1978	8,200
June 30, 1978	10,400
1978-1979	
September 30, 1978	12,700
December 31, 1978	14,400
March 31, 1979	16,100
June 30, 1979	17,300
1979-1980	
September 30, 1979	18,600
December 31, 1979	19,800
March 31, 1980	20,000

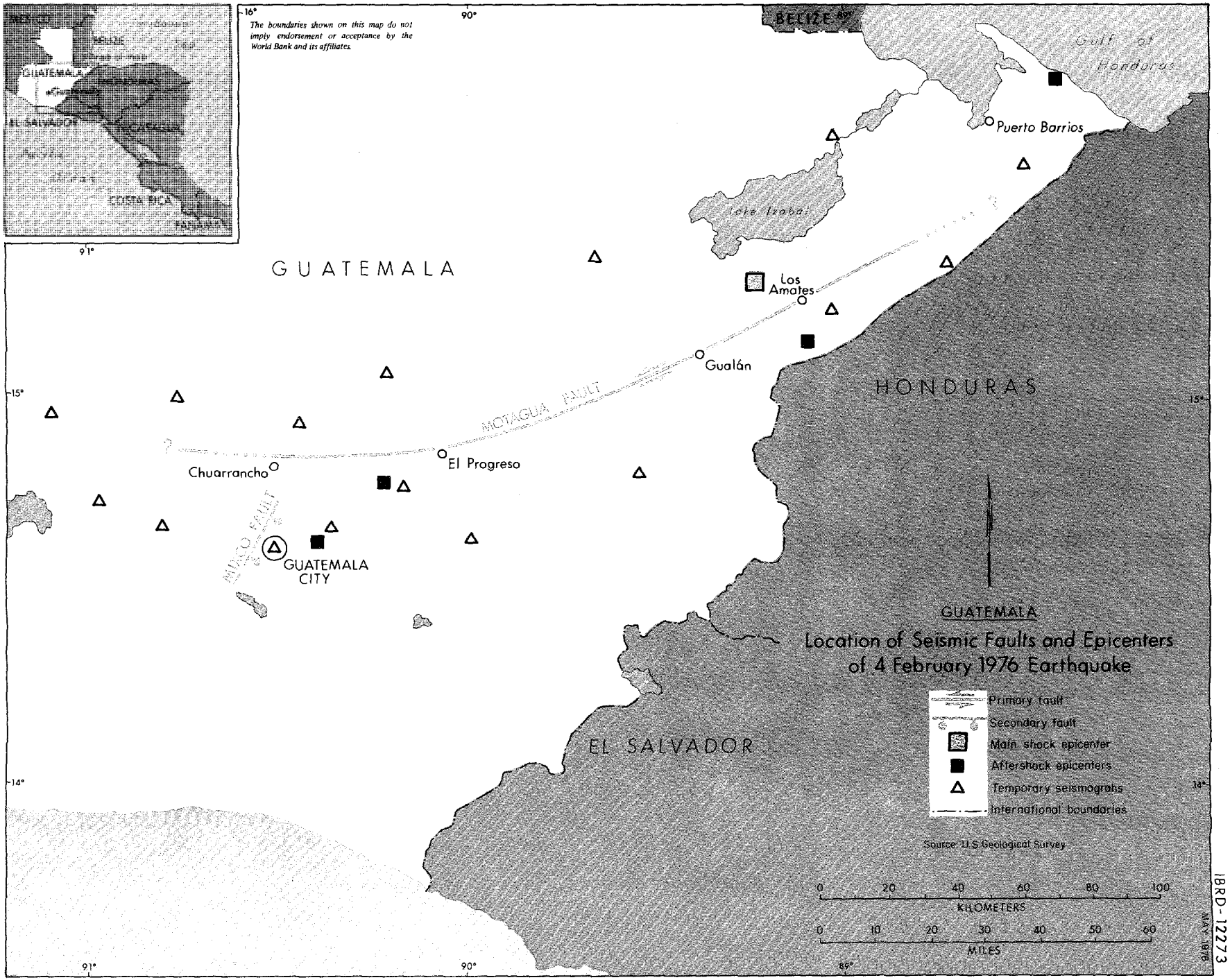
IBRD 12227

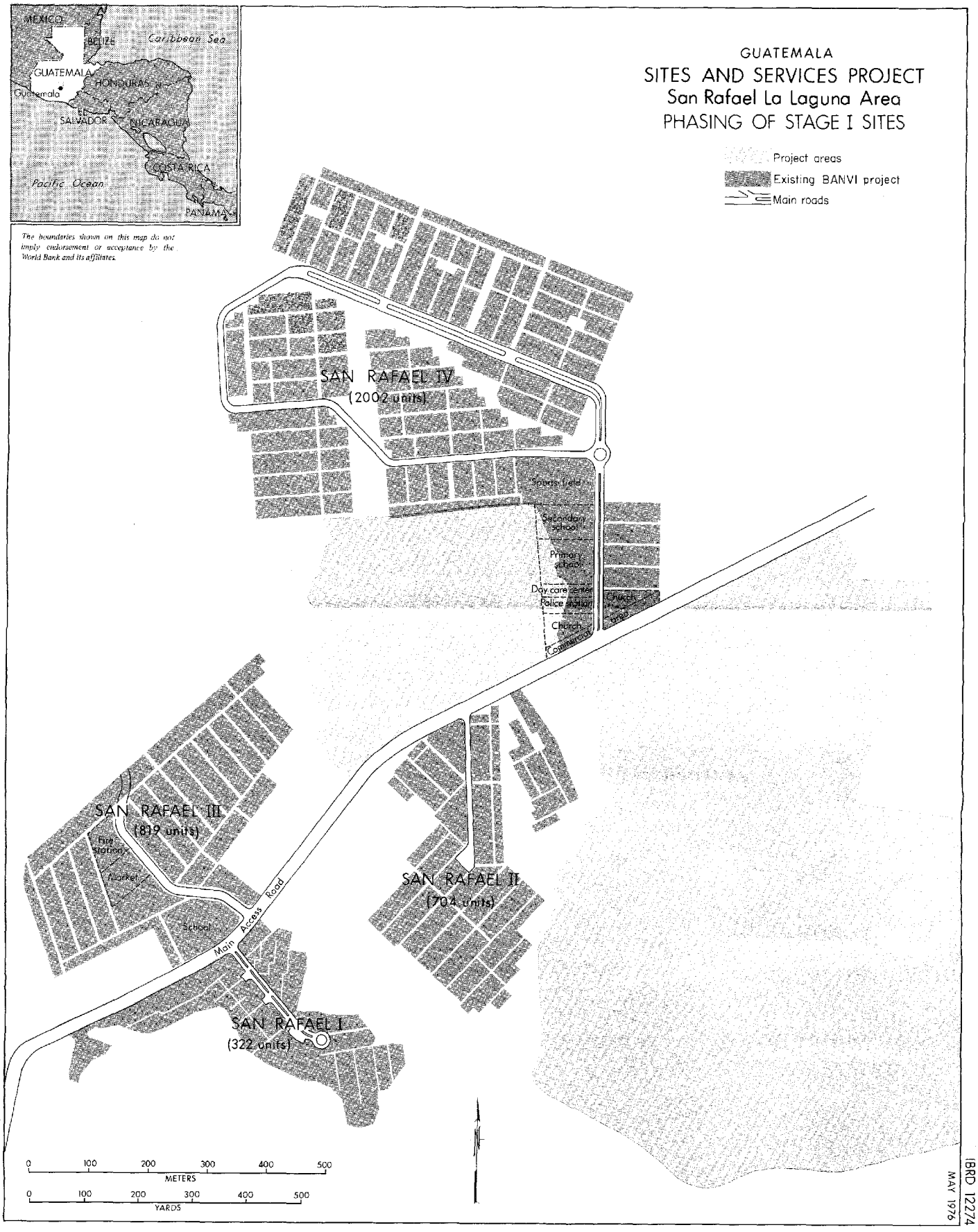
MAY 1976

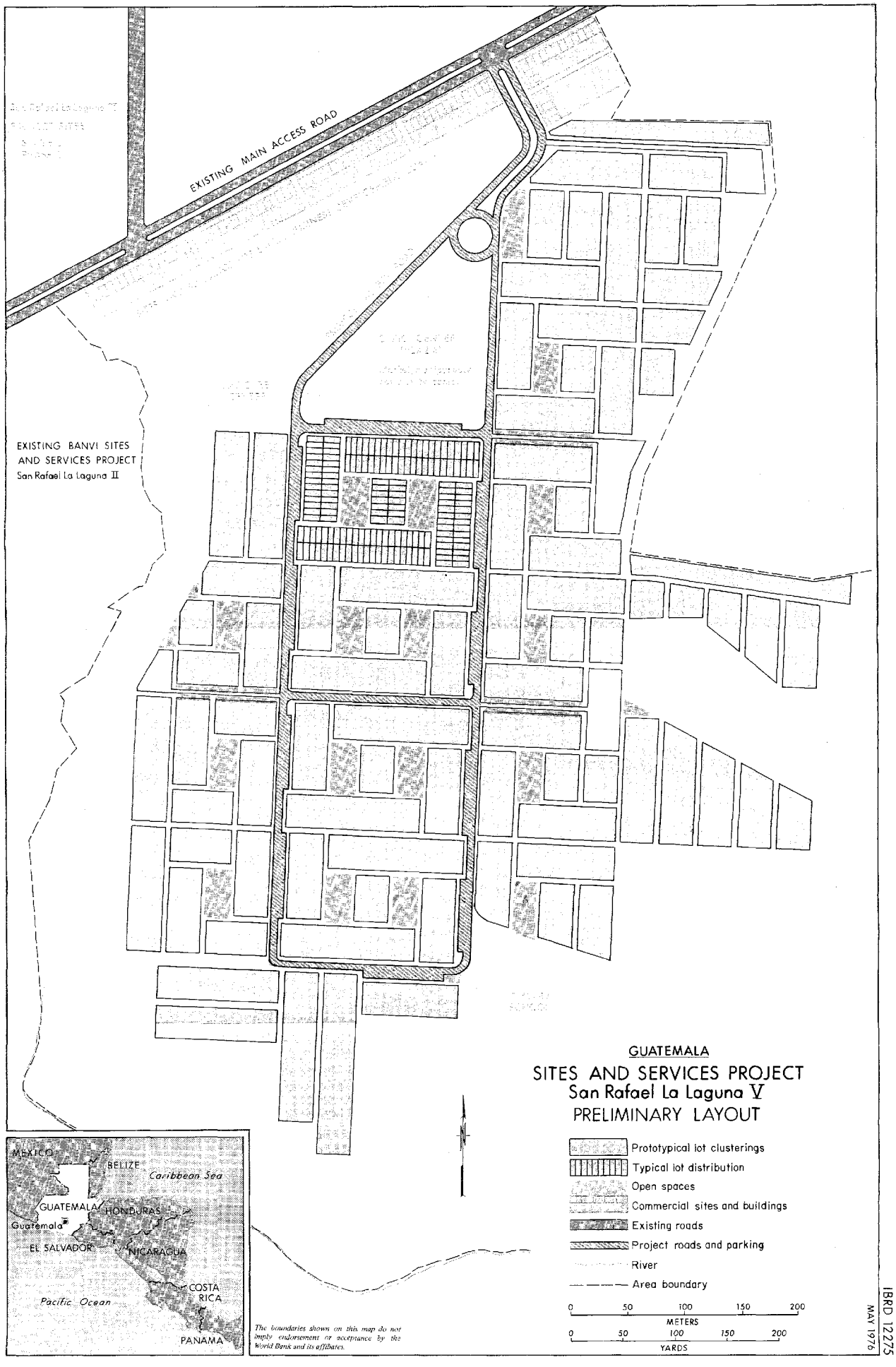


IBRD-12261


GUATEMALA
LOCATION OF THE TEN URBAN CENTERS
FOR SUPERVISED CREDIT PROGRAM
Approximate area of destruction
ZACAPA Cities included in the program
Paved roads
All-weather roads
Railroads
International airport
Other airports
Main and secondary ports
Navigable rivers
Ferry
Department boundaries
International boundaries
KILOMETERS
0 10 20 30 40 50 60 70 80
MILES
0 10 20 30 40 50
MAY 1976
MEXICO
BELIZE
HONDURAS
EL SALVADOR
PACIFIC OCEAN
PETEN
HUEHUETENANGO
EL QUICHE
ALTA VERAPAZ
IZABAL
BAJA VERAPAZ
SAN MARCOS
QUEZALTENANGO
TOTONICAPAN
SOLOLA
CHIMALTENANGO
EL PROGRESO
ZACAPA
CHIQUIMULA
GUATEMALA
JALAPA
JUTIAPA
SANTA ROSA
ESCUINTLA
SUCHITEPEQUEZ
RETALHULEU
SACATEPEQUEZ
Amatique Bay
Lake Izabal
Rio Dulce
Rio Motagua
Rio Polochic
Lake Atitlán
Lake Güija
Chiquimulilla Canal
Poptún
San Luis
Livingston
PUERTO BARRIOS
Sto. Tomás de Castilla
San Felipe
El Estor
Frances
Morales
Mariscos
Los Amates
Gualán
Rio Hondo
ZACAPA
San Agustín Acasaguastlán
EL PROGRESO
San Diego
CHIQUIMULA
San José La Arada
Jocotán
Quezaltepeque
Esquipulas
Agua Caliente
Anguiatú
Ipala
Agua Blanca
Sta. Catarina Mita
El Progreso
JUTIAPA
San José Acatempa
El Molino
CUILAPA
Barberena
Sta. Cruz Naranjo
Casillas
Pueblo Nuevo
Chiquimulilla
Taxisco
Zapotitlán
Jerez
San Cristóbal Frontera
El Guayabo
To San Salvador
To Acajutla
Las Lisas
La Avellana
San José (Puerto)
Iztapa
Cantarrana
Sipacate
Tecojate
El Semillero
El Tulate
Champerico
La Maquina
Tiquisate
Río Bravo
Cerro Colorado
La Democracia
Masagua
Guanagazapa
ESCUINTLA
Siquinalá
Sta. Lucía
Patulul
Palín
Alotenango
Villa Nueva
Villa Canales
Don Justo
GUATEMALA CITY
JALAPA
Miramundo
San Pedro Ayampuc
San Raimundo
San Martín Jilotepeque
Comalapa
CHIMALTENANGO
Parramos
San Andrés
ANTIGUA GUATEMALA
Patzicía
Tecpán
San José Poaquil
Joyabaj
Chiché
Chinique
SANTA CRUZ DEL QUICHE
Patzité
Cubulco
SALAMA
COBÁN
San Pedro Carchá
Lanquín
Cahabón
Senahú
Panzós
Papalijá
Santa Cruz de Verapaz
Chajul
San Juan Cotzal
San Mateo Ixtatán
Barillas
Nentón
La Democracia
To Toxtla
Cuilco
Ixtahuacán
HUEHUETENANGO
Momostenango
San Cristóbal
TOTONICAPAN
Los Encuentros
SOLOLA
Panajachel
Atitlán
San Lucas
San Antonio
Chicacao
San Francisco Zapotitlán
MAZATENANGO
Villaseca
RETALHULEU
San Sebastián
Génova
Coatepeque
Pajapita
Tecún Umán
Tilapa
Estación Castillo
Chicaoo
Concepción Chiquirichapa
Nuevo Progreso
Malacatán
San Rafael
El Rodeo
SAN MARCOS
Talismán
To Tapachula
S. Lorenzo
Sibilia
Tejutla
Ixchiguán
92°
91°
90°
89°
16°
15°
14°

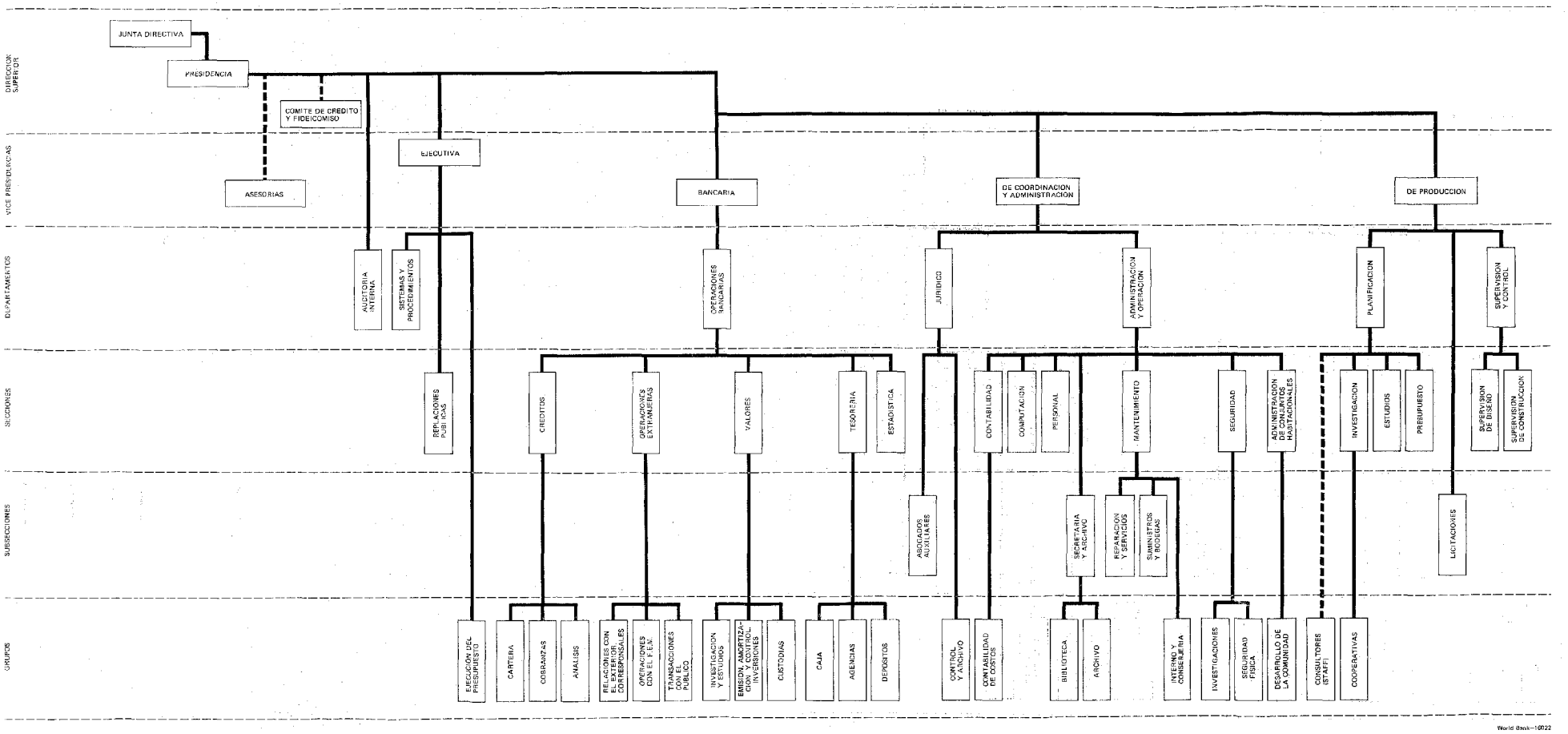

The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.
BELIZE
GUATEMALA
HONDURAS
EL SALVADOR
COSTA RICA
PANAMA
Gulf of Honduras
Puerto Barrios
Lake Izabal
Los Amates
Gualán
El Progreso
Chuarrancho
MOTAGUA FAULT
MICO FAULT
GUATEMALA CITY
16°
15°
14°
91°
90°
89°
GUATEMALA
Location of Seismic Faults and Epicenters of 4 February 1976 Earthquake
Primary fault
Secondary fault
Main shock epicenter
Aftershock epicenters
Temporary seismographs
International boundaries
Source: U.S. Geological Survey
0 20 40 60 80 100
KILOMETERS
0 10 20 30 40 50 60
MILES
IBRD-12273
MAY 1976


GUATEMALA
SITES AND SERVICES PROJECT
San Rafael La Laguna Area
PHASING OF STAGE I SITES
Project areas
Existing BANVI project
Main roads
MEXICO
BELIZE
Caribbean Sea
GUATEMALA
HONDURAS
Guatemala
EL SALVADOR
NICARAGUA
COSTA RICA
Pacific Ocean
PANAMA
The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.
SAN RAFAEL IV
(2002 units)
Sports field
Secondary school
Primary school
Day care center
Police station
Church
Church
Commercial
SAN RAFAEL III
(819 units)
Fire Station
Market
School
Main Access Road
SAN RAFAEL II
(704 units)
SAN RAFAEL I
(322 units)
0 100 200 300 400 500
METERS
0 100 200 300 400 500
YARDS
IBRD 12274
MAY 1976



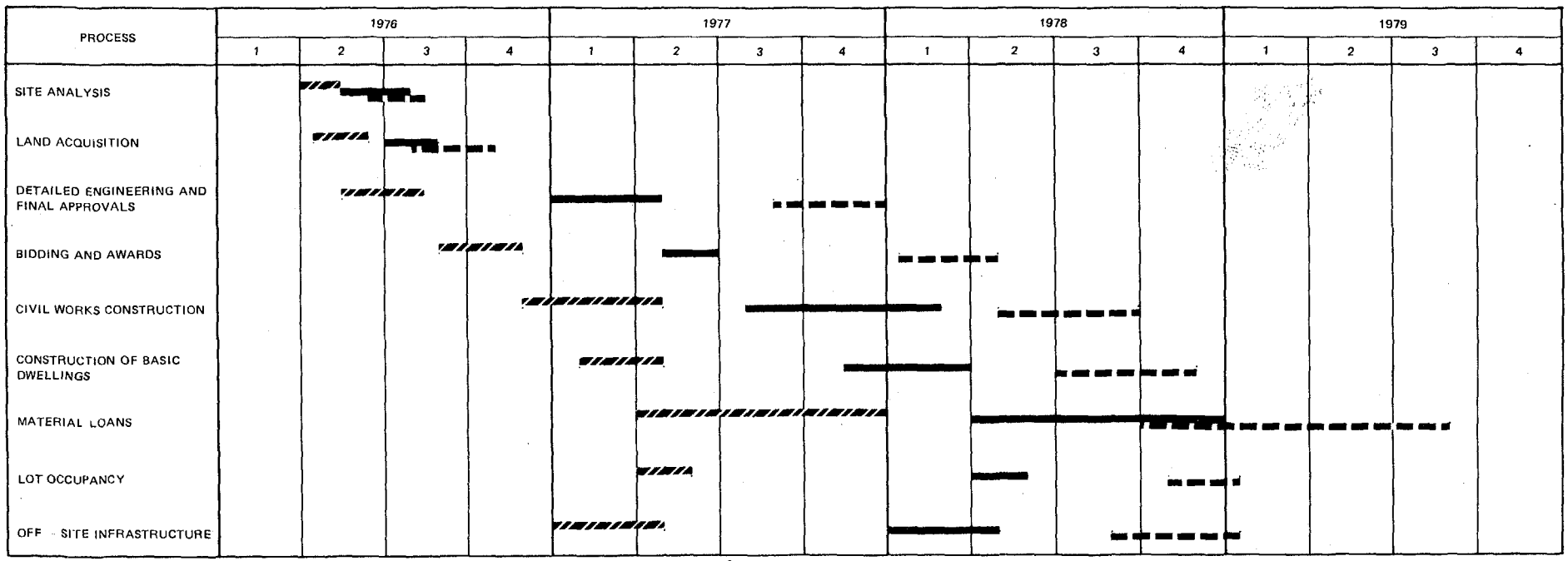
IBRD 12275
MAY 1976

ORGANIZATION CHART OF THE BANCO NACIONAL DE LA VIVIENDA



World Bank—16022

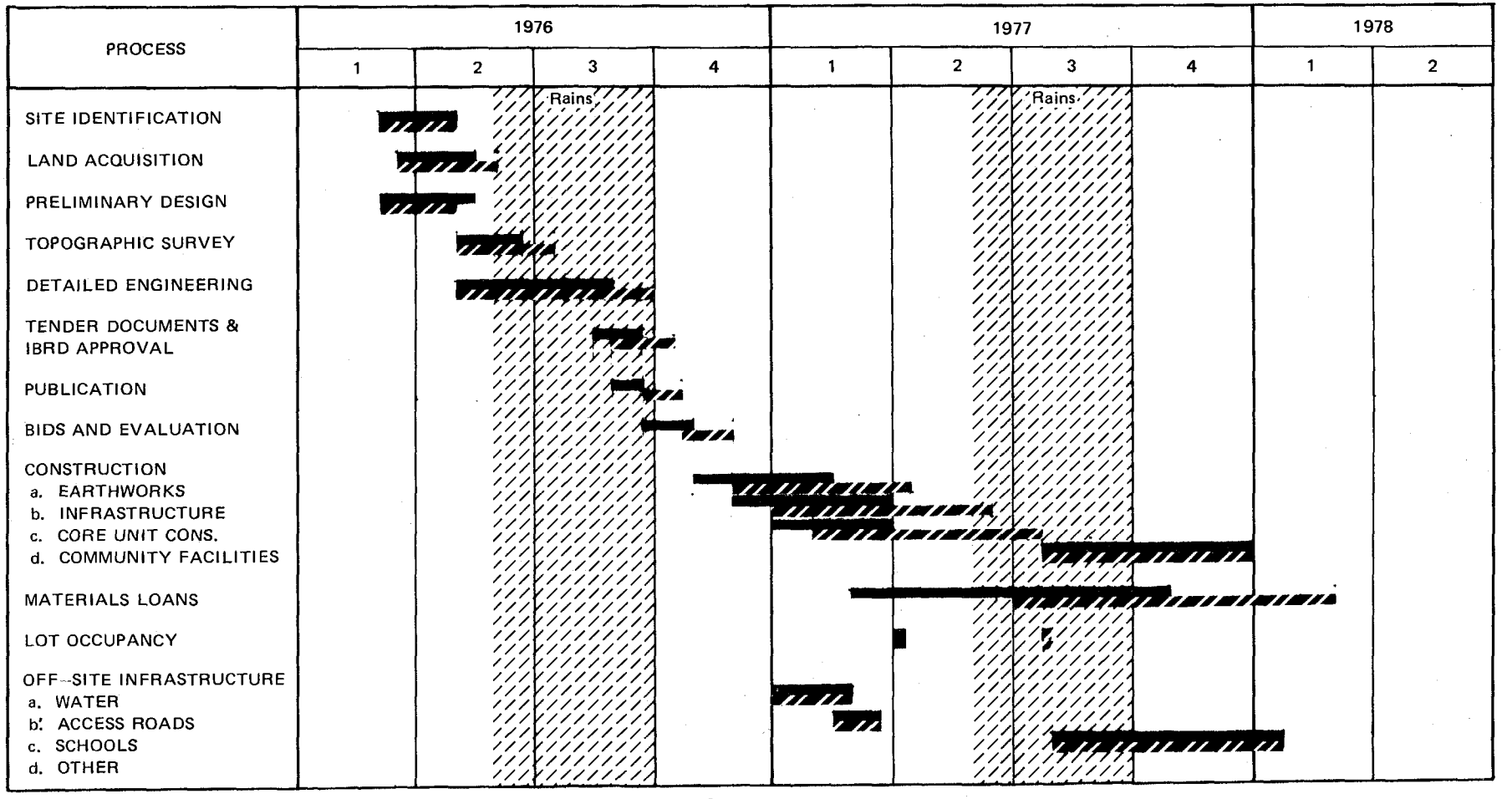
GUATEMALA
APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT
CONSTRUCTION SCHEDULE



STAGE I —2,400 units
STAGE II —4,300 units
STAGE III —3,300 units
TOTAL —10,000 units

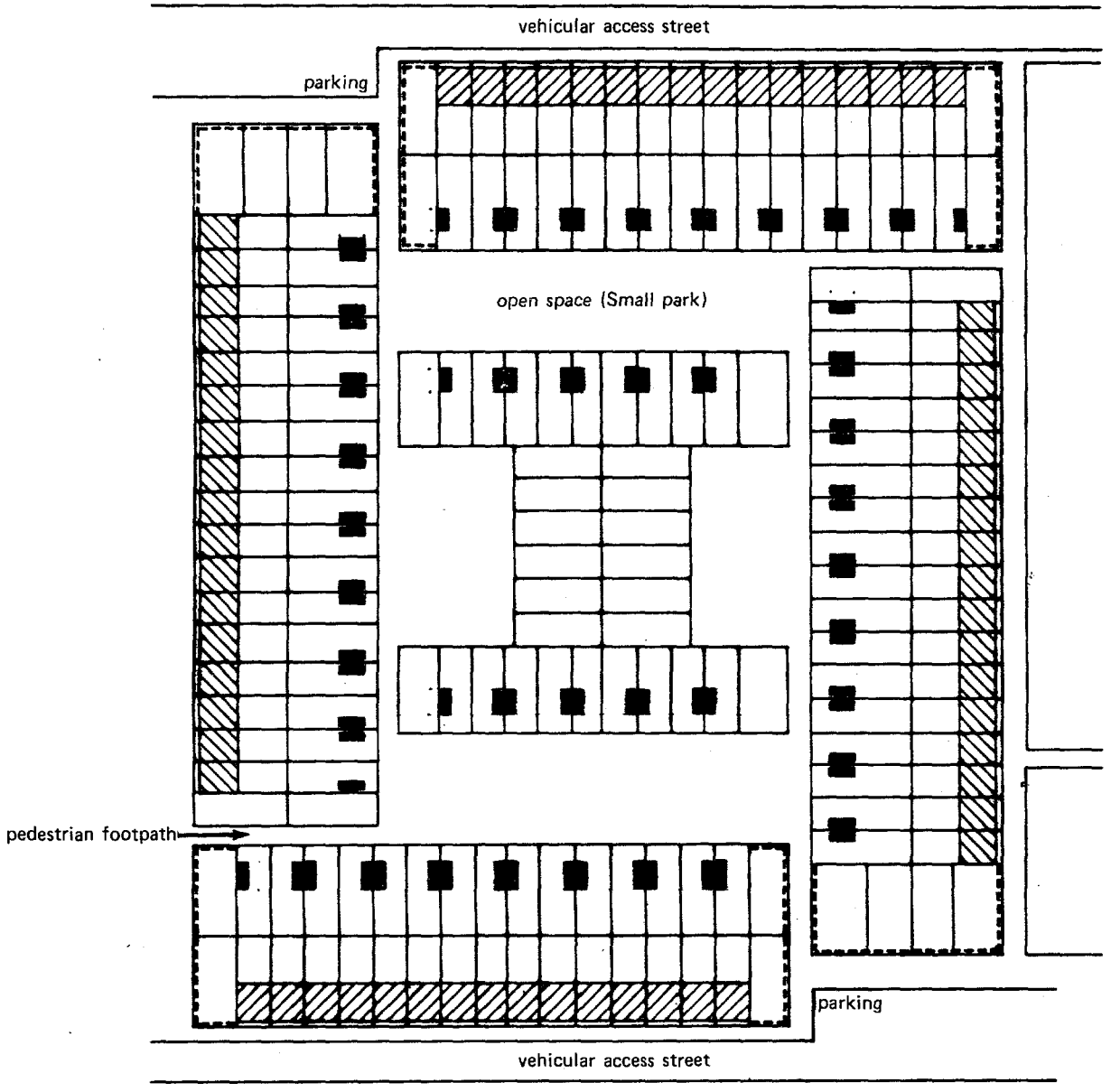
World Bank--16092

GUATEMALA
APPRAISAL OF THE EARTHQUAKE RECONSTRUCTION PROJECT
IMPLEMENTATION SCHEDULE–STAGE I SAN REFAEL LAGUNA "V"



World Bank–16093

PROTOTYPICAL PLOT CLUSTER



prototype area = 2.24ha

residential lots (private)	=	1.50ha	= 67.2%
circulation areas (public)	=	0.45ha.	= 20.0%
open space (public)	=	0.28ha	= 12.8%

SERVICE LEVEL I, plot: $75m^2 - 81m^2$ = 6%

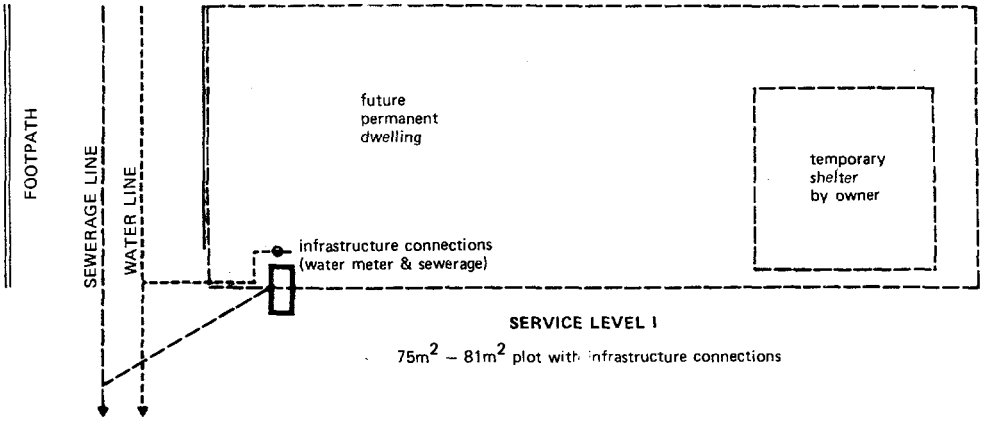
SERVICE LEVEL II, plot: $81m^2$ = 52%

SERVICE LEVEL III, plot: $81m^2$ = 40%

SERVICE LEVEL I, plot: $94m^2 - 100m^2$ = 2%
(potential for Commercial/residential use)

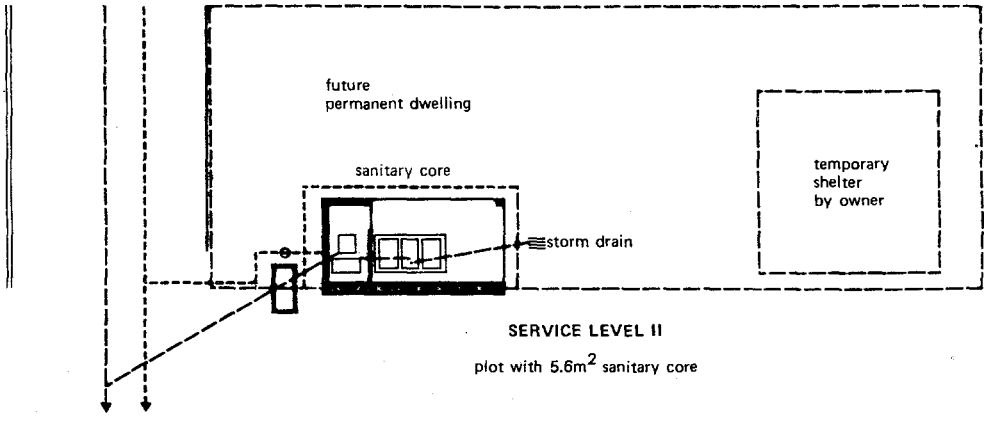
World Bank–16127

SERVICE LEVEL OPTIONS



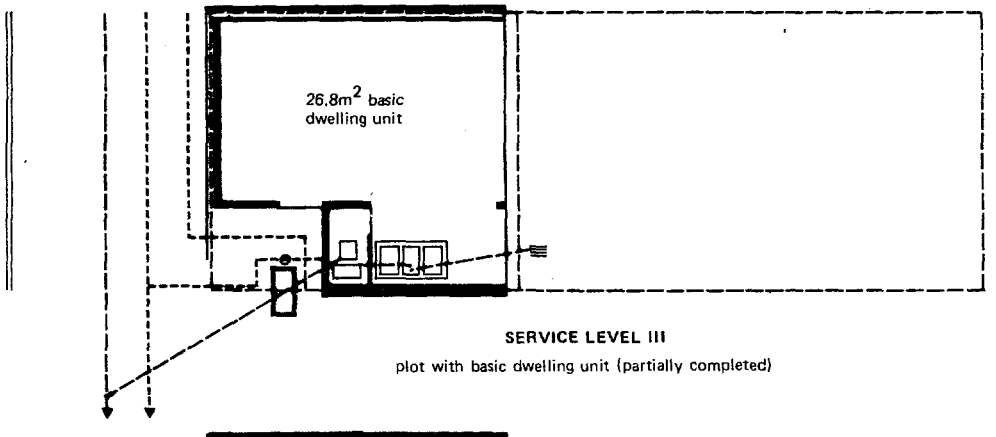
SERVICE LEVEL I

$75m^2 - 81m^2$ plot with infrastructure connections



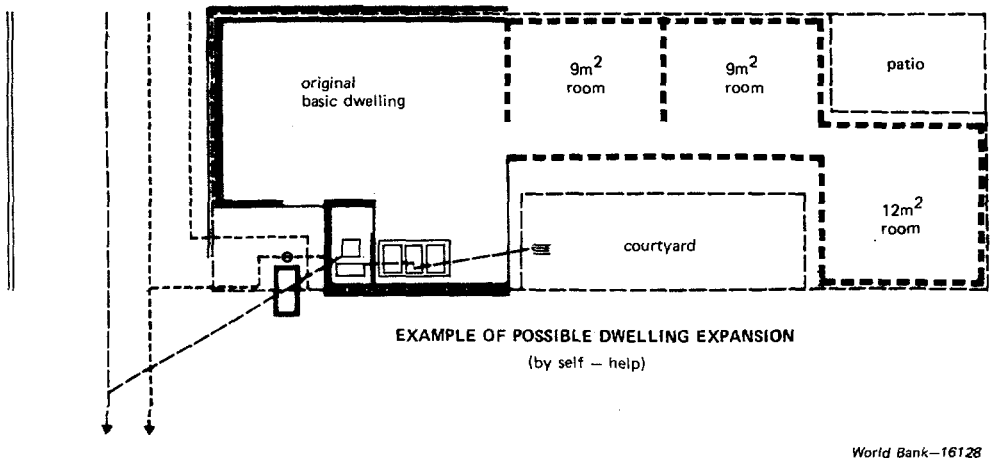
SERVICE LEVEL II

plot with $5.6m^2$ sanitary core



SERVICE LEVEL III

plot with basic dwelling unit (partially completed)



EXAMPLE OF POSSIBLE DWELLING EXPANSION

(by self – help)

World Bank–16128

(B) EDUCATION COMPONENT

GUATEMALA

TECHNICAL ANNEX

EDUCATION COMPONENT

TABLE OF CONTENTS

ABBREVIATIONS

BANVI	Banco Nacional de la Vivienda (National Housing Bank)
CEEP	Unidad Ejecutora de Construcción y Equipamiento del Proyecto de Extensión y Mejoramiento de la Educación Primaria (Implementation Unit for Construction and Equipment of the Project for Extension and Improvement of Primary Education)
PEMEM	Proyecto de Extensión y Mejoramiento del Nivel de la Enseñanza Media (Implementation Unit for Second Education Project)
USAID	United States Agency for International Development

GUATEMALA

EDUCATION COMPONENT

EARTHQUAKE RECONSTRUCTION PROJECT

1. This report appraises the education component of the reconstruction project, which consists of the following items:

(a) thirteen primary schools in Guatemala City (4,320 places) to replace destroyed schools;

(b) fourteen primary schools in Guatemala City (3,360 places) to provide primary education facilities in new residential areas to be constructed through assistance by the sites and services component of the project; and

(c) five lower secondary schools in Guatemala City and provincial cities (2,640 places) to replace destroyed secondary schools.

The report is based on a preparation/appraisal mission which visited Guatemala in April 1976. The mission members were L. Wolff (education planner) and D. Shoesmith (architect, consultant).

Earthquake Damage

2. Primary Education. In Guatemala City, about 13 public primary schools (grades 1 to 6) serving almost 8,000 students were destroyed or so severely damaged that they cannot be repaired. Eight of these schools were in rented buildings which the government intends to replace by new buildings on publicly-owned land. An additional 22 schools serving about 14,000 students were damaged but can be repaired. Schools serving about 82,000 students were not damaged. The government has been able to provide schooling to children from damaged or destroyed facilities through triple and quadruple sessions in undamaged schools. Repair of schools, already being undertaken by private owners of rented school facilities, should reduce significantly the number of students on multiple sessions and provide a tolerable educational environment while replacement schools are constructed.

3. Outside Guatemala City, primary schools in urban areas serving 9,000 students were reported as destroyed. Data on rural schools are not yet available but estimates of their destruction run very high, since most were of adobe construction. USAID is assisting in reconstruction of primary schools outside Guatemala City, through a grant of US$1 million for surplus Navy prefabricated buildings which will be adapted for use as primary schools, and through future loan assistance.

4. Secondary Education. In Guatemala City, three public secondary schools (grades 7 to 12) serving 4,400 students (out of a total of 25,000 public school students in Guatemala City) were destroyed or damaged so severely that they cannot be repaired. About 14 other public secondary schools were damaged but can be repaired. All students are in school at this time, but many are on triple or quadruple shifts. This situation is being alleviated as repairs are made to existing schools and as the destroyed schools, with assistance from the government, are being provided with temporary teaching sheds. The Bank would provide assistance to construct two schools with space on a two-shift basis for about 3,700 lower secondary school students, but would not provide assistance to accomodate approximately 700 upper secondary school students in one school who are preparing to be urban primary school teachers. The system has been seriously over-producing these teachers (2,440 trained in 1974, while only 215 teaching positions were available). The government should be able to provide temporary accomodation to these students while it would review and propose changes in the teacher training system.

5. Outside Guatemala City, eight secondary schools with a total enrollment of 2,500 were destroyed or cannot be repaired. Classes have resumed in all these institutions through the utilization of primary school buildings and construction of temporary wooden sheds. The Bank would provide assistance to replace three lower secondary schools (grades 7 to 9) in Salama, El Progreso and Chichicastenango. The other five schools would not be assisted because: (a) a replacement for one school is already planned in the Second Education Project; (b) three schools have less than 120 students and little prospect for enrollment increases to allow for efficient space and teacher utilization; and (c) one rural teacher training school faces major problems regarding staff qualifications and curriculum, and may be assisted by another agency which has been working in rural education.

6. Accompanied by a representative from the Ministry of Education and by a structural engineer from the Project Unit of the Second Education Project (PEMEM), the appraisal mission visited the sites of all except one of the severely damaged primary or secondary schools to determine whether they could be repaired or would need to be replaced. In some cases, the mission concluded that schools which the government had previously proposed to replace could be repaired at a fraction of their replacement cost.

The Project

7. The education component of the project consists of construction of (i) 13 primary schools in Guatemala City to replace those destroyed by the earthquake; (ii) 14 primary schools in Guatemala City to be part of the sites and services component of the project; and (iii) five lower secondary schools in Guatemala City and provincial cities to replace schools destroyed by the earthquake.

Primary Schools

8. Thirteen primary schools (4,320 places) serving 8,640 students on a double shift basis would replace schools destroyed by the earthquake. On the basis of present information, it is estimated that nine would provide 240 places; three would provide 480 places; and one replacement of a large school would provide 720 places in a multi-story building. The government is now undertaking detailed studies of the catchment areas of the destroyed schools and of potential new sites which may result in the division of some of the larger schools into smaller schools or in the merger of two smaller schools; thus while the number of places provided would remain constant at 4,320 the actual number of schools to be constructed may vary according to the results of these studies. Each primary school would consist of a basis classroom block or blocks, administrative spaces, a storeroom, and a library. Equipment provided would be modest--about US$10 per student. New furniture would be provided to all the schools, since the furniture saved from the destroyed schools was in very poor condition.

9. Fourteen primary schools (3,360 places) serving 6,720 students on a double shift basis would be constructed to provide educational facilities for children of families in the residential areas to be constructed through assistance from the sites and services component of the project. These schools would all be of a 240 place size. Ten of these schools would consist of a single classroom block, administrative spaces, a storeroom, and a library. Four of the schools (or one in each zone of the sites and services project) would also include basic workshop and home economics spaces to be utilized by students from neighboring schools and adults in non-formal training programs.

Secondary Schools

10. The five lower secondary schools to be constructed would replace destroyed schools and provide for modest enrollment increases through intensive use of school facilities in double shifts. In Guatemala City, one 960 place school would be constructed to replace the lower secondary facilities of a school destroyed by the earthquake. A second school of 600 places would replace two smaller destroyed schools; this school would effectively serve 960 students per shift, since it would be located on the same site where a common facilities center would be constructed as part of the second education project and would utilize the laboratories and workshops to be part of the center. Outside Guatelama City, three 360 place schools would be constructed in El Progreso, Salama, and Chichicastenango. These schools would utilize the same curriculum as the schools to be constructed under the second education project and would benefit from the curriculum develpment and technical assistance activities supported under the second education project. All the schools except the 600 place school in Guatemala City would be available for non-formal education and training activities.

Cost of the Project

11. The estimated cost of the project is US$6.7 million--including US$3.4 million for primary school construction, US$3.1 million for secondary school construction, and US$.2 million for project administration. The foreign exchange component is estimated at US$2.3 million or 34%. The detailed breakdown by type of expenditure is shown in Annex 1.

12. The base costs are based on prices estimated as of December, 1976. Added to these are contingency allowances for (a) unforeseen physical increases equal to 10% of base costs for construction and (b) price escalation likely to occur during the implementation period (Annex 2). Price escalation for construction of 15% for 1976 was taken into account in arriving at the base cost. The contingency allowance for construction in 1977 is 15%, and Bank guidelines of 12% for 1978 and 1979 were followed.

13. The estimated unit construction cost of one story buildings for primary schools is US$75/sq. meter and for secondary schools US$95/sq. meter; the estimated cost per sq. meter of a multi-story primary school to be constructed is about US$120/sq. meter. A local cost adjustment ranging from 5% to 10% has been made for secondary schools outside the Guatemala City area to allow for differences in cost of transportation and building materials, as well as the availability of local skilled labor. The construction cost estimates are based on current unit costs of a constructional system for primary schools developed by the government with assistance from USAID. This system would be used for the primary schools and with appropriate modifications it would also be utilized for the secondary schools in the project. The system is based on the repetitive use of simple steel frames with concrete block walls. Application to secondary schools would result in a shorter design and construction period with estimated savings of 30% over conventional brick and reinforced concrete construction.

14. Furniture costs are based on a review of the costs of the second education project and of recently completed primary schools. Equipment costs are similarly based and include providing a minimum amount of equipment to primary schools. Also included are the costs of additional personnel for the two project units at an estimate of US$200,000.

Administration and Implementation

15. The project unit of the Second Education Project (PEMEM), located within the Ministry of Communications and Public Works, would administer the secondary schools program; it would be expanded by the appointment of an architect, an engineer, and supporting personnel to handle the increased workload. A second implementation unit (CEEP), located in the same Ministry, would administer the primary schools component. Currently CEEP has responsibilities for administering the USAID assisted rural primary school project, which it has accomplished with distinction. CEEP would also be

expanded by appointment of an architect, engineer, draftsman, and procurement officer to accommodate its additional responsibilities. Conditions of disbursement for the education component of the project would be (i) the appointment of the additional personnel necessary for implementation of the project by CEEP and (ii) fulfillment of the conditions for effectiveness of the Second Education Project.

Professional and Architectural Services

16. Executive architects who would provide professional services to develop the project would be appointed on terms and conditions acceptable to the Bank. Coincidental with preparation of architects' briefs PEMEM would undertake a study of the constructional system described in para. 13 to determine modifications necessary for its application to secondary schools. Technical review committees established under the second education project and including representatives from the Ministry of Education and the project units would analyze and review architectural designs and equipment and furniture lists and specifications and certify that they meet economic and functional standards and costs and the educational objectives of each project institution.

Project Implementation Schedule

17. The project would be implemented over a period of three and a half years. Construction of the primary schools for the areas to be served by the sites and services component of the project would be phased with the three-year implementation period of that component. Design work for the 13 schools to replace those destroyed would begin as soon as sites have been identified and steps initiated for transfer of title. Since this process is time-consuming, it is anticipated that construction of most of these schools would begin in 1977 and be completed by December 1978; schools would be ready for occupancy for the 1979 school year. Design and construction of the secondary schools would take place over a three and a half-year period. To assist in the effective and timely execution of the project, an implementation schedule has been prepared (Annex 3). This schedule was discussed during negotiations and mutually agreed upon as a project implementation and monitoring tool.

Sites

18. The government has initiated a study to identify the catchment areas of the 13 destroyed primary schools and to identify potential sites for reconstruction. Sites for the 14 schools to serve the areas of the sites and services component would be provided in the master plan and BANVI would deed the land to the Ministry of Education as and when needed. In Guatemala City, two acceptable secondary school sites have been identified; one must be purchased and legal issues regarding the second must be resolved or an alternative found. The proposed sites for secondary schools in El Progreso and Chichicastenango are both acceptable and government-owned.

The proposed site in Salama would be acceptable if a more appropriate site on the outskirts of the city cannot be identified. The government has provided assurances that all sites for both primary and secondary schools would be identified and acquired by January 1, 1977.

19. Contracts for civil works would be awarded to pre-qualified bidders on the basis of competitive bidding advertised locally and in accordance with local procedures acceptable to the Bank. Announcements would be made in the national press and foreign contractors would not be excluded from prequalification. Construction contracts would be grouped in packages of US$3-400,000 in order to attract contractors with adequate management expertise and equipment. Current emergency procedures which shorten the time required for awarding of contracts would be applied to the project.

20. Contracts for furniture and equipment would be awarded on the basis of international bidding in accordance with Bank guidelines. However, furniture and equipment that cannot be grouped in packages of at least US$50,000 would be procured on the basis of competitive bidding in accordance with the Borrower's regular procurement procedures, which are satisfactory to the Bank. It is estimated that procurement under these procedures would not in aggregate exceed 15% of the cost of furniture and equipment or about US$165,000.

Maintenance

21. The government has given assurances that it will provide adequate funds for replacement of used materials and for maintenance of project schools. These funds for maintenance would be equivalent to one percent of the replacement costs of project institutions for the first four years, and one and one-half percent of the replacement costs thereafter.

Disbursements

22. The education component of the proposed loan would be US$4.2 million and would cover the foreign exchange component and 44% of the local currency costs. It would be equivalent to 63% of the total cost of the education component of US$6.7 million. The loan would be disbursed over a period of three and a half years (Annex 4). Retroactive financing not exceeding US$50,000 is recommended for expenditures made since June 1, 1976, for professional services and project administration.

Benefits and Risks

23. The benefits of the project would accrue to the more disadvantaged sections of the population. The 13 destroyed primary schools in Guatemala City were all located in poorer parts of the city. The 14 schools to be built in the areas of the sites and services component would serve poor families, especially those whose homes were destroyed by the earthquake. The secondary schools to be constructed in Guatemala City would serve a relatively less

advantaged population, since most middle and upper class students attend private schools which account for 50% of total secondary school enrollment in Guatemala City; the secondary schools to be constructed outside Guatemala City would assist in providing greater educational opportunities outside the capital. There are no special risks with regard to this project.

Agreements Reached

24. During loan negotiations, agreement was reached on the following principal points: (i) utilization in the secondary schools to be constructed of the same curriculum as the schools to be constructed under the second education project and the integration of these schools into the curriculum development and technical assistance activities supported under the second education project (para. 10); (ii) availability of all secondary schools except the 600 place school in Guatemala City for non-formal education and training activities (para. 10); (iii) designation of CEEP as the implementing unit responsible for the primary school component of the project (para. 15); (iv) identification and acquisition of all sites, except those to be included in the areas of the sites and services component of the project, by January 1, 1977 (para. 18); (v) application to the project of emergency procedures which shorten the time required for award of contracts (para. 19); and (vi) adequate provision of funds for maintenance of project schools (para. 21).

25. Conditions of disbursement for the education component of the project would be (i) the appointment to CEEP of the additional personnel necessary for implementation of the project and (ii) fulfillment of the conditions for effectiveness of the Second Education Project (para. 15).

GUATEMALA

Education Component, Earthquake Reconstruction Project
Summary of Costs (as of December 31, 1976) (1 Quetzal = 1US$)

	Student Places	Gross area m^2	Construction and Site Works	Physical Contingency (10%)	Professional Fees	Price Contingencies (construction) (19%)	Furniture	Equipment	Price Contingencies (furniture and equipment) (15%)	Project Administration	Total
Primary Education											
24 single story schools	6,960	24,395	1,830,000	183,000	221,000	412,000	139,000	142,000	42,000		2,969,000
1 multi-story school	720	2,055	267,000[2/]	25,000	30,000	45,000	15,000	7,000	3,000		392,000
Secondary Education											
El Progresso	360	2,590	258,000	26,000	31,000	58,000	28,800	94,200	15,000		511,000
Chichicastenango	360	2,590	271,000	27,000	33,000	61,000	28,800	94,200	15,000		530,000
Salama	360	2,590	271,000	27,000	33,000	61,000	28,800	94,200	15,000		530,000
Guatemala, Zone 13	960	5,485	521,000	52,000	63,000	161,000	67,500	187,500	54,000		1,106,000
Guatemala, Zone 2	600[1/]	2,560	243,000	24,000	30,000	66,000	39,300	31,500	12,200		444,000
Project Administration										200,000	200,000
TOTAL			3,661,000	364,000	441,000	864,000	346,200	650,600	155,200	200,000	6,682,000
Foreign Exchange Component			915,000	91,000	110,000	216,000	183,000	586,000	115,000	40,000	2,256,000
% of total			25	25	25	25	53	90	74	20	34

1/ Total effective number of places to be constructed (without laboratories and workshops). 960 students per session would be served by this school and a common facilities center to be constructed under the second education project.
2/ Includes cost of demolition.

ANNEX 1

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Education Component, Earthquake Reconstruction Project
Contingencies Allowances (Quetzales '000 or US$'000)

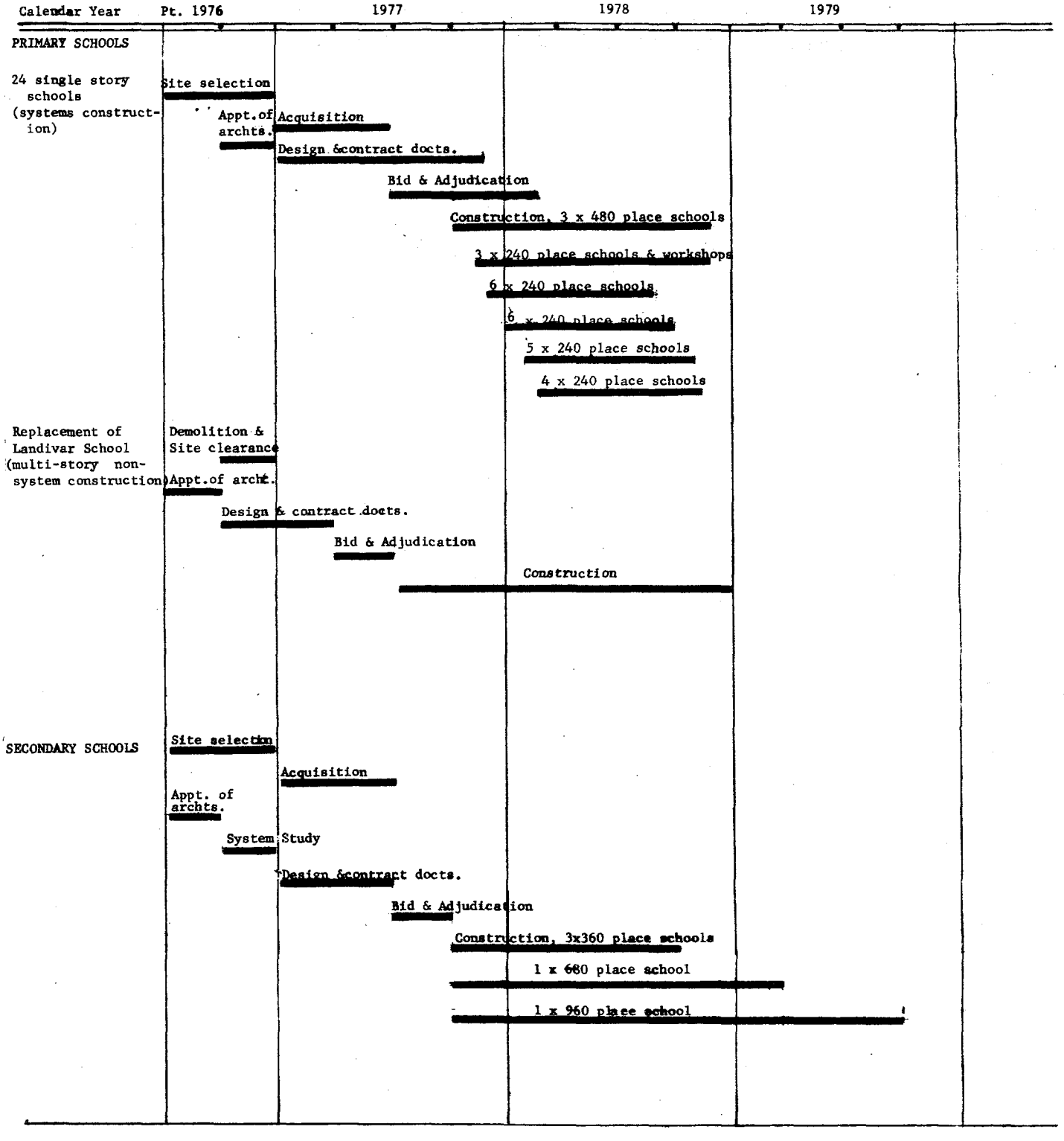
	Construction and Site Works		Professional Fees		Furniture		Equipment		Project Administration		Total		
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Total
Physical Increase %	10	10	-	-	-	-	-	-	-	-	8	5	7
Price Increase %	19	19	19	19	15	15	15	15	-	-	18	17	18
Base Project Costs	2746	915	331	110	163	183	65	586	160	40	3465	1834	5299
Physical Increase	273	91	-	-	-	-	-	-	-	-	273	91	364
Base Project Costs Plus Physical Increase	3019	1006	331	110	163	183	65	586	160	40	3738	1934	5662
Price Increase	584	195	64	21	25	29	10	91	-	-	683	336	1019
Total Contingencies	857	286	64	21	25	29	10	91	-	-	956	427	1383
Total Project Cost	3603	1201	395	131	188	212	75	677	160	40	4421	2261	6682
Foreign and Local Components %	75	25	75	25	47	53	10	90	80	20	66	34	100

ANNEX 2

GUATEMALA

ANNEX 3

Education Component, Earthquake Reconstruction Project
Implementation Schedule



ANNEX 4

GUATEMALA

Education Component, Earthquake Reconstruction Project
Estimated Schedule of Disbursements (US$'000,000s)

FISCAL YEARS & SEMESTERS	DISBURSEMENTS				UNDISBURSED BALANCE	
	SEMI-ANNUAL		CUMULATIVE			
	US$M	%	US$M	%	US$M	%
1976						
2nd	-	-	-	-	4.2	100
1977						
1st	.1	2	.1	2	4.1	98
2nd	.3	7	.4	10	3.8	90
1978						
1st	.8	19	1.2	29	3.0	71
2nd	1.5	36	2.7	64	1.5	36
1979						
1st	1.0	24	3.7	88	.5	12
2nd	.3	7	4.0	95	.2	5
1980						
1st	.2	5	4.2	100	0	0
2nd						
Total	4.2	100				

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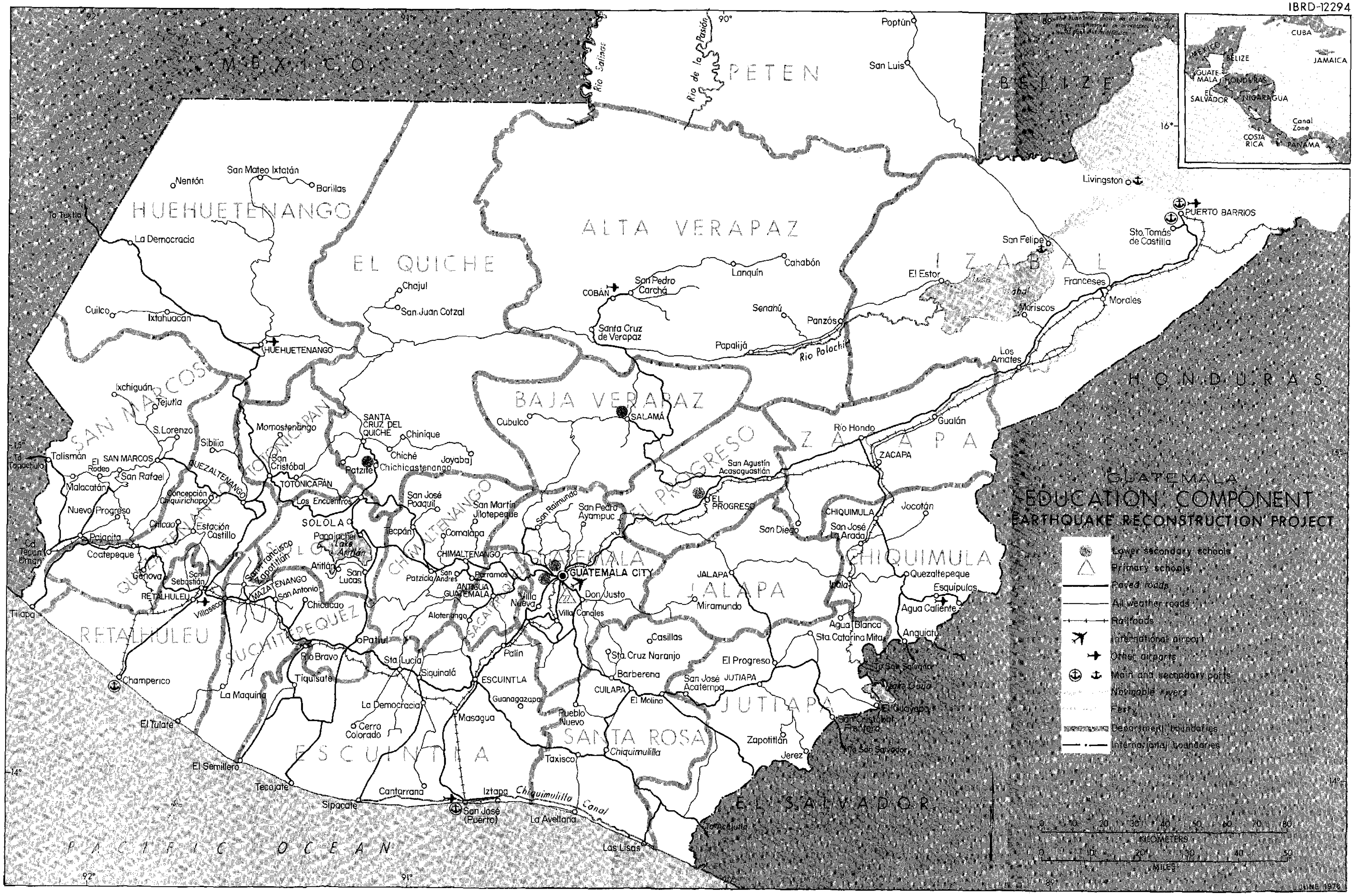
GUATEMALA
EDUCATION COMPONENT
EARTHQUAKE RECONSTRUCTION PROJECT
Lower secondary schools
Primary schools
Paved roads
All weather roads
Railroads
International airport
Other airports
Main and secondary ports
Navigable rivers
Ferry
Department boundaries
International boundaries
KILOMETERS
MILES
MEXICO
BELIZE
HONDURAS
EL SALVADOR
PACIFIC OCEAN
PETEN
HUEHUETENANGO
EL QUICHE
ALTA VERAPAZ
IZABAL
BAJA VERAPAZ
SAN MARCOS
EL PROGRESO
ZACAPA
CHIQUIMULA
JALAPA
JUTIAPA
SANTA ROSA
ESCUINTLA
RETALHULEU
SUCHITEPEQUEZ
GUATEMALA CITY
CUBA
JAMAICA
NICARAGUA
COSTA RICA
PANAMA
Canal Zone
JUNE 1976

(C) PORT REHABILITATION COMPONENT

GUATEMALA

PORT REHABILITATION PROJECT

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PORT REHABILITATION PROJECT

1. INTRODUCTION

1.01 The Government of Guatemala has requested the Bank's help in financing its reconstruction program following the recent earthquake disaster. Along with the housing and education sectors, the transport sector was identified as one of the areas where Bank assistance was to be considered. As a result of the earthquake, the railway-owned port of Puerto Barrios on the Atlantic was destroyed, and the Atlantic Highway leading to it from Guatemala City was damaged and temporarily closed to heavy traffic. This seriously affected the import and export of goods that were forced to use alternate routes at a much higher cost. The highway has now been reopened to heavy traffic on a temporary basis, and a more permanent rehabilitation effort will be undertaken with the help of the Inter-American Development Bank (IDB) and other financial institutions. On the port side, although there is no bottleneck at present due to the existence of slack capacity in the neighboring port of Santo Tomas, some additional interim facilities have to be provided until a major capacity-increasing facility can be built and operated.

1.02 The proposed project, therefore, consists of a limited rehabilitation of Puerto Barrios to provide sufficient port capacity on the Atlantic for the next three to four years and a technical assistance program designed to help Guatemala in preparing its port expansion plan on a sound basis and in setting up appropriate port institutions. The project cost is estimated at US$2.8 million, of which the Bank loan would finance 76%, or US$2.3 million, corresponding to the estimated foreign exchange component.

1.03 This would be the second Bank loan to Guatemala for transportation. The first (Loan 124-GU, US$18.2 million), made in 1955, was to assist in completing the construction of 435 km of the main trunk highway system (Atlantic and Pacific highways) and in executing a three-year maintenance program. The project was completed in 1960, about two years behind schedule, except for the maintenance component, which was not satisfactorily implemented until 1964. There has been no lending for transportation since then, although port and highway identification missions were sent to Guatemala in 1968 and 1969. The proposed limited port rehabilitation loan would afford the Bank an opportunity to renew its collaboration with Guatemala in the transport field.

1.04 This report is based on the findings of two Bank missions: the first, consisting of Messrs. M. Blanc (economist), E. Frankel (consultant), and E. Pinilla (engineer), visited Guatemala in March 1976; the second, consisting of Mr. R. Scheiner (engineer/consultant), visited Guatemala in May 1976. The report has been edited by Ms. V. Foster.

2. BACKGROUND

A. The Transport Sector

2.01 Guatemala's transport system consists of the following three major transport corridors (Map IBRD 11953):

(a) the Transoceanic rail and road corridor, which runs from the port of San Jose on the Pacific to the ports of Puerto Barrios and Santo Tomas on the Atlantic, and which includes the highly trafficked middle section between Guatemala City and Escuintla;

(b) the Pacific Highway rail and road corridor, which goes from the Mexican border to the Salvadorean border; and

(c) the Central American Highway, which winds around on the highlands from border to border, north of the above corridor.

2.02 This rail and road intercity trunk network, which includes 2,619 km of paved highways and 700 km of railways, is complemented by (a) an important feeder and secondary road network about 11,300 km long; (b) two pipelines (San Jose-Escuintla and a small one in Puerto Barrios); and (c) a system of airports (one international and more than 20 general domestic aviation airstrips).

2.03 Since there are no statistics for intercity freight transport, the tonnages moving along these routes are not known precisely. However, total intercity ton-km moved in 1973 can be estimated at about 3.2 billion, with only about 5% moved by rail. Total exports and imports in 1975 can be estimated, from Table 1, at about 2.4 million tons; 80% consists of international trade taking place through the ports, which underscores the major role of Guatemalan ports in foreign trade. The remaining 20% is regional trade with the Central American countries and Mexico, taking place overland, mostly by truck.

2.04 There is no Transportation Ministry in Guatemala. The several transport modes are managed by various departments and agencies responsible to different ministries and, in some cases, to the Presidency. Because of this fragmentation of transport institutions and the fact that they relate to different levels of the Government hierarchy, transport coordination and policy-making are hampered at the sector level and can be effected only at the highest level of Government. The Guatemalan Government is aware of the difficulties and has been attempting to remedy them for some time, but with very little progress so far. This project, which includes an organization study for the port subsector, would constitute a step toward solving some of the institutional problems mentioned in the following section.

B. Railway and Port Subsectors

2.05 Built toward the end of the last century, the Guatemalan railway network was operated from about 1900 to 1968 by International Railways of Central America (IRCA), an American firm which also controlled the ports of Puerto Barrios on the Atlantic and San Jose on the Pacific. In December 1968, in the face of an increasing financial and social burden that IRCA was no longer able to meet, the Government of Guatemala terminated the IRCA concession and created an autonomous public enterprise, Ferrocarriles de Guatemala (FEGUA), to take over the railroad and the Puerto Barrios port.

2.06 FEGUA is supervised by a five-member Board of Directors with overall responsibility in policy-making and planning. Three members are nominated by the President of the Republic (through the Minister of Economy), and the other two are representatives, respectively, of the company's workers and of private interests. The Board nominates the General Manager and the Internal Auditor of FEGUA. FEGUA is more specifically dependent upon the Minister of Economy regarding tariff setting and upon the Minister of Public Finance regarding its financial operations. The FEGUA-owned port of Puerto Barrios is operated as a division of FEGUA's Transport Department. This rather low level of port management within the FEGUA hierarchy, and the fact that the port was captive to the railways, have been generally prejudicial to efficient, decentralized and autonomous port management.

2.07 The total FEGUA network comprises 770 route-km of single-track, three-foot-gauge rail lines; the physical plant is generally poor and obsolete. Since the creation of FEGUA in 1968, some improvements have been achieved, e.g., reducing excess labor. However, the future of the railroad is still uncertain since it is doubtful whether the required rehabilitation program would be economically justified and whether sufficient funds could be assigned to it.

2.08 For 30 years prior to nationalization, rail traffic followed a decreasing trend. Since FEGUA's creation, a traffic recovery, particularly of passengers, appears to have taken place, but the uncertainty of the statistics calls for a cautious interpretation of the available figures. Total freight traffic in 1974 was estimated at 776,000 metric tons and 155 million ton-km, corresponding to an average haul of only about 200 km. In 1974, passenger traffic totalled 1,663,000 passengers and 93 million pass-km, corresponding to an average haul of only 56 km.

2.09 FEGUA's financial situation has generally accompanied the evolution of the traffic. The yearly deficit increased to US$3.8 million in 1968, then went down to US$1.6 million in 1974 because of increased revenues and cost savings achieved by reducing the labor force. Since FEGUA's accounts do not separate the rail and port revenues and expenses, it is difficult to obtain a clear picture of the profitability or loss of each of the separate activities. A crude analysis indicates that port activities in Puerto Barrios and San Jose generate a substantial profit, which is more than offset by the deficit of the railroad operations.

2.10 Guatemala has four main ports, two on the Atlantic - Santo Tomas and Puerto Barrios - and two on the Pacific - San Jose and Champerico. Santo Tomas and Champerico are run by two separate autonomous National Port Authorities responsible to the Presidency through the Ministry of Public Finance, while San Jose and Puerto Barrios come under the Transport Department of FEGUA. Under the present structure, therefore, there is no single Ministry or Government agency in Guatemala responsible for ports and shipping. Port planning is usually done at the port level and is unsatisfactory because of its limited scope and the lack of overall planning and coordination at the national level.

2.11 The port of Puerto Barrios was equipped, before the earthquake, with a four-berth finger pier, where ocean-going ships up to 9 m draft were accommodated alongside. The wharf was accessible only by rail through an access bridge - which has suffered only minor damages - and had very narrow aprons which were fully occupied by rail lines. The port handled about 540,000 metric tons in 1975 (Table 2). Almost all commodities were shipped to and from the port by rail.

2.12 The port of Santo Tomas was constructed in 1955 at a location 10 km southwest of Puerto Barrios to provide an Atlantic public user port at a time when Puerto Barrios was a proprietary railway port. It is the only modern port facility in Guatemala and presently consists of seven marginal berths (914 m) with alongside drafts of 8.5 m. There is one roll-on/roll-off berth and limited container-handling capacity. Total port traffic in 1975 was 1,040,000 metric tons. While the port is accessible by both rail and road, rail facilities are minimal, and practically all cargo is handled by road. Santo Tomas is planning an expansion of its facilities, particularly with regard to container traffic, and has just contracted a feasibility study of its expansion plan.

2.13 On the Pacific Coast, Champerico and San Jose are two lighterage ports in rather decrepit state, with pier pilings wasted away and archaic and damaged warehousing facilities. Each has four lighter berths and uses 30-35 ton lighters to unload ships anchored about 1 km offshore. In 1974, San Jose handled 184,000 tons and Champerico 130,000 tons of general cargo and semi-bulk goods. Both ports are very inadequate, and numerous studies have been made over the last 12 years recommending the construction of a deepwater port at various locations. However, no decision has been reached so far.

C. The Effects of the Earthquake

2.14 About 220 km of primary roads and 180 km of rural roads were damaged by the earthquake and will need to be rebuilt at a total cost estimated, respectively, at US$33 million and US$9 million. This reconstruction effort will be executed in three stages: emergency, short term and long term. The most serious damage was done to the first 80-km section of the Atlantic Highway near Guatemala City. The emergency repair works have now been completed by

the U.S. Army Corps of Engineers with USAID financing, and the road has been reopened to all traffic. The Government hopes to reallocate the proceeds of an existing IDB highway loan to the more permanent reconstruction of the highway (US$11 million) and expects a US$1 million grant from the Government of the Federal Republic of Germany for reconstruction of a major bridge at Agua Caliente.

2.15 The railway, which parallels much of the Atlantic Highway on the floor of the valleys, suffered only minor damages, estimated at about US$1.3 million, and was able to restart its operation very quickly. However, the damages to the track, caused by minor but recurrent landslides, reduce the speed of trains considerably and, therefore, the level of traffic. Passenger traffic has been suspended, and priority has been given to export cargo.

2.16 The port of Puerto Barrios is now out of service due to the collapse of the wharf with its warehouse installation and equipment. The replacement cost of the facilities is estimated at about US$10-15 million. The 350-m long access bridge, with its three railway spurs, has suffered only minor damages, however, and can be used to a limited extent for berthing; its rehabilitation is recommended as an interim short term measure that will allow for planning and construction of a permanent dry bulk terminal. Santo Tomas suffered only very minor damage and is now handling most of the traffic previously handled at Puerto Barrios (para 4.03).

3. THE PROJECT

A. Description and Cost Estimates

3.01 The project consists of (see Chart):

(a) a limited rehabilitation of Puerto Barrios, including:

(i) converting the existing 350-m long access bridge into a two-berth pier (US$1,600,000);

(ii) dredging about 240,000 m^3 alongside the pier (US$400,000);

(iii) provision of cargo-handling equipment (US$160,000); and

(iv) consulting services for preparing and supervising (i) and (ii) above (US$130,000).

(b) a port organization study to help improve the port institutions in Guatemala (US$70,000); and

(c) a feasibility study for construction of a dry bulk terminal (US$110,000).

3.02 To upgrade the access bridge, it is intended to drive piles alongside it to support a concrete deck 4-6 m wide and 350 m long, thereby providing some limited apron space to work the ships. The area alongside the berth would be dredged to -8.5 m at lower low water in, at the outer end, decreasing to -6.0 m at the land end. The existing damaged piles would be repaired, and the causeway would be paved to provide truck access alongside ships. To replace equipment lost during the earthquake, the following cargo-handling equipment would be acquired: four to five forklifts and two to three portable conveyors. The following three studies would be carried out before implementation:

(a) hydrographic study to define the water depth in the port and channel area and to determine dredging requirements;

(b) structural study of the condition of the existing piling and access bridge to define the amount of repair and reinforcement needed; and

(c) engineering design of the proposed structure.

Terms of reference for these studies have been discussed with the executing agency and are included in Annex 1. Consultants would be hired to carry out these studies. They will also prepare bid documents and supervise project execution.

3.03 A feasibility study is needed to define the optimum location and economic viability of a dry bulk terminal. At least four alternative locations have been suggested and should be considered:

(a) In Puerto Barrios, which has the advantage of having the railway infrastructure, some warehouse space and a pool of experienced manpower;

(b) In Santo Tomas, where a free zone with industrial development is planned, in addition to planned expansion in container and roll-on/roll-off facilities;

(c) At a new location, in the Bay of Galvez, 12 km east of Puerto Barrios, where deep and protected waters would provide a good site for a new bulk-handling terminal; and

(d) On the Pacific coast, because of the proximity of the export-oriented agricultural zone.

These alternatives are being studied in the ongoing Central American Transport Study at a prefeasibility level and could be studied at a feasibility level.

3.04 The port organization study would review the existing shortcomings of port institutions in Guatemala and propose an overall reorganization plan of the port sector at the port level and at the national level. Along with the proposed charters for the new institutions, the study should produce a realistic schedule for implementation of the proposed reorganization. During an early phase, the study should consider the setting up of an appropriate port authority on the Atlantic Coast to operate both existing and proposed facilities. The terms of reference, as well as the qualifications and experience of the team to be nominated for carrying out the study, would be approved by the Bank.

3.05 The total estimated cost of the project is US$3.0 million equivalent with a foreign exchange component of US$2.3 million (76%). More detailed cost estimates are given in Table 3 and are summarized below:

	Q ('000) = US$ ('000)			% of
	Local	Foreign	Total	Total Cost
Dredging	50	350	400	13
Civil Works	400	1,200	1,600	53
Equipment	20	150	170	6
Engineering and Supervision	130	-	130	4
Subtotal	600	1,700	2,300	76
Studies	50	130	180	6
Base Cost Estimate	650	1,830	2,480	82
Contingencies				
Physical	50	350	400	13
Price	30	120	150	5
Total Estimated Cost	730	2,300	3,030	100

The foreign currency component for civil works is relatively high since, as a result of the shortage of construction materials, Guatemala is now importing cement, reinforcement steel, timber, asphalt, etc.

B. Project Execution, Procurement and Disbursement

(i) Execution

3.06 The Ministry of Communications and Public Works (MCPW) would be responsible for the execution of the project. The Vice Minister has been nominated by the President of the Republic to be personally responsible for project implementation. He would be assisted by consultants, who would, in close

collaboration with FEGUA, carry out the studies mentioned in paragraph 3.02, prepare the detailed engineering and tender documents and would later supervise the construction work. The consultants would be Guatemalans assisted by foreign experts. In view of the small amount involved (US$130,000), and in order to speed up project preparation, it is proposed that these consultants be nominated and paid directly by the Government. It was agreed during negotiations that the selection of the consultants would be made in consultation with the Bank and that reports on the studies mentioned in paragraph 3.02 and the bid documents to be prepared by the consultants would be made available to the Bank for review and comments.

3.07 The National Economic Planning Council has been nominated by the Government to supervise the Port Organization Study, which would be based upon terms of reference to be discussed and agreed with the Bank. Contracting would be done according to Bank guidelines. During negotiations, assurance was obtained that the Bank would be given an opportunity to review and comment on the final draft report of the study.

3.08 The feasibility study for the bulk terminal also would be undertaken by the National Economic Planning Council with Bank financing. During negotiations, it was agreed that the Bank would review and agree upon the terms of reference, and that the selection of consultants would be done in accordance with Bank guidelines. It is estimated that about 30 man-months of consultant services (of which 20 man-months would be provided by foreign specialists) would be required for the two studies at an average cost of US$5,000 per man-month.

(ii) Procurement

3.09 The main contract (53% of project cost), comprising marine works and paving, is to be awarded on the basis of competitive bidding advertised locally and in accordance with acceptable local procedures. This would involve international participation since all large local contractors are working in joint venture with expatriate contractors.

3.10 In order to save time and mobilization costs, the contract for the dredging (13% of project cost) required in conjunction with the wharf rehabilitation should be negotiated with the dredging company (Guatemalan-US Company) presently engaged in deepening the approach channel to nearby Santo Tomas, under a contract that was awarded following international bidding. During negotiations, it was confirmed that, subject to obtaining reasonable contract terms, the Bank had no objection to this procedure.

3.11 It was also agreed that the limited amount of cargo-handling equipment (6% of project cost) to be provided under the rehabilitation project could be procured from the same companies which supplied the equipment lost in the earthquake in order to permit standardization and continuing use of existing spare parts. FEGUA would assist MCPW in the procurement of this equipment.

3.12 The schedule for the execution of port works shown in Annex 2 has been discussed and agreed with the executing agency. The reconstruction of the port and also the studies for port organization and bulk terminal are expected to be completed by end March 1977.

(iii) Disbursements

3.13 A schedule of estimated disbursements is given in Table 4. Disbursements would cover:

(a) 87% of the total cost of dredging work related to the port rehabilitation works;

(b) 75% of the total cost of civil works;

(c) 100% of the foreign cost of the mobile equipment;

(d) 100% of the foreign costs of the consultants' fees for the studies.

C. Financing

3.14 The foreign exchange component has been estimated at 76% of total cost, or US$2.3 million, and would be covered by the Bank loan. Local costs in the amount of US$.7 million, as well as interest during construction, would be financed by the Government. This was confirmed during negotiations. The tentative financing plan is therefore as follows:

	Millions of US$		
	1976	1977	Total
Requirements of funds			
Project cost	2.0	1.0	3.0
Sources of funds			
Bank loan	1.4	0.9	2.3
Government contributions	0.5	0.2	0.7
	1.9	1.1	3.0

D. Ecology

3.15 The dredging would alter the existing seabed around the wharf. The dredged material which cannot be used as selected fill material for the foreseen port development of Santo Tomas would be dumped in the deeper parts of the sea. Experience has shown that the amount of silting is extremely small. The currents are minimal, and no rivers empty into the bay. No large scale variations in the dredged areas and maintenance dredging quantities are foreseen. The rehabilitated port facilities would handle non-polluting cargo similar to that handled in the past. No adverse effects are therefore expected.

4. ECONOMIC JUSTIFICATION

A. Traffic Patterns and Port Capacity

4.01 As indicated in Table 2, the total port traffic handled in 1975 in the Atlantic ports of Guatemala was about 1,580,000 metric tons, with Santo Tomas handling 1,040,000 tons and Puerto Barrios 540,000 tons. Puerto Barrios handled mostly agricultural exports, such as bananas (227,000 tons), sugar (149,000 tons) and grain imports (87,000 tons). Santo Tomas, on the other hand, has traditionally handled general cargo (400,000 tons), either in break-bulk or unitized form (container and trailer), in addition to petroleum product imports (370,000 tons). Traffic growth in the past has been important on the Atlantic coast, at about 9% on average per annum over the six-year period from 1970 to 1975, and, particularly, in Santo Tomas, where traffic trebled during the last ten years. Although detailed traffic forecasts are not available at this time, tentative forecasts were prepared for the years 1976 to 1979, based on information provided by the users, the Port Authorities and the Central American Transport Study Group (Table 2). They show that total traffic demand for the Atlantic is expected to increase to about 2.2 million tons by 1979, which is equivalent to an average yearly increase of 8.7%, slightly below past growth rate. These forecasts assume that the present capacity limitation on the Atlantic coast will be eliminated from early 1977 onward when the temporary rehabilitation project in Puerto Barrios is completed. The forecasts for 1976 and 1977 also take into account the earthquake effects, mainly in the form of additional and temporary imports of foodstuff, machinery, steel and building materials. This increase is partially offset by reduced exports of wood (to be used locally).

4.02 The collapse of the four-berth pier of Puerto Barrios represents a decrease in capability to handle 500,000 tons per year, which is expected to be met this year, approximately, as follows: about 70% will be absorbed by Santo Tomas, 15% will be diverted to the Pacific port of Acajutla in El Salvador, and the remaining 15% will continue to be handled in Puerto Barrios, alongside the access bridge. Because of its excess capacity, Santo Tomas has so far been able to handle the bulk of the additional traffic without major problems, but at some additional cost. Ship waiting time has

increased from almost nil in 1975 to 15% of service time this year in spite of double shift working. There are some inefficient rail operations and double handlings of cargo due to the fact that the rail yards and the sugar warehouse are located in Puerto Barrios, 10 km away. Although there is no immediate congestion problem, additional capacity would be needed to meet, first, the boost of imports generated by the reconstruction program and, second, the expected medium term traffic growth.

B. Short Term Alternatives

4.03 Since a carefully planned and engineered new investment providing a substantial increase in port capacity on the Atlantic would be at least two-and-a-half to three years away, four short term alternatives were considered, which are not mutually exclusive:

(a) the proposed limited rehabilitation of Puerto Barrios, providing an additional two-berth capacity, mainly for the export of sugar;

(b) the provision of lighterage facilities, making use of the existing access bridge in Puerto Barrios;

(c) improvement in Santo Tomas, including the purchase of bulk handling equipment and the construction of additional railway spurs and new storage areas; and

(d) diversion of more cargo to Pacific ports or to other Atlantic ports, such as Puerto Cortes in Honduras.

The total costs to the Guatemalan economy incurred by each alternative were estimated on the basis of available information and were found to be the least for the first alternative (Annex 3).

C. Other Factors

4.04 The proposed solution is one that fits well with the longer term prospective. Unlike a hasty reconstruction of a full bulk berth in Puerto Barrios which would preempt the careful study and implementation of other, possibly better, long term alternatives, it gives time, at a relatively low cost, to carefully plan future bulk shipping facilities in Guatemala and to lay the groundwork for creating badly needed port institutions. In this regard, the proposed project is not an attempt to restore the old inefficient situation, but is, rather, the first step of a long term port improvement strategy. To ensure this, the Government agreed during negotiations that before undertaking, within the next three years, the construction or development of any dry bulk terminal which may decrease the use of the proposed two berth facility, the Bank would be given an opportunity to comment on the economic justification of such project.

4.05 Unlike other short term alternatives considered, the proposed rehabilitation would provide jobs for a large portion of the 1,000 workers who lost employment as a result of the earthquake. The port was, in fact, the main economic activity of the Puerto Barrios community (about 40,000 people), and it is estimated that about one-third of the total township was economically dependent upon the port activity.

4.06 Because most of FEGUA's traffic and revenues were generated by the imports and exports through Puerto Barrios, the closing of Puerto Barrios would result in a rapid decline of railway traffic and would place FEGUA in a very critical position. Even if all of the Puerto Barrios traffic were transferred to Santo Tomas, it is very unlikely that the modal split between rail and road port cargo would remain the same as it was before the earthquake, because Santo Tomas was not designed, and is not equipped, to handle rail cargo efficiently. Thus, keeping some, albeit reduced, port activity in Puerto Barrios would also help to avoid a rapid deterioration of FEGUA until, at least, its economic role in the transportation system of Guatemala is ascertained.

D. Project Risk

4.07 The special risks attendant upon the project are the possible damage to the proposed facility by another earthquake and delays in construction due to shortage of materials; provision would be made in the design of the structure to minimize the first risk to a reasonable extent. Since the construction period is short and the quantities of materials required are not large and are believed to be presently available, the second risk would not be of material significance.

E. Conclusion

4.08 The proposed project, while being the least cost short term alternative for ensuring normal port operations on the Atlantic coast for the next three years, is also the first step of a long term port improvement strategy, thanks to the technical assistance program it includes. It will also alleviate serious unemployment and other social problems within the community of Puerto Barrios and the port-dependent Guatemalan Railways, until better and more permanent solutions can be implemented.

5. AGREEMENTS REACHED AND RECOMMENDATION

5.01 During negotiations, agreement was reached with the Government on the following points:

(a) The selection of consultants for carrying out the engineering studies and design and supervision of execution would be made in consultation with the Bank (para. 3.06);

(b) The Bank would be given an opportunity to review and comment on reports on studies mentioned in paragraph 3.02 and the bid documents (para. 3.06);

(c) The appointment of consultants for the studies for Port Organization and Bulk Terminal would be made in accordance with Bank guidelines and the Bank would review and comment on their terms of reference and the final draft reports (paras. 3.07 and 3.08);

(d) The Government would finance the local costs of executing the project, as well as interest during construction (para. 3.14); and

(e) Before undertaking, within the next three years, development of any dry bulk terminal which may decrease the use of the proposed two-berth facility, the Bank would be given an opportunity to comment on the economic justification of such project (para. 4.04).

GUATEMALA

PORT REHABILITATION PROJECT

Exports and Imports by Mode - First Half of 1975

Mode/Border Point	Imports		Exports		Total			
	000 tons	Million Quetzales or US$	000 tons	Million Quetzales or US$	000 tons	%	Million Quetzales	%
Sea								
Pacific								
Champerico	5.9	1.7	76.1	56.5	82.0	6.9	58.2	9.8
San Jose	197.2	35.2	46.9	22.0	244.1	20.4	57.2	9.7
	203.1	36.9	123.0	78.5	326.1	27.3	115.4	19.5
Atlantic								
Puerto Barrios	22.1	7.0	269.1	97.6	291.2	24.4	104.6	17.7
Santo Tomas	175.6	76.2	140.8	140.2	316.4	26.4	216.4	36.5
	197.7	83.2	409.9	237.8	607.6	50.8	321.0	54.2
Ports Subtotal	400.8	120.1	532.9	316.3	933.7	78.1	436.4	73.7
Land	91.0	46.0	166.2	80.9	257.2	21.5	126.9	21.5
(inc. Mexico)	(23.5)	(1.1)	(3.2)	(1.4)	(26.7)		(8.5)	
Air	1.5	16.0	3.4	12.7	4.9	.4	28.7	4.8
Total	493.3	182.1	702.5	409.9	1,195.8	100.0	592.0	100.0

Source: Dirección General de Estadística

November 1975

TABLE 1

GUATEMALA

PORT REHABILITATION PROJECT

Traffic Statistics and Forecasts for the Atlantic Ports

in 000's of Metric Tons

	Actual Results 1974			Actual Results 1975			Traffic Forecasts			
	1974 Puerto Barrios	1974 Santo Tomas	1974 Total	1975 Puerto Barrios	1975 Santo Tomas	1975 Total	1976[1/]	1977	1978	1979
A. Exports										
Banana	297	-	297	227	-	227	218	227	233	243
Sugar	79	50	129	149	42	191	278	324	388	450
Coffee	n.a.	107	107	8	106	114	107	110	120	125
Minerals	-	-	-	-	8	8	12	28	47	85
General Cargo	31	120	151	14	73	87	80	104	120	135
Subtotal Exports	407	277	684	398	229	627	695	793	908	1,038
B. Imports										
Petroleum products	6	411	417	14	370	384	390	410	430	451
Grain	54	71	125	87	61	148	130	130	130	130
Fertilizer	n.a.	29	29	18	55	73	80	88	97	107
General Cargo	48	372	420	23	325	348	450	450	462	510
Subtotal Imports	108	883	991	142	811	953	1,050	1,078	1,119	1,198
C. Total Exports and Imports	515	1,160	1,675	540	1,040	1,580	1,745	1,871	2,027	2,236
Total (excluding petroleum products)	509	749	1,258	526	670	1,196	1,355	1,461	1,597	1,785

TABLE 2

1/ Forecast traffic includes traffic that has been temporarily diverted to the Pacific ports (Acajutla, in particular), due to the earthquake. It is expected that with the rehabilitation project this traffic will revert to the Atlantic ports.

Source: Santo Tomas Port Authority, FEGUA, Central American Study Group, Asazgua, Bandegua.

May 1976

GUATEMALA

PORT REHABILITATION PROJECT

Project Cost Estimates

		Local	Foreign	Total	% of Total Cost
		(Quetzal 000 or US$ 000)			
I	DREDGING				
	Dredging of some 240,000 m^3	50	350	400	13
II	CIVIL WORKS				
	Rehabilitation of existing causeway	250	1,050	1,300	43
	Repair and paving of causeway	150	150	300	10
	Subtotal	400	1,200	1,600	
III	EQUIPMENT				
	Forklift (four to five)	10	90	100	3
	Portable Conveyors (two to three)	10	60	70	2
	Subtotal	20	150	170	
IV	ENGINEERING AND SUPERVISION	130	-	130	4
V	STUDIES				
	Organization	20	50	70	2
	Feasibility for Bulk Terminal	30	80	110	4
	Subtotal	50	130	180	
	BASE COST ESTIMATE	650	1,830	2,480	82
VI	CONTINGENCIES				
	Physical	50	350	400	13
	Price	30	120	150	5
	Subtotal	80	470	550	
	GRAND TOTAL	730	2,300	3,030	100

Source: Bank Missions
June, 1976

TABLE 3

TABLE 4

GUATEMALA

PORT REHABILITATION PROJECT

Estimated Schedule of Disbursement

IBRD Fiscal Year and End of Quarter	Estimated Disbursements US$000	Estimated Cumulative Disbursements US$000
FY1977		
September 30, 1976	400.0	400.0
December 31, 1976	1,000.0	1,400.0
March 31, 1977	600.0	2,000.0
June 30, 1977	100.0	2,100.0

Source: Bank mission

May 1976

ANNEX 1

GUATEMALA

PORT REHABILITATION PROJECT

Outline Terms of Reference for Engineering Studies

The engineering studies for the reconstruction of Puerto Barrios are designed to provide all engineering data, computations, specifications, materials, listings, and survey and test requirements for the reconstruction of Puerto Barrios. The following terms of reference define the required engineering studies:

1. Definition of requirements for hydrographic survey and analysis of results of said survey.

2. Definition of requirements for soil borings and tests and review of laboratory and soil mechanics analysis to determine load bearing capability and consequent piling requirements.

3. Specification of requirements for inspection and test and repair of existing causeway structure.

4. Review of submerged obstructions and effect on safety of approach, including determination of debris removal and marking requirements.

5. Determination of dredging requirements and specifications for dredging project, including determination of channel width, turning circle, and docking approach. Definition of navigational aids.

6. Computation of docking and mooring forces and specifications for mooring methods and fittings.

7. Engineering and design of structure to support vertical loads of 3 tons/square meter and transverse docking and mooring forces.

8. Design of wharf outfitting, including piping, bollards and fendering system.

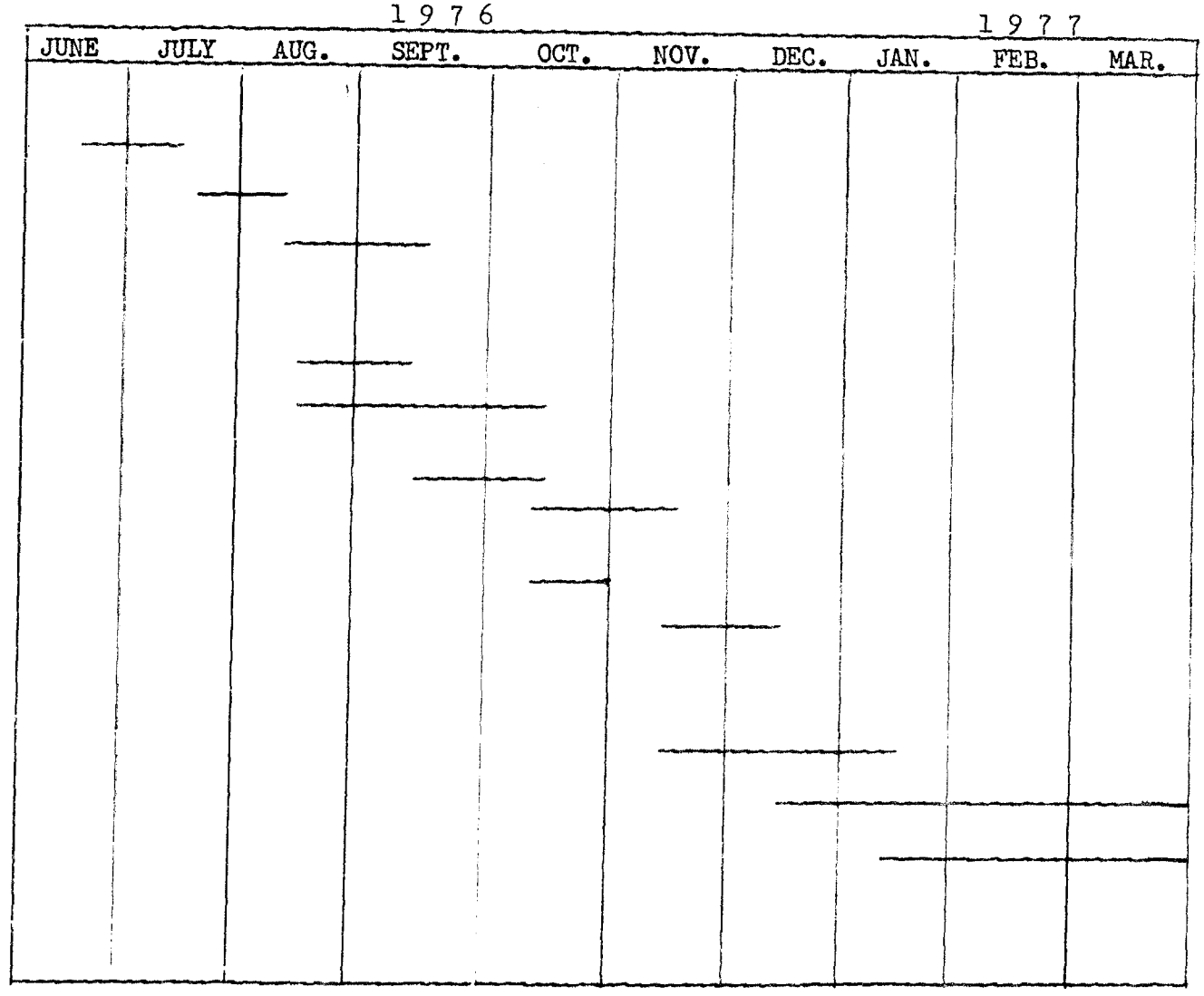
9. Drafting of construction specifications and bill of quantities.

10. Drafting of tender documents for dredging and new wharf construction at Puerto Barrios.

GUATEMALA

PORT REHABILITATION PROJECT

Execution Schedule for Port Works



1. SELECTION OF CONSULTANTS
2. AGREEMENT WITH CONSULTANTS
3. ENGINEERING STUDIES
4. DESIGN AND PREPARATION OF TENDER DOCUMENTS
   - DREDGING
   - CIVIL WORKS
5. BIDDING
   - DREDGING
   - CIVIL WORKS
6. AWARD
   - DREDGING
   - CIVIL WORKS
   - EQUIPMENT
7. EXECUTION
   - DREDGING
   - CIVIL WORKS
   - EQUIPMENT

June 1976

ANNEX 2

GUATEMALA

PORT REHABILITATION PROJECT

Economic Justification - Discussion of Short Term Alternatives

Lighterage

1. Lighterage could constitute a flexible but expensive short term alternative. Providing 200,000 tons of lighterage capacity would require an initial investment of about US$800,000 in equipment and would increase cargo-handling costs by an additional US$4.00 per ton, or US$800,000 per year. This extra charge, combined with higher damage costs, would preclude the shipment of sugar and coffee exports by this method. Also, lighterage facilities would not completely replace the proposed project since a partial rehabilitation of the existing bridge would still be needed. It is therefore estimated that, when compared with proposed alternatives, the savings in investment costs would not outweigh the additional operating costs incurred by the lighterage alternative.

Improvement in Santo Tomas

2. Although port productivity can still be raised in Santo Tomas, and is expected to be by the end of the year when the three-shift schedule is implemented, the inadequacy of the port installation in handling bulk cargo casts serious doubt upon its ability to handle the total expected Atlantic traffic within the next three years. Improvements in additional rail facilities, costing about US$500,000, would have to be made to facilitate the movements of rail-carried goods inside and outside the port area. With these physical improvements and very favorable port operation conditions, i.e., a 40% increase in productivity and a traffic flow evenly distributed throughout the year, the queuing analysis shows that berth occupancy could be high, about 70%, corresponding to 230 waiting days. With the proposed project, waiting time would be reduced, and savings are estimated at about 200 ship days in 1977 and 300 in 1978, corresponding to about US$600,000 and US$900,000 respectively, in ship cost savings. It should be noted that even a slight shortfall from the maximum productivity or irregularly distributed traffic would cause a drastic increase in berth occupancy and waiting time, i.e., waiting time becomes infinite if only two shifts are worked. It is inadvisable, therefore, to consider that Santo Tomas would be able, with short term improvements only, to cope with the bulk of Atlantic cargo. The construction of an additional general cargo berth in Santo Tomas is not considered here since its cost would be much higher - at least US$5 million - and it might not be consistent with the planned long term expansion of the port.

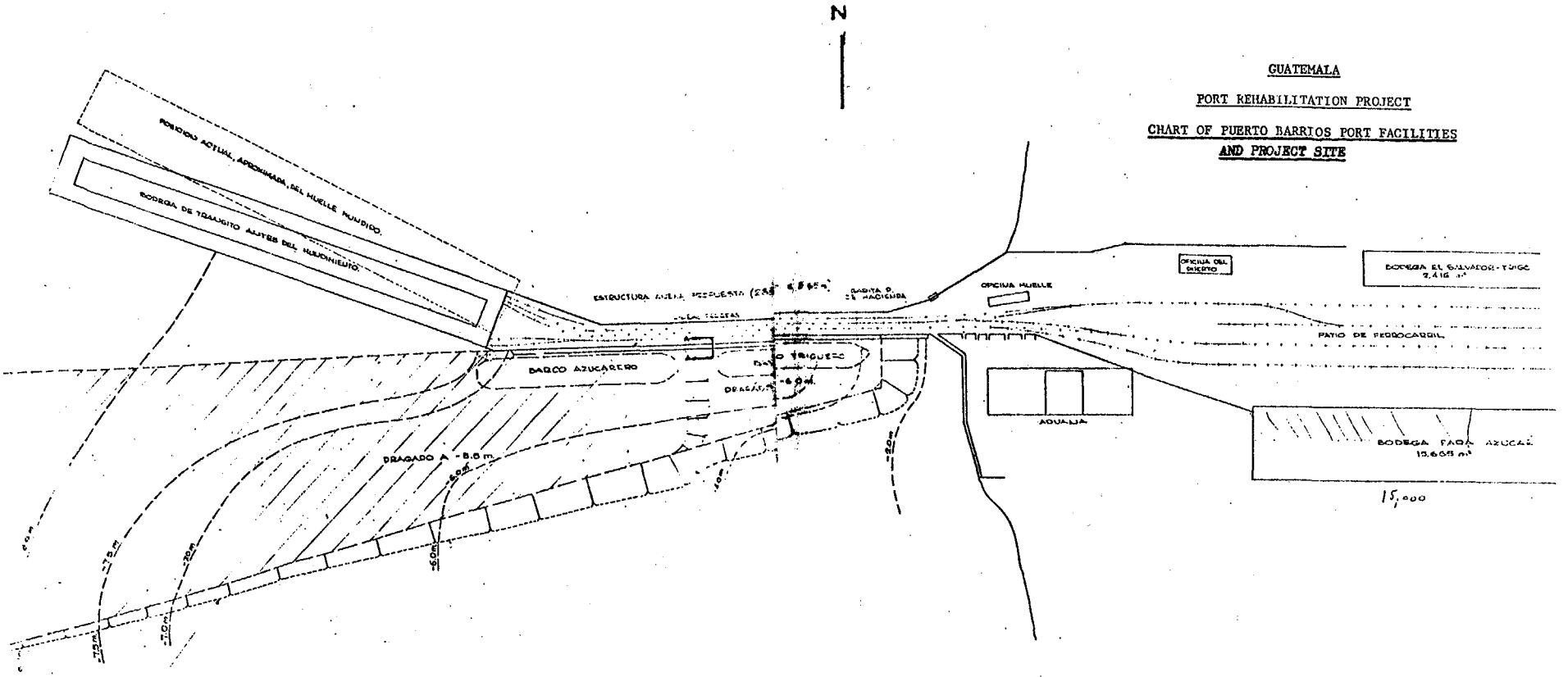
Diversion to other Ports of the Atlantic and Pacific Coasts

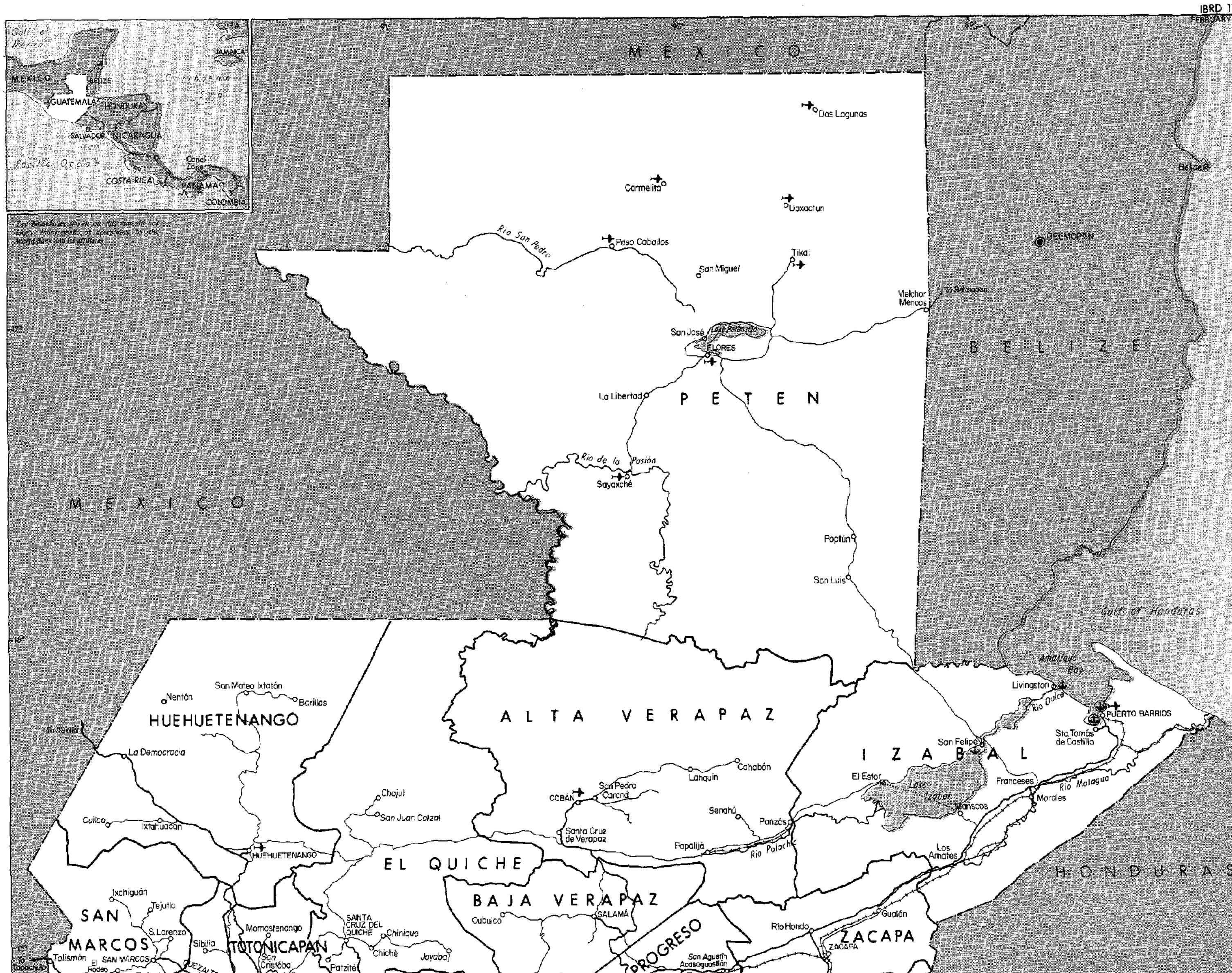
3. Diverting more cargo to other ports on the Atlantic or the Pacific coasts is either not feasible for capacity reasons or is costly in terms of loss of national output. The two lighterage ports on the Guatemalan Pacific Coast are high cost operations, and their capacity is quite limited. Additional truck costs to Puerto Cortes (Honduras) are reported to be US$10 to US$12 higher than to the Guatemalan ports of Santo Tomas/Puerto Barrios and, therefore, too much to make Puerto Cortes a valid alternative. Acajutla, in El Salvador, is being used for sugar exports and could continue to be used. Farm-to-shipboard transport costs are about US$3.00-3.50 per ton cheaper than for the Atlantic port due to a lower trucking rate (US$11-12 instead of US$17-18); however, this advantage is eliminated when considering c.i.f. costs in the United States, due to Panama Canal charges and higher freight rates. Since sugar is being sold f.o.b., the additional sea costs have to be paid, so far, by the sugar importer, but it is unlikely that this would continue to be so since Guatemalan sugar would become less competitive on the sugar market. However, the main diseconomy incurred by using Acajutla would be the loss of foreign exchange and of related national output that it entails. At US$6/ton (handling rates in Acajutla) and 200,000 tons per year, this represents a minimum loss for Guatemala of US$1,200,000 annually for the next three years, i.e., about US$3.6 million over a three-year period, not counting the foreign trucking costs.

GUATEMALA

PORT REHABILITATION PROJECT

CHART OF PUERTO BARRIOS PORT FACILITIES
AND PROJECT SITE




GUATEMALA
TRANSPORTATION NETWORK
Paved roads
All weather roads
Railroads
International airport
Other airports
Main and secondary ports
Navigable rivers
Ferries
Department boundaries
International boundaries
KILOMETERS
MILES
MEXICO
BELIZE
HONDURAS
EL SALVADOR
PACIFIC OCEAN
Gulf of Honduras
PETEN
ALTA VERAPAZ
IZABAL
HUEHUETENANGO
EL QUICHE
BAJA VERAPAZ
EL PROGRESO
ZACAPA
SAN MARCOS
TOTONICAPAN
QUEZALTENANGO
SOLOLA
CHIMALTENANGO
GUATEMALA
CHIQUIMULA
JALAPA
RETALHULEU
SUCHITEPEQUEZ
SACATEPEQUEZ
JUTIAPA
SANTA ROSA
ESCUINTLA
GUATEMALA CITY
FLORES
BELMOPAN
PUERTO BARRIOS
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Tikal
Paso Caballos
San Miguel
San José
La Libertad
Sayaxché
Poptún
San Luis
Melchor Mencos
Belize
Río San Pedro
Río de la Pasión
San Felipe
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Lake Izabal
Morales
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Talismán
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El Tulate
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Chiquimulilla Canal
Las Lisas
Chiquimulilla
Taxisco
Cuilapa
Barberena
Jutiapa
Jalapa
Miramundo
Esquipulas
Agua Caliente
Zapotitlán
Jerez
Lake Güija
San Cristóbal Frontera
Mazatenango
Retalhuleu
Antigua Guatemala
Escuintla
Palín
Masagua
Siquinalá
Sta. Lucía
Río Bravo
Chimaltenango
Sololá
Panajachel
Lake Atitlán
Totonicapán
Momostenango
Chichicastenango
Santa Cruz del Quiché
Joyabaj
Huehuetenango
Jocotán
Quezaltepeque
El Progreso