

AGREEMENT FOR TECHNICAL COOPERATION

between

BARBADOS

and the

INTER-AMERICAN DEVELOPMENT BANK

(Feasibility Studies for South and West  
Coast Sewerage Systems)

1981

W-8659B

AGREEMENT FOR CONTINGENT REPAYMENT TECHNICAL COOPERATION

ATC/CD(PP)-1990-BA

AGREEMENT made and entered into this 23rd day of September, 1981, by BARBADOS (hereinafter called the "Beneficiary") and the INTER-AMERICAN DEVELOPMENT BANK (hereinafter called the "Bank") on the granting by the latter of a credit for technical cooperation purposes (hereinafter called the "Credit").

This Agreement is entered into by virtue of the Agreement on the Special Programme for the Preparation of Development Projects, signed on November 22, 1974, by the Government of Canada and the Inter-American Development Bank.

ARTICLE I

Object

Section 1.01. Purpose of the Credit. The Credit shall be used exclusively to cooperate in the financing of expenses to be incurred in the realisation of a technical cooperation programme (hereinafter called the "Programme") for the preparation of feasibility studies and preliminary engineering designs and cost estimates to determine the most feasible alternative sewerage system for the densely developed south and west coastline of Barbados, and the greater Bridgetown area.

Section 1.02. Description of the Programme. (a) To accomplish the objective set forth in Section 1.01, the Programme shall be executed in accordance with the following provisions:

(i) The Programme shall encompass the following areas:

- (1) A stretch of approximately 15 kilometers of Western coastline between Brighton and Speightstown, extending about 500 meters inland.
- (2) A stretch of approximately 10 kilometers along the southern coast between Needham's Point and Oistins, extending about 500 meters inland, and
- (3) The populated areas surrounding central Bridgetown which will not be covered by the sewerage system currently under construction.

(ii) The Programme shall include the following tasks:

- (1) Carry out feasibility studies and present recommendations for the collection, treatment and disposal of sewerage in the South Coast, West Coast and Greater Bridgetown areas.
- (2) Prepare and present preliminary engineering designs and cost estimates for the sewerage of the areas included in the Programme areas.

(b) All the alternatives to be studied shall include the collection, treatment and final disposal of sewerage from residential, commercial, tourist, industrial, public and other sources along the areas indicated in paragraph (a)(i) above.

## ARTICLE II

### Realisation of the Programme

Section 2.01. Executing Agency. The executing agency for this operation shall be the Ministry of Health and National Insurance (hereinafter called the "Ministry").

Section 2.02. Consulting Firm. (a) For the realisation of the Programme, the Beneficiary, through the Ministry, shall select and contract the services of a consulting engineering firm (hereinafter called the "Consulting Firm") with considerable knowledge in the technical, economic and financial aspects of sewerage collection, treatment and final disposal systems, as well as experience in the appropriateness and applicability of such systems to an island ecosystem such as Barbados.

(b) The Consulting Firm shall provide the necessary personnel, testing, services, resources and equipment to successfully complete the Programme with the highest professional standards. The experts to be furnished by the Consulting Firm and the approximate duration of their services, within a total of 108 expert/months, are listed below as an indication:

<u>Experts</u>	<u>person/months</u>
(i) a Senior Sanitary Engineer, who shall serve as Project Director	15
(ii) a Senior Sanitary Engineer specialised in collection systems	12
(iii) a Senior Sanitary Engineer specialised in waste water treatment	12
(iv) a Senior Sanitary Engineer specialised in sewage and sludge disposal	12
(v) a Senior Civil Engineer	9
(vi) a Soil Mechanics Engineer	3
(vii) a Geologist	3
(viii) an Hydrologist specialised in surface and ground water	3
(ix) an Irrigation Engineer	3
(x) a Chemist	6
(xi) a Microbiologist	6

	<u>person/months</u>
(xii) a Marine Biologist	3
(xiii) an Oceanographer	3
(xiv) a Coastal Engineer	3
(xv) an Ecologist	3
(xvi) a Computer Sciences Technician	3
(xvii) a Senior Economist	6
(xviii) a Senior Financial Analyst	3
Total	<u>108</u>

(c) The Consulting Firm shall undertake its functions in close consultation with the designated Ministry staff and pursuant to the terms of reference set forth in Annex A which forms part of this Agreement, it being understood that such terms of reference may be modified by mutual agreement between the Beneficiary and the Bank.

Section 2.03. Procedure for Selecting and Contracting the Consulting Firm. The Beneficiary, through the Ministry, shall select and contract the services of the Consulting Firm in accordance with the terms and procedures set forth in Annex B which forms part of this Agreement.

Section 2.04. Period for Contracting of the Consulting Firm. The contract with the Consulting Firm shall be entered into within six months from the date of this Agreement or within such other period as the Bank may, for special reasons, agree upon in writing with the Beneficiary. The Ministry shall notify the Bank on the date on which the Consulting Firm commences its duties.

Section 2.05. Reports of the Consulting Firm. (a) The contract to be entered into with the Consulting Firm shall establish that it shall submit to the Ministry, with five copies to the Bank, the following reports:

- (i) An initial report, within 15 days after the commencement of work. This report shall include a work programme, stipulating the nature and intended timing of each component of all the activities to be undertaken;
- (ii) Bimestrial reports, within 15 days after the end of each bimester, stipulating in a concise and precise manner, the progress of work for each component making comparisons to the work programme;
- (iii) a draft final report, upon completion of the studies, which shall set out the alternatives studied and the recommended alternative;

- (iv) a final report, within thirty days from receipt of comments on the draft final report, incorporating relevant modifications which the Beneficiary and/or the Bank may suggest. This report shall be presented with an executive summary.

(b) The contract to be entered into with the Consulting Firm shall also establish that it shall: (i) submit to the Ministry and the Bank any additional reports that may be reasonably requested in connection with the progress of the Programme; (ii) keep the Bank's office in Barbados informed as to the development of the Programme; and (iii) incorporate in its final reports any modification and/or enlargement that the Ministry and/or the Bank may deem necessary, within the scope of the terms of reference set forth in the contract.

Section 2.06. Obligations of the Beneficiary. The Beneficiary through the Ministry, shall:

- (a) Designate the following staff as local counterpart to work directly with the Consulting Firm in the execution of the Programme, for the approximate periods hereinafter indicated:

<u>Personnel</u>	<u>person/months</u>
(i) a Civil or Sanitary Engineer	15
(ii) a Statistician	12
(iii) 3 Technical Assistants	36
(iv) 3 Land Surveyors	12
(v) 6 chainmen	24
(vi) 3 Draftsmen	24
(vii) 2 Secretaries	24
(viii) Economic Survey personnel	<u>10</u>
Total	157

- (b) Provide the Consulting Firm with copies of all topographical information and available studies relevant to the Programme, and discuss them with the Consulting Firm.
- (c) Provide the Consulting Firm with the administrative and logistic support for the realisation of the Programme including computer services, office space, supplies and local transportation expenditures.

- (d) Submit to the Bank, within 90 days of receipt of the final report mentioned in Section 2.05(a)(iv), a report evaluating the results of the technical cooperation granted in accordance with this Agreement and the extent to which its objectives have been accomplished.
- (e) Furnish to the Bank any additional information which it may reasonably request in relation to the development of this technical cooperation operation and the utilisation of the Credit, and keep the Office of the Bank in Barbados informed as to the implementation of this Agreement.

Section 2.07. Period for Execution of the Programme. The overall execution of the Programme shall be carried out within 15 months from the date of the initiation of the work by the Consulting Firm or within such other period as the Bank may, for special reasons, agree upon in writing with the Beneficiary.

### ARTICLE III

#### Cost and Disbursement

Section 3.01. Amount of the Credit. (a) The Credit shall be granted on a contingent repayment basis and shall not exceed the amount of one million and four hundred and four thousand Canadian dollars (CAN\$1,404,000) to be charged to the resources of the Canadian Fund for the Preparation of Development Projects. Such amount shall exclusively finance the budget categories to be charged to the Credit referred to in Section 3.03.

(b) It is agreed that: (i) the sum of CAN\$1,404,000 indicated in paragraph (a) above, represents the maximum that may be utilised in the financing of the above-mentioned budget categories, and (ii) all amounts not utilised in such financing shall be cancelled.

Section 3.02. Participation of the Beneficiary. The Beneficiary agrees to contribute to the financing of the Programme, through the Ministry and within the period set forth in Section 2.07, not less than the equivalent of two hundred thousand United States of America dollars (US\$200,000) to complete the equivalent of one million and four hundred thousand United States of America dollars (US\$1,400,000) estimated as being the total cost of the Programme. Such amount shall be utilised in financing the budget categories to be charged to this allocation referred to in Section 3.03.

Section 3.03. The Budget. (a) The Credit, together with the allocation of the Beneficiary set forth in Section 3.02, shall be utilised in accordance with the following estimated breakdown:

	<u>Credit of</u> <u>the Bank</u>	<u>Allocation of the</u> <u>Beneficiary</u>
	(CAN\$)	(equiv. in US\$)
1. <u>Consulting Firm</u>	<u>1,203,193</u>	-
6. <u>General Support</u>	<u>17,550</u>	<u>172,900</u>
98. <u>Contingencies</u>	<u>183,257</u>	<u>27,100</u>
TOTALS	<u>1,404,000</u> =====	<u>200,000</u> =====

(b) A more detailed Budget is established in Annex B which forms part of this Agreement.

Section 3.04. Additional Funds. The Beneficiary agrees to provide such additional funds, in excess of the amounts specified in Sections 3.01 and 3.02 of this Agreement, as may be required for the complete execution of the Programme.

Section 3.05. Disbursement of the Credit. (a) Disbursement of the Credit shall conform to the following procedure: the Bank shall disburse the Credit of the Beneficiary, through the Ministry, to the extent requested and to the extent that payments chargeable to the Credit are justified to the Bank's satisfaction by the submission of documentary evidence. Prior to the first disbursement, the Ministry shall present to the Bank's satisfaction: (i) a certificate as to the name and office of the person or persons who will represent the Ministry in all acts relating to the execution of this Agreement, as well as authenticated specimens of their signature; (ii) a written request; (iii) a copy of the contract which the Ministry shall have signed with the Consulting Firm; and (iv) a schedule for the utilisation of the Beneficiary's allocation referred to in Sections 3.02 and 3.03, including the list of the local staff who shall participate in the execution of the Programme in accordance with Section 2.06(a).

(b) At the request of the Ministry and once the requirements set forth in paragraph (a) above have been fulfilled, the Bank may establish a revolving fund in a sum not exceeding the amount of CAN\$140,000 which the Ministry shall utilise to defray expenses for the Programme chargeable to the Credit. Prior to the establishment of the revolving fund, the Ministry shall present for the Bank's approval a detail of the expenses to be covered from the revolving fund during a period of thirty (30) days from the date of the request.

(c) Upon the request of the Ministry, the Bank may replenish the revolving fund entirely or in part as the resources are used and upon presentation by the Ministry of a detailed statement of the expenses covered from the revolving fund and acceptable to the Bank, together with the supporting documents thereof, and a justification of such request.

(d) It is agreed that the last disbursement of not less than 10% of the total amount of the contract agreed upon with the Consulting Firm, shall be conditioned on the acceptance by the Beneficiary and the Bank of the final report of the Consulting Firm.

Section 3.06. Currencies for Disbursement. The Bank shall disburse the Credit in Canadian dollars.

Section 3.07. Rate of Exchange. In computing United States of America dollar equivalent of the allocation of the Beneficiary for the Programme, the Bank shall proceed in accordance with its policies established for this purpose with Barbados.

Section 3.08. Use of the Credit. The Credit may be used only for the payment of services to consulting firms who are nationals of Canada or Barbados. However, if the Bank deems it to be in the best interest of the Beneficiary, it may authorise the contracting of services of consulting firms who are nationals of the developing countries that are members of the Bank, and with the concurrence of the Canadian International Development Agency, of any other country that is member of the Bank.

Section 3.09. Period of Disbursement. The entire amount of the Credit shall be disbursed in a period of 30 months from the date of this Agreement. At the end of such time, the Agreement shall be considered cancelled with respect to any portion not yet disbursed, unless the parties have expressly agreed to extend the period.

Section 3.10. Suspension of Disbursement. The Bank may at any time suspend disbursements of the credit if any circumstance has arisen which, in its opinion, may render unlikely the attainment of the proposed purposes. Upon the occurrences of any such circumstance, the Bank shall notify the Beneficiary in writing so that it may submit its points of view, and the Bank may suspend disbursements after 30 days from the date of such notification,

Section 3.11. Contingent Recovery of the Credit. (a) The Credit is granted subject to the condition that it shall be reimbursed in the event that the Beneficiary should receive a loan from the Bank or from another external source of financing for the financing of any project related to the Programme. In the event of financing by the Bank, the amount of the Credit shall be charged to the corresponding loan and the conditions established in the respective loan shall be applicable. Should the loan originate from some other source of financing, the Beneficiary agrees to negotiate with such other source to establish that the amount of the Credit be included in the respective loan and that such amount be paid to the Bank in one payment upon receipt of the first disbursement of such loan.

(b) Disbursements of the Credit shall be owed in Canadian dollars.

Section 3.12. Receipts of amounts disbursed. At the conclusion of the disbursement of the Credit, the Beneficiary shall sign and deliver at the



request of the Bank a receipt representing the amount disbursed, in the form prescribed by the Bank. Such receipt shall prescribe that the Credit shall be reimbursed in the manner set forth in Section 3.11.

#### ARTICLE IV

##### Other Conditions

Section 4.01. Unit Responsible on Behalf of the Bank. The Operations Department, acting through its Region III, Division 7, shall have basic responsibility for the implementation of this Agreement on behalf of the Bank.

Section 4.02. Supervision. It is agreed that the Bank shall have the right to undertake the supervision of the services of the Consulting Firm through its Representative in Barbados and/or the officials it may designate for such purpose, without prejudice to the rights of the Beneficiary to maintain supervision on its own part.

Section 4.03. Statement of Expenses. The Beneficiary, through the Ministry, shall present to the Bank not later than 90 days from the last disbursement of the Credit, a detailed statement of all expenses incurred chargeable to the Credit and the allocation of the Beneficiary referred to in Section 3.02. The financial and accounting statements shall be certified by auditors satisfactory to the Bank.

IN WITNESS WHEREOF, this Agreement has been signed on behalf of the Beneficiary and the Bank by their respective duly authorised representatives in two equally valid copies, as of the day and year first above written.

BARBADOS

INTER-AMERICAN DEVELOPMENT BANK

/s/

J.M.G.M. Adams

/s/

Michael E. Curtin

J.M.G.M. Adams

Prime Minister and Minister of Finance

Date: August 28th, 1981

Michael E. Curtin

Executive Vice-President

Date: September 23rd, 1981

ANNEX A

Terms of Reference for Sewerage Studies  
for Barbados

I. Objectives

1.01 Objectives of the work to be performed by the Consulting Firm shall be:

- (a) To carry out feasibility studies and present recommendations for the collection, treatment and disposal of sewage in the South Coast, West Coast and Greater Bridgetown, as hereinafter defined;
- (b) To prepare and present preliminary engineering designs and cost estimates for the sewerage of South Coast, West Coast and Greater Bridgetown.

II. Areas to be included in the Studies

2.01 The South Coast Area

For the purpose of these terms of reference, the South Coast area is defined as that area within the parishes of St. Michael and Christ Church bounded by the coast line adjacent to Yacht Club in the West and Enterprise Drive in the East, and a line drawn perpendicular from the junction of Bay Street and Chelsea to the sea off Yacht Club, continuing 100 meters of Highway 7 along the eastern side of Highway 7 in a southerly direction to Balmoral Gap at Hastings where the line changes direction in a northerly direction maintaining the distance of 100 meters from Highway 7 off Hastings, Rockley, Worthing, St. Lawrence, Maxwell Main Road until it reaches Fairholme, where it continues in a straight line to the 20 ft. contour on Oisting Hill, then following the 20 ft. contour along Oistin to east of Scarborough then terminates in a straight line along Enterprise Drive to the Coast adjacent to the Coast Guard Station at Oistin.

2.02 Greater Bridgetown Area

For the purposes of these terms of reference, the Greater Bridgetown area includes that area within the parish of St. Michael circumscribed by the coast line adjacent to the western end of Brighton Road to India River and a line drawn along the eastern side of Fontabelle, turning east on Lakes Folly and north along Mason Hall Street to its junction with Baxters Road, then along Whitepark Road to its junction with Roebuck Street, then along Roebuck Street to the round-about, then along Halls Road, Martindales Road and Jemmotts Lane and to the coast line off the old Eye Hospital on Bay Street, then along the coast to a line drawn to the sea perpendicular to Bay Street at the junction of Bay Street and Chelsea Road

to Dalkeith Road, then along Dalkeith Road, turning left on to Dalkeith Hill and then right on to Culloden Road, then along Culloden, Pine, Welches, Bridge and Bank Hall Cross Roads, along Lower Bank Hall Cross Road and on to Highway 1 to Brighton Road, then along Brighton Road and to the coast.

## 2.03 West Coast Area

For the purpose of these terms of reference the West Coast area is defined as that area within the parishes of St. Michael, St. James and St. Peter bounded by the coast line adjacent to the western end of Brighton Road to Six Men's Bay and a line drawn perpendicular to the coast line at Six Men's Bay at its junction with Mile and Quarter Road to 0.4 Km east of Highway 1, then continuing in a southerly direction parallel to the coast maintaining the 0.40 Km distance from Highway 1 until it reaches the St. James/St. Michael Parish Boundary, then continuing at a distance of 0.20 Km. East of Highway 1 until the line reaches opposite Brighton Road where it makes a right angle and continues along Brighton Road terminating at its junction with the sea at Brighton Beach.

## III. General Requirements for all Areas of the Studies

### 3.01 Review of Study Area

It shall be the responsibility of the Consulting Firm to review the definitions of the study areas and present their own on the subject for review and approval by the Ministry and the Bank in accordance with the provisions of the Contract.

### 3.02 Population and Land Use

The Consulting Firm is required to present a report on current and projected population and land use for the study area --with special attention being paid to high density tourism oriented development-- for a period of at least 20 years. For these projections the Consulting Firm shall take into account official statistical data available, elements of the Revised 1965 Physical Development Plan, and other physical development projections by the Town and Country Development Planning Office and the Ministry of Civil Aviation and Tourism. It shall be the responsibility of the Consulting Firm to present their own opinion on the subject for review and approval by the Ministry in accordance with the provisions of the contract.

### 3.03 Actual Conditions

The Consulting Firm shall evaluate and define the source of potable water and its distribution, and any existing sewerage or in-situ disposal systems (e.g. package plants) in the areas herein defined. In such definition and evaluation the areas should be broken down into service zones such as residential, tourism, commercial, industrial and others.

### 3.04 Waste Water Flow

For determining the contribution of waste water to the Sewer System in any area, the Consulting Firm shall take into account plans for increasing the physical facilities in the area and the plans and projections of the Waterworks Department and when applicable the Water and Sewage Authority for a period of at least 20 years. It shall be the responsibility of the Consulting Firm to establish their own estimate of design flows.

### 3.05 Topographical Maps

The following topographical information shall be made available to the Consulting Firm by the Ministry:

- (a) Topographical maps to the scale of 1:10,000 with 20 ft. contour intervals. The maps were printed in 1955;
- (b) Topographical plans of the Oistin Redevelopment area;
- (c) Out line maps of the area to the scale of 1:1250 which are available at the Land Valuation Department.

It shall be the responsibility of the Consulting Firm to perform any additional topographical survey which should include, but not be limited to the execution of a field survey and levelling program to update and/or supplement existing topographical or Photogrammetric maps of the study area.

### 3.06 Marine Studies

The South and West Coast areas are coastal strips where because of their proximity to the sea marine pollution has been a serious problem. It shall be the responsibility of the Consultants to perform marine studies necessary for:

- (a) adequate siting of marine outfalls for the discharge of treated sewage effluents if these are considered necessary;
- (b) determining the adverse effects or otherwise the discharge of sewage effluents will have on marine life and its ecology in general;
- (c) determining the effects of coastal development on the marine environment; and
- (d) making a preliminary analysis of the effect of non-point sources of pollution, and oil pollution on the Southern, South Western beaches, as well as on the marine ecology.

Such studies shall include, but not be limited to the evaluation of bathymetric conditions, marine tides and currents, meteorological factors, salinity, and temperature profiles.

Available information made available to the Consulting Firm by the Ministry shall include:

- (i) Copies of "A Report on the Investigation of Coastal Currents in the Vicinity of Barbados" by Allan R. Emery of the Bellairs Research Institute;
- (ii) Copies of the Report on "Study of the Effects of Oil Pollution on Beaches, Coral Reef Structures, Inshore Fisheries and Marine Life around Coasts of Barbados" by Farmer and Hunte;
- (iii) Report on "Study of Possible Effects of Oil Pollution on Beach Structure and Beach Erosion around the Coast-Line of Barbados" by Dr. Gillian Cambers.

3.07 (i) Soil Studies

It shall be the responsibility of the Consulting Firm to perform all soil borings and other soil studies that may be necessary to determine the geology and soil conditions of the study areas. The soil studies should take into account the soils information contained in the Report on the Studies for the Redevelopment of the Oistin area and other relevant soil studies done in the areas.

(ii) Geotechnical Report

The Consulting Firm shall submit to the Ministry a geotechnical report for each area which shall include all field and laboratory data, a description of the geological conditions encountered, and conclusions and recommendations relative to the area to be sewer-ed.

The report shall also contain an engineering geological map illustrating the general subsurface conditions of rock and water, and shall contain discussion on any unusual subsurface conditions and an indication of the soil in the area above and below the ground water-table.

3.08 Protection of Beaches from Pollution

The Consulting Firm shall submit to the Ministry proposals for the collection, treatment, and disposal of sewage in a manner to prevent the pollution of beaches and inshore marine areas along the South, Southwest, and West coasts, together with drafts of regulatory Acts, by-laws and codes of practice and their enforcement procedures considered necessary for their application.

3.09 Land Disposal of Sewage Effluent

The Consulting Firm shall present specific recommendations for the protection of ground water sources of potable water or water used for irrigation purposes, and in this context, shall state their views on the probability of using any suitable upper elevation areas adjacent to the

study areas for the disposal of treated sewage effluent for ground water recharge or irrigation purposes. Such recommendations shall include drafts of any legal and administrative dispositions and enforcement policies required to execute the recommendations made.

### 3.10 Presentation of Plans

The Consulting Firm shall present to the Ministry plans showing the areas to be sewerred, the method or methods of sewage treatment to be employed, and the methods and areas of sewage disposal. In determining the methods of sewage collection, treatment and disposal, attention shall be given to the recommendations of the Consulting Firm for the Sewerage Study for Bridgetown and surrounding areas by Lawler Matusky and Skelly Engineers, as contained in their "Supplement to the Report on the Bridgetown Sewerage Study" dated April 25, 1975.

Separate maps shall be presented for any areas of localised sewerage, and for any stage of phased sewerage if recommended. Special maps and/or drawings shall be submitted to support recommendations for the protection of beaches and inshore marine areas from pollution by sewage and other wastes discharged from the Study area.

### 3.11 Alternate Systems

The Consulting Firm shall define the areas where the use of septic tanks and other individual systems may be continued with disposal by wells or percolation fields based on the infiltration capacities of the soil. An analysis of alternative systems, must be submitted based on technical, economical, financial, institutional and legal considerations. The Consulting Firm is required to recommend the most attractive method or methods.

### 3.12 Collection Treatment and Disposal of the Sewage

Special attention is required of the Consulting Firm regarding the treatment of sewage prior to its disposal. Treatment methods must take into account the need to minimise as far as practicable for the efficient treatment of sewage, the cost of fuel and other non-renewable energy. It is expected that disposal of effluent methods considered will include marine disposal, land disposal by spreading and/or recharge of ground water, and irrigation. Recommendations for Land disposal of sewage effluents for ground water quality. It is also expected that methods considered for the treatment and disposal of sludge will take into account the need to eliminate the possibility of offensive odour and other adverse environmental conditions in the immediate surrounding area particularly in the high density housing and holiday development areas. Before presentation of preliminary designs for the collection, treatment and disposal of sewage by the most attractive alternative, the Consulting Firm shall present the conceptual design and drawings necessary for the technical, economic, and financial analysis of each mutually exclusive alternative. These studies and documents shall be submitted to the Ministry and the Bank for review and approval in accordance with the contract.

#### IV. Specific Requirements

##### 4.01 Documents, Engineers Report and Preliminary Designs to be Submitted

The documents mentioned at 3.12 shall be included in an Engineering Report for the areas studied.

All plans and documents shall be presented in accordance with the requirements of the Bank and the Ministry. It shall be the responsibility of the Consulting Firm to secure the necessary information on the above requirements.

##### 4.02 Operation

The Consulting Firm shall present recommendations for the organization to operate the Sewerage System for the study area, including the Bridgetown sewerage system under construction. Such organizational structure shall take into consideration the organization of the Barbados Water and Sewerage Authority which will be responsible for the operation of Water and Sewerage System throughout the island. A schematic structural chart of the organization shall be presented with summary description of functions.

##### 4.03 Economic Studies

The economic analysis will compare all technical feasible alternatives, as indicated in 3.11 and 3.12 above, and shall provide the basis for selecting the best approach for disposing of waste products. In the analysis of all alternatives, the economist will convert financial to economic prices using the national accounting parameters developed jointly by the Bank and the Beneficiary. Of particular importance are the accounting prices for fuel and other energy-intensive products which are in scarce supply in Barbados. The benefit and cost projections should be for a period of 20 to 30 years, taking account of the additional investment requirements which may occur beyond the initial construction period and of any salvage value remaining at the end of the analysis period used.

Elements of importance for the economic analysis include the following:

- (a) Among the alternatives for sewerage collection, treatment and final disposal, the evaluation should look at the costs and benefits of improving the existing facilities.
- (b) The analysis should identify the potential users by zones (residential, tourist, industrial, commercial, etc.) and by income group. The definition of income group (basically the low income group and the rest of the private sector) will be based upon the per capita income value agreed upon by the Bank and Barbados for identifying low income persons. Moreover, surveys shall be undertaken to establish the willingness of potential users to connect to an integrated sewerage system. In this regard, account must be taken of the connection costs which will be paid by the users, if any.

- (c) For setting the tariff structure of a public system, as well as for the economic analysis of alternatives, the evaluation will present a detailed breakdown of operating costs (e.g., materials, labor by skill level, replacements, chemicals, etc.). If a public sewerage system is chosen as the best alternative, the Consulting Firm shall indicate sewer charges necessary for covering marginal costs, including depreciation.
- (d) If a subsidy is proposed by the Beneficiary for any group of potential users, the economic evaluation should estimate the size of the subsidy, the alternative ways of providing the subsidy and who will ultimately pay for the subsidy.

In addition to the cost-benefit analysis, using efficiency prices the economic studies shall include an evaluation of the net economic benefits accruing to low income groups. The Consulting Firm shall use the methodology developed within the Bank for this purpose.

#### 4.04 Other Work to be Performed by the Consultants

It shall be the responsibility of the Consulting Firm to perform any other work not specifically mentioned in these terms of Reference that shall be required by sound engineering practice for the completion of reports, plans, specifications, cost estimates and other documents that are produced by the Consulting Firm for the satisfaction of their responsibilities under the terms of the Contract.



ANNEX B

SELECTION AND CONTRACTING OF THE CONSULTING FIRM

In the selection and contracting of the Consulting Firm, the following shall be applicable:

I. DEFINITIONS

- 1.01 A consulting firm is any legally constituted association, composed primarily of professional personnel, for the purpose of offering consulting services, technical advice, expert opinions, and professional services of other kinds.

For purposes of this Annex, non-profit organisations such as universities, foundations, autonomous or semi-autonomous organisations and international organisations which offer consulting services, shall be considered as consulting firms.

II. CONFLICTS OF INTEREST

- 2.01 A fully qualified consulting firm which is a subsidiary or affiliate of a construction contractor, equipment supplier, or holding company, can only be accepted if it agrees in writing to limit its role to the provision of professional consulting services, and agrees in the contract to disqualify itself and its associates from any construction work, material or equipment supply or financial participation in the programme or project which may result from the services of the firm.

III. ELIGIBILITY AND NATIONALITY REQUIREMENTS

- 3.01 The Beneficiary shall not establish in the implementation of the procedures set forth in this Annex provisions or conditions which may restrict or impede the participation of consulting firms from member countries of the Bank.
- 3.02 For the purposes of the provisions of the Agreement with respect to the utilisation of the Credit, the nationality of the Consulting Firm shall be determined in accordance with the following criteria:
- (a) The country in which the firm is duly established or legally organised.
  - (b) The country in which the firm maintains its principal place of business.

- (c) The nationality of any firms or the citizenship of the bona fide residency of individuals possessing ownership, with the right to participate in profits, of more than fifty percent (50%) of the Consulting Firm, as established by the certification of a duly authorised officer of such firm.
- (d) The existence of arrangements whereby a substantial portion of the profits or other tangible benefits of the Consulting Firm accrued to firms or individuals of a given nationality.
- (e) A determination by the Bank that the Consulting Firm constitutes an integral part of the economy of a country, as evidenced by bona fide residency in the country of a substantial portion of the executive, professional and technical personnel of the Consulting Firm; and that the Consulting Firm has available in the country the operating equipment or other elements necessary to provide the services to be contracted.

3.03 The nationality requirements established by the Bank shall also be applicable to consulting firms proposed to provide part of the respective services in joint venture with or under sub-contract to a qualified consulting firm which itself meets the nationality requirements.

#### IV. PROCEDURES FOR SELECTION AND CONTRACTING

##### 4.01 Selection and contracting:

- (a) Prior to the selection of the Consulting Firm, the Ministry shall submit the following for the approval of the Bank:
  - (i) The procedure to be used in selecting and contracting the Consulting Firm. The selection and contracting shall be advertised in the national press and, if warranted by the complexity and degree of specialisation of the advisory assistance requested, in specialized foreign publications. Furthermore, the Bank shall be informed of these advertisements, and clippings thereof shall be sent to it specifying the date and the name of the publication in which they have appeared;
  - (ii) The terms of reference (specifications) describing the work to be done by the Consulting Firm, together with an estimate of the cost, and
  - (iii) A list of at least three and no more than six firms from which proposals for the work would be invited.
- (b) Once the Bank has approved the foregoing requirements, the accepted firms shall be invited to present proposals, in conformity with the procedures and terms of reference approved.

- (c) In the invitations to present proposals the use of one or the other of the following procedures shall be specified, as appropriate:
- (i) In the first case, a single sealed envelope including only the technical proposal, without a price quotation, shall be used. The Ministry shall examine the proposals received and establish their order of merit. If the complexity of the case so requires, the Ministry may resort at its own expense to a group of consultants to review the proposals and provide technical and expert advice in establishing the order of merit.

Once an order of merit has been established among the firms, the firm listed as first shall be invited to negotiate a contract. During these negotiations, the details of the terms of reference shall be reviewed completely to assure full and mutual understanding with the firm, the contractual and legal requirements of the agreement shall be reviewed and finally, detailed costs shall be developed. If agreement cannot be reached with the firm on the terms of the contract, it shall be notified in writing that its proposal has been rejected and negotiations shall be initiated with the second firm, and so on until a satisfactory agreement has been reached.

- (ii) In the second case two sealed envelopes shall be used for presenting proposals, the first containing the technical proposal exclusive of costs and the second containing the proposed costs for the services.

The Ministry shall analyse the technical proposals and establish their order of merit. Contract negotiations shall commence with the firm offering the best technical proposal. The second envelope presented by this firm shall be opened in the presence of one or more of its representatives and shall be utilised in the contract negotiations. All the second envelopes presented by the other firms shall remain sealed and, if an agreement is reached with the first firm, they shall be returned to the respective firms. If an agreement on the terms of the contract is not reached with the first firm, it shall be notified in writing of its rejection and negotiations shall be initiated with the second firm, and so on until a satisfactory agreement is reached. Inability to agree on detailed costs or compensation for services, or a judgment on the part of the Ministry that such costs or compensation are inappropriate or excessive, shall be sufficient cause for notifying the rejection of the proposal and for the initiation of negotiations with the firm which follows in the order of merit. Once a firm has been rejected it shall not be recalled for further negotiations on the contract.

- (d) The text of the proposed contract negotiated with the Consulting Firm shall be submitted to the approval of the Bank before the contract is signed and the services are initiated. A true copy of the text as signed shall be promptly sent to the Bank.

- 4.02 Notwithstanding the procedure set forth in paragraph 4.01 above, the Bank, at the request of the Ministry, may cooperate in selecting the Consulting Firm and in drafting the respective contract, provided, however, that the Bank will undertake such cooperation only in an advisory capacity and that the final negotiations as well as the actual execution of the respective contract shall be the responsibility of the Ministry.

V. CURRENCIES OF PAYMENT TO THE CONSULTING FIRM

- 5.01 The contract between the Ministry and the Consulting Firm shall stipulate that the respective payments shall be made in Canadian dollars.

VI. RECOMMENDATIONS OF THE CONSULTING FIRM

- 6.01 It is understood that the opinions and recommendations of the Consulting Firm obligate neither the Beneficiary nor the Bank, and that they reserve the right to put forward such observations or exceptions as they deem appropriate.

VII. SCOPE OF COMMITMENT OF THE BANK

- 7.01 It is agreed that the Bank assumes no commitment to finance all or part of any programme or project which, directly or indirectly, might result from the services performed by the Consulting Firm.

VIII. REQUIREMENTS AND SPECIAL CONDITIONS

- 8.01 The experts assigned by the Consulting Firm shall work in close coordination with the local professional personnel who, in accordance with the provisions of this Agreement shall be assigned by the Ministry to collaborate with the Consulting Firm in the realisation of its works; such coordination shall be in order to achieve the technical and operational training of such personnel.
- 8.02 The final payments for services to the Consulting Firm shall be contingent upon prior acceptance by the Ministry and the Bank of the final report of the Consulting Firm. Such payments shall consist of not less than 10% of the total amount to be paid to the Consulting Firm in accordance with the aforementioned contract.

## DETAILED BUDGET

	IDB (In CAN\$)	Beneficiary (Equiv. in US\$)
1. <u>CONSULTING FIRM</u>		
1.1 FEES	-	
<u>Honoraria</u>	356,265	-
-Sr. Sanitary Engineers (51 m/m)	187,785	
-Sr. Civil Engineers (9 m/m)	31,590	
-Other Experts (45 m/m)	129,870	
-Computer Science Tech. (3 m/m)	7,020	
<u>Overhead (150% of Honoraria)</u>	534,398	-
1.2 EQUIPMENT (Rented)	46,800	-
-For water quality analysis	11,700	
-Bathymetric, wave, current tide studies	35,100	
1.9 OTHERS (Soil Mechanics & Percolation Tests)	23,400	-
2.5 BUSINESS TRAVEL	242,330	-
<u>International</u>		
-Tickets	35,100	
-Per Diem	207,230	
6. <u>GENERAL SUPPORT</u>	17,550	172,900
6.1 OFFICE FACILITIES AND SUPPLIES	-	20,000
6.5 COMPUTER SERVICES	11,700	-
6.6 SUPPORT PERSONNEL	-	137,900
-Civil or Sanitary Engineer (15 m/m)		22,500
-Technicians (108 m/m)		96,000
-Additional Support Personnel (34 m/m)		19,400
6.7 PUBLICATIONS	5,850	-
-Printing Final Report	5,850	
6.8 COMMUNICATIONS	-	5,000
6.9 OTHER (Local Travel)	-	10,000
98 <u>CONTINGENCIES (15%)</u>	183,257	27,100
TOTALS	1,404,000 =====	200,000 =====