JAPAN INTERNATIONAL COOPERATION AGENCY

STATE SECRETARIAT OF PLANNING, SCIENCE AND TECHNOLOGY
THE STATE OF SERGIPE, THE FEDERATIVE REPUBLIC OF BRAZIL

THE STUDY
ON
WATER RESOURCES DEVELOPMENT
IN THE STATE OF SERGIPE
IN
THE FEDERATIVE REPUBLIC OF BRAZIL

FINAL REPORT

SUMMARY

MARCH 2000

YACHIYO ENGINEERING CO., LTD. (YEC)

Exchange Rate

Part I Master Plan Study :

US$ 1.00 = R$ 1.18 = ¥ 141.40 as of August 1998

Part II Feasibility Study :

US$ 1.00 = R$ 1.92 = ¥ 106.95 as of September 1999

PREFACE

In response to a request from the Government of the Federative Republic of Brazil, the Government of Japan decided to conduct a Development Study on Water Resources Development in the State of Sergipe and entrusted the study to the Japan International Cooperation Agency (JICA).

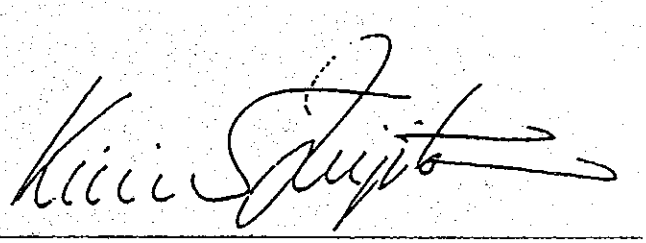
JICA selected and dispatched a study team headed by Mr. Masatomo Watanabe of Yachiyo Engineering Co., Ltd. to Brazil, three times between May 1998 and February 2000. In addition, JICA set up an advisory committee between May 1998 and March 2000, which examined the study from specialist and technical points of view.

The team held discussions with the officials concerned of the Government of Federative Republic of Brazil and conducted field surveys in the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

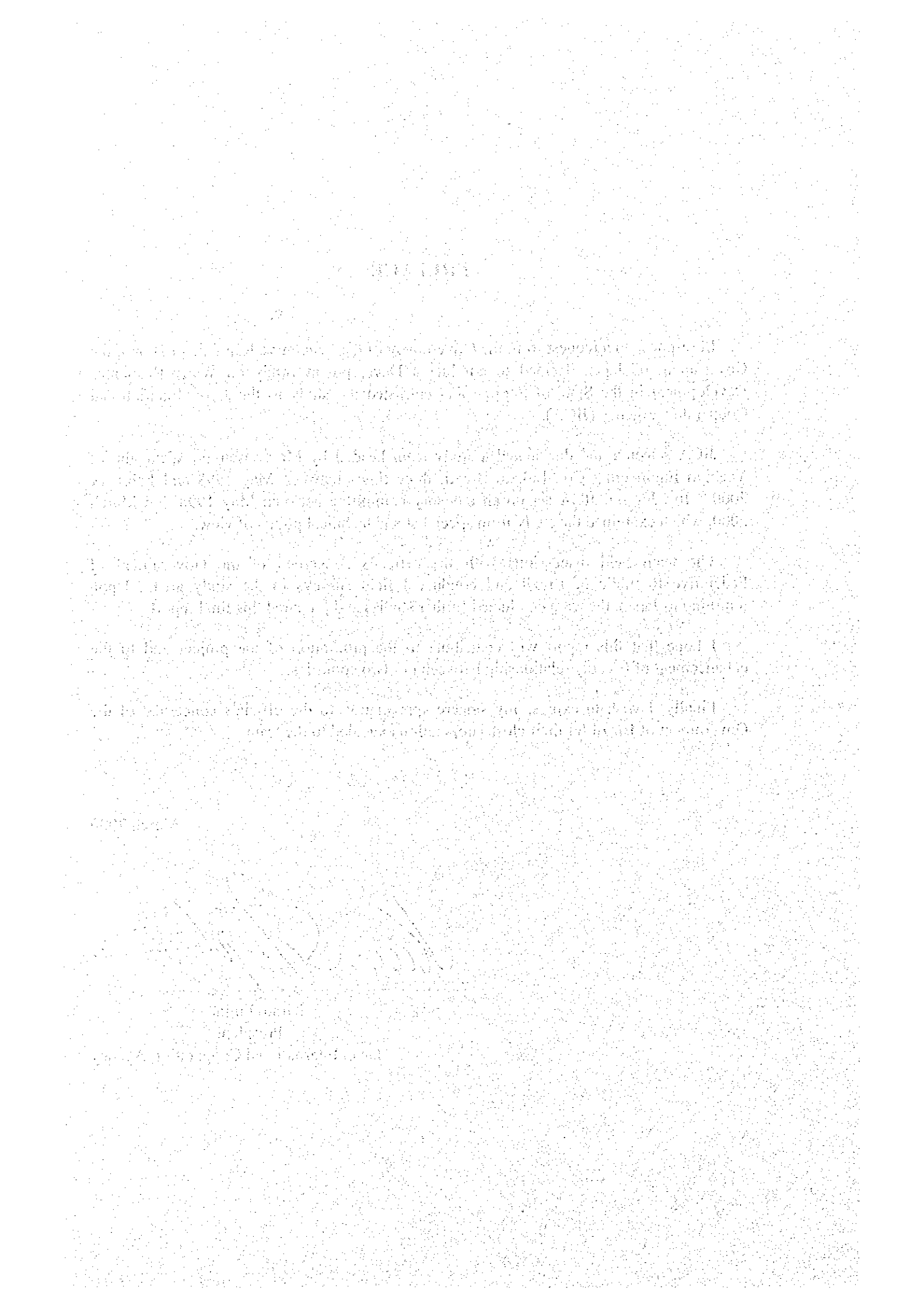
I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Brazil for their close cooperation extended to the team.

March 2000



Kimio Fujita
President
Japan International Cooperation Agency



March 2000

Mr. Kimio Fujita
President
Japan International Cooperation Agency
Tokyo, Japan

Dear Mr. Fujita,

LETTER OF TRANSMITTAL

We are pleased to submit to you the final report of the Study on Water Resources Development in the State of Sergipe in the Federative Republic of Brazil. The report contains plans of water resources development projects, taking into account of the advice and suggestions of the authorities concerned of the Government of Japan and your Agency. Also included are comments made by the State Secretariat of Planning, Science and Technology, the State of Sergipe, the Federative Republic of Brazil, through technical discussions on the draft reports that were held in Aracaju, the State of Sergipe, Brazil.

The report consists of the master plan for water resources development in the State of Sergipe, as well as the feasibility study for the Project on Water Resources Development and Supply in Vaza Barris River- Sergipe (PROVABASE). In the master plan, the water resources development plan of the six (6) main rivers was formulated for the whole State, targeting the year of 2020. We proposed the private-tap systems with integrated and independent pipelines for urban and large rural areas through direct river intakes or dam reservoirs as well as the public-tap systems for rural areas through deep wells, and the eight (8) irrigation projects were also proposed. As for river basin management, institutional plan, water resources management plan, management improvement of water supply and drought measures were proposed. In the feasibility study, a new system was introduced to the dam plan and design, in order to make it possible to use reservoir water as potable and irrigation water, bypassing the river water with high chlorine concentration in the dry season to the downstream of the dam. In the planning, negative socio-economic impacts (resettlement and land acquisition) and effects on the natural environment were minimized as much as possible, and positive environmental mitigation plans such as reforestation were also proposed. Finally we came to a conclusion that the proposed project was feasible in the technical, economic, financial and environmental aspects.

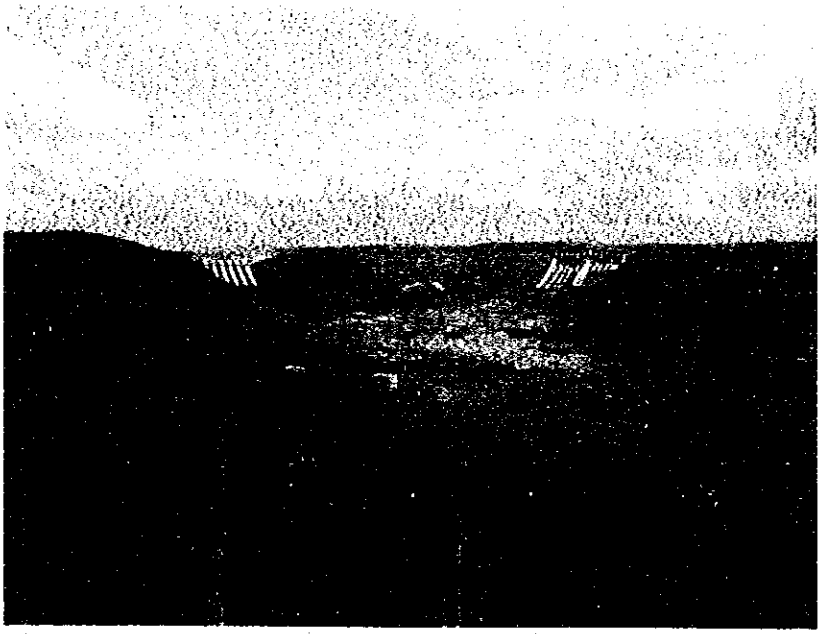
In view of the urgent necessity for water resources development and supply in urban, large rural and small rural areas, especially in semi-arid areas, and of the need for the infrastructure development in the State of Sergipe, we recommend that both the State and Federal Government implement the priority projects proposed in the report as a top priority.

We wish to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs and Ministry of Construction. We also wish to express our deep gratitude to the State Secretariat of Planning, Science and Technology, the State of Sergipe, the Federative Republic of Brazil for the close cooperation and assistance extended to us during our investigation and study.

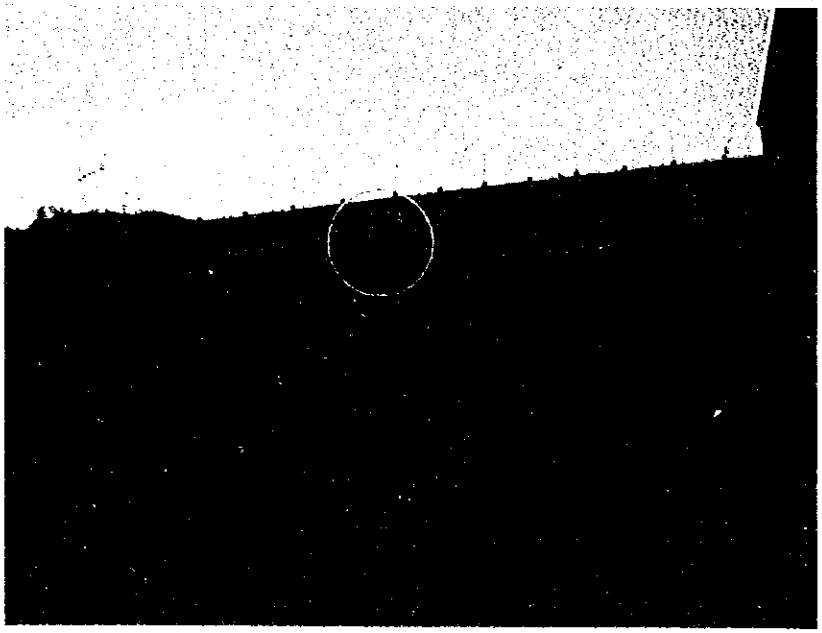
Very truly yours,

渡辺正知

Masatomo Watanabe
Team Leader
The Study on Water Resources Development in the State of Sergipe in the Federative Republic of Brazil



Downstream View of Xingo Dam, Intake pump station for California Irrigation Project

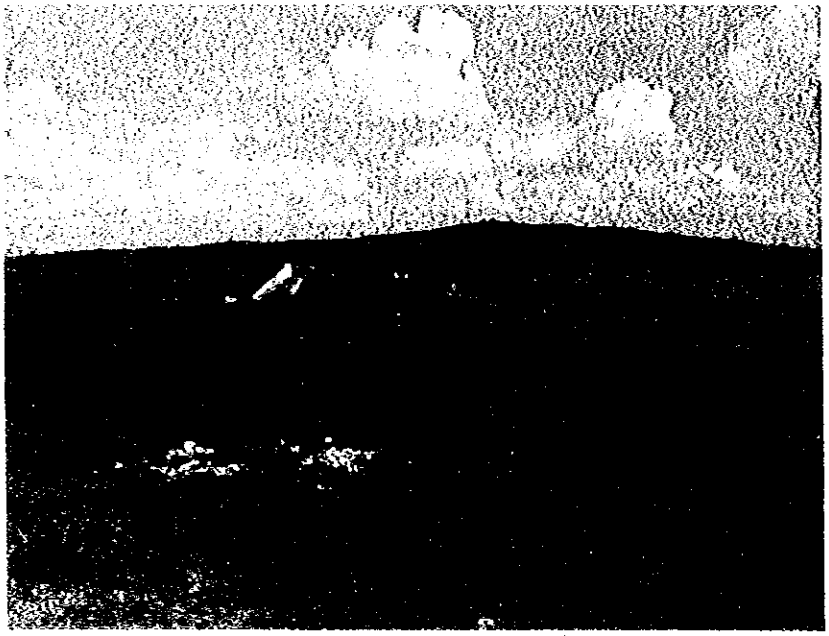


Two intake conduit of Xingo Dam for the State of Sergipe

São Francisco River Downstream of Xingo Dam

(Photo-1)

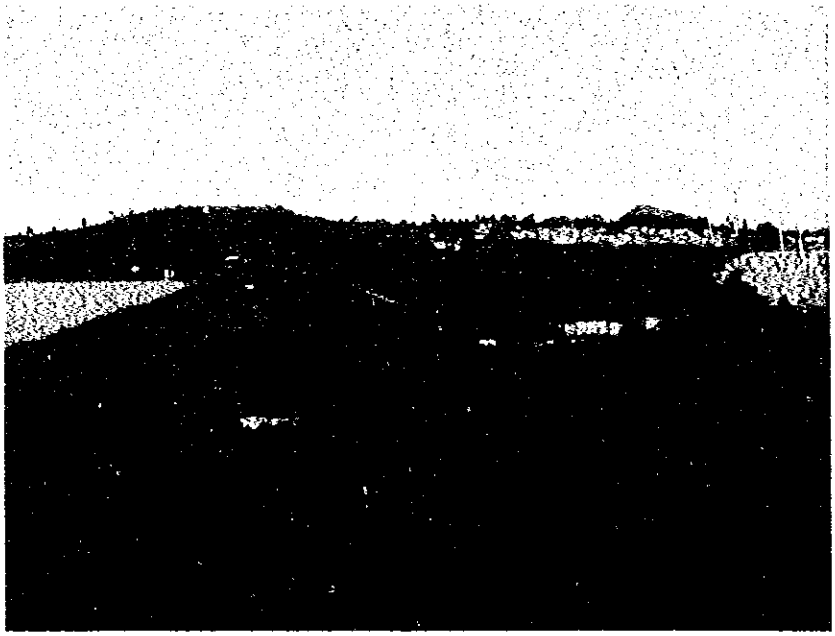
Jabiberi Dam
(Tobias Barreto)



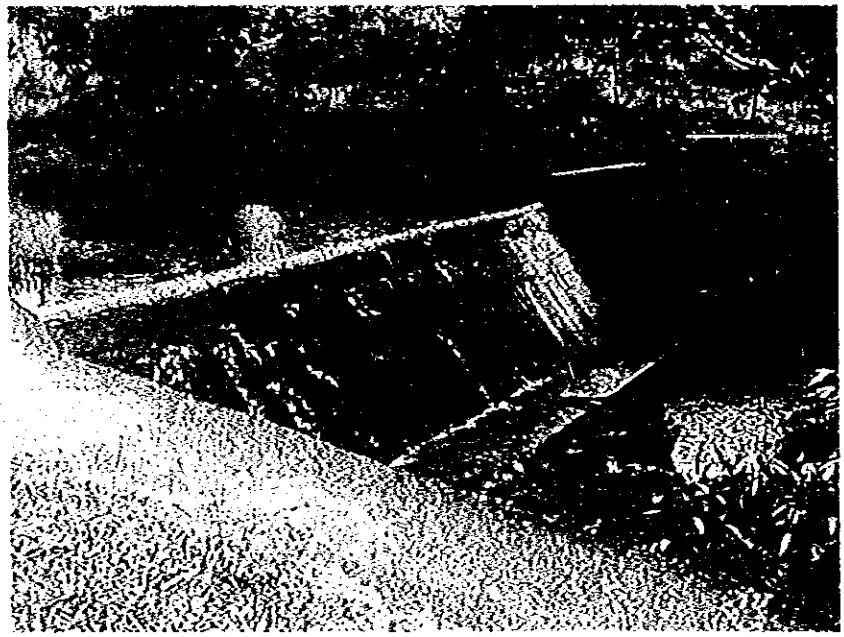
Piaui Dam
(Lagarto)

Marcela Dam
(Itabaiana)

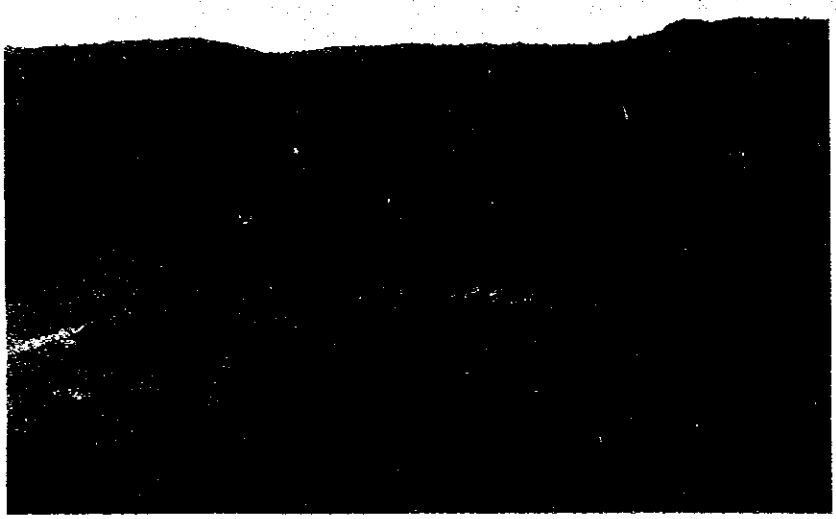
(Photo-2)



Cajaiba Dam, Pump station to Itabaiana is seen



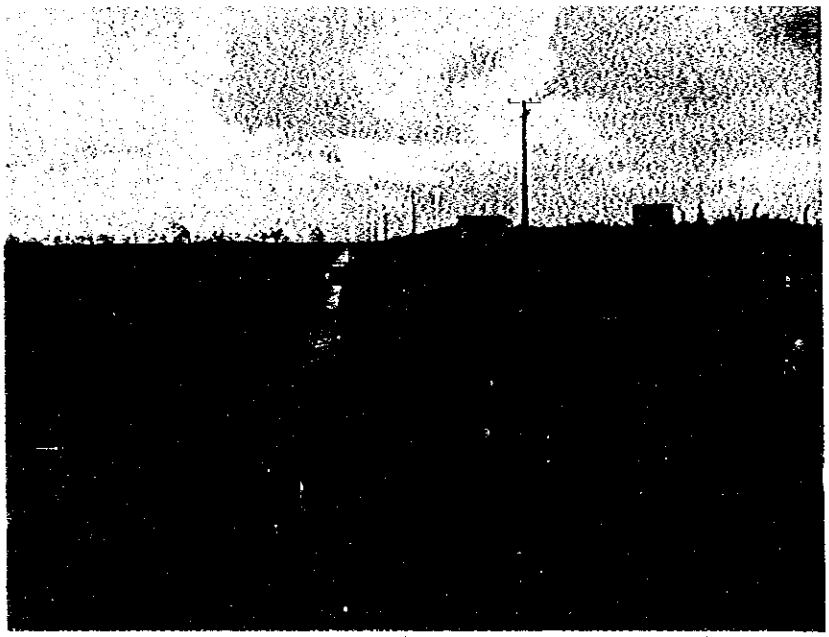
Ribeira Wier for Itabaiana Water Supply System



Jacarecica II Dam (under construction)

(Photo-3)

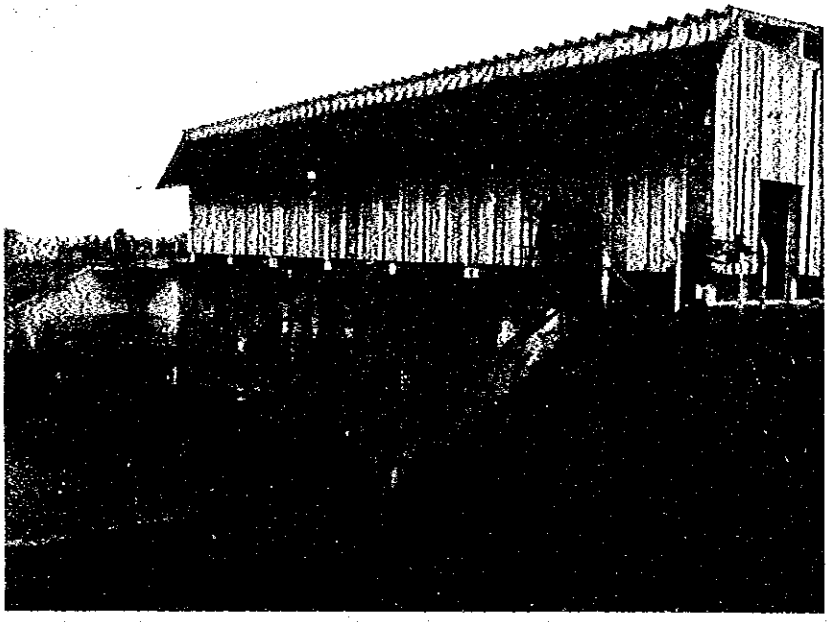
Pump Station for Neopilice Irrigation Project



Irrigation Canal in Neopilice Irrigation Project

Micro-sprinkler for Banana Farm in Neopolice Irrigation Project

(Photo-4)

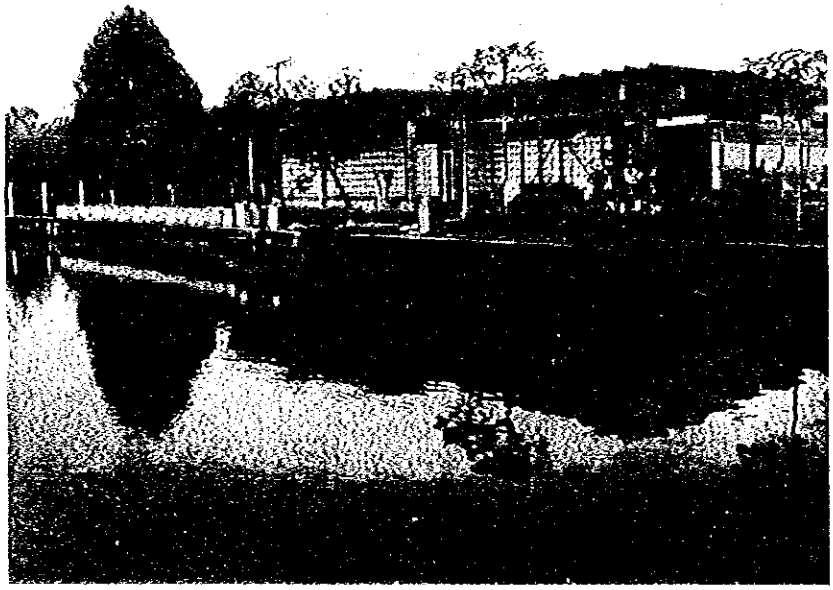


Pump Station for São Francisco Pipeline for Aracaju City

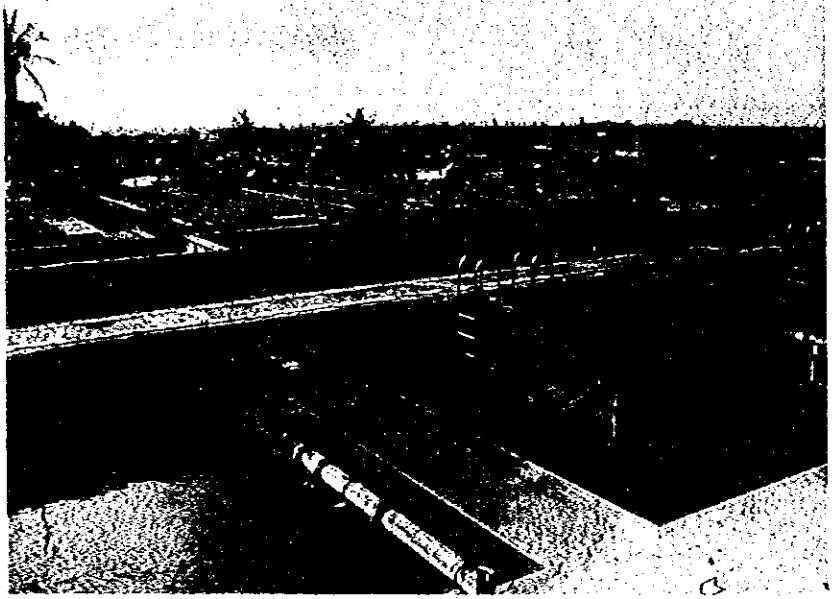
5 sets of Pump in the Station for São Francisco Pipeline

Intake Weir at Poxim River for Living Water to Aracaju City

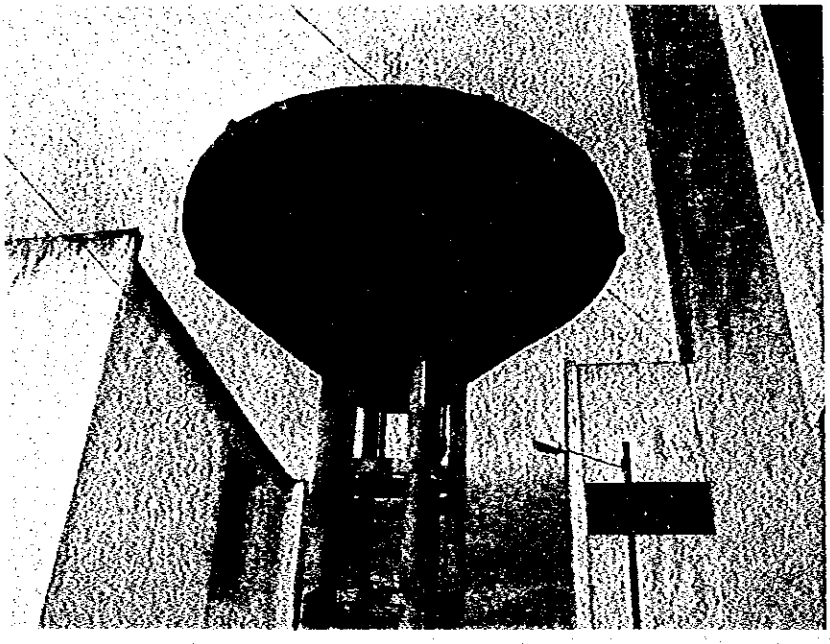
(Photo-5)



Ibura Spring and Pump Station for Living Water to Aracaju City

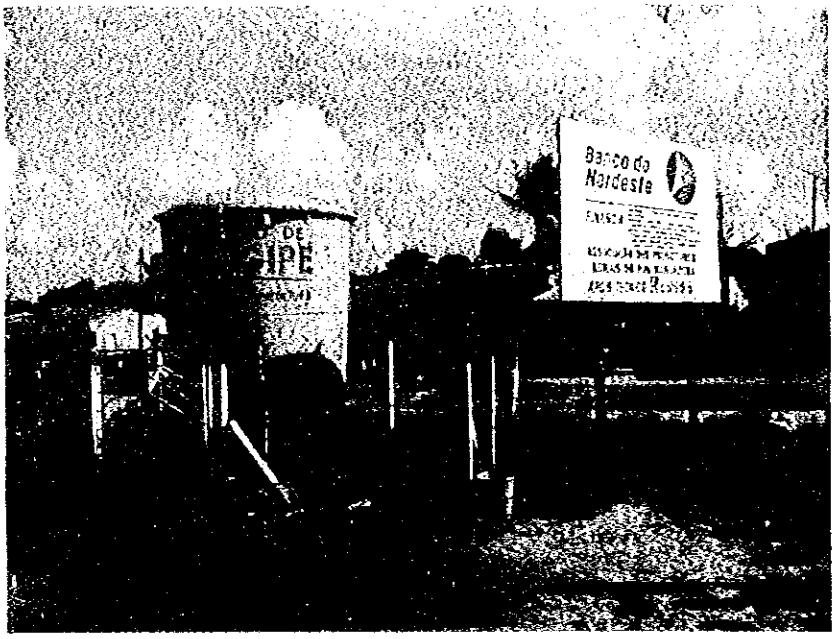


Water Purification Plant for Aracaju City

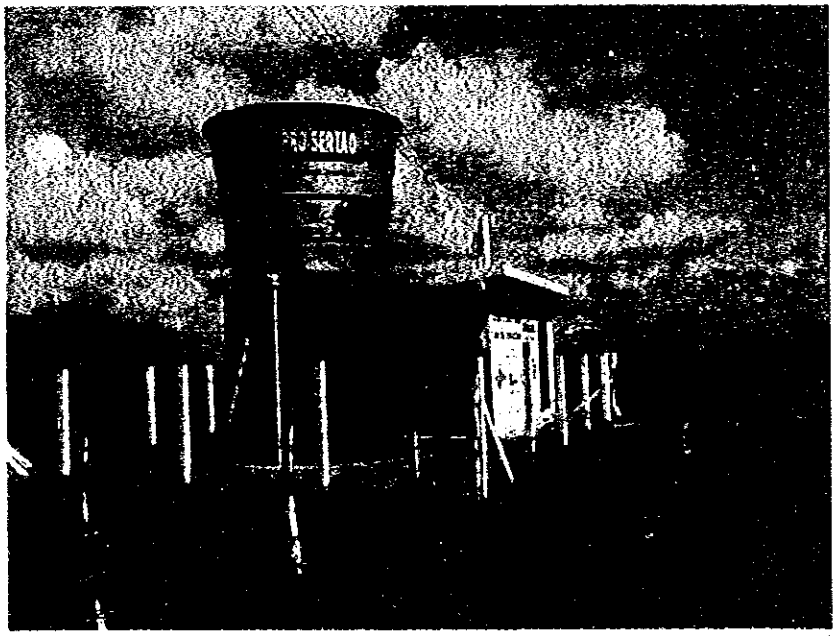


Elevation Reservoir in Propria City

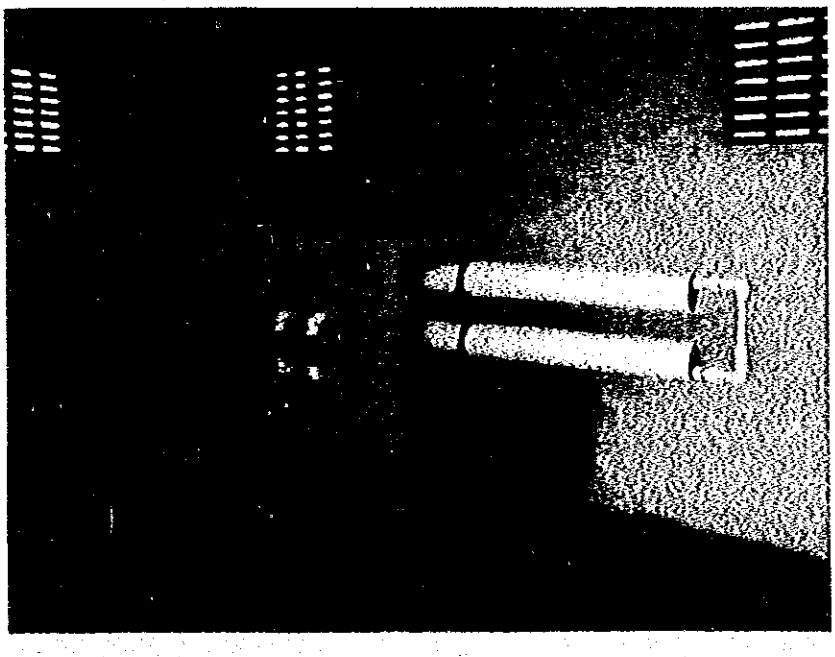
(Photo-6)



Well Water Supply System by COHIDRO, Public Tap



Well Water Supply System in Campo Pequenho by PRO-SERTÃO and COHIDRO

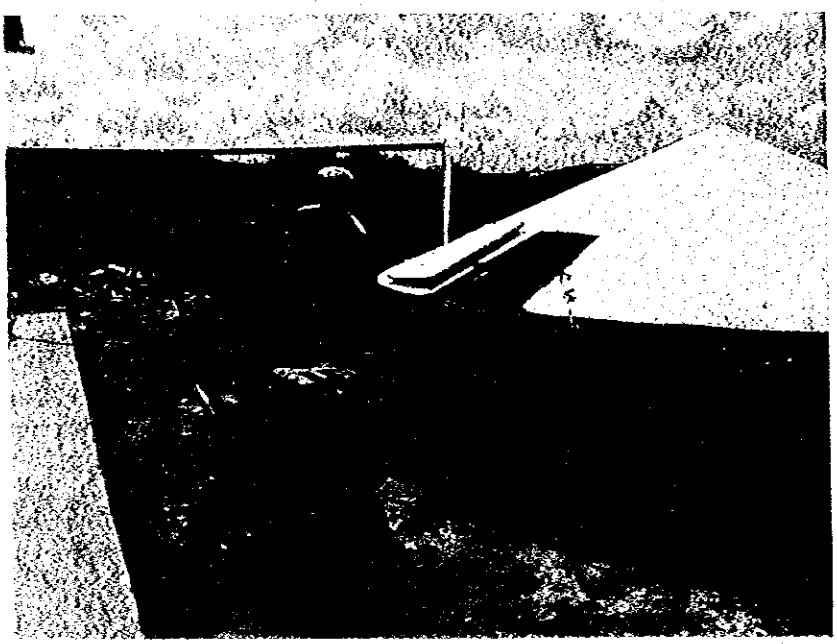


Desalinizer with Well Water Supply System in Campo Pequenho by PRO-SERTÃO and COHIDRO

(Photo-7)

Public-tap in Campo Pequenho

Rainfall Collecting System (30 m³) at Elementary School in Campo Pequenho by PRO-SERTÃO



Rainfall Collecting System (30 m³)at Elementary School in Campo Pequenho by PRO-SERTÃO

(Photo-8)

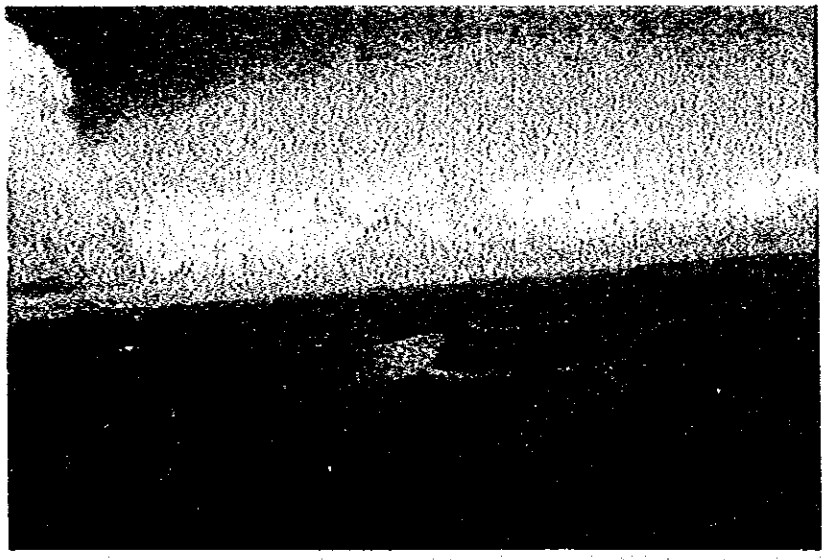
Upstream View of Vaza Barris River, near Itaporanga de A'juda

Upstream View of Vaza Barris River at Dam Site

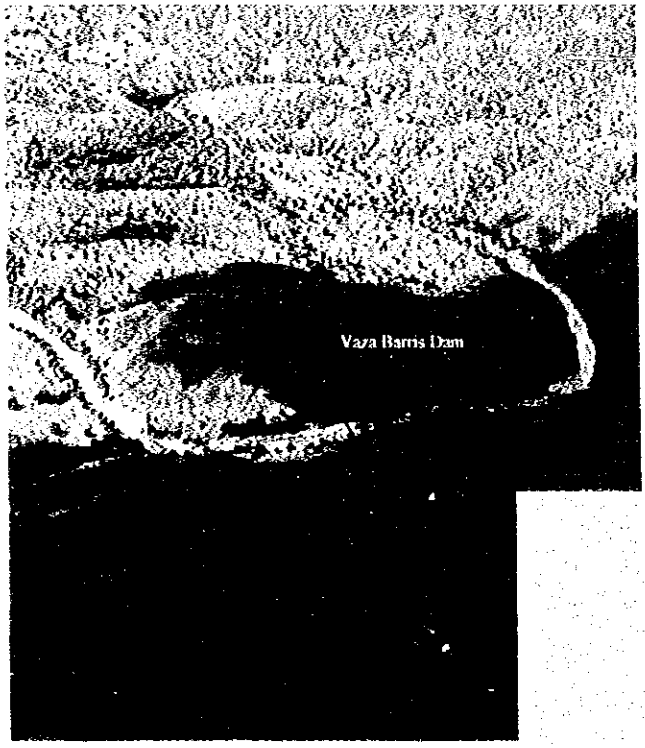
Downstream View of Vaza Barris River at Dam Site

(Photo-9)

Check Dam Site, Upstream
View of Vaza Barris River



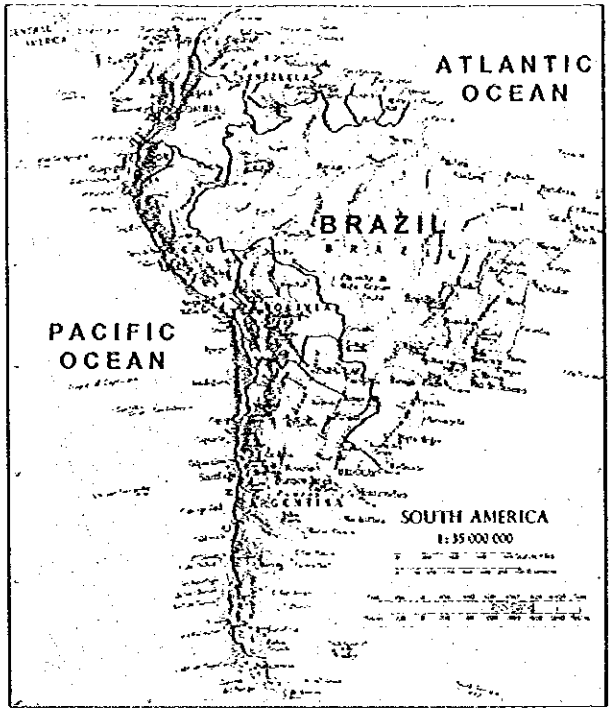
The Vaza Barris Estuary
(Mangrove)



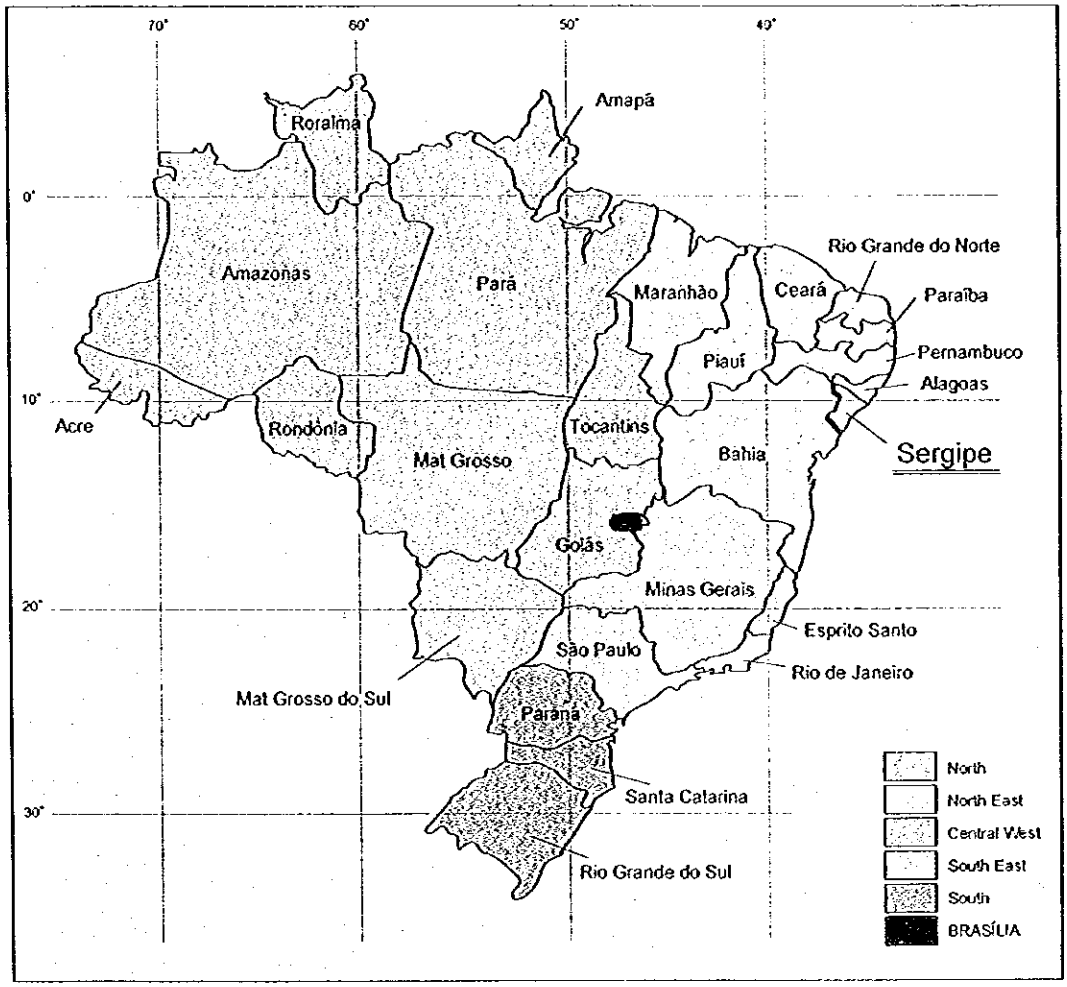
Vaza Barris Dam Site

(Photo-10)

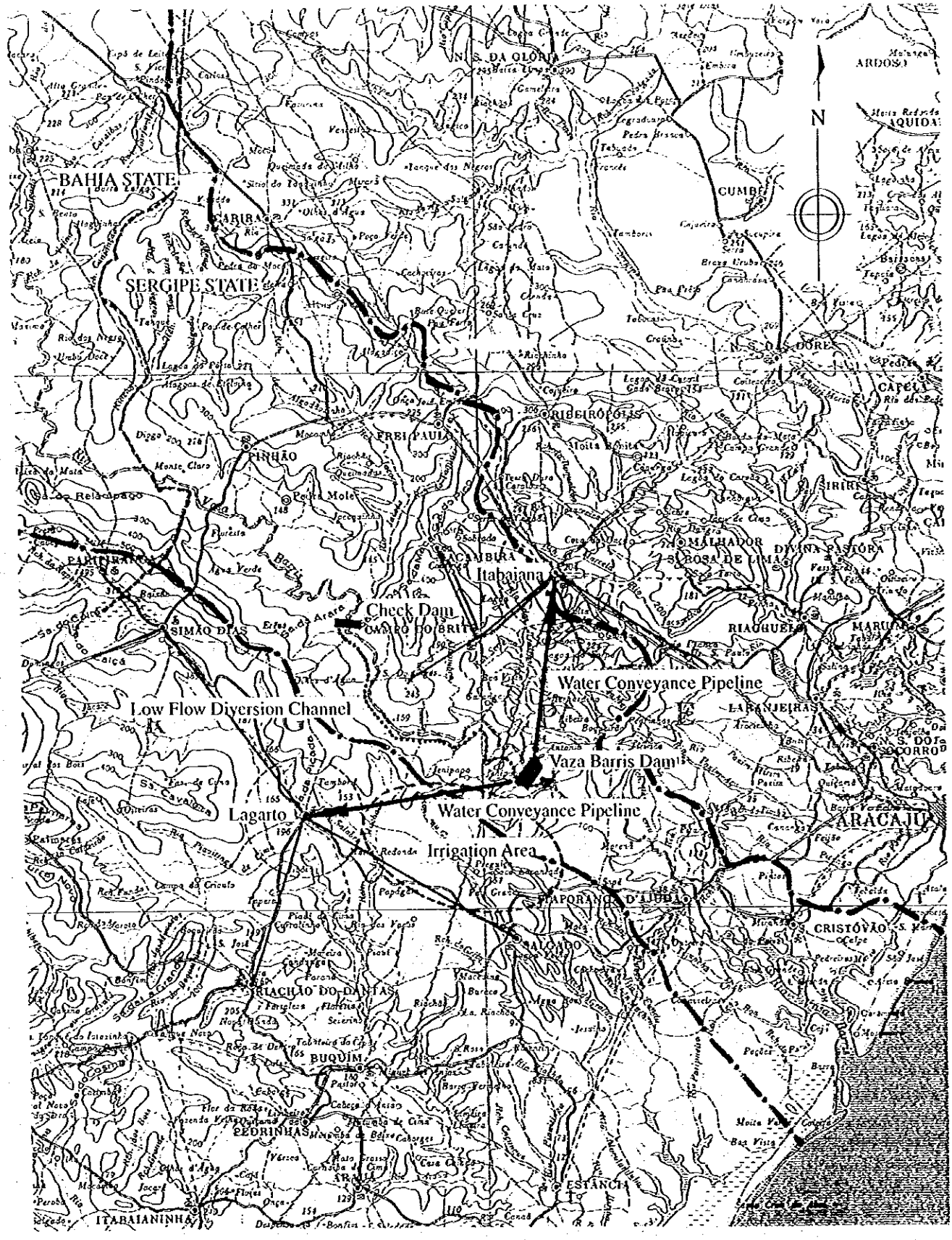
Location of Brazil



Location of Sergipe



LOCATION OF THE PROJECT (MASTER PLAN STUDY)



LOCATION OF THE PROJECT (FEASIBILITY STUDY)

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SYNOPSIS

The Study on Water Resources Development in the State of Sergipe in the Federative Republic of Brazil

Study Period: June 1998 – March 2000
Recipient Agency: State Secretariat of Planning, Science and Technology, the State of Sergipe

1 BACKGROUND TO THE STUDY

Sergipe State (area: 22,050 km^2, population: 1,600,000), the target area of the Study, is located in the northeast of Brazil. The main issue currently facing Sergipe State concerns increasing statewide socio-economic levels and infrastructure development, and especially the comprehensive development of water resources is an issue that requires urgent attention. Since agriculture is unable to absorb the natural increase in the rural population, a movement of population from rural to urban areas is taking place. The incoming population is being absorbed and secondary and tertiary industries are expanding in the urban areas. As a result, the water demand has increased so much that infrastructure development has been unable to keep up, and there are shortages of domestic water and industrial water. Moreover, semi-arid area has been suffering from chronic water shortage because of the lack of adequate water sources in quantity and quality.

2 OBJECTIVES OF THE STUDY

The objectives of the Study, targeting the whole of the State of Sergipe, are as given below:

1) To compile a master plan, having the year of 2020 as its target year, for water resources development in each river basin;
2) To conduct a feasibility study on priority projects selected within the master plan, in order to ascertain the suitability of each project; and
3) At the same time, to carry out the transfer of technology to the counterparts in Sergipe State during the course of the Study implementation.

3 OUTLINE OF THE MASTER PLAN

3-1 Planning Policy

Based on the socio-economic conditions and hydrological feature as well as current water supply conditions, the planning policy on water resources development was set as follows:

1) **Goal Setting**: "Strategic Scenario" of regional development for water resources development is adopted instead of "Trend Scenario". Public water supply rate was set as 100 % in urban areas and 85 % in rural areas at the target year of 2020. As for the industrial water supply, the 28 % of the demand is supplied by public water system.
2) **Public water supply systems** are divided into following two categories:
   - **Urban and large rural area**: municipal and industrial water supplied by private-tap system (Integrated System and Independent System)
   - **Small rural area**: domestic water supplied by public-tap system, through groundwater development (deep wells) with desalinizer if necessary
3) **Irrigation water supply:** Agriculture water is classified into: 1) Irrigation, 2) Livestock and 3) Aquiculture. Irrigation water is mainly discussed in this study, because necessary water amount of the others is considered to be very small.
4) **Compensation Discharge and Low Flow Security**: The 20% and 100% of Q[7,10] (the 10-year return period minimum 7-day flow) is applied as compensation discharge for direct intake plan and for dam plan respectively. Low flow security has been set to ensure the abstraction of new development discharge even in the worst drought in ten years.

3-2 Proposed Project and Programs

The proposed projects and programs for water resources development and management in the State of Sergipe are described in Table-1. The project costs are shown in Table-2.

Table-1 Water Resources Development and Management Projects

Water Resources Development Projects	Developed Water (m^3/day)	Water Resources Management Programs
1 Municipal and Industrial Water Supply	**547,103**	**1 Institutional Plan**
1.1 Urban and Large Rural Area (Integrated System)	**379,399**	a Management Organization Set-up
a Project Expansion of Sao Francisco Pipeline System	*151,600*	b Charging to Use of Water Resources
b Project Expansion of Agreste Pipeline System	*22,200*	c Public Involvement
c Project Expansion of Piauitinga Pipeline System	*30,200*	d Cost Allocation for Multi-purpose Facilities
d Aracaju Well Development Project	*23,292*	**2 Water Resources Management Programs**
e Project Expansion of Itabaianinha Pipeline System	*13,321*	a Improvement in Efficiency of Water Supply in Urban and Large Rural Areas
f Project Expansion of Propria Pipeline System	*6,189*	b Management System of Rural Water Services
g Project Expansion of Alto Sertao Pipeline System	*5,495*	**3 Management Improvement of Water Supply**
h Project Expansion of Sertaneja Pipeline System	*6,493*	a Classifications of Waters
I Xingo Dam Pipeline Project	*43,999*	b Enhancement of Hydrological Assessment
j Vaza Barris Dam Project	*76,610*	c Water Quality Monitoring
1.2 Urban and Large Rural Area (Independent System)	**158,351**	d Establishing a System for Effluent Control
1.3 Small Rural Area (Municipal Water Supply Only)	**9,353**	e Regulation of Land Development and Use
2 Irrigation Water Supply	**1,906,301**	**4 Operation against Drought**

Table-2 Project Costs

Domestic and Industrial Water Supply (W/S) Projects				Irrigation W/S Projects	Total
Integrated W/S	Independent W/S	Small Rural W/S	Total		
R$ 701.94 mil.	R$ 170.00 mil.	R$ 73.86 mil.	R$ 945.80 mil.	R$ 427.50 mil.	R$ 1,373.30 mil.

Note. Cost estimation as of August 1998, US$ 1 = R$ 1.18 = ¥ 141.40

3-3 Project Evaluation

(1) Social Evaluation

Through the implementation of the Master Plan projects, the following social effects will be expected:

- Increase of Employment Opportunity and Activation of Regional Economy
- Improvement of Safe Water Coverage and Public Hygiene
- Mitigation of Economic Disparity and Alleviation of Centralization to the State Capital

(2) Economic Evaluation

Economic efficiencies of the projects are evaluated as shown in Table-3. EIRR of the projects exclude the small rural water supply projects exceed the opportunity cost of 10 %.

Table-3 Results of the Economic Evaluation

Projects	EIRR	NPV (R$ million)	B/C
(1) Municipal and Industrial Water Supply Project	11.8	91.1	1.13
(1-1) Integrated System	10.8	32.9	1.06
(1-2) Independent System	27.7	87.7	1.82
(2) Small Rural Water Supply (Single Well System)	-	-29.5	0.18
(3) Irrigation Projects	17.2	116.1	1.48
<<Total of Projects>> (1)+(2)+(3)	13.1	207.2	1.23

(3) Financial Evaluation

The initial investment cost for Public Water Supply System amounts to R$ 950 million, of which R$ 660 million or 70 % concentrates in the first decade (2000-2009). The R$ 390

million would be possibly be arranged by the state budget and public entities are assumed to share the financial burden of 10 % (R$ 66 million). Consequently, an amount of R$ 210 million should be raised from a soft loan in the first decade. However, initial investment in the second decade (2010-2019) could be covered entirely by the state budget.

(4) Initial Environmental Examination (IEE)

The IEE on the projects proposed in the master plan were conducted and have identified the following issues on potential environmental impacts and monitoring.

Table-4 Potential Environmental Impacts and Monitoring

Projects	Potential Environmental Impacts	Mitigation and Monitoring
Water Pipeline Projects	- Land acquisition and relocation - Damage to the wildlife - Water and air pollution during construction.	- Well-designed pipeline alignment - Well-planned land clearing and tree cutting
Vaza Barris Dam Project	- Land acquisition and relocation - Damage to ecosystem and riverside forest - Sediment load reduction, Obstruction of fish migration, Damage to mangrove forest - Water born disease	- Well-planned land clearing and tree cutting - Dry season work to minimize erosion - Reforestation and green buffer zone - Environmental monitoring (discharge, water quality, sediment, fish, ecosystem)
Well Dev. Projects	- Over pumping results in ground subsidence and salt water intrusion	- Monitoring on groundwater level and water quality
Irrigation Projects	- Salt damage of land and water logging - Damage to the wildlife and the soil - Water and air pollution during construction	- Well-planned land clearing and tree cutting - Monitoring on water quality caused by agricultural chemical

3-4 Recommendations

1) Implementation of the master plan on water resources development and management according to their priority
2) Review of water resources master plan every five years
3) Financing a part of the project cost through a foreign soft loan
4) Continuous Effort to Collecting, archiving and processing hydrometric data

4 OUTLINE OF THE FEASIBILITY STUDY

Of the water resources development projects proposed in the master plan, "The Project of Water Resources Development and Supply in Vaza Barris River- Sergipe (PROVABASE)" was selected as the most priority project. This project has the target to supply water to Agreste and Piauitinga Pipeline Systems (Itabaiana and Lagarto) through construction of Vaza Barris Dam and water conveyance pipelines to both cities.

4-1 Planning Policy

(1) Newly Developed Water Amount

Water Amount newly developed by the project is as follows:

- Domestic and Industrial Water: 0.887 m^3/s
- Irrigation Water: 2.912 m^3/s (1.507m^3/s on Average)
- Total: 3.799m^3/s (2.394m^3/s on Average)

(2) Concept of Reservoir Operation Plan

Vaza Barris Dam has the functions of not only "Storing Water" but also "Improvement of Reservoir Water Quality". To improve reservoir water quality, a new system of a low flow bypass was introduced into reservoir operation plan, considering water quality behavior that river flow has high chlorine concentration only during low flow condition but not during flood. Then, high chlorine concentration water is bypassed around the dam reservoir and clean or low chlorine concentration water is stored in the dam reservoir.

4-2 Outline of the Project

The component and specification of the proposed project are shown in Table-5. Project implementation is divided into 1) phase-1 from 2002 to 2006 and 2) phase-2 from 2012 to 2016. The total project cost is estimated as R$ 265,444 thousand (Phase-1: R$ 208,564 thousand, Phase-2: R$ 56,880 thousand). Price level as of September 1999, US$ 1 = R$ 1.92 = ¥ 106.95.

Table-5 Project Component and Specification

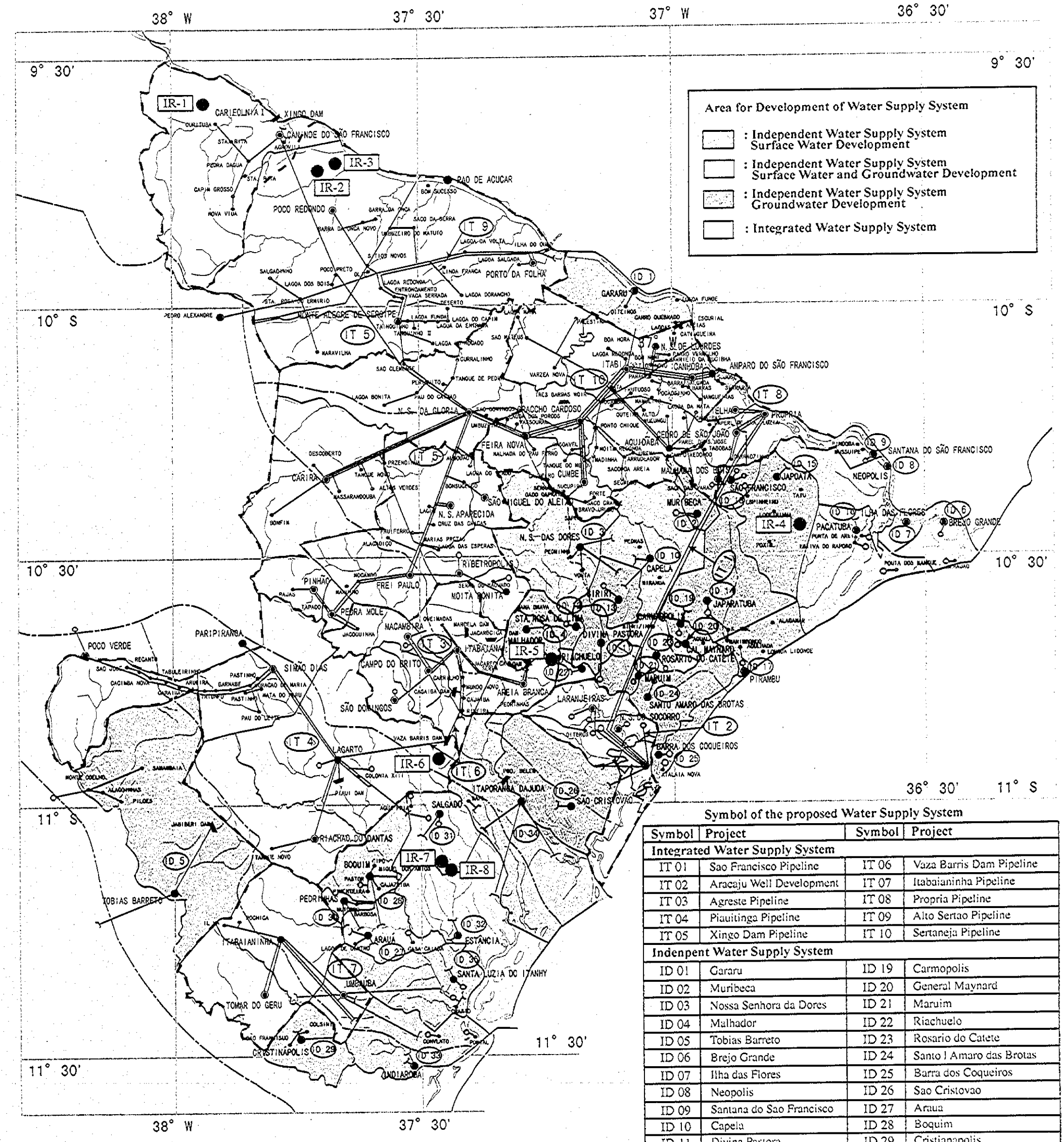
Project Components	Specification
(1) Vaza Barris Multipurpose Dam	
Main Dam	Type: Gravity concrete dam, Height: 48.2m, Crest Length: 280.0m
Spillway	Design discharge: 3,600m^3/s, Width: 150m, Height: 5.2m
Check Dam (or Intake Dam)	Type: Gravity concrete dam, Height: 20.0m, Crest Length: 127.0m
Low Flow Bypass	Concrete Box Culvert: 1.05m x 1.05m, Length: 27.7 km, Q=0.75m^3/s
(2) Domestic/Industrial Water Supply Facilities: <Itabaiana City Area>	
Water Conveyance Pipeline	Pump station: 0.546 m^3/s, Diameter ϕ 500-700mm, Length:25.4km
Treatment and distribution facilities	Itabaiana, AreiaBranca, Canpo. do Brito, Macambira, Sao Domingos
(3) Domestic/Industrial Water Supply Facilities: <Lagarto City Area>	
Water Conveyance Pipeline	Pump station: 0.52 m^3/s, Diameter ϕ 500-700mm, Length:24.0km
Treatment and distribution facilities	Lagarto, Poço Verde, Simao Dias, Riachao do Dantes
(4) Forestation for Environmental Protection	
Forestation	Total 300 ha (main dam: 150 ha, check dam: 50 ha, reservoir: 100 ha)
(5) Irrigation Water Supply Facilities	
Water Conveyance Pipeline	Pump station: 2.912 m^3/s, Cast iron pipes
Irrigation Facilities	Irrigation area: 4,553 ha (Lagarto, Itaporanga de Ajuda, Salgado)

4-3 Project Evaluation

1) **Social Evaluation:** a) Increase of Employment and Activation of Regional Economy, b) Improvement of Safe Water Coverage and Public Hygiene, and c) Mitigation of Economic Disparity and Alleviation of Centralization in the State Capital
2) **Economic Evaluation:** The EIRR of PROVABASE project resulted in 14.9%, which exceeds opportunity cost of 10%. NPV was R$75million and B/C was 1.59. Accordingly, the project is assessed to be in economic efficiency.
3) **Financial Evaluation:** The phase-1 project is evaluated to be financially feasible, raising the fund from a soft loan and the State Government with the share of 50 % respectively.
4) **Environmental Impact Assessment:** Vaza Barris Dam project has potentially adverse impacts on many environmental items, such as resettlement, riverside forest, mangrove and fishery in the estuary. More detailed investigation is necessary but some adverse effects can be avoided by suitable mitigation plans as follows:
   - Careful and adequate treatment on resettlement
   - Reforestation plan around dam and reservoir
   - Annual monitoring on fisheries activities

4-4 Recommendations

1) Implementation of the PROVABASE Project (Firstly phase-1 project)
2) Financing of the 50 % of the Project Cost through a foreign soft loan
3) Necessity of Additional Study before the implementation of the project
4) Necessity of Water Quality Monitoring for the future project implementation
5) Arrangement on basin development and management between Sergipe and Bahia



Legend

- : Existing Pipelines
- : Proposed Pipelines
- : City
- : Village
- : Existing Wells
- : Proposed Wells
- : Boundary of River Basin
- : River
- : Block Division of Integrated Water Supply
- : Proposed Irrigation Project

Symbol of the proposed Water Supply System

Symbol	Project	Symbol	Project
Integrated Water Supply System			
IT 01	Sao Francisco Pipeline	IT 06	Vaza Barris Dam Pipeline
IT 02	Aracaju Well Development	IT 07	Itabaianinha Pipeline
IT 03	Agreste Pipeline	IT 08	Propria Pipeline
IT 04	Piauitinga Pipeline	IT 09	Alto Sertao Pipeline
IT 05	Xingo Dam Pipeline	IT 10	Sertaneja Pipeline
Indenpent Water Supply System			
ID 01	Gararu	ID 19	Carmopolis
ID 02	Muribeca	ID 20	General Maynard
ID 03	Nossa Senhora da Dores	ID 21	Maruim
ID 04	Malhador	ID 22	Riachuelo
ID 05	Tobias Barreto	ID 23	Rosario do Catete
ID 06	Brejo Grande	ID 24	Santo I Amaro das Brotas
ID 07	Ilha das Flores	ID 25	Barra dos Coqueiros
ID 08	Neopolis	ID 26	Sao Cristovao
ID 09	Santana do Sao Francisco	ID 27	Araua
ID 10	Capela	ID 28	Boquim
ID 11	Divina Pastora	ID 29	Cristianapolis
ID 12	Santa Rosa de Lima	ID 30	Pedrinhas
ID 13	Siriri	ID 31	Salgado
ID 14	Japaratuba	ID 32	Estancia
ID 15	Japoata	ID 33	Indiabora
ID 16	Pacatuba	ID 34	Itaporanga D'Ajuda
ID 17	Pirambu	ID 35	Santa Luzia do Itanhy
ID 18	Sao Francisco		
Irrigation Project			
IR 01	Quixabeira	IR 05	Jacarecica II
IR 02	Jacare-Curituba	IR 06	Vaza Barris
IR 03	Sao Francisco	IR 07	Entre Rios
IR 04	Ladeirinhas	IR 08	Estancinha

PLAN OF WATER RESOURCES DEVELOPMENT PROJECTS

THE STUDY ON WATER RESOURCES DEVELOPMENT IN THE STATE OF SERGIPE IN THE FEDERATIVE REPUBLIC OF BRAZIL

FINAL REPORT [SUMMARY]

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LIST OF ABBREVIATIONS

Abbreviation	Official Name in Brazil	Name Translated in English
ADEMA	Administração Estadual do Meio Ambiente	State Department of Environment
ANA	Agência Nacional de Água	National Water Agency
ANEEL	Agência Nacional de Energia Elétrica	National Agency of Electric Energy
ASES	Agência Reguladora de Serviços Concedidos	Agency for Public Services Inspection
CEMIG	Companhia Energética de Minas Gerais	Minas Gerais Power Company
CECMA	Conselho Estadual de Controle do Meio Ambiente	State Council of Environmental Control
CEHOP	Companhia Estadual de Habitação e Obras Públicas	State Company of Housing and Public Works
CEPEL	Centro de Pesquisa de Energia Elétrica	Electric Power Research Center
CEPES	Central de Pesquisas Espaciais de Sergipe	Sergipe Space Research Center
CHESF	Companhia Hidroelétrica do São Francisco	São Francisco Hydropower Electricity Corporation
CNPq	Conselho Nacional de Desenvolvimento Científico e Tecnológico	National Council of Science and Technology Development
CNRH	Conselho Nacional de Recursos Hídricos	National Council of Water Resources
CNRNR	Conselho Nacional dos Recursos Naturais Renováveis	National Council of Renewal Natural Resources
CODEVASF	Companhia de Desenvolvimento do Vale do São Francisco	São Francisco Valley Development Corporation
CODISE	Companhia de Desenvolvimento Industrial e de Recursos Minerais de Sergipe	Industry and Mineral Resources Development Corporation of Sergipe State
COFIEX	Comissão de Financiamentos Externos	Commission of International Finance
COHIDRO	Companhia de Desenvolvimento de Recursos Hídricos e Irrigação de Sergipe	Sergipe Water Resources and Irrigation Development Corporation
CONAMA	Conselho Nacional do Meio Ambiente	National Council of Environment
CONDESE	Conselho do Desenvolvimento Econômico de Sergipe	Sergipe Economic Development Council
CONERH/SE	Conselho Estadual de Recursos Hídricos	State Council of Water Resources
CVRD	Companhia Vale do Rio Doce	Council of Doce River Valley
DC	Defesa Civil	Civil Defense
DESO	Companhia de Saneamento de Sergipe	Sergipe Sanitation Corporation
DNAEE	Departamento Nacional de Águas e Energia Elétrica	National Department of Water and Electric Energy
DNER	Departamento Nacional de Estados e Rodagens	National Department of Roads and Highways
DNOCS	Departamento Nacional de Obras Contra as Secas	National Department of Drought Countermeasure
ELETROBRAS	Centrais Elétricas Brasileiras S.A.	Brazilian Central Electric Joint-stock Company
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária	Brazilian Agriculture and Livestock Research Company
EMDAGRO	Empresa de Desenvolvimento Agropecuário de Sergipe	Sergipe Agriculture and Livestock Development Company
FAO	Fundo das Nações Unidas para Alimentação e Agricultura	Food and Agriculture Organization
FIDA	Fundo Internacional de Desenvolvimento Agrícola	International Fund of Agriculture Development
FNS	Fundação Nacional de Saúde	National Foundation Health
FUNERH	Fundo Estadual de Recursos Hídricos	State Fund of Water Resources
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis	Brazilian Institute of Environment and Renewable Natural Resources
IBGE	Instituto Brasileiro de Geografia e Estatística	Brazilian Institute of Geography and Statistics
IICA	Instituto Interamericano de Cooperação para a Agricultura	Interamerican Institute of Agricultural Cooperation
INCRA	Instituto de Nacional de Colonização e Reforma Agraria	National Institute of Colonization and Agricultural Reform

Abbreviation	Official Name in Brazil	Name Translated in English
ITPS	Instituto de Tecnologia e Pesquisas de Sergipe	Sergipe Institute of Technology and Research
JBIC	Banco de Cooperação Internacional do Japão	Japan Bank for International Cooperation
JICA	Agência de Cooperação Técnica Internacional do Japão	Japan International Cooperation Agency
JIS	Padrão Industrial do Japão	Japan Industrial Standard
MMARHAL	Ministério do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal	Ministry of Environment, Water Resources and Legal Amazon
MPO (change to MP)	Ministério de Planejamento e de Orçamento	Ministry of Planning and Budget
MP (change from MPO)	Ministério do Planejamento, Orçamento e Gestão	Ministry of Planning, Budget and Management
OECF	Fundo Cooperação e Economica Ultramarino	Overseas Economic Cooperation Fund
PERH	Plano Estadual de Recursos Hídricos	State Plan of Water Resources
PROÁGUA/ Semi-Árido	Sub-Programa de Desenvolvimento Sustentável de Recursos Hídricos para o Semi-Árido Brasileiro	Water Resources Development Program for Brazilian Semi-Arid Areas
PRÓ-SERTÃO	Projeto de Apoio às Famílias de Baixa Renda da Região Semi- Árida de Sergipe	Low Income Family Supporting Project in Semi-Arid Region of Sergipe
PROVABASE	Projeto do Desenvolvimento dos Recursos Hídricos e Abastecimento de Água com Aproveitamento do Rio Vaza Barris em Sergipe	Project of Water Resources Development and Supply in Vaza Barris River - Sergipe
RBC		River Basin Committee
SAGRI	Secretaria de Estado da Agricultura, do Abastecimento e da Irrigação	State Secretariat of Agriculture, Supply and Irrigation
SEAIN	Secretaria Assuntos Internacionais	Secretariat of International Affairs
SEEC	Secretaria de Estado de Educação e Cultura	State Secretariat of Education and Culture
SEED	Secretaria de Estado de Educação e do Desporto	State Secretariat of Education and Sports
SEFAZ	Secretaria de Estado da Fazenda	State Secretariat of Finance
SEICT	Secretaria de Estado da Indústria, do Comércio e do Turismo	State Secretariat of Industry, Commercial and Tourism
SEMA	Secretaria de Estado do Meio Ambiente	State Secretariat of Environment
SESP	Secretaria de Estado de Serviços Públicos	State Secretariat of Public Services
SEPLAN	Secretaria de Estado do Planejamento	State Secretariat of Planning
SEPLANTEC	Secretaria de Estado do Planejamento e da Ciência e Tecnologia	State Secretariat of Planning, Science and Technology
SES	Secretaria de Estado da Saúde	Secretariat of Health
SOE	Empresas possuídas pelo Estado	State owned Enterprise
SPEO	Superintendência de Planejamento e Orçamento	Superintendency of Planning and Budget
SRH	Superintendência de Recursos Hídricos	Superintendency of Water Resources
SRH	Secretaria de Recursos Hídricos	Secretariat of Water Resources
SSP	Secretaria de Estado da Segurança Pública	State Secretariat of Public Security
SUDENE	Superintendência de Desenvolvimento do Nordeste	Superintendency of Northeast Brazil Development
SUPES	Superintendência de Estudos e Pesquisas	Superintendency of Study and Research
UEGP	Unidade Estadual de Gestão do PROÁGUA	State Unit of PROÁGUA Management
UFS	Universidade Federal de Sergipe	Federal University of Sergipe
UGP	Unidade de Gestão do PROÁGUA	Project Management Unit
UNDP	Programa da Nações Unidas para o Desenvolvimento	United Nation Development Program
USBR	Departamento de Interior dos Estados Unidos	United States Department of Interior, Bureau of Reclamation
USCE	Exército dos Estados Unidos, Corpo de Engenheiros	United States Army, Corps of Engineers
WA		Water Agency
WHO	Organização Mundial de Saúde	World Health Organization