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UNITED NATIONS SPECIAL FUND

PLAN OF OPERATION

THIRD DRAFT

REGIONAL: COSTA RICA, EL SALVADOR, GUATEMALA, HONDURAS, NICARAGUA  
AND PANAMA

TITLE OF PROJECT: EXPANSION AND IMPROVEMENT OF HYDROMETEOROLOGICAL  
AND HYDROLOGICAL SERVICES IN THE CENTRAL AMERICAN  
ISTHMUS

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## UNITED NATIONS SPECIAL FUND

## PLAN OF OPERATION

REGIONAL: COSTA RICA, EL SALVADOR, GUATEMALA, HONDURAS  
NICARAGUA AND PANAMA

TITLE OF PROJECT: EXPANSION AND IMPROVEMENT OF HYDROMETEOROLOGICAL AND  
HYDROLOGICAL SERVICES IN THE CENTRAL AMERICAN ISTHMUS

## Summary data

Special Fund allocation US\$ 2,806.500

## Consisting of:

Special Fund contribution US\$ 2,732,400

Government contributions towards  
local operating costs US\$ 74,100

Government counterpart contribution in kind US\$ 3,257,000

Duration Five years

Executing Agency The World Meteorological Organization

Co-operating Government  
Agency Regional Committee on Water Resources in Central  
America

PREAMBLE

For the purpose of the project "Expansion and Improvement of Hydro-meteorological and Hydrological Services in the Central American Isthmus" to be undertaken by the World Meteorological Organization acting as Executing Agency for the Special Fund, in co-operation with the Governments of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, this Plan of Operation shall be the Plan of Operation provided for in Article I, paragraph 2, of the Agreement signed by the Governments of the six countries concerned and the Special Fund on the following dates: Costa Rica, 10 January 1961; El Salvador, 24 October 1960; Guatemala, 17 November 1960; Honduras, 20 December 1960; Nicaragua, 20 January 1961; Panama, 9 March 1961. It has been established in six original copies, three in English and three in Spanish, it being understood that the English and Spanish texts shall be considered equally authentic.

## I. PURPOSE AND DESCRIPTION

1.1 The purpose of the project is to establish a network consisting of 830 hydrometeorological and 270 hydrological stations in the countries of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, for the collection of basic data required in the appraisal of water resources and long-term planning of their utilization. Technical and administrative facilities for the collection and processing of hydrometeorological and hydrological data on a continuing basis will also be established in the six countries.

1.2 The distribution of the stations in the six countries will be determined by the magnitude of the proposed programmes and according to local conditions existing in them. The proposed distribution is given in Table 1. The planning of network, the installation, maintenance and operation of the stations and the collection, processing and publication of the data will be done in accordance with the standards and regulations established by the World Meteorological Organization. The selection of stations will be done taking into account the areas of the most pressing needs.

1.3 An efficient organization will be set up, when not already existing, in each of the countries under which the stations will be installed and operated and which will be responsible for the collection, processing and publication of the data from the new stations as well as from already existing stations during and after the period of Special Fund support.

1.4 Special attention will be given to the institutional development in the six countries. To this end the training of the national personnel will be carried out through fellowships abroad and by in-service instructional courses by the experts in the project so that at the end of the project an adequate number of technicians will be available to carry on and further develop the hydrometeorological and hydrological activities.

1.5 The observational programme and any studies that will be carried out during the project period will be co-ordinated with the programme established in the countries for the International Hydrological Decade. In fact, this project may be considered as part of the region's contribution to the Hydrological Decade.

1.6 The Headquarters of the project will be in San Jose, Costa Rica.

## II. PRIOR OBLIGATIONS

2.1 The Governments will authorize the Regional Committee for Water Resources in Central America established by the Central American Sub-Committee for Electrification and Water Resources to act on their behalf as the overall co-operating government agency with respect to the project. The Governments in addition to investing the necessary authority to the Regional Committee will also provide it with necessary financial and administrative support.

2.2 The regional Committee for Water Resources in Central America will be composed of the six Chairmen of the National Co-ordinating Committee referred to in paragraph 2.3 below.

2.3 Each Government will establish within its own country a national co-ordinating Committee which will assume responsibility for the execution, on behalf of the Government, of the project operations planned in that country. This Committee will be composed of representatives from the governmental and other important agencies concerned with water resources (general hydrology, hydro-electric power, irrigation, potable water, etc.) and the meteorological services.

2.4 The Governments will take appropriate steps through legislation or otherwise, to provide funds, facilities and administrative support necessary to maintain the meteorological and hydrological services concerned with the project on a continuing basis during and after the period of Special Fund support.

2.5 Since the efficient operation of the project is dependent on the obligations set forth in paragraphs 2.1 to 2.4 above being completed, the Governments will take the most expeditious steps to fulfill the above obligations.

## III. WORK PLAN

## A. PARTICIPATION AND CONTRIBUTION OF THE SPECIAL FUND

3.1 The Special Fund shall provide the following through the Executing Agency.

a. Experts

A total of 240 man-months of expert service. Within the total of 240 man-months of expert service minor adjustments of individual post assignments may be made by the Executing Agency, in consultation with the Government, if this is found to be in the best interest of the project.

b. Fellowships

Fellowships at an estimated cost of \$60,000. Fellowships awarded under this Plan of Operation shall be administered in accordance with the fellowship regulations of the Executing Agency. Within the total allocation of \$60,000 minor adjustments of individual fellowships may be made if this is found to be in the best interest of the project.

c. Equipment and supplies

Equipment and supplies at a cost not exceeding \$1,933,600

d. Miscellaneous local operating costs

Miscellaneous services and facilities, falling under local operating costs, at an estimated cost of \$29,500.

3.2 The services and facilities summarized in paragraph 3.1 above are detailed in Appendix I and Tables II, III, IV, V, VI and VII.

## B. PARTICIPATION AND CONTRIBUTION OF THE GOVERNMENTS

i. Counterpart Contribution

3.3 The Government shall provide the following as a counterpart contribution in:

a. Personal services

Professional staff. A total of 5100 man-months of professional staff service. Within the total of 5100 man-months of professional

staff service minor adjustments of individual post assignments may be made by the Government, in consultation with the Executing Agency, if this is found to be in the best interest of the project.

Non-professional staff. An estimated total of 7389 man-months of non-professional staff service.

b. Fellowships

Local salary for professional staff awarded Special Fund fellowships while in fellowship status.

c. Land and buildings

Land and buildings including the construction of hydrological and hydrometeorological stations at an estimated cost of \$435,400.

d. Equipment and supplies

Equipment and supplies, including installation and maintenance of equipment provided by the Special Fund, at an estimated cost of \$62,720.

e. Miscellaneous

Miscellaneous services and facilities at an estimated cost of \$377,065

f. Cost of transporting and handling of equipment

The cost of import and customs clearance of project equipment; its transportation, handling, storage and related expenses within the country; its safe custody, insurance, and replacement if necessary, after delivery to the project site.

g. Records and information

The Government shall make available to the project all existing published and unpublished records and information necessary for its implementation. This will include reports, maps, records and other data which, in the opinion of the Executing Agency, would facilitate the operation of the project.

h. Internal travel of international experts

In addition to their payments towards local operating costs provided in paragraph 3.7 below, the Governments shall provide the required travel of the international experts within the region.



i. Vehicles

The Governments shall meet the cost of operation and maintenance of the vehicles provided by the Special Fund.

3.4 The services and facilities summarized in paragraphs 3.3 above are detailed in Appendix II and Table VII~~I~~.

3.5 The estimated cost of the counterpart contribution as detailed in Appendix II below is based on the most realistic information available at the time of drafting this Plan of Operation. It is understood that price fluctuations during the period of execution of the project may necessitate an adjustment of said contribution in monetary terms; the latter shall at all times be determined by the value of the services and facilities required for the proper execution of the project.

ii. Local Operating Costs

3.6 With reference to the payments to be made by the Government under Article V, paragraph 1 (a) to (d) of the Agreement referred to in the preamble to this Plan of Operation, excepting the cost within the transport~~ation~~ of project supplies and equipment, which is a counterpart contribu~~tion~~, the Governments shall pay to the Special Fund in local currency the equivalent of US\$ 74,100 as a contribution towards local operating costs. This amount represents 15 per cent of the total estimated cost to the Special Fund of foreign project personnel.

3.7 The contribution towards local operating costs, the equivalent of US\$ 74,100, shall be deposited by the Governments in local currency to the credit of the Special Fund accounts

Nº 61122/8	with Banco Nacional de Costa Rica, San Jose
41512	with Banco Central de Reserva de El Salvador, San Salvador
150160	with Banco de Guatemala, Guatemala City
-	with Banco Central de Honduras, Tegucigalpa
2501-5	with Banco Nacional de Nicaragua, Dep. Bancario, Managua
40-40000	with Banco Nacional de Panama, Casa Matriz, Panama City

The deposits will be made in accordance with the schedule and country distribution indicated in the following table:

Amounts equivalent to U. S. \$

<u>Dates</u>	<u>- Costa Rica</u>	<u>- El Salvador</u>	<u>- Guatemala</u>	<u>- Honduras</u>	<u>- Nicaragua</u>	<u>- Panama</u>
On sign- ature of the Plan of Opera- tion	-	-	-	-	-	-
on 1/1/68	3,700	3,700	3,700	3,700	3,700	3,700
on 1/1/69	2,450	2,450	2,450	2,450	2,450	2,450
on 1/1/70	2,450	2,450	2,450	2,450	2,450	2,450
on 1/1/71	2,450	2,450	2,450	2,450	2,450	2,450
	1,300	1,300	1,300	1,300	1,300	1,300

The amount payable in each installment by each Government is determined on the basis of the United Nations operating rate of exchange in effect for that currency at the date the payment falls due or at the date payment is made, whichever is later. Payment of the above amounts on or before the dates specified is a prerequisite to operation.

### C. ORGANIZATION

3.8 Overall responsibility for the organization and execution of the project rests with the Executing Agency which will plan and direct operations through the Project Manager. The appointment of the Project Manager and of the other international experts, will be done by the Executing Agency in consultation with the Governments.

3.9 The Governments shall, in consultation with the Executing Agency, appoint a Project Co-Manager, who will be assigned full-time to the project. He will act as the Secretary of the Regional Committee and will co-operate closely with the Project Manager in the administration and execution of the project.

3.10 In the discharge of his duties, the Project Manager, in consultation with the Co-Manager shall:

- (a) be responsible for the detailed planning and execution of the project, including timing and budgeting of the various operations and the preparation of technical reports;

- (b) plan the project network in collaboration with the other international experts and the National Co-ordinating Committees, and taking into consideration existing plans for the development of meteorological and hydrological networks in the Central American countries, as well as the need for a regional co-ordination of these networks.
- (c) select the station sites and establish the specifications of the equipment to be procured for the hydrological and hydro-meteorological stations included in the planned network.
- (d) assist in the selection of project counterpart personnel and auxiliary staff, and assist in the selection of candidates for Special Fund fellowships who normally will be chosen from the counterpart project personnel;
- (e) supervise and direct training of local counterpart personnel;
- (f) supervise the experts, and in respect to technical matters, the counterpart personnel assigned to the project;
- (g) be responsible to the Executing Agency for all material, equipment and transport, and for the local disbursement of any funds furnished to the project through the Executing Agency;
- (h) control the use of equipment and materials, supplies and other property belonging to the UNDP or assigned to the project by the Governments;
- (i) assist in establishing arrangements in each country for the prompt collection, processing and publication of the data from already existing and newly established stations.

- (j) investigate the possibility of organizing during the course of the project or soon thereafter of a central unit which will be responsible for the collection of the data published by the six countries and bringing out in a single volume the hydrometeorological and hydrological data of the region as a whole. It is most essential that this publication is issued regularly.

3.11 The Regional Committee for Water Resources in Central America as the Co-operating Governments' Agency, shall provide the necessary technical and administrative support to the project and ensure the co-operation of all agencies participating in the project. This Committee will elect a president in accordance with an internal set of regulations.

3.12 The Regional Committee will advise the Project Co-Manager on matters related to the project operations and development of the Hydrometeorological and Hydrological activities in the six countries; on the co-ordination of activities of the Government services concerned with those of the project team, take necessary steps to ensure that the Government's counterpart contribution as specified in this Plan of Operation will be available as outlined in Appendix II. The Regional Committee will also be responsible for informing Government authorities periodically about the progress of the project and releasing official information regarding the activities and results of the project.

3.13 The president of the Regional Committee will receive joint reports of the Project Manager and the Project Co-Manager on the progress of the project. In consultation with the members, he shall call meetings of the Committee at suitable intervals; the intervals between meetings of the Committee shall not exceed six months. The Project Manager and the Regional Representative of the UNDP in El Salvador will take part in the meetings of the Committee as co-opted members.

3.14 In the discharge of his duties, the Co-Manager, in consultation with the Project Manager, shall:

- (a) be responsible for all phases of the Government's participation in the project; including ensuring the Governments contributions are made as scheduled, and the buildings, equipment, and facilities listed as counterpart contributions in kind in the Plan of Operation are available as needed;
- (b) submit for appointment or approval by the Governments candidates for counterpart and auxiliary staff posts and for fellowships previously agreed with the Project Manager;
- (c) be responsible for the administrative supervision of counterpart professional and auxiliary personnel assigned to the projects;
- (d) assist the Project Manager in co-ordinating project activities with the activities of other Government Agencies and projects in fields of work related to the project.

3.15 The Government shall appoint an Administrative Officer, in consultation with the Executing Agency, who will work under the supervision of the Project Manager and the Co-Manager. The Administrative Officer shall be responsible for servicing the project on administrative matters such as accounting, storekeeping, local purchase of materials and supplies and maintenance of equipment. He shall be responsible for the care and maintenance of equipment and supplies and the supervision of administrative personnel. In consultation and co-operation with the Regional Representative of the Special Fund, he shall also be responsible for the appropriate registration (in the name of Special Fund) licensing and insurance for the duration of the project of all motor vehicles supplied by UNDP.

3.16 The Chairman of the National Co-ordinating Committee of each country referred to in paragraph 2.3 above, will work closely with the Project Co-Manager in organizing the counterpart operations and to ensure proper co-ordination in the execution of the project operations in his own country. He will act as member of the Regional Committee referred to in paragraph 2.2 above.

3.17 All material and equipment provided for in the Plan of Operation will be used exclusively for the execution of the project.

3.18 All equipment and supplies which are purchased from Special Fund resources remain the property of the UNDP in whose name it is held by the Executing Agency.

3.19 Equipment supplied by the Special Fund shall be marked with the insignia of the Special Fund and the Executing Agency.

3.20 The headquarters of the project will be San Jose, Costa Rica. However, a project office will be established in each of the capitals of the other countries involved in the project and will be made available to the international experts.

#### D. SEQUENCE OF OPERATIONS

3.21 The Executing Agency shall commence execution of the project upon receipt of written authorization to do so from the Administrator.

3.22 Not including the period of active pre-operational planning at the project site by Executing Agency and Government project personnel, field operations are planned to commence in January 1967 and to continue for approximately five years thereafter.

3.23 The planned Sequence of Operation for the project is set out in some detail in Appendix IV, Schedule of Operations.

#### IV. BUDGET

4.1 The estimated cost of the services and facilities to be provided for the project is detailed in the Plans of Expenditure appended to this Plan of Operation. Funds will be provided by the Special Fund and the Government as indicated below:

1. Allocation by the Special Fund	US\$ 2,806,500
Consisting of:	
Special Fund contribution	US\$2,732,400
Government contribution towards	
local operating costs	US\$ 74,100
2. Counterpart contribution in kind	
by the Governments	US\$ 3,257,000
shared as given below:	
Costa Rica	US\$ 528,000
El Salvador	US\$ 480,600
Guatemala	US\$ 642,300
Honduras	US\$ 391,300
Nicaragua	US\$ 617,900
Panama	US\$ 596,900

## V. REPORTS

5.1 The Executing Agency shall submit periodic progress reports to the Special Fund on the implementation of the project. Such reports shall, as appropriate, include an up-to-date Schedule of Operation. The timing and frequency of these reports are determined in operating procedures agreed between the Special Fund and the Executing Agency.

5.2 The Executing Agency and the Governments shall exchange reports, the content and timing of which shall be agreed by correspondence.

5.3 The Executing Agency and the Governments shall, at the end of each calendar year, submit to the Special Fund a joint certified inventory of project equipment purchased from the Special Fund allocation and for which title remains with the Special Fund.

5.4 As soon as possible following the conclusion of project operations and not later than six months from that date, the Executing Agency shall submit a final comprehensive report on the project to the Administrator for presentation to the Governments.

## VI. CHANGES IN THE PLAN OF OPERATION

6.1 On the basis of periodic reviews of project activities the eight parties to the project shall, as appropriate, confer to determine if any modifications to the Plan of Operation be required. All agreed modifications shall be reflected in Adjustments or Amendments to the Plan of Operation.

## VII. STEPS TO BE TAKEN AT THE COMPLETION OF SPECIAL FUND ASSISTANCE TO THE PROJECT

7.1 Within three months of receiving the final report the Governments shall submit to the Executing Agency and the Special Fund a report on the benefits derived from the project and the actions planned by the Governments to implement the recommendations contained in the final report.

7.2 At the successful conclusion of the project the Governments, the Executing Agency and the Special Fund shall consult with a view to transferring title to the Government, or to Agencies nominated by the Governments, of that part of the equipment provided by the Special Fund

which is essential for the continued operation of the project or for activities following directly from the project.

7.3 Since the ultimate aim of the project is to make meteorological and hydrological data available for various technical purposes, the most effective way for the Governments to utilize the assistance provided for this project by the Special Fund and the Executing Agency is the prompt processing and publication of the data. The Governments shall therefore ensure that the arrangements for the compilation, processing and publication of data brought into existence during the project are continued on a permanent basis, if possible in a centralized unit.

7.4 The Governments shall make the necessary statutory and budgetary provisions for the continuation of the project, as described in paragraph 2.4 of this Plan of Operation, after the termination of the responsibilities of the Executing Agency and the Special Fund as defined in this document.

Agreed, on behalf of the parties, by the undersigned:

_____	_____
Date	The Government of Costa Rica
_____	_____
Date	The Government of El Salvador
_____	_____
Date	The Government of Guatemala
_____	_____
Date	The Government of Honduras
_____	_____
Date	The Government of Nicaragua
_____	_____
Date	The Government of Panama
_____	_____
Date	United Nations Development Programme
_____	_____
Date	World Meteorological Organization



## APPENDIX I

REGIONAL: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama

TITLE OF PROJECT: "Expansion and Improvement of Hydrometeorological and Hydrological Services in the Central American Isthmus"

PLAN OF EXPENDITURE  
SPECIAL FUND ALLOCATION  
(In US dollars)

	Total man-months	Total project-costs	Estimated cash disbursement						
			<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
1. Experts									
Project Manager									
hydrometeorologist	66	135,300	6,150	24,600	24,600	24,600	24,600	24,600	6,150
Hydrologist	58	118,900	-	20,500	24,600	24,600	24,600	24,600	-
Hydrologist	58	118,900	-	20,500	24,600	24,600	24,600	24,600	-
Hydrometeorologist	58	118,900	-	20,500	24,600	24,600	24,600	24,600	-
Preparatory Assistance	-	1,900	1,900	-	-	-	-	-	-
Sub-Total	240	493,900	8,050	86,100	98,400	98,400	98,400	98,400	6,150

## APPENDIX I (Continued)

	Total man-months	Total project costs	Estimated cash disbursement						
			1966	1967	1968	1969	1970	1971	1972
2. <u>Fellowships</u>									
6 Hydrology	72	30,000	-	7,500	15,000	7,500	-	-	-
6 Hydrometeorology	72	30,000	-	7,500	15,000	7,500	-	-	-
Sub-total	144	60,000	-	15,000	30,000	15,000	-	-	-
3. <u>Equipment</u>									
Major items and categories (for detail see ble ):									
Hydrometeorological and Hydrometric networks (For details see tables II, III and IV)		1,475,900	-	461,230	289,880	289,880	289,880	145,030	-
Complementary equipment (For details see tables V and VI)		368,500	-	151,560	92,280	56,680	43,020	24,960	-
Vehicles (For details see table VII)		79,200	-	39,600	39,600	-	-	-	-
Preparation of the Final Report		10,000	-	-	-	-	-	-	10,000
Sub-total		1,933,600	-	652,390	421,760	346,560	332,900	169,990	10,000

## APPENDIX I (continued)

		Estimated cash disbursement						
	<u>Total</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
4. <u>Sub-contracts</u>	-	-	-	-	-	-	-	-
Sub-total	-	-	-	-	-	-	-	-
5. <u>Miscellaneous local operating costs</u>								
Secretarial and clerical services								
Postal and Communications charges								
Contingencies								
Sub-total	29,500	1,500	5,900	5,900	5,900	5,800	3,000	1,500
TOTAL GROSS PROJECT COSTS	2,517,000	9,550	759,390	556,060	465,860	437,100	271,390	17,650
6. <u>Executing Agency overhead costs</u>	288,400	45,400	70,000	55,000	50,000	45,000	23,000	-
7. <u>Special Fund direct costs</u>	1,100	1,100	-	-	-	-	-	-
SPECIAL FUND ALLOCATION	2,806,500	56,050	829,390	611,060	515,860	482,100	294,390	17,650

APPENDIX II

REGIONAL: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama

TITLE OF PROJECT: "Expansion and Improvement of Hydrometeorological and Hydrological Services in the Central American Isthmus"

PLAN OF EXPENDITURE  
GOVERNMENT COUNTERPART CONTRIBUTION  
(In US dollars)

(Government's financial year begins January and ends December)

	Total man-months	Total project costs	Estimated cash disbursement				
			<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
1. <u>Personal services</u>							
a. <u>Professional staff</u>							
Project Co-Manager	60	75,000	15,000	15,000	15,000	15,000	15,000
Senior Technical Officers	1,050	553,800	102,960	106,860	110,760	114,660	118,560
Junior Technical Officer	3,990	825,100	91,200	128,110	165,020	201,930	238,840
Sub-total	5,100	1,453,900	209,160	249,970	290,780	331,590	372,400

## APPENDIX II (Continued)

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	Total man-months	Total Project costs	Estimated cash disbursement				
			1967	1968	1969	1970	1971
b. <u>Other staff</u>							
Administrative Officer	60	22,500	4,500	4,500	4,500	4,500	4,500
Full-time Hydrological and Meteorological Ob- servers	2,160	231,000	14,400	30,300	46,200	62,100	78,000
Part-time Hydrological and Meteorological Ob- servers	2,127 (1)	237,075	15,245	31,560	47,375	63,490	79,605
Laboratory Staff	360	69,000	13,250	13,525	13,800	14,075	14,350
Clerical and Adminis- trative staff	822	103,800	14,160	16,740	20,520	24,300	28,080
Mechanics(instruments and workshops),drivers	1,860	181,940	17,520	26,505	36,490	45,975	55,450
Sub-total	7,389	845,315	79,075	122,930	168,885	214,440	259,985
Sub-total for all personal services	12,489	2,299,215	288,235	372,900	459,665	546,030	632,385
2. <u>Fellowships</u>							
Local salary of counter part fellowships hold- ers		(Included under item 1.a of this Appendix)					
Sub-total	-	-	-	-	-	-	-
3. <u>Land and Buildings</u> (for detail see table VII)							
Buildings		39,300	4,320	6,360	7,800	9,540	11,280
Construction of hydrological stations		337,500	73,500	73,500	64,500	63,000	63,000
Construction of meteorological stations		46,600	9,320	9,320	9,320	9,320	9,320
Laboratories		12,900	2,400	2,400	2,400	2,400	2,400
Sub-total		435,400	89,540	91,580	84,020	84,260	86,000

(1) Total reduced to full time

## APPENDIX II (Continued)

	Total Project costs	Estimated cash disbursement				
		<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
4. <u>Equipment and supplies</u>						
Major items and categories (for detail, see Table VIII)						
(Miscellaneous materials for the construction of stations Office supplies)	62,720	8,010	10,100	12,490	14,880	17,240
Sub-total	62,720	8,010	10,100	12,490	14,880	17,240

## APPENDIX II (Continued)

	Total Project costs	Estimated cash disbursement				
		1967	1968	1969	1970	1971
5. <u>Miscellaneous</u>						
Transportation of personnel	105,100	13,280	16,950	20,920	24,990	28,960
Per diem of personnel	131,000	18,200	22,150	26,350	30,150	34,150
Contingencies	140,965	28,180	28,190	28,190	28,195	28,210
Sub-total	377,065	59,660	67,290	75,460	83,335	91,320
6. <u>Local transport and handling of equipment</u>						
Import and customs clearance (1)	-	-	-	-	-	-
Transport, handling, storage and related expenses	32,000	6,300	9,800	9,800	4,300	1,800
Insurance after delivery to the project site	16,620	1,920	3,000	3,900	3,900	3,900
Sub-total	48,620	8,220	12,800	12,700	8,200	5,700
7. <u>Records and Information</u>						
(Publication of data included)	33,980	2,040	4,500	6,840	9,250	11,350
Sub-total	33,980	2,040	4,500	6,840	9,250	11,350
TOTAL COUNTERPART CONTRIBUTION IN KIND	3,257,000	455,705	559,170	652,175	745,955	843,995

## APPENDIX II - A

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GOVERNMENT OF COSTA RICA COUNTERPART CONTRIBUTION

(In Colones from Costa Rica)

	Total man-months	Total cost	Estimated cash disbursement				
			1967	1968	1969	1970	1971
<u>1. Personal services</u>							
Professional staff							
Senior tech.officers	180	546,150.00	104,860.80	107,045.40	109,230.00	111,414.60	113,599.20
Junior Techn. Officers	750	840,409.00	88,972.80	128,527.30	168,081.80	207,636.30	247,190.80
<u>2. Other Staff</u>							
Full-time observers	360	254,870.00	15,888.00	33,431.00	50,974.00	68,517.00	86,060.00
Part time observers	365	257,518.00	16,086.60	33,795.10	51,503.60	69,212.10	86,920.60
Laboratory staff	60	59,580.00	11,452.60	11,684.30	11,916.00	12,147.70	12,379.40
Administrative Staff	172	99,300.00	18,668.40	19,264.20	19,860.00	20,455.80	21,051.60
Mechanics, drivers	330	142,330.00	8,208.80	18,337.40	28,466.00	38,594.60	48,723.20
<u>3. Land and Buildings</u>							
Buildings		33,431.00	2,780.40	5,031.20	6,620.00	8,539.80	10,459.60
Constr.of Hydrolog. Station		397,200.00	79,440.00	79,440.00	79,440.00	79,440.00	79,440.00
Constr.of Meteorol. Station		51,636.00	10,327.20	10,327.20	10,327.20	10,327.20	10,327.20
Laboratories		13,240.00	2,648.00	2,648.00	2,648.00	2,648.00	2,648.00
<u>4. Equipment and Supplies</u>		36,433.10	2,714.20	4,998.10	7,282.00	9,565.90	11,882.90
<u>5. Miscellaneous</u>							
Transportation of personnel		89,370.00	8,738.40	13,306.20	17,874.00	22,441.80	27,009.60
Per diem of personnel		115,850.00	16,550.00	19,860.00	23,170.00	26,480.00	29,790.00
Contingencies		67,159.90	13,405.50	13,438.60	13,438.60	13,438.60	13,438.60
<u>6. Local transport and handling of equipment</u>							
Transport and handling		36,741.00	7,282.00	11,254.00	11,254.00	4,965.00	1,986.00



APPENDIX II - A (Cont.)GOVERNMENT OF COSTA RICA COUNTERPART CONTRIBUTION

(In Colones from Costa Rica)

	<u>Total man-months</u>	<u>Total cost</u>	<u>Estimated cash disbursement</u>				
			<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
Insurance		18,337.40	2,118.40	3,310.00	4,303.00	4,303.00	4,303.00
<u>7. Records and in-</u> <u>formation</u>		38,594.60	2,250.80	4,965.00	7,546.80	10,592.00	13,240.00
Sub-total		3,098,160.00	412,392.90	520,663.00	623,935.00	720,719.40	820,449.70
Sub-total reduced to US\$		468,000.00	62,295.00	78,650.00	94,250.00	108,870.00	123,935.00
Contribution to central office (in US\$)		60,000.00	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00
<u>TOTAL</u> reduced to US\$		528,000.00	74,295.00	90,650.00	106,250.00	120,870.00	135,935.00



## APPENDIX II - B (contd.)

GOVERNMENT OF EL SALVADOR COUNTERPART CONTRIBUTION

(In Colones from El Salvador)

Item	Total cost	1967	1968	1969	1970	1971
Transport and handling	12,250.00	2,500.00	3,625.00	3,625.00	1,750.00	750.00
Insurance	6,925.00	800.00	1,250.00	1,625.00	1,625.00	1,625.00
7. <u>Records and information</u>	14,575.00	850.00	1,875.00	2,850.00	4,000.00	5,000.00
Sub-total	1,141,500.00	186,350.00	216,250.00	222,137.50	244,825.00	271,937.50
Sub-total reduced to US\$	456,600.00	74,540.00	86,500.00	88,855.00	97,930.00	108,775.00
Contribution to central office(in US\$)	24,000.00	4,800.00	4,800.00	4,800.00	4,800.00	4,800.00
TOTAL reduced to US\$	480,600.00	79,340.00	91,300.00	93,655.00	102,730.00	113,575.00

## APPENDIX II - C

GOVERNMENT OF GUATEMALA COUNTERPART CONTRIBUTION

( In Quetzales)

ITEM	Total man-months	Total cost	Estimated cash disbursement				
			1967	1968	1969	1970	1971
<u>1. Personal services</u>							
Professional staff							
Senior tech. officers	180	120,000	23,040	23,520	24,000	24,480	24,960
Junior tech. officers	720	154,250	20,880	25,865	30,850	35,835	40,820
Other staff							
Full time observers	360	38,500	2,400	5,050	7,700	10,350	13,000
Part time observers	250	31,650	2,110	4,220	6,330	8,440	10,550
Laboratory staff	60	15,000	2,880	2,940	3,000	3,060	3,120
Administrative staff	142	15,900	2,280	2,730	3,180	3,630	4,080
Mechanics, drivers	330	31,500	3,240	4,770	6,300	7,830	9,360
<u>3. Land and Buildings</u>							
Buildings		5,050	420	760	1,000	1,290	1,580
Constr. of Hydrolog Station		62,500	12,500	12,500	12,500	12,500	12,500
Constr. of Meteorol. Station		7,800	1,560	1,560	1,560	1,560	1,560
Laboratories		2,000	400	400	400	400	400
<u>4. Equipment and supplies</u>		10,775	1,305	1,730	2,155	2,580	3,005
<u>5. Miscellaneous</u>							
Transportation of personnel		16,500	1,920	2,610	3,300	3,990	4,680
Per diem of personnel		31,500	4,800	5,550	6,300	7,050	7,800
Contingencies		61,175	12,235	12,235	12,235	12,235	12,235
<u>6. Local transport and handling of equipment</u>							
Transport and handling		5,600	1,000	1,700	1,700	800	400

APPENDIX II - C (Cont.)GOVERNMENT OF GUATEMALA COUNTERPART CONTRIBUTION

(In Quetzales)

Estimated cash disbursement

ITEM	Total cost	Estimated cash disbursement				
		1967	1968	1969	1970	1971
Insurance	2,770	320	500	650	650	650
7. <u>Records and information</u>	5,830	340	750	1,140	1,600	2,000
Sub-total	618,300	93,630	109,390	124,300	138,280	152,700
Sub-total reduced to US\$	618,300	93,630	109,390	124,300	138,280	152,700
Contribution to central office (in US\$)	24,000	4,800	4,800	4,800	4,800	4,800
TOTAL reduced to US\$	642,300	98,430	114,190	129,100	143,080	157,500

GOVERNMENT OF

ITEM	Total man-month	Total cost
1. <u>Personal services</u>		
Professional staff		
Senior tech. officers	180	195,000
Junior tech. officers	450	171,900
Other staff		
Full time observers	360	77,000
Part time observers	190	42,650
Laboratory staff	60	22,500
Administrative staff	82	18,600
Mechanics, drivers	150	36,600
3. <u>Land and Buildings</u>		
Buildings		10,100
Constr. of Hydrolog. Station		70,000
Constr. of Meteorol. Station		11,600
Laboratories		4,000
4. <u>Equipment and supplies</u>		
11,530		
5. <u>Miscellaneous</u>		
Transportation of personnel		14,800
Per diem of personnel		18,000
Contingencies		7,320

APPENDIX II - IHONDURAS COUNTERPART CONTRIBUTION

(In Lempiras)

<u>Estimated cash disbursement</u>				
<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
37,440	38,220	39,000	39,780	40,560
17,280	25,830	34,380	42,930	51,480
4,800	10,100	15,400	20,700	26,000
3,290	5,970	8,450	11,130	13,810
4,320	4,410	4,500	4,590	4,680
--	1,140	3,480	5,820	8,160
2,320	3,920	7,520	10,120	12,720
840	1,520	2,000	2,580	3,160
14,000	14,000	14,000	14,000	14,000
2,320	2,320	2,320	2,320	2,320
800	800	800	800	800
1,190	1,750	2,310	2,870	3,410
1,440	1,800	2,760	3,920	4,880
1,600	2,600	3,600	4,600	5,600
1,460	1,460	1,460	1,460	1,480

APPENDIX II - D (Cont.)GOVERNMENT OF HONDURAS COUNTERPART CONTRIBUTION

(In Lempiras)

ITEM	Total Cost	Estimated cash disbursement				
		1967	1968	1969	1970	1971
<u>6. Local transport and handling of equipment</u>						
Transport and handling	7,800	1,600	2,500	2,500	1,000	200
Insurance	5,540	640	1,000	1,300	1,300	1,300
<u>7. Records and information</u>	9,660	680	1,500	2,280	2,500	2,700
Sub-total	734,600	96,020	120,840	148,060	172,420	197,260
Sub-total reduced to US\$	367,300	48,010	60,420	74,030	86,210	98,630
Contribution to central office (in US\$)	24,000	4,800	4,800	4,800	4,800	4,800
TOTAL reduced to US\$	391,300	52,810	65,220	78,830	91,010	103,430



## APPENDIX II - E

## GOVERNMENT OF NICARAGUA COUNTERPART CONTRIBUTION

(In Córdobas)

ITEM	Total man-month	Total cost	Estimated cash disbursement				
			1967	1968	1969	1970	1971
<u>1. Personal services</u>							
Professional staff	180	577,500	110,880	113,190	115,500	117,810	120,120
Senior tech. officers							
Junior Tech. Officers	750	1,008,000	75,600	138,600	201,600	264,600	327,600
Other staff							
Full time observers	540	404,250	25,200	53,025	80,850	108,675	136,500
Part time observers	702	559,300	34,860	73,360	111,860	150,360	188,860
Laboratory staff	60	78,750	15,120	15,435	15,750	16,065	16,380
Administrative staff	82	65,100	--	3,990	12,180	20,370	28,560
Mechanics, drivers	390	261,450	22,680	37,485	52,290	67,095	81,900
<u>3. Land and Buildings</u>							
Buildings		35,350	2,940	5,320	7,000	9,030	11,060
Constr. of Hydrolog. Station		525,000	105,000	105,000	105,000	105,000	105,000
Constr. of Meteorol. Station		94,500	18,900	18,900	18,900	18,900	18,900
Laboratories		14,000	2,800	2,800	2,800	2,800	2,800
<u>4. Equipment and supplies</u>		66,640	5,215	9,275	13,335	17,395	21,420
<u>5. Miscellaneous</u>							
Transportation of personnel		138,600	13,440	20,580	27,720	34,860	42,000
Per diem of personnel		168,000	19,600	26,600	33,600	40,600	47,600
Contingencies		55,160	11,025	11,025	11,025	11,025	11,060

APPENDIX II - E (Cont.)GOVERNMENT OF NICARAGUA COUNTERPART CONTRIBUTION

(In Córdobas)

ITEM	Total Cost	Estimated cash disbursement				
		1967	1968	1969	1970	1971
<u>6. Local transport and handling of equipment</u>						
Transport and handling	45,500	9,100	14,000	14,000	5,600	2,800
Insurance	19,390	2,240	3,500	4,550	4,550	4,550
<u>7. Records and information</u>	40,810	2,380	5,250	8,050	11,200	14,000
Sub-total	4,157,300	476,980	657,335	835,940	1,005,935	1,181,110
Sub-total reduced to US\$	593,900	68,140	93,905	119,420	143,705	168,730
Contribution to central office (in US \$)	24,000	4,800	4,800	4,800	4,800	4,800
TOTAL reduced to US\$	617,900	72,940	98,705	124,220	148,505	173,530

GOVERNMENT OF

ITEM	Total Man-months	Total Cost
1. <u>Personal services</u>		
a. Professional staff		
Senior tech. officers	150	88,800
Junior tech. officers	660	168,000
b. Other staff		
Full time observers	360	38,500
Part time observers	425	43,900
Laboratory staff	60	11,250
Administrative staff	142	15,900
Mechanics, drivers	330	42,000
3. <u>Land and Buildings</u>		
Buildings		5,050
Const. of Hydrolog. Station		50,000
Const. of Meteorol. Station		7,800
Laboratories		2,000
4. <u>Equipment and Supplies</u>		10,315
5. <u>Miscellaneous</u>		
Transportation of personnel		16,400
Per diem of personnel		26,500
Contingencies		32,335

APPENDIX II - FPANAMA COUNTERPART CONTRIBUTION

(In Balboas)

Estimated cash disbursement				
1967	1968	1969	1970	1971
13,680	15,720	17,760	19,800	21,840
17,280	25,440	33,600	41,760	49,920
2,400	5,050	7,700	10,350	13,000
2,740	5,760	8,780	11,800	14,820
2,160	2,205	2,250	2,295	2,340
2,280	2,730	3,180	3,630	4,080
4,320	6,360	8,400	10,440	12,480
420	760	1,000	1,290	1,580
10,000	100,000	10,000	10,000	10,000
1,560	1,560	1,560	1,560	1,560
400	400	400	400	400
1,345	1,525	2,005	2,485	2,955
2,480	2,880	3,280	3,680	4,080
3,800	4,500	5,450	6,000	6,750
6,465	6,465	6,465	6,470	6,470

APPENDIX II - F (Cont.)

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GOVERNMENT OF PANAMA COUNTERPART CONTRIBUTION

ITEM	Total Cost	Estimated cash disbursement				
		1967	1968	1969	1970	1971
<u>6. Local transport and handling equipment</u>						
Transport and handling	5,550	1,100	1,700	1,700	750	300
Insurance	2,770	320	500	650	650	650
7. Records and information	5,830	340	750	1,140	1,600	2,000
Sub-total	572,900	73,090	94,305	115,320	134,960	155,225
Sub-total reduced at US\$	572,900	73,090	94,305	115,320	134,960	155,225
Contribution to Central office	24,000	4,800	4,800	4,800	4,800	4,800
TOTAL US\$	596,900	77,890	99,105	120,120	139,760	160,025

## APPENDIX III

EXPANSION AND IMPROVEMENT OF HYDROMETEOROLOGICAL AND HYDROLOGICAL  
SERVICES IN THE CENTRAL AMERICAN ISTHMUS

<u>Total Government Contribution</u>	<u>Total</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
Counterpart contribution in kind 1) 4)	3,257,000	455,705	559,170	652,175	745,955	843,995
Contribution towards local operating costs 2)	74,100	22,200 (3)	14,700	14,700	14,700	7,800
 TOTAL GOVERNMENT CONTRIBUTION OF THE SIX COUNTRIES	 3,331,100	 477,905	 573,870	 666,875	 760,655	 851,795
The above will be distributed as under:						
<u>COSTA RICA</u>						
Counterpart contribution in kind 1) 4)	528,000	74,295	90,650	106,250	120,870	135,935
Contribution towards local operating costs 2)	12,350	3,700 (3)	2,450	2,450	2,450	1,300
TOTAL GOVERNMENT CONTRIBUTION	540,350	77,995	93,100	108,700	123,320	137,235
<u>EL SALVADOR</u>						
Counterpart contribution in kind 1) 4)	480,600	79,310	91,300	93,655	102,730	113,575
Contribution towards local operating costs 2)	12,350	3,700 (3)	2,450	2,450	2,450	1,300
TOTAL GOVERNMENT CONTRIBUTION	492,950	83,040	93,750	96,105	105,180	114,875
<u>GUATEMALA</u>						
Counterpart contribution in kind 1) 4)	642,300	98,430	114,190	129,100	143,080	157,500
Contribution towards local operating costs 2)	12,350	3,700 (3)	2,450	2,450	2,450	1,300
TOTAL GOVERNMENT CONTRIBUTION	654,650	102,130	116,640	131,550	145,530	158,800
<u>HONDURAS</u>						
Counterpart contribution in kind 1) 4)	391,300	52,810	65,220	78,830	91,010	103,430
Contribution towards local operating costs 2)	12,350	3,700 (3)	2,450	2,450	2,450	1,300
TOTAL GOVERNMENT CONTRIBUTION	403,650	56,510	67,670	81,280	93,460	104,730

## APPENDIX III (Cont.)

EXPANSION AND IMPROVEMENT OF HYDROMETEOROLOGICAL AND HYDROLOGICAL  
SERVICES IN THE CENTRAL AMERICAN ISTHMUS

	Total	1967	1968	1969	1970	1971
<u>NICARAGUA</u>						
Counterpart contribution in kind 1) 4)	617,900	72,940	98,705	124,220	148,505	173,530
Contribution towards local operating costs 2)	12,350	3,700 <sup>(3)</sup>	2,450	2,450	2,450	1,300
TOTAL GOVERNMENT CONTRIBUTION	630,250	76,640	101,155	126,670	150,955	174,830
<u>PANAMA</u>						
Counterpart contribution in kind 1) 4)	596,900	77,890	99,105	120,120	139,760	160,025
Contribution towards local operating costs 2)	12,350	3,700 <sup>(3)</sup>	2,450	2,450	2,450	1,300
TOTAL GOVERNMENT CONTRIBUTION	609,250	81,590	101,555	122,570	142,210	161,325

1) These amounts have been calculated at the prevailing United Nations operating rate of:

- 1 US\$ = 6.62 Colones (Costa Rica)
- 1 US\$ = 2.50 Colones (El Salvador)
- 1 US\$ = 1.00 Quetzales (Guatemala)
- 1 US\$ = 2.00 Lempiras (Honduras)
- 1 US\$ = 7.00 Córdobas (Nicaragua)
- 1 US\$ = 1.00 Balboas (Panama)

2) These amounts are payable in local currency at the United Nations operating rates of exchange (which is based on the most favourable legal rate of exchange available to the Special Fund), which at the present time are equal to those indicated in (1).

3) Amounts payable on signature of Plan of Operations.

4) This figure includes the contribution for the operation of the Central Office (See Table IX)

APPENDIX IV

REGIONAL: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua y Panamá

TITLE OF PROJECT: "Expansion and Improvement of Hydrometeorological and Hydrological Services in Central American Isthmus"

## SCHEDULE OF OPERATIONS

## I. BRIEF DESCRIPTION OF WORK PROGRAMME, INCLUDING PLANNED TIMING OF MAJOR OPERATIONS

<u>Period</u>	<u>Activities</u>
September 1966 to March 1967	Organization of the central and local offices.  Preparation of maps and preliminary selection of sites for stations of the project. Preparation of specifications for acquisition of the equipment.
March 1967 to December 1967	Installation of 54 hydrometric and 146 meteorologic stations in the period.  Intensive training of personnel. Preparation of standards. Installation of laboratories (First Stage). First group of scholars (6) sent abroad.
1968	Installation of 54 hydrometric and 146 meteorological stations. Continuation of the training of personnel. Second group of scholars travelling abroad (6). Publication of the first yearbook.
1969	Installation of 54 hydrometric and 146 meteorological stations. Second stage of laboratories installations. Training with emphasis in data processing. Publications.
June 1969	Evaluation of work up to that date.
1970	Installation of 54 hydrometric and 146 meteorological stations. Training with emphasis in use of data. Publications.
1971	Installations of 54 hydrometric and 146 meteorological stations.
June 1971	Completion of the main installations.
January 1971 - June 1971	Final inspection of the installations. Approval of standards for future work.
July 1971 - December 1971	Preparation of the final report.
January 1972 - March 1972	Writing and printing of the final report.



APPENDIX IV (Continued)

II. MANNING TABLE FOR PROFESSIONAL STAFF AND TIMING OF FELLOWSHIPS

		Months of Service							
		66	67	68	69	70	71	72	
<hr/>									
1.	<u>Internationally Recruited Experts</u>								
	Project Manager	66	3	12	12	12	12	12	3
	Hydrologist	58	-	10	12	12	12	12	-
	Hydrologist	58	-	10	12	12	12	12	-
	Hydrometeorologist	58	-	10	12	12	12	12	-
2.	<u>Counterpart Staff</u>								
	Co-Manager	60	-	12	12	12	12	12	-
	Senior Technical Officers	1,050	-	204	207	210	213	216	-
	Junior Technical Officers	3,990	-	444	621	798	975	1152	-
3.	<u>Fellowships</u>								
	Hydrology	72	-	18	36	18	-	-	-
	Hydrometeorology	72	-	18	36	18	-	-	-

APPENDIX IV (continued)

III. Other Service and Facilities

	Months of Service	To be made available				
		1967	1968	1969	1970	1971
<u>1. Non-professional Personnel</u>						
Posts or Categories						
Administrative Officer	60	12	12	12	12	12
Full-time Hydrological and Meteorological Observers	2,160	144	288	432	576	720
Part-time Hydrological and Meteorological Observers	2,127	142	283	423	564	715
Laboratory Staff	360	72	72	72	72	72
Clerical and Administrative Staff	822	110	137	164	191	220
Mechanics (Instruments and Workshops), drivers	1,860	204	288	372	456	540
<u>2. Land and Buildings</u>						
Headquarters buildings in the different countries and for the project	-	7	-	-	-	-
For Hydrological stations		54	54	54	54	54
For Meteorological stations		146	146	146	146	146
Laboratories		6	-	-	-	-

## APPENDIX IV (continued)

## III. (Continued)

		To Be Made Available				
	<u>TOTAL</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
<u>3. Equipment</u>						
A. To be provided by the Special Fund						
Major items and categories (for detail see Table II to VII)						
Equipment for hydrometeorological stations	526,300	157,890	105,260	105,260	105,260	52,630
Hydrological Equipment	949,600	303,340	184,620	184,620	184,620	92,400
Complementary Equipment	190,700	110,650	59,050	7,480	7,480	6,040
Laboratory and unforeseen equipment	177,800	40,910	33,230	49,200	35,540	18,920
Vehicles	79,200	39,600	39,600	-	-	-
B. To be provided by the Governments						
Major items and categories (for detail see Table III)						
Materials for construction of stations	26,000	6,200	6,200	6,200	6,200	6,200
Materials for offices and laboratories	36,420	1,200	3,900	6,280	8,670	16,050

TABLE I

Distribution of the 830 hydrometeorological and 270 hydrological stations in the six countries

Country	Climatological				Hydrometric
	Principal (Type A)	Ordinary (Type B)	Precipitation (Type C)	Total	
Costa Rica	10	50	40	100	60
El Salvador (X)	5	20	45	70	30
Guatemala	10	40	80	130	55
Honduras	10	30	40	80	35
Nicaragua	15	60	225	300	50
Panama	10	40	100	150	40
T O T A L	60	240	530	830	270

(X) 20 already existing hydrometric stations in El Salvador will have their installations completed with additional equipment.

TABLE IIEQUIPMENT FOR EACH TYPE OF STATION1. Hydrometeorological stationsType A : Principal Climatological Station

- 1 Anemograph
- 1 Mercury barometer
- 1 Barograph
- 1 Set of psychrometers and maximum and minimum thermometers
- 1 Thermograph
- 1 Hygrograph
- 1 Sun radiation recorder
- 1 Evaporation pan complete
- 1 Sunshine recorder
- 1 Pluviograph
- 1 Standard raingauge
- 1 Housing observatory type

Type B: Ordinary climatological station

- 1 Pluviograph
- 1 Standard raingauge
- 1 Set of maximum and minimum thermometers with shelter
- 1 Psychrometer
- 1 Wind vane with support

Type C: Precipitation station

- 1 Standard raingauge
- 1 Wind vane with support

2. Hydrological stations

- 1 Pressure bubble or float limnigraph
- Staff gauge (Variable Length)
- 2 Structural steel towers
- Cable and fittings for spans 100-150 meters
- 1 Cable car
- Stilling well and recorder shelter (Variable length)
- Admission pipe (Variable length)

TABLE II (Cont.)

Additional equipment for each of 20 already existing stations in El Salvador.

- 2 Structural steel towers
- Cable and fittings for spans 100-150 metres
- 1 Cable car

TABLE III  
HYDROMETEOROLOGICAL EQUIPMENT

Cantidad	Artículo	Unit Cost	Total US\$	1967	1968	1969	1970	1971
60	Anemograph	1,730	103,800	31,140	20,760	20,760	20,760	10,380
60	Mercury Barometer	220	13,200	3,960	2,640	2,640	2,640	1,320
60	Barograph	160	9,600	2,880	1,920	1,920	1,920	960
60	Set of Psychometers and max. and min. thermometers	140	8,400	2,520	1,680	1,680	1,680	840
60	Termograph	150	9,000	2,700	1,800	1,800	1,800	900
60	Hydrograph	140	8,400	2,520	1,680	1,680	1,680	840
60	Sun radiation recorder	300	18,000	5,400	3,600	3,600	3,600	1,800
60	Sunshine recorder	220	13,200	3,960	2,640	2,640	2,640	1,320
60	Evaporation pan complete	150	9,000	2,700	1,800	1,800	1,800	900
830	Standard raingauge with support	50	41,500	12,450	8,300	8,300	8,300	4,150
300	Pluviograph	360	108,000	32,400	21,600	21,600	21,600	10,800
240	Thermometer (max. and min.) with housing	130	31,200	9,360	6,240	6,240	6,240	3,120
240	Psychometer	60	14,400	4,320	2,880	2,880	2,880	1,440
770	Wind vane with support	40	30,800	9,240	6,160	6,160	6,160	3,080
60	Housing observatory type	160	9,600	2,880	1,920	1,920	1,920	960
	Miscellaneous items and spare parts		31,300	9,390	6,260	6,260	6,260	3,130
	Total Equipment		459,400	137,820	91,880	91,880	91,880	45,940
	Shipping and Insurance		66,900	20,070	13,380	13,380	13,380	6,690
	Grand Total		526,300	157,890	105,260	105,260	105,260	52,630

TABLE IV

## HYDROLOGICAL EQUIPMENT

Quantity	Item	Unit Cost	Total US\$	1967	1968	1969	1970	1971
270	Limnigraph	1,000 (1)	270,000	81,000	54,000	54,000	54,000	27,000
270	Stillins well, pipes and fittings	200 (1)	54,000	16,200	10,800	10,800	10,800	5,400
270	Staff gauge	60	16,200	4,860	3,240	3,240	3,240	1,620
580	Structural Steel tower	275	159,500	55,550	29,700	29,700	29,700	14,850
290	Cable and fitting(spares 100-150 meters)	300	87,000	30,300	16,200	16,200	16,200	8,100
290	Cable car	300	87,000	30,300	16,200	16,200	16,200	8,100
	Miscellaneous items and spare parts	-	154,600	46,380	30,920	30,920	30,920	15,460
	Total equipment		828,300	264,590	161,060	161,060	161,060	80,530
	Shipping and insurance		121,300	38,750	23,560	23,560	23,560	11,870
	Grand Total		949,600	303,340	184,620	184,620	184,620	92,400

(1) Average values



TABLE V

Complementary equipment : Stream gauging; sediment load measurement; construction; office

Quantity	Item	Unit cost	Total US\$	1967	1968	1969	1970	1971
<u>i Stream gauging</u>								
55	Current meter	280	15,680	7,840	7,840	-	-	-
28	Set of weights	240	6,720	3,360	3,360	-	-	-
28	Gauging crane	200	5,600	2,800	2,800	-	-	-
-	Miscellaneous (tag lines, washing rods, head set hand line etc)	-	11,200	3,000	3,000	2,080	2,080	1,040
-	Spare parts	-	5,600	1,120	1,120	1,120	1,120	1,120
Sub-total			44,800	18,120	18,120	3,200	3,200	2,160
<u>ii Sediment load measurement</u>								
6	Point integrating sampler USP-46	720	4,220	2,110	2,110	-	-	-
50	Depth integrating sampler	260	7,280	3,640	3,640	-	-	-
-	Miscellaneous items	-	16,500	3,300	3,300	3,300	3,300	3,300
Sub-total			28,000	9,050	9,050	3,300	3,300	3,300

TABLE V (Continued)

Complementary equipment: Stream gauging; sediment load measurement; construction; office

Quantity	Item	Unit Cost	Total US\$	1967	1968	1969	1970	1971
iii <u>Construction equipment</u>								
6	Small engine driver compressor with pneumatic hammer	4,000	24,000	24,000	-	-	-	-
6	Water pump and miscellaneous tools	1,500	9,000	9,000	-	-	-	-
6	Transit	800	4,800	4,800	-	-	-	-
6	Level	400	2,400	2,400	-	-	-	-
12	Altimeter	250	3,000	3,000	-	-	-	-
-	Miscellaneous surveying equipment (rods- taper, etc.)		1,800	1,800	-	-	-	-
	Sub-total	-	45,000	45,000	-	-	-	-
iv <u>Office equipment</u>								
30	Automatic calculator	800	24,000	12,000	12,000	-	-	-
30	Semi-automatic calculator	300	9,000	4,500	4,500	-	-	-
30	Drawing set	180	5,400	2,700	2,700	-	-	-
30	Planimeter	120	3,600	1,800	1,800	-	-	-
-	Miscellaneous office equipment	-	6,000	3,000	3,000	-	-	-
	Sub-total	-	48,000	24,000	24,000	-	-	-
	Total equipment	-	165,800	96,170	51,170	6,500	6,500	5,460
	Shipping and insurance 15%	-	24,900	14,480	7,880	980	980	580
	GRAND TOTAL	-	190,700	110,650	59,050	7,480	7,480	6,040

TABLE VI

Complementary equipment: Laboratory and unforeseen

Quantity	Item	Unit Cost	Total US\$	1967	1968	1969	1970	1971
	i) <u>Laboratory equipment</u>							
6	Visual accumulation tube size analyser	640	3,840	-	-	3,840	-	-
6	Sieving machine	850	5,100	-	-	5,100	-	-
6	Oven (1100°C)	750	4,500	4,500	-	-	-	-
6	Vacuum machine	230	1,380	1,380	-	-	-	-
6	Stove (fixed temperature)	550	3,300	3,300	-	-	-	-
6	Double boiler	310	1,860	-	-	1,860	-	-
36	Picnometers	30	1,080	-	-	1,080	-	-
12	Thermometer ASTM 5°-200°C	10	120	120	-	-	-	-
144	Porcelain crucibles	-	1,140	1,140	-	-	-	-
144	Porcelain capsules 145 cc	-	480	480	-	-	-	-
6	Set of sieves 12-325	200	1,200	1,200	-	-	-	-
6	Precision balance	500	3,000	3,000	-	-	-	-
-	Miscellaneous laboratory equipment	-	12,000	6,000	-	2,000	2,000	2,000
	Sub-total		39,000	21,120	-	13,880	2,000	2,000
	ii) <u>Expendable equipment for the operation of the stations and unforeseen equipment according to individual country's needs</u>							
	Sub-total		115,600	14,450	28,900	28,900	28,900	14,450
	Equipment total		154,600	35,570	28,900	42,780	30,900	16,450
	Shipping and insurance		23,200	5,340	4,330	6,420	4,640	2,470
	TOTAL		177,800	40,910	33,230	49,200	35,540	18,920

TABLE VII - VEHICLES

Quantity	Item	Unit Cost	Total US\$	1967	1968	1969	1970	1971
24	Field vehicle with double transmission	3,000	72,000	36,000	36,000	-	-	-
	Shipping and insurance	-	7,200	3,600	3,600	-	-	-
	GRAND TOTAL	-	79,200	39,600	39,600	-	-	-

TABLE VIIIDETAIL OF THE EQUIPMENT PROVIDED BY THE GOVERNMENTS1. Materials for the construction of stations

Note: Materials which remain incorporated to the station are included in the items "Construction of Stations".

	Total of Expenses	1967	1968	1969	1970	1971
Light tools (shovels, stonecutters, etc.)	5,000	1,000	1,000	1,000	1,000	1,000
Camping equipment	20,000	5,000	5,000	5,000	5,000	-
Surveying equipment (Sticks, poles, etc.)	1,000	200	200	200	200	200
	26,000	6,200	6,200	6,200	6,200	1,200

2. Materials for Offices and Laboratories

Forms	8,400	320	1,000	1,680	2,360	3,040
Office materials	18,020	800	1,700	2,200	3,310	10,010
Filter paper, reactives, etc.	16,000	400	1,200	2,400	3,000	3,000
	36,420	1,520	3,900	6,280	8,670	16,050
TOTAL	62,420	7,720	10,100	12,480	14,870	17,250

TABLE IXDETAILS OF THE COSTS OF THE CENTRAL OFFICE TO BE FINANCED BY THE GOVERNMENTS.

	Number man-months	Total Cost	1967	<u>Estimates of cash disbursement</u>			
				1968	1969	1970	1971
Co-Manager	60	75,000	15,000	15,000	15,000	15,000	15,000
Administrative Officer	60	22,500	4,500	4,500	4,500	4,500	4,500
Administrative personnel	60	22,500	4,500	4,500	4,500	4,500	4,500
Building		9,000	1,800	1,800	1,800	1,800	1,800
Equipment and supplies		13,000	2,600	2,600	2,600	2,600	2,600
Transportation of the personnel		15,000	3,000	3,000	3,000	3,000	3,000
Per diem of the personnel		7,500	1,500	1,500	1,500	1,500	1,500
Unforseen		15,500	3,100	3,100	3,100	3,100	3,100
T O T A L	180	180,000	36,000	36,000	36,000	36,000	36,000