

## PEREIRA POTABLE WATER AND SANITATION PROGRAM

(CO-0182)

### EXECUTIVE SUMMARY

**Borrower:** Empresa de Acueducto y Alcantarillado de Pereira [Pereira Water and Sewer Corporation] (AAP)

**Guarantor:** Republic of Colombia.

**Executing agency:** Empresa de Acueducto y Alcantarillado de Pereira S.A. E.S.P.

<b>Amount and source:</b>		<u>Phase 1</u>	<u>Phase 2</u>
	IDB: (OC)	US\$38.6 million	US\$23.0 million
	Local:	US\$26.0 million	US\$15.3 million
	Total:	US\$64.6 million	US\$38.3 million

<b>Financial terms and conditions:</b>	Amortization period:	25 years
	Disbursement period:	5 years (phase 1)
	Grace period:	5 years
	Interest rate:	variable
	Inspection and supervision:	1%
	Credit fee:	0.75% on the undisbursed balance
	Currency:	U.S. dollars, Single Currency Facility

**Background:** The proposed program, conceived and analyzed as an operation with an estimated aggregate cost of US\$102.9 million, will be carried through in two phases. The IDB would supply US\$61.6 million in funding. The phased approach was prompted by two considerations: (i) how to make the new water and sewer utility self-financing and achieve operational efficiencies as quickly as possible, and (ii) how to make certain the new corporation executes an optimized facilities plan for water and sewer plant, given the financial constraints anticipated in its early years. In accordance with the appraisal findings, the first of the two phases would consist of corporate-development actions and waterworks investments, which in the short term would benefit the corporation's finances and efficiency. It also would include emergency work on sewers to avoid material losses and prevent landslides on city creek banks, which could take a human toll in low-income communities located there. In the second phase, investments would be made in the sewer system to clean up the environment in built-up areas adjacent to rivers, conveying sewage to the city limits. The two phases are at once standalone operations (since each would

separately yield enough benefits to warrant its implementation) and mutually complementary, since the phase 2 sanitation works will round out the phase 1 waterworks outlays.

Each phase would be supported by a separate Bank loan (US\$38.6 million and US\$23 million, respectively). Phase 1 would take five years, phase 2 three years, to begin at the start of the fourth year of phase 1. The following will be prerequisites for approval of phase 2: (i) in each year elapsed of phase 1, a surplus from internal cash generation, after counterpart contributions, equal to at least 12% of AAP's aggregate long-term bank debt; (ii) a demonstration, in updated projections, that local counterpart funds will be forthcoming for the rest of phase 1 and throughout phase 2, and that the debt can be serviced in both phases; (iii) completed designs for all works and a final resettlement plan, including proof of possession of land for the aforesaid plan for the phase 2 works; (iv) awarding of a BOT contract for construction and operation of the first sewage treatment plant; the contract award will be subject to formalization of IDB financing for the phase 2 interceptor and collector sewers, and the bid documents must so state; and (v) fulfillment of conditions for the third package of phase 1 works. Performance of these conditions will be assessed by a technical/financial audit firm engaged by AAP with the Bank's no objection (see paragraphs 3.16-3.18 of the proposal which follows).

**Objectives:**

The program's objective is to support AAP as it develops and consolidates itself as a technically sound, operationally efficient utility corporation. The specific objectives are to: (i) foster AAP's operational and financial sustainability; (ii) help create conditions to interest the private sector in building and operating a sewage treatment plant; (iii) make for more efficient water distribution; (iv) bring piped water to new settlements in the city, including low-income neighborhoods; and (v) improve the urban environment.

The program would be divided into various subprograms and components, described in the following section. To pursue the first specific objective, a management contract would be signed with an operating company, a downsizing component would be executed (subprogram 1, components 1 and 2), and a performance plan would be devised. For the second objective, program funds would defray part of the cost of preparing a BOT deal (subprogram 1, component 3). The third objective would be achieved by bringing in reliable at-source and customer water metering systems, building water distribution tanks, and repairing leaks (subprogram 2, component 1). Distribution networks would be built to attain the fourth objective (subprogram 2, component 2). The last-named objective, urban-sanitation improvement, will be achieved through subprograms 3 and 4.

**Description:** The program would be divided into four subprograms; the fourth of them to be implemented during phase 2.

**Subprogram 1. Corporate development and private-sector involvement (US\$6 million),** with three components.

For **Component 1**, "accelerated integrated corporate management development" (DIAGE) (US\$3.6 million), a specialized firm (the operating company) will be hired for an estimated period of at least four years for integrated management development of AAP. It will be accountable for attaining operational and financial performance ratios set out in the performance plan and updated in the AAP/operating company contract. **Component 2**, downsizing (US\$1.5 million) is a voluntary retirement program to be paid for entirely with local funds. **Component 3** to foster private-sector involvement (US\$900,000) will finance work to prepare for the hiring of the DIAGE contract operating company and part of the cost of studies and bid-document preparation to tender a BOT contract for the treatment plants.

**Subprogram 2. Investments for waterworks (US\$13.7 million),** two components.

Under **Component 1**, designed to reduce volumes of unaccounted-for water (US\$10.4 million), system meters will be installed in the four water treatment plants, the six distribution tanks, and water mains. Leaks will be located and repaired, supply circuits will be segmented and mapped out, 110,000 home meters and about 500 meters for significant customers will be replaced, and four tanks will be built with a combined capacity of 10,800 cubic meters. **Component 2**, for water delivery (US\$3.3 million), will install two conveyance mains 2.1 km long and about 15.9 kilometers of distribution lines.

**Subprogram 3. Investments for sewers, phase 1 (US\$20.1 million),** to clean up city creeks. Three components.

Activities in **Component 1**, cleanup of creeks (US\$16 million) are: (i) laying of 31.1 km of interceptor sanitary sewers along 12 city creeks; (ii) rehabilitation of 7.6 km of sewer lines; (iii) construction of 18 relief sewers 15.2 km long draining into the Otún River, and construction of 18 structures to separate sewage from stormwater; construction of 20 relief sewers 2.9 km long draining into the Consota River and several tributaries, and building of 20 sewage/stormwater separation structures; and (iv) building of 1.1 km of open channel on the downstream part of El Oso Creek to its confluence with the Consota River.

**Component 2**, resettlement (US\$2.8 million), includes the relocation, in accordance with Bank resettlement policy, of 137 families living on

land on which sewers would be built and compensation to 170 families on whom the work would have some impact. This component also will fund studies to produce the final resettlement plan corresponding to the phase 2 sewer work. **Component 3**, environmental education and protection (US\$1.3 million), provides for environmental protection structures along the stretches of eight creeks where interceptor sewers will be built, preparation of an environmental management plan for the Otún River middle and upper watershed, and environmental education projects.

**Subprogram 4. Investments for sewers, phase 2 (US\$25.7 million).** The three components comprising this subprogram will improve the state of the city's rivers by taking sewage and stormwater to the edge of the built-up area, eventually for conveyance to the treatment plant.

**Component 1**, cleanup of rivers (US\$23.6 million), consists of: (i) rehabilitation of 6.5 km of sewer lines; (ii) construction of 26.1 km of sewers along the Otún and Consota rivers, to what will be the start of the final outfall for wastewater conveyance to the future sewage treatment plant; that outfall and the treatment facility would be built under a BOT contract format; and (iii) construction of 3.4 km of reinforced concrete channel along part of La Dulcera Creek, to a point before it meets the Consota River. Under **Component 2**, for resettlement (US\$1 million), 150 families that stand to be affected by the interceptor construction would be resettled. **Component 3**, environmental education and protection (US\$1.1 million), will build environmental protection structures in La Dulcera Creek and along stretches of the Otún and Consota rivers, and carry out activities that are part of the Otún and Consota watershed management plan.

**Relationship of project in Bank's country and sector strategy:**

The Bank is pursuing five objectives in its strategy for operations with Colombia: (i) support for the peace process and its sustainability; (ii) reduction of poverty and inequality; (iii) consolidation of decentralization; (iv) modernization of the State apparatus; and (v) promotion of sustainable growth. The sanitation sector is identified as a strategy focus in the second and fifth of these objectives.

The proposed program would pursue the Bank's strategy by: (i) helping in the delivery of modern, efficient utility services, by way of the new water and sewer corporation; (ii) decidedly raising city residents' living standards, as the quality of water and sewer services improves, yielding immediate environmental benefits when surface discharges of sewage into rivers bordering the city (areas that are home mainly to low-income residents) are halted; (iii) promoting private-sector participation in the sector; and (iv) supporting the development of the sector in a medium-sized city.

**Environmental and social review:**

The program's benefits would take the form of improved water delivery, cleaner rivers and creeks, and flood control. Its main direct social impact would be the resettlement of 137 families affected by the works. Following recommendations of the Committee on Environment and Social Impact, provision has been made for: (i) specified milestones relating to sewage treatment service, to be attained before funds can be committed for the phase 2 works packages; (ii) AAP to demonstrate, before it may award construction contracts, that the bid documents include the environmental requirements and standards recommended in the environmental impact assessments and approved by the Bank; and (iii) AAP to outline, in its annual reports, progress made on the environmental management plan and the follow-up of residents affected by the resettlement plan, and any adjustments to same (see paragraphs 3.27-3.30).

**Benefits:**

- a. Modernization of AAP management, with the ensuing gains in operational efficiency and financial sustainability.
- b. Improvement in water delivery by resolving problems with service interruptions, pressure, and conveyance, and reducing levels of unaccounted-for water.
- c. Cleanup of rivers bordering the city and associated improvements in residents' health. Flood control on the largest creeks will avert financial losses and a human toll in low-income communities that live on their banks.

**Risks:**

**Risk:** Lack of interest of operating companies in the management contract (DIAGE) or high bids because of perceived risks. **Mitigating provision:** Financing for the contract's fixed-remuneration component via the loan, to offer more attractive prospects to firms and ease their concerns over perceived risks.

**Risk:** Failure to bring in real rate increases according to the plan agreed on through 2001. **Mitigating provisions:** the contract will require a demonstration each year that the real rate increases have been brought in.

**Risk:** Indefinite postponement of construction of the sewage treatment plant for financial or technical reasons. **Mitigating provisions:** (i) a financial penalty will be assessed on above-tolerance polluters, making it expensive to defer the plant's construction indefinitely; in the case of Pereira, there is a grace period of about four years for this fine; (ii) the aim of the BOT studies included in the program is to find a viable technical and economic alternative whereby construction of this plant could be tendered out to the private sector; and (iii) phase 2 cannot begin until the treatment-plant contract is awarded.

**Special contractual clauses:****Conditions precedent to the first disbursement:**

- a. Creation and startup of the program-executing unit (paragraph 3.3).
- b. Hiring of a professional accountant in the finance department (paragraph 4.22).
- c. Presentation of an organization plan for an internal audit office and timetable for its implementation (paragraph 4.16).
- d. Presentation of certification of future appropriations for the municipal and national counterpart contributions (paragraph 2.26).
- e. Presentation of evidence of legal ownership of the land needed for phase 1 resettlement (paragraph 3.13).

**Other conditions:** In addition to the standard loan-contract covenants:

- a. IDB approval required for any change in ratios or other performance-plan requirements that may come out of negotiations with the operating company (paragraph 3.6).
- b. IDB approval required for AAP to commit loan proceeds for Group 2 and 3 works packages under phase 1 (paragraph 3.10).
- c. Annual review meetings (paragraph 3.15).
- d. Demonstration that the bid documents specify environmental standards and requirements (paragraph 3.20).
- e. Presentation of annual reports on maintenance of the works (paragraph 3.26).
- f. Presentation of audited financial statements of the program and of the corporation (paragraph 3.32).
- g. Semiannual evaluation reports on the performance plan (paragraph 3.8).
- h. Startup of the internal audit office (paragraph 4.16).
- i. Restrictions in phase 1 on capital outlays other than those funded by the program (paragraph 5.8).
- j. Effective application of real tariff increases and adjustment of rates for inflation (paragraph 4.25).

**Recognition of expenditures:** The Bank may recognize, against the local counterpart, up to US\$4,858,000 in expenditures on studies and works that are part of the program provided they were incurred within the 18 months preceding approval of the loan and after March 1998. Likewise, it may recognize US\$170,000 against the loan proceeds for the preparation of bid documents to engage the operating company.

**Poverty-targeting and social sector classification:**

This operation qualifies as a project promoting social equity, as described in the key objectives for the Bank's activities in the Report on the Eighth General Increase in Resources (document AB-1704) (paragraph 3.31).

**Procurement thresholds:**

Thresholds above which international competitive bidding will be mandatory for program procurement are US\$5 million for works and US\$350,000 for goods and associated services. There will be no contractor prequalification process, since there will be no large contracts and the construction work is relatively straightforward.

**Exceptions to Bank policy:**

As an exception to the procedure for selecting consultants through open calls for offers, the direct hiring of the NGO Minuto de Dios, is recommended. This agency will carry out any type of procurement, hiring of consultants, or other activities required, pursuant to the Bank's procedures. The hiring of the NGO satisfies the provisions set forth in GS-403 of the Procurement Manual (paragraph 3.21).

As an exception to the policy for the selection of consulting firms based exclusively on quality, it is recommended that the consulting firm that will be drawing up the bid documents to hire the DIAGE operating company be selected on the basis of quality and price. The cost of these consulting services is equivalent to US\$170,000, the weighting factor will be no more than 30%, and the five interested candidates will compete on a level playing field (paragraph 3.22).

As an exception to the sovereign guarantee coverage policy, it is recommended that the government guarantee be limited to the loan payment obligations – including interest and credit fees – and that the Municipality of Pereira be required to provide the guarantee for the local counterpart and for the measures needed to fulfill the objectives of the financing (paragraph 4.1).

## **I. FRAME OF REFERENCE**

### **A. The water and sanitation sector in Colombia**

#### **1. Legal and institutional framework**

- 1.1 The 1990-1994 Development Plan pointed up serious problems in Colombia's water and sanitation sector. These included heavy centralization of the system, an unstable institutional base, low coverage and poor quality of service, inefficient operations and administration, political influence on the operations side, and unequal access to water and sewer services. As part of its plan to address these shortcomings, in July 1994 the Colombian government passed into law the Public Utilities Act (Law 142), bringing in a new regulatory framework to improve operating efficiency, seek greater private-sector involvement in service delivery, demand greater accountability for operating performance, and strengthen the operations area, shielding it from political influence.
- 1.2 Law 142 places regulatory and oversight functions at the national level. In the sector's institutional makeup today, overall responsibility rests with the Ministry of Economic Development, with its Water and Basic Sanitation Directorate (in charge of sector planning, policy-setting on technical assistance and training), Water Regulation Board (for regulation, tariff management, rate-setting criteria and methods), and Superintendency of Utility Services, Customer Premises (oversees service delivery).
- 1.3 At the service-delivery level, under Law 142 the municipalities are in charge of services, through utility companies preferably organized as stock corporations or, alternatively, as state industrial and commercial enterprises. The process of reorganizing municipal utilities mandated by Law 142 is still under way.

#### **2. State of the sector**

- 1.4 The primary aims of the current water and basic sanitation sector strategy, as mapped out in the 1998-2002 National Development Plan, are to expand coverage, improve service quality, strengthen systems to leave them less vulnerable, and move forward on a sewage treatment plan as soon as it is economically, socially, and environmentally feasible. The object is to devise a comprehensive policy to coordinate institutional, regulatory, and financial elements at the national level, offering productive support for local management modernization efforts to make for efficient water and sewer systems.
- 1.5 As a rationale for this strategy, the 1998-2002 National Development Plan notes that, though the percentage of the population receiving city water rose from 90% in 1990 to 94% in 1997, only part of the poorest communities felt these benefits. Furthermore, the Plan points out, these coverage figures are nominal: the service is operational only 75% of the time and, because of poor water quality, 60% of



residents are at medium to high risk of receiving contaminated water, leaving them vulnerable to health problems. The Plan also reports 80% sewer-system coverage, unchanged in 12 years, and mentions the weak management capacity of municipalities coupled with limited private-sector involvement in this sphere and the disincentive for local financing efforts (by way of tariffs or direct local contributions) because there is no clear policy on allocation of national cofinancing resources.

### **3. Utility tariff policy**

- 1.6 The rate policy now in effect, developed by the Water Regulation Board, is one of 'regulated free pricing', whereby each provider can set its own rates, guided by sector-wide common tariff rules. The latter adopt long-run marginal cost as a cost-recovery criterion and pursue the following principles: (i) economic efficiency; (ii) solidarity and redistribution; and (iii) financial adequacy. 'Economic efficiency' means that utility-company rate schedules must approximate competitive market prices; 'solidarity and redistribution' refers to a system of cross-subsidization among customer classes; and 'financial adequacy' means that rates must be high enough to recover operating and maintenance costs, replace and expand existing utility plant, and pay a return on shareholders' equity.
- 1.7 The following are the basic features of water and sanitation utilities' rate-setting methodology: (i) there are separate tariffs for water and sewer service; (ii) both tariffs consist of a fixed user charge and a charge per cubic meter that varies with consumption range: 0 to 20 m<sup>3</sup>/month, 20 to 40 m<sup>3</sup>/month, and over 40m<sup>3</sup>/month; (iii) the fixed portion of the rate must cover administrative costs; the variable portion must defray operating, maintenance, replacement, and capital costs; (iv) under the subsidy and surcharge system now in place, high-income customers subsidize those of few means; (v) municipalities may elect to subsidize low-income households by directly taking over part of the bill. All Colombian utility companies are applying the new tariffs under a plan that will be fully phased in by 2001.
- 1.8 Two effects of this phasing-in of rate schedules are a tendency for tariffs to rise in order to cover costs (as mandated) and, because of the limits on subsidies and surcharges, a rise in rates paid by lower-income customers while those paid by wealthier consumers decline.

## **B. The water and sanitation sector in Pereira**

### **1. Institutional and technical backdrop**

- 1.9 Pereira, capital of the department of Risaralda, has a population of roughly 350,000. It is the nucleus of a growing metropolitan area that includes the adjacent municipality of Dos Quebradas, with a population of about 140,000. On average,

this area's population has grown by 5% over the past three years, double the 2.5% national average. This growth rate is expected to hold in the coming years.

- 1.10 Until July 1997, Pereira households received water and sewer service from Empresas Públicas de Pereira [Pereira Public Utilities Corporation] (EEPP), an autonomous municipal multiservice entity that also managed urban sanitation, electricity, and telephone services for the city, and provided telephone and block water service to Dos Quebradas. Because of the mix of utility services being provided by this single company, water and sewer system deficits could be concealed and covered from telephone-service surpluses: a deficit of some US\$2 million was made up this way in 1996. The magnitude of the shortfall, and the impending deregulation of telephone services, pointed up the constraints for financing EEPP's water and sewerage master plan, with direct costs totaling US\$161 million over five years.
- 1.11 Some 90% of Pereira households have piped water and are connected to city sewers, but because of serious problems in service delivery, this is a nominal figure: the percentage who actually have reliable water and sewer service is lower.
- 1.12 There are problems with water delivery, reliability, and pressure in approximately 50% of the built-up area, which particularly affect low-income districts and new developments. The problems stem from insufficient conveyance and obsolete plant.
- 1.13 Though a high percentage (94%) of user premises are metered, from 36% to 40% of all water produced is unaccounted for. Water-pressure problems account for much of this loss; the rest can be traced to weaknesses in internal management controls and the assignment of commercial-area responsibilities.
- 1.14 There also are problems in the sewer system (much of which is combined with storm drains) at various points in the city, because of the limited conveyance of existing collectors and the lack of interceptor sewers and channeling in the city's larger creeks. This triggers flooding during periods of moderate to heavy rainfall. City sewage is discharged untreated into rivers and nearby creeks, creating undesirable health and environmental conditions in the city and polluting receiving bodies.

## **2. Pereira's water and sanitation strategy**

- 1.15 The requirements brought in by Law 142 in combination with other factors prompted Pereira and EEPP authorities to launch a corporate reorganization of the utility company. Those other factors, as far as water and sewer services were concerned, were:

- a. A national regulatory system for the sector that demanded efficiency and quality standards far higher than in the past, along with cost recovery through rate revenues.
  - b. Expectations in light of the impending deregulation of the telecommunications industry, which would heighten competition in that sector and mean that water and sewer services could no longer look to the telephone service for funding, as had hitherto been possible.
  - c. A master plan providing for US\$32 million in capital outlays each year for five years, far surpassing the historical peak of US\$6 million annually.
  - d. New national sewage-treatment laws with a system of fines (after a grace period) for parties discharging sewage into receiving bodies and causing violative pollution levels.
  - e. Scant knowledge of the true cost of service delivery because of the way the utility company's financial systems were organized and its multiservice philosophy.
- 1.16 In light of these factors, a separate analysis of each utility service was indicated, to include the corporate restructuring of services and adjustment of the capital spending program to take account of the financial capacity of each restructured service.
- 1.17 With that in mind, a two-part strategy was adopted. The first part, developed as the program was being prepared, involved splitting the various utility services into separate, autonomous stock corporations and optimizing the water and sewerage master plan in line with that service's finances. The second part entailed implementation of the optimized master plan and corporate management arrangements to assure the medium- and long-range operational and financial viability of the new corporation.
- 1.18 In pursuit of the first part of the strategy, the Bank provided support to EEPP for: (i) preparation of an action plan and terms of reference for the breakup; (ii) revision of the master plan to prioritize capital outlays and program them as company finances permitted; and (iii) processing of a technical-cooperation operation (ATN/JF-5431-CO) to finance integrated consulting services to produce studies to call for bids for the financing and operation of a first sewage treatment plant.
- 1.19 Breakup of EEPP: In May 1996, the Pereira City Council ordered the restructuring of EEPP, which was to be split up to create four operating companies set up as stock corporations (for telephone services, electricity, city sanitation, and water supply and sewerage). The Council also ordered a fifth company to be created (the "multiservice corporation") to temporarily manage certain common services such as billing and stores. The separate new companies began operating in July 1997.

Each started out with its own assets, liabilities, and capital, a set of by-laws, a frame of reference for its staff complement and position descriptions for key personnel, and basic financial studies projecting its operations and estimating the business's net present value. The water-supply area of the former EEPP became the Empresa de Acueducto y Alcantarillado de Pereira [Pereira Water and Sewer Corporation], which for corporate-image reasons has styled itself Aguas y Aguas de Pereira (AAP). Its principal shareholder at present is the Municipality of Pereira, which holds 95% of its stock; four municipally owned local agencies each have a 1.25% interest.

### **3. Conceptualization of the program**

- 1.20 To proceed with the second part of the sector strategy mapped out by Pereira authorities, the proposed program aims to make AAP operationally and financially viable in the medium and long term, and optimize the new corporation's facilities plan in keeping with its financial capacity.
- 1.21 The approach agreed on with national and municipal authorities to help AAP realize its potential as an efficient, self-sustaining corporation is built around two instruments: (i) a management tool in the form of a contract for 'accelerated integrated corporate management development' (DIAGE) and a performance plan that would measure the company's operating and financial performance; and (ii) optimization of the capital-investment master plan.
- 1.22 Under the DIAGE approach, a management contract would be executed with an operating company that is known and respected in the industry. The company's mandate will be to bring in modern operations, commercial, and management practices, provide technical assistance to transfer know-how and technology, and develop the requisite information and reporting systems. It also will be accountable for attainment of the performance-plan ratios. Organized as a formal agreement between the Municipality and AAP, that plan spells out the company's responsibilities in terms of ratios and benchmarks to be achieved and the Municipality's responsibilities for making the corporation's operations and finances more autonomous.
- 1.23 In the revised master plan, priority was given to a program with a total cost of US\$102.9 million. Given the new AAP's financial means and other considerations, a two-stage operation seemed to be the best approach.

### **C. The IDB's strategy and rationale for its involvement**

- 1.24 The Bank's strategy for operations with Colombia, as set out in the country paper (document GN-2052), pursues five objectives: (i) support for the peace process and its sustainability; (ii) reduction of poverty and inequality; (iii) consolidation of decentralization; (iv) modernization of the State apparatus; and (v) promotion of

sustainable growth. The sanitation sector is identified as a strategy focus in the second and fifth of these objectives.

- 1.25 The proposed program, which is in line with the national strategy, would pursue the Bank's strategy by: (i) assisting in the delivery of modern, efficient utility services, by way of the new water and sewer utility; (ii) decidedly helping to raise living standards of city residents as the quality of water and sewer services improves, yielding immediate environmental benefits when surface discharges of sewage into rivers bordering the city (most of these areas being home to low-income communities) are halted; (iii) promoting private-sector participation in construction and operation of the first sewage treatment plant; and (iv) supporting the development of the sector in a medium-sized city.

**D. The Bank's experience in the sector**

- 1.26 The Bank has ample experience in funding sanitation projects in Colombia, having lent US\$781 million for that purpose to date. Among the utility companies with which it has worked are Empresas Públicas de Medellín, Empresas Municipales de Cali, Compañía de Acueducto Metropolitano de Bucaramanga, Compañía Aguas de Cartagena and a number of regional corporations. These operations have boosted treated-water production, enhanced service quality and reliability, extended coverage, increased metering, and reduced unaccounted-for water volumes. The Bank also has assisted with operations in support of privatizations and concessions and the strengthening of the industry regulator (Water Regulation Board).
- 1.27 With regard to management of the sector, the main problems noted in a review of past projects are: (i) local political interference in water and sewerage operations; (ii) inefficient administration and operations, including a shortage of qualified staff in key positions; (iii) ill-timed tariff adjustments, typically when a company experiences cashflow problems; (iv) delays in tendering processes; and (v) problems of interface and demarcation of responsibilities between executing agencies and system operators. The Bank and executing agencies have together been taking corrective measures, and both Law 142 and Water Regulation Board tariff regulations are intended to resolve many of these problems. The aforementioned experiences and good practices learned were taken into consideration in designing the program proposed here.

## **II. THE PROGRAM**

### **A. Introduction**

- 2.1 The proposed program was conceived and analyzed as an operation with an estimated aggregate cost of US\$102.9 million, of which the IDB would fund US\$61.6 million. Its four subprograms would be carried through in two phases, each of them supported by a separate IDB loan (US\$38.6 million and US\$23 million, respectively). Phase 2 would be eligible for approval when the conditions listed in paragraph 3.16 are fulfilled, the object being to make certain that AAP is equipped to meet its phase 2 obligations and has a treatment plant on stream shortly after systems are in place to convey sewage and stormwater to the city limits.
- 2.2 Phase 1, which would last five years, is divided into three subprograms; phase 2, which would require three years, consists of a single subprogram. The phases can overlap; in fact, the plan is to start phase 2 at the beginning of the fourth year of phase 1, making for a program implementation period of six calendar years.
- 2.3 The two phases are at once standalone operations (since each would separately yield enough benefits to warrant its implementation) and mutually complementary, since the phase 2 sanitation works will round out the phase 1 waterworks. Furthermore, the phase 2 works will help improve the state of rivers running through the city and benefit residents whether or not the sewage treatment plant is built.
- 2.4 Apart from the above considerations, the two-phase approach falls in with AAP priorities to improve its finances and operations. The phase 1 subprograms would strengthen the corporation's capacity in those two areas, improve the quality of water delivery, including service to new settlements, and remedy pressing health and pollution problems. Phase 2 would clean up built-up areas adjacent to the rivers, conveying sewage to the city limits.

### **B. Objectives**

- 2.5 The program's objective is to support AAP as it develops and consolidates itself as a technically sound, operationally efficient utility corporation. The specific objectives are to: (i) foster AAP's operational and financial sustainability; (ii) help create conditions to interest the private sector in building and operating a sewage treatment plant; (iii) achieve more efficient water distribution; (iv) pipe water to new settlements in the city, including low-income neighborhoods; and (v) improve the urban environment.

- 2.6 The subprograms have been structured around the foregoing objectives, such that subprograms and components can be associated with each objective. However, the subprograms are interrelated: the water supply subprogram, for instance, will improve water delivery and also help make the new corporation financially viable.
- 2.7 To pursue the first specific objective, a management contract would be executed with an operating company that has a strong track record in the water and sewerage sector, a downsizing component would be carried out (subprogram 1, components 1 and 2), and a performance plan would be devised. For the second objective, program funding would defray part of the cost of preparing a BOT deal (subprogram 1, component 3). The third objective would be achieved by bringing in reliable water metering systems at source and on user premises, building water distribution tanks, and repairing leaks (subprogram 2, component 1). Distribution networks would be built in the targeted parts of the city to attain the fourth objective (subprogram 2, component 2). The fifth objective, to improve the urban environment, will be achieved through the two-phase sewerage program (subprograms 3 and 4): phase 1 will clean up creeks; phase 2 will do the same for rivers and eventually carry away sewage for treatment.

**C. Program targets**

- 2.8 The program would aim for the following targets, which were developed on the basis of findings of financial and/or technical appraisals of the proposed program and of the company.
- a. AAP financial sustainability targets: (i) hire an operating company to manage the corporation and implement an accelerated corporate management program; (ii) set in place efficient commercial, financial, and planning systems before 2003; (iii) bring down the ratio of operating expenses to operating revenues, not counting depreciation, from 85% in 1998 to 61% in 2003; (iv) starting in 1999, increase internal cash generation to service the debt and, from 2000 onward, generate the equivalent of at least 23% of monies needed for the facilities plan; and (v) boost collection efficiency from 80% in 1998 to 95% in 2003.
  - b. Targets for fostering private-sector involvement in construction and operation of a sewage treatment plant: award a BOT contract for construction and operation of a treatment facility.
  - c. Improved water-distribution efficiency targets: (i) reduce unaccounted-for water from the current 36% of production to 30% by year-end 2003; (ii) hold the reliability level at 97% beginning in 1999; (iii) achieve 13,500 cubic meter storage capacity by 2001; and (iv) achieve pressure capacity in the range of 30 to 70 psi by 2003.

- d. Targets for water delivery to new settlements, including low-income communities: Before 2003, start piping city water to some 1,500 low-income households in southwest Pereira.
  - e. Sanitation improvement targets: In phase 1: (i) as of 2003, eliminate the five critical flooding points along El Oso Creek and (ii) as of 2003, end the discharge of 7.7 tons per day of BOD into city creeks. In phase 2: (i) as of 2005, prevent landslides along Dulcera Creek and (ii) as of 2005, end the discharge of 16 tons per day of BOD into rivers crossing the city.
- 2.9 The above-listed targets are for the program overall, but because of the positive financial impact some of them would have on the corporation's operations, their attainment has been programmed during or, at the latest, for the end of phase 1. The verification indicators devised to track targets and assess compliance with the program's objectives are presented in the Logical Framework in Annex II-1 and in the performance plan.

#### **D. Description**

- 2.10 The program is divided into four subprograms, the fourth of them to be implemented during phase 2.
- 1. Subprogram 1. Corporate development and private-sector involvement (US\$6 million), with three components**
- 2.11 Component 1. Accelerated integrated corporate management development (DIAGE) (US\$3.6 million). A specialized firm (the operating company) will be hired for an estimated period of at least four years for integrated management development of AAP. It will be accountable for attaining the operational and financial performance ratios in the performance plan. One feature of the contract with the operating company will be a reward/penalty system to encourage effective management of water and sewer services; to that end, part of the contract price will be fixed and part variable. The program will fund the fixed portion, corresponding to the minimum percentage of the costs the operating company wishes to assure to be able to offer its services. The variable portion will be tied to the operating company's success in increasing the corporation's operating margin; that portion will be defrayed with AAP's internal cash generation and thus will not count as part of the program cost. The contract also will prescribe penalties against the fixed portion if the management objectives are not achieved.
- 2.12 The operating company will develop and set in place a sound organizational structure, operations and financial reporting systems, and procedures and manuals, and will train executives and middle management in the new systems and in modern management approaches and procedures. The underlying philosophy of the DIAGE approach is to modernize corporate management quickly using a learning-



by-doing approach and offering comprehensive, coordinated support for all management functions.

- 2.13 Component 2. Downsizing (US\$1.5 million). This component, to be paid for entirely with local funds, will reactivate a voluntary retirement program that began in 1997, under which 48 employees have left the company. Under this plan, which is to be updated as a condition for the negotiations, a further 50 staff members who wish to take voluntary retirement, are nearing retirement age, or are redundant, would leave.
- 2.14 Component 3. Fostering private-sector involvement (US\$900,000). This component will pay for work to prepare for the DIAGE arrangement and produce studies for the sewage treatment plant. Funding will be provided for:  
(i) reimbursement to AAP, under the retroactive financing arrangement, of the cost of the consulting firm that will produce studies and bid documents for the hiring of an operating company under the DIAGE contract; (ii) resources to supplement funds available from operation ATN/JF-5431-CO (see paragraph 1.18) to cover the increase in cost of a consulting-firm consortium to produce studies to call for bids for the financing and operation of a first sewage treatment plant; and (iii) the hiring of two experts, one technical and one financial, to help AAP monitor the work of the aforementioned consortium (quality control, evaluation of recommendations, selection of alternatives).

**2. Subprogram 2. Investments for waterworks (US\$13.7 million). Two components**

- 2.15 Component 1. Unaccounted-for water (US\$10.4 million). Activities slated for funding are: (i) installation of system meters in the four water treatment plants, the intake system of the six distribution tanks, and in water mains; (ii) a leak detection and repair program, segmentation and demarcation of supply circuits, and replacement and installation of 110,000 residential meters and about 500 meters for significant customers, and (iii) building of four metal module distribution tanks with a combined capacity of 10,800 cubic meters.
- 2.16 Component 2. Water delivery (US\$3.3 million): Construction of two conveyance mains 12" to 24" in diameter, totaling 2.1 km, and about 15.9 km of distribution lines.

**3. Subprogram 3. Investments in sewer works, phase 1 (US\$20.1 million)**

- 2.17 The aim of this subprogram is to clean up city creeks and control floods. In accordance with the Bank's policy, there is provision for the resettlement of families affected by these works and for environmental education and protection actions. The subprogram consists of three components.

- 2.18 Component 1. Cleanup of creeks (US\$16 million). Activities: (i) laying of 31.1 km of simple and reinforced concrete interceptor sewers along 12 city creeks; (ii) rehabilitation of 7.6 km of sewer lines; (iii) construction of 18 simple and reinforced concrete relief sewers (15.2 km total length) to drain into the Otún River, and building of 18 structures to separate wastewater and stormwater. Construction of 20 simple and reinforced concrete relief sewers (2.9 km total length) to drain into the Consota River and several tributaries, and building of 20 separation structures; and (iv) construction of 1.1 km of open channel, 10 m wide and 3.75 m deep on the downstream part of El Oso Creek up to the point where it meets the Consota River.
- 2.19 Component 2. Resettlement (US\$2.8 million). Covers the relocation, in accordance with Bank resettlement policy, of 137 families who would need to be moved for the sewer construction, and compensation to 170 families on whom the work would have some impact. This component also will fund studies to produce the final resettlement plan corresponding to the phase 2 sewer work.
- 2.20 Component 3. Environmental education and protection (US\$1.3 million). Includes the building of environmental protection structures along stretches of eight creeks where interceptors will be constructed, preparation of an environmental management plan for the Otún River middle and upper watershed, and environmental education projects for residents of the middle Otún basin.

**4. Subprogram 4. Investments for sewers, phase 2 (US\$25.7 million)**

- 2.21 The three components comprising this subprogram will improve the state of the city's rivers by taking sewage and stormwater to the edge of the built-up area, eventually for conveyance to the treatment plant.
- 2.22 Component 1. Cleanup of rivers (US\$23.6 million). Activities: (i) rehabilitation of 6.5 km of sewer lines; (ii) laying of 26.1 km of simple and reinforced concrete sewers along the Otún and Consota rivers, to the point marking the eventual start of the final outfall from which wastewater will flow to the planned sewage treatment plant; that outfall and treatment facility would be built under BOT contracts; and (iii) construction of 3.4 km of reinforced concrete channel with a 5 m by 3 m section along one part of La Dulcera Creek, to a point before it meets the Consota River.
- 2.23 Component 2. Resettlement (US\$1 million): Relocation of 150 families that stand to be affected by the sewer work and payment of compensation as applicable.
- 2.24 Component 3. Environmental education and protection (US\$1.1 million). Activities: building of environmental protection structures along La Dulcera Creek and stretches of the Otún and Consota rivers, and activities that are part of the Otún and Consota watershed management plan.

- 2.25 The following table gives a breakdown of the program's cost by item of expenditure and phase. The total estimated cost is US\$102.9 million – US\$64.6 million for phase 1 and US\$38.3 million for phase 2. Included in the total is US\$3.5 million in associated costs, from estimates for hardware and software needed for the DIAGE contract; external audits of program and AAP financial statements; land to be acquired for tanks for the water delivery subprogram, and estimated financial charges. For phase 1 the latter includes IDB-financed interest of US\$6.8 million, the US\$658,000 credit fee, and US\$386,000 in inspection and supervision charges. The Phase 2 figures will be US\$2.2 million for interest, US\$265,000 for the credit fee, and US\$230,000 for inspection and supervision.

**Cost Table**  
(US\$000)

EXPENDITURE ITEM	PHASE 1			PHASE 2					
	IDB- OC	LOCAL	TOTAL	IDB- OC	LOCAL	TOTAL	IDB- OC	LOCAL	TOTAL
1. Engineering and admin.	827	7,256	<b>8,083</b>	2,526	1,069	<b>3,595</b>	3,353	8,325	<b>11,678</b>
2. Direct costs	25,688	14,125	<b>39,813</b>	15,072	10,641	<b>25,713</b>	40,760	24,766	<b>65,526</b>
2.1 Corp.devt.	4,520	1,500	6,020	-	-	-	4,520	1,500	6,020
2.2 Waterworks	9,665	4,040	13,705	-	-	-	9,665	4,040	13,705
2.3 Sewers	11,503	8,585	20,088	15,072	10,641	25,713	26,575	19,226	45,801
3. Assoc. costs	1,175	1,362	<b>2,537</b>	0	997	<b>997</b>	1,175	2,359	<b>3,534</b>
Unallocated	3,715	2,599	<b>6,314</b>	2,935	2,328	<b>5,263</b>	6,650	4,927	<b>11,577</b>
Financial charges	7,195	658	<b>7,853</b>	2,467	265	<b>2,732</b>	9,662	923	<b>10,585</b>
<b>TOTAL</b>	<b>38,600</b>	<b>26,000</b>	<b>64,600</b>	<b>23,000</b>	<b>15,300</b>	<b>38,300</b>	<b>61,600</b>	<b>41,300</b>	<b>102,900</b>
% yrs/phase			62.8			37.2			
% funds/phase	59.8	40.2	100.0	60.0	40.0	100.0	59.9	40.1	100.0

#### **E. Funding for phase 1**

- 2.26 At AAP's request, the Bank's US\$38.6 million loan for this phase would come from its ordinary capital Single Currency Facility. Terms and conditions would be as follows: amortization, 25 years; grace period, 5 years; disbursement period, 5 years; interest rate, variable; credit fee, 0.75%; inspection and supervision, 1%. The US\$26 million-equivalent local counterpart includes the equivalent of US\$6.2 million from the Municipality of Pereira, US\$5.6 million from the national government, and US\$4.8 million from recognition of prior expenditures. The US\$9.4 million balance would be furnished by AAP from internal cash generation. As a condition precedent to the first disbursement, evidence will be required showing that the Municipality and the Republic have issued a future appropriations certification establishing the budget allocations necessary to cover their respective counterpart contributions for project execution.

**F. Funding for phase 2**

- 2.27 In the financial projections it was assumed that terms for phase 2 Bank financing of US\$23 million would be the same as for phase 1 except for the grace and disbursement periods, which would each run three years. The US\$15.3 million local counterpart contribution would be supplied by AAP from internal cash generation.

### **III. PROGRAM IMPLEMENTATION**

#### **A. Implementation arrangements**

##### **1. Institutional considerations**

- 3.1 To implement the kinds of activities envisaged for this program, two groups would be set up, reporting to the general manager: one to contract and supervise the operating company under the DIAGE arrangement and take charge of studies for the BOT contract, and the other to execute the other components.
- 3.2 To hire the DIAGE operating company, AAP will engage a consulting firm to draw up bid documents, evaluate bids, and assist in negotiations with the most qualified candidate. The plan is to hire the consulting firm by mid-August 1999 using program resources (retroactive financing). The process of hiring the operating company, from bid-document preparation to contract award, would be completed by mid-2000; it would be managed within AAP by the DIAGE/BOT unit, working under the general manager. That unit also will be in charge of commissioning and overseeing studies for the BOT sewage treatment plant. The contract with the operating company will be overseen, until its completion, by the office of AAP's president, which will be created when that contract is awarded. Apart from these supervisory duties the president will approve the corporation's strategic plans and serve as liaison between the corporation and its shareholders. There will be three professional staff and support staff in the president's office.
- 3.3 The other program components will be executed through a program executing unit (PEU) reporting to the corporation's general manager. The PEU as well as the DIAGE/BOT unit must have been set up before the first disbursement will be released. Deciding on the best location for the PEU once the operating company has been engaged under a management contract will be one of the tasks of the consulting firm that will be producing bid documents to tender out that contract. The PEU will monitor the resettlement and environmental activities, conduct the tendering process, and monitor construction work. Three consulting firms will be hired for works supervision, one for each of the works packages described in paragraph 3.10. The PEU's primary functions will be to: (i) serve as liaison with the Bank; (ii) coordinate and authorize services contracting and goods procurement following the Bank's rules and procedures; (iii) supervise contractors' work; (iv) request disbursements and authorize expenditures, adhering to Bank rules and procedures; and (v) prepare annual budgets, produce reports required by the Bank, and ensure that the loan contract conditions are fulfilled.

## **2. Performance plan**

- 3.4 The performance plan (PP), an integral part of the implementation plan for this program, will set out ratios and benchmarks pertaining to the program's interim and final targets. Authorization to commit Bank funds for capital outlays will be tied to attainment of those ratios and other PP requirements. The PP thus will serve as a tool for the Municipality of Pereira and the Bank to assess progress on the program. Signed by the AAP and the Municipality, it will spell out each party's responsibilities.
- 3.5 The AAP's responsibilities can be summed up as follows: (i) achieve prescribed operational and financial ratios each year during the life of the program; (ii) hire the operating company; (iii) transform itself into a mixed public-private corporation by year-end 2002; (iv) develop a labor policy based on an optimum staff roster, transparent recruitment processes, adequate funding of pension liabilities and separation reserves, and staff costs in line with the market; (v) execute the capital investment program agreed on with the Bank and no other; (vi) adopt a financial policy that seeks to lower short-term financial costs, with restrictions on the use of surpluses to fund capital outlays, which will require prior consultation with the Bank; AAP may not pass surpluses on to shareholders (though such surpluses may be used to capitalize the corporation); (vii) review the annual contract with the multiservice company by year-end 1999, including performance of that company's contractual undertaking to help the operating company with reporting and transfer the customer rolls to AAP; and (viii) present to the Superintendency of Utility Services – for public disclosure – operating and financial ratios and other performance indicators that the Superintendency may require. The indicators agreed on with the Bank are listed in the following table. One of the indicators contained in this list is the number of users to be legalized through the year 2000 based on a recent census of users. After this year, the rolls and legalization of users will be one of the responsibilities of the operating company. No water quality indicators have been included, inasmuch as water quality is acceptable.

**Pereira potable water and sanitation program (CO-0182)**

**Aguas y Aguas de Pereira**

**Operating and financial ratios**

Included in the PP

Ratio	Formula	1998	1999	2000	2001	2002	2003	2004	2005
Operating margin (%)	$\frac{\text{Oper. exp. w/out deprec.} + \text{Fin.exp.}}{\text{Operating revenue}} * 100$	85	85	74	64	63	61	61	61
Collection efficiency (%)	$\frac{\text{Intake}}{\text{11/12 Bill.} + \text{ARBY}} * 100$	80	85	88	90	92	95	95	95
Customer metering efficiency (%)	$\frac{\text{No.meters read}}{\text{No.meters installed}} * 100$	89	93	94	94	95	95	95	95
Users metered (%)	$\frac{\text{No.metered users}}{\text{Total users}} * 100$	96	97	97	98	98	98	98	98
Water service reliability level (%)	$\frac{1 - \text{Sum}(\text{Hi} * \text{Ci})}{\text{Th} * \text{Cs}} * 100$	96	97	97	97	97	97	97	97
No. unregistered connections legalized			1,200	1,778					
Unaccounted-for water (%)	$\frac{\text{Vol.prod.} - \text{Vol.billed}}{\text{Vol.produced}} * 100$	40	36	34	33	32	30	30	30
Debt service coverage (times)	$\frac{\text{Cashflow}}{\text{Debt service}} * 100$	0.4	1.3	1.9	2.6	3.8	4.5	1.7	1.3
Capital outlays funded (%)	$\frac{\text{Cashflow} - \text{Debt serv.}}{\text{Cap. Investments}} * 100$	0	14	23	29	44	27	49	

Hi=Hours service suspended during interruption i; Ci=Customers losing service during interruption i; Th=Total hours in year (8,760); CS=Total number of users; ARBY=Accounts receivable beginning of year

- 3.6 When the DIAGE operating company starts managing the services, it will assume responsibility for AAP's achieving the PP operating and financial ratios. Experience with similar approaches in which management contracts have been tied to performance plans shows that such ratios sometimes are adjusted as bid documents are drawn up to hire an operating company or during management-contract negotiations. To prevent any substantive change in this program's targets or objectives, the PP and the loan contract will require the parties to obtain the Bank's approval before changing a ratio or other obligation as a result of negotiations with the prospective operator.
- 3.7 Under the terms of the PP the Municipality is responsible for making AAP independent and respecting its autonomy. This will mean no interference in operations areas or in decisions on facilities-plan contents. Other Municipality obligations will be to furnish the municipal portion of counterpart funds, help AAP

expedite the DIAGE work, and assure counterpart contributions to the program. The Bank has reviewed the PP and concurs with its content.

- 3.8 The PP will be in effect for at least six years. It will be overseen by a Monitoring Committee made up of representatives of the Municipality, AAP board of directors, and AAP executives who will be supervising the DIAGE. Semiannual reviews and certifications of compliance with the ratios and other PP requirements will be done: (i) before the operating company is brought in, by an independent firm of certified public accountants assisted by technical consultants as needed; and (ii) after the operating company begins work, by the specialized technical/financial audit firm that will also be auditing management-contract performance. Based on these semiannual reviews, the Monitoring Committee may propose changes to achieve the set targets. During phase 1, AAP is to provide the Bank and the National Planning Department with a report on such changes, and the semiannual evaluations, within 60 days after completion of the evaluations.

**B. Readiness of the program and of its implementation mechanisms**

**1. Phases and implementation arrangements for each**

- 3.9 Final designs for the phase 1 water and sewer works are 95% complete and should be finished by late 1999. These works have been divided into three groups: Group 1, to begin in year 1 of the program, are investments that will have an immediate beneficial impact on the corporation's finances, and emergency sewer works (36%); Group 2, slated to start midway through year 2 (when the operating company is slated to start work) are outlays for customer metering and water-line rehabilitation (32%); and Group 3, to begin in year 2, for creek channeling and some collector and interceptor sewers (32%).
- 3.10 AAP will be required to obtain Bank authorization before committing loan funds for Groups 2 and 3. Conditions that must be met fulfilled before such authorization will be given are: For Group 2: hiring of the operating company, creation and startup of the office of the corporation's president, and demonstration of satisfactory compliance with the ratios and other PP requirements. For Group 3: demonstration of satisfactory attainment of the PP ratios and other requirements and presentation, based on the BOT studies, of a plan and technical timetable which, on the basis of the financial viability analysis, define the sewage treatment program and provide specific milestones for gauging progress on sewage treatment.
- 3.11 All construction work will be contracted out to specialized firms. The unaccounted-for water component will also be contracted out (both system and customer metering portions). Since metering work on user premises has to be aligned with the corporation's commercial and customer-service systems, except for a small meter-installation component, customer metering work has been



deferred until the operating company comes on board and takes over responsibility for those systems.

- 3.12 Designs for the phase 2 works are 70% finished; they will be completed in the second half of 1999. These works are divided into two groups (see Annex III-1, page 2). For these works, as for phase 1, AAP must secure authorization from the Bank before committing funds, and certain conditions must be satisfied in order to secure that authorization, involving PP requirements and sewage-treatment milestones. As noted in paragraph 3.10, these indicators will come out of the BOT studies.
- 3.13 A final resettlement plan has been devised. According to an analysis of options and capacities, the plan would be executed by the Colombian NGO Minuto de Dios (paragraph 3.21). As a condition precedent to the first disbursement, evidence will be provided of legal ownership of land for the phase 1 final resettlement plan. Technical and price offers have been received for the BOT studies from three international consortia and are now being evaluated. AAP will monitor and oversee these studies with the help of two experts, one technical and one financial, paid for by the program.
- 3.14 AAP will open a special account to manage the program's accounting. Funds will be disbursed following the Bank's current disbursement procedures, with an advance equivalent to 5% of the loan.

## **2. Supervision**

- 3.15 The Bank's Country Office in Colombia will supervise implementation of the program with support from the project team. Since this will be the Bank's first operation with the recently created AAP and the implementation plan is fairly complex, there will be annual review meetings, the third of them serving as the mid-term review. The object of the annual gatherings will be to assess progress on the physical components of the program, status of BOT studies, adherence to the environmental management plan and follow-up of persons affected by the resettlement program, and operation of the DIAGE scheme, with a focus on trouble-shooting. The mid-term review meeting will also look at matters pertaining to phase 2 and to implementation of recommendations in the sewage-treatment study. The meetings will take place in the first half of each year except for the mid-term review, which will be timed to tie in with plans for submittal of a memorandum to the Board recommending approval of the loan for phase 2 (see paragraphs 3.16-3.18). Within the 15 days preceding each of these meetings, AAP is to furnish reports on the aforementioned matters.

### **3. Conditions for commencement of phase 2 and its evaluation plan**

- 3.16 In year 3 of phase 1, the Bank's Management, following recently adopted procedures for time-slice operations, will decide the timing of submittal of a memorandum to the Board to recommend approval of the loan for phase 2. The recommendation is to be backed by a report from an independent firm confirming that the following conditions have been fulfilled: (i) each year to date in phase 1, AAP has posted a surplus from internal cash generation, after counterpart contributions, equal to at least 12% of its aggregate bank debt; (ii) the corporation has demonstrated that it is able to furnish counterpart funds for the remainder of phase 1 and for phase 2 and to service the debt for both phases; (iii) designs are finished for all the works and the final resettlement plan has been completed, including possession of land; (iv) a BOT contract has been awarded for the first sewage treatment plant in accordance with the studies included in the program on this topic (before the contract is awarded, Bank financing for construction of the phase 2 interceptors and collectors must have been formalized – such proviso to be stated in the bid documents, along with the indication that plant construction cannot begin until a specified milestone has been reached for the interceptor sewers); and (v) fulfillment of prerequisites for startup of the third package of phase 1 works.
- 3.17 As was noted earlier, one fundamental reason for structuring the program in two phases was that AAP would experience financial constraints in its early years of operation. Hence, the intent of the first two conditions listed above, which are related, is to assure that AAP will be able to service its debt continuously after furnishing local counterpart funds. By 2003, 90% of the corporation's debt would consist of borrowings from the Bank, so its cost of capital would be around 9%. The 12% figure established in the first condition for the three years before phase 2 begins thus represents AAP's ability to generate cash to cover accrued interest; the other 3% would go toward principal. In a sensitivity analysis testing for a 100% increase in the interest rate on the domestic debt, there was no substantive change in this figure. The corporation's capacity in this regard would be verified through an evaluation of projected future cashflow requirements under the second condition. The third condition is necessary for startup of the phase 2 works; the fourth bolsters program incentives for proceeding with the sewage treatment plant.
- 3.18 Evaluation plan. After securing the Bank's no objection, AAP would retain an internationally reputed technical/financial audit firm to produce a report on compliance with the above-listed requirements. AAP and the Bank will examine the report at the mid-term review meeting. Among the information and reports that will be reviewed to assess compliance with the first two conditions are AAP's audited financial statements, the external auditor's semiannual reports on adherence to the performance plan, AAP financial projections, and an analysis of planned tariffs pursuant to legislation issued to that end by the regulatory agency. Fulfillment of the last three conditions will be assessed by way of a technical review by the auditors of the bid documents, designs, and associated documents.

### C. Investment timetable

- 3.19 In keeping with the assessment of AAP's financial strength and the grouping done of program capital outlays, a five-year implementation period is being proposed for phase 1 and a three-year completion time for phase 2. Phase 2 would start at the beginning of the fourth year of phase 1. This makes for an implementation period for the program as a whole of six calendar years, as shown in the following table.

**Investment timetable**  
(US\$000)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
IDB/OC	4,385	14,304	9,835	5,807	4,269		38,600
Local (a)	9,036	6,745	5,229	1,772	3,218		26,000
Total Phase I	13,421	21,049	15,064	7,579	7,487		64,600
Percentages phase I	20.8	32.6	23.3	11.7	11.6	0.0	100.0
IDB/OC				5,648	11,121	6,231	23,000
Local				4,363	6,501	4,436	15,300
Total Phase II				10,011	17,662	10,667	38,300
Percentages Phase II				26.1	46.0	27.9	100.0
			Phase I				
					Phase II		

(a) Includes US\$4.8 million in prior expenditures recognized.

### D. Tendering procedures and timetable

- 3.20 Goods and services will be procured following Bank procedures. Tender calls for construction work and/or goods have been grouped into packages by phase; firms may bid on one or more packages. International competitive bidding will be mandatory for contracts for goods and related services worth over US\$350,000 and construction contracts of over US\$5 million. These thresholds are warranted because in similar projects in Colombia foreign firms tend to bid when the amounts are above those figures. There will be no prequalification process for construction firms wishing to bid on the program since none of the contracts to be tendered are for large amounts and the construction work is fairly straightforward. Before contracting with firms for construction work, AAP must demonstrate to the Bank that the environmental requirements and standards recommended in the environmental impact assessments and approved by the Bank have been included in the tender conditions and specifications. The procurement timetable is in Annex III-1.
- 3.21 One exception to the above-described approach and to the Bank's tendering procedures would be the direct hiring of the Colombian NGO Minuto de Dios to

carry out the phase 1 final resettlement plan. A careful assessment during preparation of the program showed that the success of this plan will hinge on the selected entity's experience in resettlement operations and close follow-up of affected residents. According to this same assessment, Minuto de Dios is the only agency with a successful track record in these two areas at the local, national, and international level, including projects with the Bank, which had very good outcomes. No other Colombian or international firm was found to match this NGO's experience and expertise in resettlement operations and follow-up of the affected communities; this would warrant a waiver of procurement procedures requiring open competition. The cost of this component, without land and the infrastructure in phase 1, is US\$2.3 million.

- 3.22 A second exception – this time to the current policy on evaluation and the hiring of consulting firms solely on the basis of quality – will be the hiring, based on quality and price, of the consulting firm that will be drawing up the bid documents to hire the operating company for the DIAGE plan (paragraphs 3.2 and 3.24). The cost of the consulting services is the equivalent of US\$170,000 and the weighting factor is limited to 30%. The basic principle of the importance of quality in the selection of consulting firms is thereby maintained. The five firms that have submitted proposals can compete on a level playing field.

#### **E. Recognition of prior expenditures and retroactive financing**

- 3.23 AAP has asked the Bank to recognize, against the program's local counterpart, up to US\$4,858,000 for the expenditures summarized in the following table, incurred since March 1998, to commission studies and pay for works that are part of the program.

No.	Component	US\$000
<b>1.</b>	<b>Engineering and administration</b>	<b>1,569.1</b>
	Studies and designs	1,038.1
	Works supervision	531.0
<b>2.</b>	<b>Direct costs</b>	<b>3,288.9</b>
<b>2.2</b>	<b>Waterworks</b>	<b>2,732.5</b>
	Unaccounted-for water and tanks	1,267.3
	Express lines and water-line rehabilitation	1,465.2
	<b>Sewers</b>	<b>556.4</b>
	Channeling and interceptors	9.2
	Replacement of collectors and sewer-line rehabilitation	547.2
	<b>TOTAL</b>	<b>4,858.0</b>

- 3.24 The Country Office and project team reviewed all the outlays and found that the underlying contracts adhered to Bank rules and procedures. It therefore is

recommended that the loan contract permit US\$4,858,000 in expenditures to be recognized against the counterpart. It is further recommended that provision be made for US\$170,000 in retroactive financing, pertaining to the cost of hiring the consulting firm that is to produce bid documents to hire an operating company for the DIAGE plan.

**F. Infrastructure operation and maintenance**

- 3.25 AAP will operate and maintain the utility plant set in place by the program, through its production department and its water and sewer system department. These departments are technically equipped to perform this work and will be strengthened under the DIAGE arrangement.
- 3.26 In the first quarter of each year for 10 years, starting the year after completion and commissioning of the works, AAP will provide the Bank with an operating and maintenance plan for the works, including a report on those activities the previous year and on the state of repair of the systems.

**G. Environmental and social considerations**

- 3.27 Environmental considerations have been factored into this project at every stage in its preparation, as an integral part of the operation. Environmental impact assessments (EIAs) and social impact evaluations were done. With due regard to the EIA recommendations a preliminary resettlement plan and then a final plan were devised for the relocation of affected families. The design of some components was adjusted in light of the EIA, and an environmental management plan was developed.
- 3.28 A consultation and participatory process was conducted throughout the preparation stage of the program, identifying stakeholders and directly consulting interest groups, conducting surveys, and visiting communities that stand to be affected. Larger-scale public meetings were held on March 14 and May 30, 1997. On February 24, 1998, AAP held a seminar to present and discuss the final EIA findings; it was attended by NGOs, public agencies, and professional groups. The EIA was released to the public in February 1998. As the resettlement plans were put together there were continual consultations with affected communities, a socioeconomic census, and continuing work with assistance from sociologists and the NGO Minuto de Dios, an agency with a solid track record in resettlement programs in this part of Colombia.
- 3.29 Most of the adverse environmental effects are localized and transitional, occurring during construction. The most important have to do with the concentration of raw sewage until the sewage treatment plants come on stream. An analysis of the effect of deferring construction of program works until those plants are built showed the difference to be very modest, given the rivers' self-purification capability and the

fact that no significant use is made of their water before their estuaries. As for the program's social impact, the heaviest direct effect will be the resettlement of 137 families during phase 1 and an estimated 150 families more in phase 2. In each case measures have been planned to ease these impacts, along with a resettlement component for affected residents. The final resettlement plan satisfies the requirements in all the Bank's guidelines and Operations Policy 105 of May 1998. In its annual submissions AAP is to report on compliance with the environmental management plan and follow-up actions with resettled families, and any adjustments made.

- 3.30 The program's chief environmental benefits take the form of improvements in water delivery, cleanup of creeks and rivers running through built-up areas of Pereira, flood control in El Oso and La Dulcera creeks, and better management of the Otún and Consota river watersheds.
- 3.31 By virtue of the target sector (water and sanitation) the proposed operation qualifies as promoting social equity, as described in the key objectives for Bank activities set out in the Report on the Eighth General Increase in Resources (document AB-1704).

#### **H. External audits**

- 3.32 Audited financial statements of the program and of AAP are to be submitted each year in accordance with Bank requirements. This condition will be in effect: (i) for the program's statements, until its completion, and (ii) for AAP's statements, throughout the program and for five years following its completion.

#### **I. Natural disasters**

- 3.33 The project zone is prone to earthquakes and moderate to heavy rain events that have caused flooding in the past. Channeling work on the main city creeks is designed to halt such flooding. All the construction designs meet seismic-code specifications.
- 3.34 On January 25, 1999, Colombia's coffee belt was shaken by a powerful earthquake measuring 6 on the Richter scale. The city of Pereira sustained damage to utility plant, homes, and buildings. The National Disaster Prevention and Aid System immediately organized an emergency response. In the aftermath of the quake the Colombian government set up the Coffee Belt Reconstruction Fund to head up the reconstruction effort. The Bank is providing financing for those activities through a US\$20 million loan, already approved, and by redirecting funds from some active loans.

**J. Ex post evaluation**

- 3.35 AAP has decided not to conduct an ex post evaluation, and the project team leader concurs that such an evaluation is not necessary. The corporation's attainment of agreed targets and other requirements will be assessed by way of evaluations of its operating and financial ratios.

#### **IV. THE BORROWER AND EXECUTING AGENCY**

- 4.1 The borrower and executing agency will be Empresa de Acueducto y Alcantarillado de Pereira S.A. E.S.P., which for corporate-image purposes has styled itself Aguas y Aguas de Pereira (AAP). With regard to the guarantee, and as an exception to the Bank's policy in this area, the Colombian government will guarantee payment of the loan, including interest and credit fees, while the Municipality of Pereira will guarantee the local counterpart and, within its area of competence, the measures necessary to fulfill the objectives of the financing. The sovereign guarantee limitation is recommended taking into account the Municipality's jurisdiction over and legal and financial responsibility for service delivery in Pereira (paragraph 1.3), its current ownership share in the company (paragraph 4.2), and the influence of the mayor on the company's policies, on the basis of his capacity as chairman of its Board of Directors (paragraph 4.3).<sup>1</sup>

##### **A. Aguas y Aguas de Pereira (AAP)**

###### **1. Legal form and institutional features**

- 4.2 AAP is a publicly owned municipal utility organized as a corporation, with authorized capital of 10.72 billion pesos, of which 5.36 billion pesos has been subscribed. The Municipality of Pereira owns 95% of the company; four municipally owned local agencies each have a 1.25% interest. The corporation adopted a public-ownership configuration (no private-sector involvement) as a first step toward the corporate form mandated by the City Council, i.e., a semipublic corporation in which private shareholders would hold an 11% stake. This percentage is the minimum required for the AAP to be legally considered a semipublic corporation. Labor matters in mixed corporations, in contrast to their wholly publicly owned counterparts, are governed by the private-sector Labor Code. Pursuant to the performance plan devised, in June 2001 the corporation is to present a plan for its changeover to mixed-corporation form by December 2002, pursuant to the City Council order. The transition has been timed taking into account the planned starting date of the operating company under the DIAGE arrangement, so that company can assist AAP with the changeover and with the evaluation of the increase in the percentage of private ownership.
- 4.3 The corporation's highest authorities are its meeting of shareholders and the 10-member Board of Directors, both chaired by the mayor of Pereira. All the members of the Board of Directors –with the exception of the mayor and the

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<sup>1</sup> The Management of the Bank is preparing a new policy on sovereign guarantees, which would be required for loans to subnational governments and their decentralized agencies. This policy would allow guarantee arrangements similar to those presented in this loan proposal.



representative of the company's labor union— come from civil society. The general manager, appointed by the Board of Directors, is in charge of the corporation's management and is its legal representative.

## **2. Assessment of the corporation's organization and structure**

- 4.4 AAP is still in transition, and will need to review and consolidate its structure and management organization. An assessment of its current status in this regard follows. Solutions that have been worked out to address weak points and, where applicable, the effect these could have on the proposed program's implementation, are outlined in the next section.
- 4.5 Water and sanitation services and their users. There are about 83,400 registered users of the city's water system, 90% of them dwelling units and the other 10% commercial, industrial, and government customers. The preliminary findings of a census AAP is conducting suggest there may be at least 3,000 illegal connections. About 79,000 customers are registered for sewer service, 90% of them residential.
- 4.6 Structure. During the breakup process of the former Empresas Públicas de Pereira (EEPP) the consulting firm devised out a process-based basic organization. Among other elements this addressed: (i) functions and responsibilities by area; (ii) staffing by organization unit; and (iii) position profiles.
- 4.7 All the core functions necessary to run a water and sewer utility are present – operation, maintenance, planning, administration, and finance. However, the organizational scheme adopted has some limitations. For one thing, the structure is firmly horizontal, with all 11 of the larger organization units coming under the general manager. And, as an assessment of functions by area shows, there is still a need to define processes and better assign responsibilities, to do away with overlaps in functions and responsibilities between some units.
- 4.8 Staff and labor matters. After the voluntary retirement plan offered in 1997 and 1998, under which 48 employees left the company, the corporation has 369 people on staff. There also are 15 employees hired on service contracts, bringing the total to 384, for a ratio of 4.4 employees per 1,000 customers. In principle this ratio is acceptable for a water and sanitation utility, but the fact that AAP subcontracts much of its commercial and financial operations to the multiservice company points to the need for further efforts to optimize its permanent staffing table.
- 4.9 The companies created out of the now-defunct EEPP inherited the employee benefit conditions enshrined in past collective agreements. Moreover, in September 1997 all the companies together signed a new collective agreement with the Union of Public Utility Employees for 1998-2000. The benefit factor for the new corporations' employees is among the country's highest: estimated at 3.20, it may be even higher. In bonuses alone employees receive more than 100 days' wages a

year. This points up the need for incentive programs to achieve greater productivity and efficiency.

- 4.10 Financial and commercial management. The functional and organizational weaknesses in these AAP areas are a product of the breakup of the former utility company.
- 4.11 The City Council resolution authorizing the creation of the four new operating companies prompted the creation of a fifth, "multiservice" company to expedite the split-up of the others. Its mandate was to deliver common services having to do with commercial, financial, and information systems management and maintenance. The multiservice company was set up with staff and support systems from the former EEPP. The Council resolution did not specify a termination date for this company's services, but agreements between the company and the four operating companies specified that its costs were to be prorated among those four companies, that its costs were to be in line with market efficiency prices, and that the operating companies were free to seek alternatives. AAP's current contract with the multiservice company expires at the end of December 1999.
- 4.12 The functions of the multiservice company as regards AAP are the following, at a cost of some US\$1 million a year: in the commercial area: meter reading, warnings, complaints, customer roll, customer service; in the finance area, revenue intake and collection, development and maintenance of financial and payroll systems. It also handles information systems relating to inventories and stores.
- 4.13 Among the problems observed in the current arrangement are the following:
  - (i) there is no performance tracking system in place to assess the multiservice company's work; (ii) since the information the multiservice company produces feeds into both AAP's accounting and commercial systems, there is no internal system of checks and balances, as is standard between those two functions;
  - (iii) responses to customer queries are taking too long; (iv) there are problems in keeping up the customer roster because this key (for AAP) task is handled by the multiservice company, making it difficult to bring unregistered users onto the rolls;
  - (v) there is little interface in the AAP between accounting, budgeting, and cash management systems; and (vi) the present arrangement has done nothing to foster development of financial and commercial management capacity within AAP.
- 4.14 These constraints, it should be emphasized, have to do with the organization of systems and functions in these areas, and not with any shortage of human resources. AAP has qualified employees, particularly at the supervisory level, in the commercial, accounting, budget, and cash management areas.
- 4.15 Internal audit. One fixture of AAP's meeting of shareholders is a statutory audit function, for which it has engaged a firm of external auditors, which performs that same function for the other four companies. By law, the statutory auditor is akin to

the State's representative in a corporation, with the obligation to audit its financial statements and ensure that the company adheres to the Commercial Code and carries out orders of the board of directors. This being the case, statutory auditors only peripherally perform an internal audit function and thus cannot replace that function.

- 4.16 Given the transition process that AAP is undergoing, its relations with the multiservice company and, above all, the relative magnitude of the proposed program, it would be advisable to bolster AAP's internal controls by establishing an internal audit office. As a condition precedent to the first disbursement, AAP is to provide the Bank with an organization plan for an internal audit office and a timetable for its implementation, showing the office's location on the organization chart, functions, and resources assigned to it. The office must begin operating within 18 months after signature of the loan contract.
- 4.17 Technical areas. For the most part, these AAP areas (production, distribution, unaccounted-for water) are the best organized. As for project development and execution, the Special Projects Unit produces feasibility studies for projects that then are implemented by executing units, assisted by private works-supervision firms.
- 4.18 To sum up: AAP's current weak points are typical of a corporation in transition. Most of them lie in the commercial, finance, and planning areas, though there also are problems in process organization and structure. The remedial actions devised are described in the next section.

### **3. Organizational improvements in the short and medium term**

- 4.19 Short term. While waiting for the DIAGE arrangement to become operational, AAP will rewrite the contract with the multiservice company effective in 2000, turning it into a commercial contract with quality and efficiency benchmarks, monitoring and control mechanisms, comprehensive contract audits, including reporting and information systems, unilateral termination clauses, fines for nonperformance, and guarantees.
- 4.20 AAP will continue to update its customer roster and devise a preliminary organization for a customer service center. Its special focus will be to register users who are illegally connected to the system; progress made in this respect will be one of the performance-plan benchmarks. In addition, by late 1999 AAP is to develop a cost accounting system so it can ascertain and assess process costs of water volumes produced and billed. This information will be included in annual reports submitted to the Bank.
- 4.21 Medium term. It is expected that the greatest advances in consolidating AAP's structure and modernizing its management will come out of the DIAGE

arrangement described earlier in this proposal. The operating company in charge of the DIAGE is to develop a sound structure, personnel, and operating, financial, and commercial systems to optimize the corporation's management. To supplement that system the program includes US\$1.5 million in funding to continue the downsizing program begun by AAP.

- 4.22 For the proposed program: The following mechanisms will expedite the program's implementation and strengthen internal controls: (i) a professional accountant will be hired in the finance department to manage the program's accounting function. That department's staff are equipped to develop and maintain the requisite project accounting system. Hiring of this staff for the program will be a condition precedent to the first disbursement; (ii) organization of the internal audit office; and (iii) hiring of works-supervision firms to assist the executing unit throughout the program.

#### 4. Rates

- 4.23 Tariff structures and rates are set following regulations issued by the Water Regulation Board, which has mandated a phased increase to reach target rates by 2001 (see paragraphs 1.6-1.8). Pereira water and sewer rate schedules were set by reference to those regulations for the first time in September 1996, with gradual monthly increments thereafter. In September 1997 AAP accelerated its move toward some of the target tariffs for the upper three customer classes. In addition to the target-tied increases AAP raises rates monthly to adjust for inflation.
- 4.24 The following table shows average tariff changes since 1995, in constant 1995 dollars.

AVERAGE TARIFF INCREASE					
	1995	1996	1997	1998	Feb/1998
Average water rate	0.08	0.10	0.18	0.21	0.22
Increments base year 95	100.00	124.19	214.24	252.47	267.40
Average sewer rate	0.07	0.08	0.11	0.17	0.18
Increments base year 95	100.00	117.49	152.26	244.16	257.65

- 4.25 Measured in constant 1995 dollars, Pereira water rates rose 167% between 1995 and February 1999 and sewer rates increased by 157%, reflecting real increments from 1996 onward. According to the tariff transition approved by AAP's board of directors and pursuant to Water Regulation Board (CRA) regulations, target tariffs for year-end 2001, in constant dollars per cubic meter, are US\$0.32 for water and US\$0.26 for sewer service. To judge from the increases posted in recent years,

those targets should be attainable. Nevertheless, to ensure that the target tariff is achieved and maintained, AAP will take appropriate steps to ensure timely implementation of the CRA-approved water and sewer tariffs for 1997-2001 and to adjust rates in real terms and for inflation. Likewise, for subsequent years, AAP will ensure that the tariff is revised and implemented pursuant to Law 142/94 and CRA regulations. To that end, AAP will submit to the Bank, with its financial statements, an annual report showing tariff adjustments the previous year.

## **5. Financial performance**

- 4.26 In its first full year of operations running from January 1 to December 31, 1998, AAP posted an operating surplus of US\$800,000 equivalent, compared to a 1997 loss of US\$2.9 million equivalent. This improvement can be traced mainly to the elimination of expenditures for administrative staff of the former EEPP (US\$3.7 million), which in the previous organization was charged against utility revenues, and the September 1997 acceleration of the tariff transition. AAP's 1998 rate revenues covered 100% of its operating costs and depreciation. However, with a cashflow from operations of US\$3.3 million equivalent it was able to cover only about 67% of its debt service for the year. This year, the corporation restructured about US\$4.1 million in debt, securing better terms. Capital expenditures for the year worth US\$5 million equivalent were defrayed through borrowings, the bulk of them from FINDETER (Regional Development Finance Corporation).

## **V. PROGRAM VIABILITY AND RISKS**

### **A. Technical viability**

- 5.1 The program is considered to be technically viable. There are solid grounds for this assessment:
- a. Final engineering designs for phase 1 works are 95% complete; those for phase 2 are 70% complete. This means that costs can be calculated and bidding documents and specifications can be drawn up.
  - b. Cost calculations are based on real unit costs in the international and local market, with reasonable allowances for contingencies and escalation.
  - c. The completion schedule takes due account of the time required for each planned activity. The proposed five-year disbursement period for phase 1 thus is realistic and workable, as is the three-year period for phase 2.
  - d. The engineering work planned is reasonably straightforward and the executing agency has experience with similar works projects.
  - e. AAP is now operating and maintaining the water and sewer systems and will continue to do so. It has adequate experience in this area.

### **B. Institutional viability**

- 5.2 On the institutional side, in keeping with Colombia's regulatory system, the program seeks to support AAP as it consolidates itself as a corporation with a solid business base. To do this it will need to remedy certain shortcomings in its systems and in the management of key functions, tackling that task as a comprehensive effort rather than focusing on discrete areas, an approach that is unlikely to achieve the desired results, to judge from experiences elsewhere.
- 5.3 For this reason, the program has adopted a management-contract approach (the DIAGE arrangement) whereby an operating company with a proven track record in the sector will provide coordinated and integrated support to AAP for every facet of its management. An important adjunct will be a set of ratios and benchmarks to track the progress achieved; these in turn will be tied to a reward/penalty system for the operating company and to Bank authorization to the AAP to commit the loan proceeds.
- 5.4 Most of the construction work will be contracted out to private firms, so capacity requirements in this area have to do with supervising contractors and coordinating

their work. The program would strengthen this capacity through the planned organization of the executing unit with consultants to help with works supervision.

**C. Financial viability**

**1. AAP financial projections**

- 5.5 Projections run for the period 1999-2008 assumed a 2.8% annual increase in residential customers, consistent with municipal and national government population-growth forecasts for this region. Added to this increase, as a conservative estimate, were about 1,800 currently unregistered users who would be added to the rolls. Natural growth of 1.8% was projected for other customer classes. It was assumed that consumption figures would hold steady. Revenues were estimated by reference to the tariff system mandated by the Water Regulation Board; cost forecasts, other than for payroll, used standard unit activity costs based on the methodology – technical or accounting estimates – that best reflected efficiency costs. It was assumed that unaccounted-for water would drop from 46% of total production in 1997 to 30% in 2003.
- 5.6 Even though a downsizing program is in the works, AAP's current payroll was used for the estimates. To be conservative, the cost of the multiservice company was included at a real amount equivalent to the present cost. Only works planned under the IDB program (US\$103.3 million) were taken into account.
- 5.7 According to earnings projections using the above-listed assumptions, AAP's rate revenues will be sufficient, every year, to defray its running costs, including operating, maintenance, and administrative costs and depreciation. Cashflow projections indicate that the corporation will generate enough cash to service its debt, contribute 33%, on average, toward its overall capital spending plan throughout the two phases (1999-2004), and end the year 2004 with about US\$8 million on hand.
- 5.8 Given AAP's anticipated cash availabilities and the need for fiscal discipline in a new corporation, particularly in its early years, a condition of the proposed loan is that AAP would have to consult the Bank in advance before making, during phase 1, additional capital investments – with internally generated resources or loans – not provided for in the performance plan (PP) in excess of US\$800,000 annually. That figure can be revised at the scheduled annual meetings with the Bank. Another PP condition will forbid the transfer, during phase 1, of all or part of operating surpluses to AAP shareholders, though such surpluses may be used to capitalize the corporation, for instance by reducing short-term debt carrying high interest rates.

## **2. Viability of municipal and national counterpart contributions**

- 5.9 Included in the US\$26 million counterpart funding for phase 1 will be contributions from the Municipality (US\$6.2 million equivalent) and the Republic of Colombia (US\$5.6 million equivalent), to be provided through budget allocations over four years (municipal portion) and three years (national portion).
- 5.10 According to municipal budget forecasts for 1999-2003, the Municipality will have a cumulative cash surplus of US\$3.6 million equivalent in 2003. Not counted in that figure is the eventual sale (now being arranged) of 62% of the stock of the telephone carrier to the private sector; at a conservative estimate, that operation would boost the 2003 cumulative surplus to about US\$123 million. The proceeds of the sale are to be used, according to municipal plans, for social-sector investments in Pereira, but given the magnitude of the surplus before and after the telephone-company sale and the importance the Municipality is according the project, the municipal contribution to the IDB program should be feasible. As for the national counterpart, funds for year 1 have already been committed, and the national and municipal governments are drafting an agreement that will include the issuing of a future appropriations certification to assure that counterpart funds are forthcoming in the other two years. Inasmuch as this certification is a firm commitment on the part of the government to allocate resources in future budgets, the national counterpart contribution will be viable.

### **D. Environmental and social viability**

- 5.11 Mitigation measures have been planned to control any temporary adverse effects on the environment during construction and to make certain that the final resettlement plan agreed upon with the affected communities and the agencies in charge conforms to Bank policy. The budgets and timetables worked out assure that construction and other program actions will be carried through effectively and on schedule. The program will improve the environment and thereby benefit city residents, since good water quality and reliable service will mean better health and hygiene.
- 5.12 Studies to encourage private firms to build and operate a first sewage treatment plant (paragraph 2.14) are an integral part of the program. Satisfactory progress on these studies will be a prerequisite for use of the loan proceeds for the third package of construction projects (paragraph 3.10). In addition to cleaning up rivers near built-up areas in Pereira, some interceptor and collector sewers will be constructed to hook up eventually to the sewage plant's final outfall. An analysis done to ascertain the effect of deferring that work until the treatment facility is built showed a very modest impact, since the rivers purify themselves and no significant use is made of their water before their estuaries.



## E. Economic viability

- 5.13 For the economic appraisal, waterworks projects were grouped according to the type of benefits they will yield: an increase in water available to residents or better resource allocation. Three subcomponents were identified: unaccounted-for water, storage tank construction, and express lines. The SIMOP (Public Works Simulation) model used to evaluate the subcomponents simulates the behavior of water production, distribution, and consumption in a public system, calculating benefits ensuing from an increase in the consumer surplus following each project's completion. Sewer projects were likewise grouped, resulting in two subcomponents: creek cleanup and river cleanup. Benefits for those components were calculated using data on residents' willingness to pay for sewer service, gathered in two surveys in Pereira.

### 1. Cost-benefit analysis

- 5.14 The following table presents the consolidated findings of the cost-benefit analysis of the water and sewerage components in phases 1 and 2 of the program.

<b>Cost-benefit analysis – Consolidated cost</b>				
<b>Component</b>	<b>Investment (US\$000)</b>	<b>NPV (millions of pesos)</b>	<b>Benefits (millions of pesos)</b>	<b>EIRR (%)</b>
<b>PHASE 1</b>				
Unaccounted-for water	5,501	3,894	21,367	15%
Storage tanks	2,005	13,900	17,732	31%
Express lines	1,132	1,864	3,083	20%
Sewer-line rehabilitation	2,429	665	3,068	16%
Replacement of collectors	3,064	1,660	6,499	17%
Cleanup of creeks	8,845	16,809	48,263	47%
<b>PHASE 2</b>				
Cleanup of rivers	14,094	3,704	45,023	63%
<b>TOTAL</b>	<b>37,610</b>	<b>40,171</b>	<b>135,468</b>	<b>40%</b>

NPV: net present value

EIRR: economic internal rate of return

- 5.15 According to an analysis of net present value sensitivity to changes in key variables in the waterworks projects, the most sensitive variables are demand elasticity and demand growth rate. But it would take more than a 30% change in price elasticity and a 10% or more change in consumption growth rate to take the rate of return for the unaccounted-for water component below the required 12%. The express-line component would need to see more than a 20% change in demand growth rate before its return became unacceptable. To assess risks under uncertainty in the creek and river cleanup components, a sensitivity analysis was run looking at

willingness to pay, operating and maintenance costs, and growth in customer base. The return on this component was found to be sensitive to changes in willingness to pay and in the rate of growth of the roll of bill-paying customers. Here too, there would need to be over a 30% change in these parameters for the components not to be viable.

**F. Risks**

- 5.16 Risk: Lack of interest of operating companies in the management contract (DIAGE scheme) or high bids because of perceived risks. Mitigating provision: To judge from recent Bank operations, there is a desire to write up bid conditions carefully and accurately, including Bank involvement in funding the fixed-remuneration component of the contract and the contract term. This experience will be drawn on in preparing tender documents for AAP.
- 5.17 Risk: Failure to bring in real rate increases according to the plan agreed on through 2001. Mitigating provisions: the contract will require a demonstration that rates have been raised in real terms pursuant to current laws and regulations.
- 5.18 Risk: Indefinite postponement of construction of the sewage treatment plant. Mitigating provisions: (i) a penalty will be assessed on violative polluters, making it expensive to defer the plant's construction indefinitely; in the case of Pereira, there is a grace period of about four years for this fine; (ii) the aim of the BOT studies included in the program is to come up with a viable technical and economic alternative to tender out construction of this plant to the private sector.

**PEREIRA POTABLE WATER AND SANITATION PROGRAM  
(CO-0182)  
Logical Framework**

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b>Objective 1:</b> Improve the quality of life of residents in the city of Pereira.</p>	<p>Increase in recreational use of Otún and Consota Rivers. Decline in waterborne diseases.</p>	<p>Direct surveys.  Health statistics.</p>	
<p><b>Objective 2:</b> Provide high-quality water and sanitation services efficiently, under operationally and financially sustainable institutional setup.</p>	<p>Decline in customer complaints.  An end, in the project area, to flooding and direct discharges of sewage in creeks and rivers running through the city.</p>	<p>Commercial-area reports. Inspections of current problem areas.</p>	<p>National and Pereira municipal governments support the project.</p>
<b>PHASE 1 (2000-2004)</b>			
<p><b>Objective 3:</b> Institute within AAP an operationally and financially sustainable institutional setup and improve health and environmental conditions in Pereira.</p>	<p>Cashflow sufficient to help fund water and sewer service expansion plans.  An end, in the project area, to flooding and direct discharges of sewage in city creeks.</p>	<p>Audited financial statements.  Inspections of current problem areas.</p>	<p>National and Pereira municipal government support the project.</p>
<p><b>Component 1:</b> Establish an operating firm with a solid track record in the water supply sector has been hired to improve AAP's management efficiency.</p>	<p>(i) Management contract awarded. (ii) Implementation of efficient commercial, financial, planning systems by 2003. (iii) Lowering of ratio of operating expenses (not incl. depreciation) to operating revenues from 85% in 1998 to 61% in 2003. (iv) Increase in annual internal cash generation such that, as from 2003, AAP can service its debt and fund at least 23% of annual capital outlays included in</p>	<p>(i) Submittal of signed contract to the Bank. (ii) through (v) Semi-annual accounting/audit firm reports.</p>	<p>Studies for tender documents have been commissioned. There are operating firms interested. Financing for the fixed portion of the contract is assured. Municipality and central government support decision to entrust management to the</p>

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	the investment plan for this program. (v) More efficient revenue collection, raising annual billings/collections ratio from 80% in 1998 to 95% in 2003.		private sector.
Conditions are in place to enable treatment plants to be built under a BOT contract format.	BOT contract awarded before 2004.	Submittal of the signed contract to the Bank.	Technical, economic, financial and environmental feasibility studies are confirmed. There are operating and construction firms interested. Support from Municipality, Risaralda Regional Corporation, and central government if it becomes necessary to subsidize low-income customers.
Water-system reliability, pressure, and conveyance problems have been resolved, enabling the system to achieve high service levels.	(i) Unaccounted-for water reduced from current 36% to 30% by year-end 2003. (ii) Water service reliability level held at 97% from 1999 onward. (iii) Storage capacity of 13,500 m <sup>3</sup> by 2001. (iv) Pressure maintained in range 30-70 psi by 2003. (v) 95% customer metering efficiency by 2003. (vi) Increase in registered water and sewer users to 92,000.	Semiannual reports of technical audit firms.	Investment plan has been defined (technical, economic, financial, environmental elements). Financing and local counterpart are assured.
More low-income communities have city water.	Hookup of some 1,500 low-income households in southwest Pereira to the city water system.	AAP's commercial records	Idem
Problems of frequent flooding and poor sanitation in city creeks have been resolved.	Elimination of five critical flooding points along El Oso Creek as of 2003. An end to the discharge of 7.7 tons/day of BOD in city creeks as of 2003.	Inspections of critical points. Physical/chemical analysis of creeks; flow measurement	Idem

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b>PRODUCTIVITY</b></p> <p>For sustainability of AAP:</p> <p>Hiring of corporate development firm.</p> <p>Increase in productivity.</p> <p>Hiring of technical and financial consultants to produce feasibility studies and tender documents for BOT contract for AAP's first sewage treatment plant.</p>	<p>Contract, US\$3.2 million.</p> <p>Voluntary retirement plan, US\$1.5 million.</p> <p>Consulting contract, US\$700,000.</p>	<p>Budget expended.</p>	<p>Tendering processes are conducted in timely and satisfactory manner.</p> <p>Counterpart funds are furnished as agreed.</p>
<p>Quality and efficiency improvements:</p> <p>Installation of system meters in four treatment plants, six distribution tanks, in water mains. Installation of 110,000 customer meters and 730 meters for commercial customers.</p> <p>Construction of five distribution tanks, 13,500 m<sup>3</sup> total capacity.</p> <p>Construction of 10.9 km of conveyance mains.</p> <p>Construction of 19 km of distribution lines.</p>	<p>System meters contract, US\$370,000.</p> <p>Customer meters contract, US\$4.6 million.</p> <p>Contract, US\$3.1 million.</p> <p>Contract, US\$1.6 million.</p> <p>Contract, US\$2.2 million.</p>	<p>Budget expended.</p>	<p>Tendering processes are conducted in timely and satisfactory manner.</p> <p>Counterpart funds are furnished as agreed.</p>

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Cleanup of creeks: Construction of 17 km of relief sewers (10 km on Otún River, 7 km on Consota River). Building of 155 structures to separate sewage from stormwater. Commissioning of watershed management plan and environmental outlays. Resettlement of families affected by the project.	Contract, US\$5.11 million.   Contracts, US\$2 million.   Contract, US\$3.7 million.	Budget expended	Tendering processes are conducted in timely and satisfactory manner.   Counterpart funds are furnished as agreed.
<b>PHASE 2 (2003-2005)</b>			
<b>POSE:</b> Improve health and environmental conditions along Otún and Consota S.	An end to direct discharges of sewage into rivers running through the city.	Inspections of current problem areas.	National and Pereira municipal government support the project.
<b>COMES:</b> The problem of diminished conveyance of creeks owing to unstable banks has been resolved.	No landslides along La Dulcera Creek as from 2005.	Inspections of the creek.	Final design has been devised (technical, economic, financial, environmental elements).  Financing and local counterpart are assured.
Problems associated with unhealthy conditions along the banks of rivers crossing the city have been resolved.	An end to discharges of 16 tons/day of BOD in rivers running through the city, as of 2005.	Physical/chemical analysis of creeks; flow measurement.	Idem

EFFECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
IVITIES			
<p>Cleanup of rivers:</p> <p>Construction of 28.4 km of interceptor sewers.</p> <p>Construction of 1.1 km of intercepting open channel in El Oso Creek.</p> <p>Construction of protective structures in creeks where interceptors will be built.</p> <p>Commissioning of watershed management plan and environmental outlays.</p> <p>Resettlement of affected families.</p>	<p>Contract, US\$4.48 million.</p> <p>Contract, US\$3.09 million.</p> <p>Contract, US\$456,000.</p> <p>Contract, US\$720,000.</p> <p>Contract, US\$950,000.</p>	<p>Budget expended.</p>	<p>Tendering processes are conducted in timely and satisfactory manner.</p> <p>Counterpart funds are furnished as agreed.</p>

**PEREIRA POTABLE WATER AND SANITATION PROGRAM  
(CO-0182)**

**Procurement Timetable  
Phase 1**

V M	DESCRIPTION	TYPE OF TENDER	PUBLICATION DATE (month/year)	DIRECT COST (U.S. dollars)	FINANCING (U.S.)	
					IDB	I
DUP 1						
	Supply of customer meters group 1 for unaccounted-for water program & pipes, valves, fittings. Rehabilitation of waterworks, groups 2 & 3	International	Sept. 1999	1,437,686	1,096,086	
	Customer meter installation group 1, unaccounted-for water program. Civil works/rehabilitation of waterworks lines, groups 2 & 3	Local	Sept. 1999	795,209	676,809	
	Goods and construction work, stretch III. El Oso Creek channeling	Local	Sept. 1999	1,135,926	1,135,926	
	Supply of sewer pipes. Construction work to rehabilitate group 2 & 3 lines; relief sewers and supply and installation of interceptor sewers along creeks – group A	International	Sept. 1999	8,354,382	3,769,328	4.5
	Supply and installation of metal tank	Local	Jan. 2000	2,003,212	1,502,409	5
DUP 2						
	Supply of customer meters, group 2, source/system meters, valves – unaccounted-for water program. Pipes, valves, fittings-express lines, rehabilitation group 1	International	Feb. 2000	4,724,116	4,521,868	2
	Customer meter installation group 2, source/system meters, valves. Construction to implement unaccounted-for water program, express lines, rehabilitation	Local	March 2000	2,012,530	1,868,181	1



**PEREIRA POTABLE WATER AND SANITATION PROGRAM  
(CO-0182)**

**Procurement Timetable  
Phase 1**

Y M	DESCRIPTION	TYPE OF TENDER	PUBLICATION DATE (month/year)	DIRECT COST (U.S. dollars)	FINANCING (U.S. dollars)	
					IDB	IFC
GROUP 3						
	Supply and construction, stretches IV-XII El Oso Creek channeling	Local	April 2000	2,830,111	2,830,111	
	Supply and installation of sewer pipes for creek interceptor sewers	Local	Sept. 2000	2,748,880	1,571,482	1,177,398
CONSULTING CONTRACTS						
	Management support	International	April 2000	3,600,000	3,600,000	
	Group 1 works supervision	Local	Sept. 1999	1,412,688	0	1,412,688
	Group 2 works supervision	Local	Feb. 2000	673,665	0	673,665
	Group 3 works supervision	Local	April 2000	557,899	0	557,899

**PEREIRA POTABLE WATER AND SANITATION PROGRAM  
(CO-0182)**

**Procurement Timetable**

**Phase 2**

W M	DESCRIPTION	TYPE OF TENDER	PUBLICATION DATE (month/year)	DIRECT COST (U.S. dollars)	FINANCING (U.S. dollars)	
					IDB	LOCAL
DUP 1						
	Supply and installation of sewer pipes. Rehabilitation group 1 lines and San Joaquín Creek interceptor	Local	April 2002	3,775,739	2,188,282	1,587,457
DUP 2						
	Supply of sewer pipes. Construction work. La Dulcera Creek channeling	International	May 2002	8,116,467	5,275,704	2,840,763
	Supply of sewer pipes and construction work, river interceptors	International	June 2002	11,682,578	7,563,086	4,119,492
CONSULTING CONTRACTS						
	Group 1 works supervision	International	Jan. 2002	377,574	377,574	0
	Group 2 works supervision	International	March 2002	1,979,905	1,979,905	0

PROPOSED RESOLUTION

COLOMBIA. LOAN \_\_\_\_/OC-CO TO THE EMPRESA DE ACUEDUCTO  
Y ALCANTARILLADO DE PEREIRA, S.A., E.S.P.

(Pereira Potable Water and Sanitation Program)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Empresa de Acueducto y Alcantarillado de Pereira, S.A., E.S.P., as Borrower, and the Republica de Colombia, as Guarantor, for the purpose of granting the former a financing to cooperate in the execution of the First Phase of the Pereira Potable Water and Sanitation Program. Such financing will be for the amount of up to US\$38,600,000, from the Single Currency Facility of the Ordinary Capital resources of the Bank, and will be subject to the "Terms and Financial Conditions" and the "Special Contractual Conditions" indicated in the Executive Summary of the Loan Proposal contained in Document PR-\_\_\_\_\_.