

ENVIRONMENTAL MANAGEMENT OF THE MATANZA-RIACHUELO RIVER BASIN

(AR-0136)

EXECUTIVE SUMMARY

BORROWER AND GUARANTOR: The Argentine Nation

EXECUTING AGENCY: Comité Ejecutor del Plan de Gestión Ambiental y Manejo de la Cuenca Hídrica Matanza-Riachuelo (CEMR)

AMOUNT AND SOURCE: IDB (OC): US\$250 million
Local counterpart funding: US\$250 million
Total: US\$500 million

FINANCIAL TERMS AND CONDITIONS: Amortization Period: 20 years
Disbursement period: 5 years
Interest Rate: variable
Inspection and Supervision: 1 %
Credit Fee: 0.75%
Currency: US\$

OBJECTIVES: The program's objective is to improve management of the Matanza-Riachuelo Basin's natural resources through coordination of environmentally related actions.

DESCRIPTION: The program will finance the following four sub-programs: (i) industrial pollution control; (ii) flood control works; (iii) solid waste management; and (iv) urban rehabilitation.

1. Industrial pollution control (US\$51.68 million)

The sub-program will: (i) develop effluent control programs for the basin's 65 largest industries (which account for more than 80% of industrial discharges); (ii) inventory, license, and monitor 1000 industries in the basin (which represent about 10% of industrial discharges); (iii) strengthen the institutional capacity of the Province's Secretaría de Medio Ambiente and the Municipality's Sub-Secretaría de Medio Ambiente to enforce compliance with environmental legislation; (iv) finance studies to develop a private concession to construct and manage a hazardous industrial waste facility in the basin; (v) finance an early warning system for technological disasters and flooding as well as a system to measure

water quality; and (vi) clean banks and remove abandoned boats and vehicles from the river.

2. Flood control and drainage works
(US\$343.89 million)

This sub-program will finance macro drainage works including dikes and pumping stations along the Matanza-Riachuelo rivers and its tributaries and micro drainage works including pipe networks and drain inlets. The Basin's Master Plan, developed for this program, identifies 38 sub-basins where drainage is inadequate. Major works will be constructed in nine of the highest priority areas. A resettlement program will also be financed for 37 families residing where drainage works will be constructed.

3. Solid waste management (US\$4.99 million)

This sub-program will: (i) develop a management plan for domestic solid waste final disposal in the basin, (ii) convert four illegal dump sites to sanitary landfills; and (iii) and convert a fifth dump site to a public use space.

4. Urban rehabilitation (US\$18.40 million)

This sub-program will: (i) develop and implement a land use plan for the basin; (ii) develop a basin road infrastructure plan; and (iii) finance the rehabilitation of key public spaces.

EXECUTION:

Responsibility for overall coordination of the Bank financed program will rest with the CEMR. The national level Secretaría de Recursos Naturales y Ambiente Humano will continue to serve as the CEMR's Chairperson with the Ministro de Obras y Servicios Públicos of the Province of Buenos Aires and the Secretaría de Producción y Servicios of the Municipality of Buenos Aires as members. Budgetary resources for operation of the CEMR will continue to be provided by the Federal Government. The CEMR's highly trained staff of twenty one professionals will coordinate the day-to-day execution of the Program.

**THE BANK'S COUNTRY
AND SECTOR
STRATEGY:**

The program fits within the overall strategy as set forth in the Country Paper. The paper states that the Bank will support "comprehensive watershed management" as well as the "strengthening of institutions enforcing environmental regulations." By supporting the development of a permanent basin level committee and an integrated set of programs to improve the Basin's environment, the Bank is directly

supporting a comprehensive watershed management approach. Providing technical assistance to the two local entities charged with environmental pollution control directly contributes to enforcing of environmental regulations.

DATES OF ESIR AND EIA: The Environmental Management Committee classified this as a category III operation on February 21, 1995. The Environmental Impact Assessment was made available to the public on July 24, 1997. The Environmental Summary was approved by the Committee on Environmental and Social Impact (CESI) on September 19, 1997, and sent to the PIC on September 26, 1997 (see ¶ 5.5).

BENEFITS: The Program will have a significant effect on the environment for those 3 million people residing in the Basin. By providing a critical mass of drainage and flood control works, the program will largely resolve the flooding problem in the most flood prone areas greatly enhancing the quality of life of residents of these areas. Industrial effluents will be reduced with improvement in water quality, land use will be improved, real state values will increase, and key public spaces upgraded. Finally with the CEMR's broader mandate and larger staff and budget, it will continue to play an increasingly active role in coordinating inter-jurisdictional actions to manage of the basin.

RISKS: The program has two principal risks. First, the program with its four subprograms, requires strong inter-jurisdictional coordination (ie. between the Province of Buenos Aires and the Municipality of the City of Buenos Aires) to ensure that all of the activities move forward and the program's impact is maximized. This has slowed preparation of the program and will likely contribute to delays in execution. The presence of a strong CEMR to coordinate execution of the program (the CEMR's strength as demonstrated by its performance over the past year which has improved dramatically), however, should enhance the likelihood of the program's success.

A second risk has been Argentina's poor performance in Bank and other donor programs requiring enforcement of industrial pollution control legislation (see Chapter II). Linking disbursements to industrial pollution control targets as proposed would provide a strong incentive to achieve those targets although it could carry the risk of slowing the pace of execution in the event of delays in this sub-program.

SPECIAL
CONTRACTUAL
CONDITIONS:

Prior to first disbursement the contract will require the following:

Signed agreements between the program's executing agency and the co-executors establishing mechanisms for coordination and transfer of funds for future operation and maintenance of works, and for assuming obligations as outlined in the loan contract.

Other special conditions to be included in the contract are:

a. During year one of the program: evidence that agreement has been reached with the appropriate environmental authority and 15 of the major industries to control their industrial discharges. Once this target is reached 40% of loan resources can be committed for flood control and drainage works.

b. During year two of the program: evidence that agreement has been reached with the appropriate environmental authority and an additional 15 (for a total of 30) of the major industries to control their industrial discharges. Meeting this target is a condition to the next 20% of loan commitments for flood control and drainage works (for a total of 60% committed).

c. During year three of the program: evidence that agreement has been reached with the appropriate environmental authority and an additional 15 industries (for a total of 45) to control their industrial discharges. Meeting this target is a condition to the next 10% of loan commitments for flood control and drainage works (for a total of 70% committed).

d. During year four of the program: evidence that agreement has been reached with the appropriate environmental authority and the remaining 20 industries (for a total of 65) to control their industrial discharges. Meeting of this target is a condition for the remaining 30% of loan commitments for flood control and drainage works.

e. Publicity for the industrial pollution control plan: the borrower will widely disseminate the results of the Industrial Pollution Control Plan including annual publication of the names of the industries complying with environmental legislation.

f. Permanent Basin committee: the borrower will provide the financial resources necessary for the CEMR to continue functioning as a basin level authority for the duration of the effectiveness of the loan contract.

g. Legal possession of land: prior to bidding for individual works, the executing agency must provide evidence that they have legal possession of land where works will be constructed.

h. Mitigating environmental impacts: the borrower will include in bidding documents the requirement that the contractor proposal include methods to mitigate the environmental impact of executing works as outlined in the Environmental Impact Assessment.

i. Prior to bidding for each sanitary landfill: for landfills in General Las Heras, Canuelas, and Marcos Paz, the borrower will present the signed agreement with each municipality under which they agree to implement a plan for solid waste management as well as to maintain and operate the landfills. For the landfill in Lomas de Zamora, an agreement with the municipality in which it agrees to utilize the rehabilitated site as a green space.

j. Prior to bidding for works in urban rehabilitation: signed agreements will be required with the respective municipalities under which they agree to operate and maintain public spaces.

k. Re-evaluation of affected properties: within 12 months of completion of the first drainage works the Province and Municipality of Buenos Aires will submit, plans for improving property tax collection in the zone of the program. The plans will include a timetable for implementation. The Borrower's annual reports will include information of the implementation of these plans.

l. Land use planning: the borrower agrees that recommendations of the land use plan will be executed by year four of the Program.

m. Resettlement: 60 days prior to initiating works where resettlement is required, evidence that resettlement has taken place.

PREVIOUS EXPENSES: It is recommended that up to US\$47 million in previous expenses be recognized as local counterpart. This request includes US\$31 million for a main drainage line in the Matanza sub-basin now under

construction and US\$16 million in studies and activities for preparation of this program. The Bank has reviewed the procedures and agrees to this request.

POVERTY TARGETING: Since only 27% of its resources will directly benefit low income groups, this program cannot be categorized as poverty targeted either geographically or towards low income groups per the guidelines set forth in AB-1704.

**EXCEPTIONS TO BANK
POLICY:** N/A.

**PROCUREMENT OF
GOOD AND SERVICES:** International public bidding will be required for works with a value of over US\$5 million and for goods and services with a value of over US\$350,000.

I. FRAME OF REFERENCE

A. The setting

- 1.1 The Matanza-Riachuelo and Reconquista River basins are the two large catchment areas which occupy the Metropolitan area of Buenos Aires. The Federal Capital of Buenos Aires also falls within the borders of Matanza-Riachuelo. These two important basins include most of the country's industrial base, a major port and generate 25% of the country's Gross Domestic Product. In 1994 it was estimated that nearly 7 million people inhabited these two basins.
- 1.2 Consistent with the Bank's strategy to approach water resource issues using a basin approach, the Bank approved a US\$150 million program for management, flood control and environmental clean-up of the area's largest river Basin, the Reconquista in 1993. This operation will support environmental management and flood control in Buenos Aires' second largest basin, the Matanza-Riachuelo.
- 1.3 The Matanza-Riachuelo Basin occupies an area of over 2,000km² and its catchment area includes over 60 tributaries. Settlement patterns and economic activity in the area vary widely. The Eastern region is highly industrialized, densely populated (with population density in the capital reaching nearly 12,000 persons per square kilometer) and includes the poorest areas of Buenos Aires. In the western region, economic activity is largely agrarian with population density in some areas reaching as low as six persons per square kilometer.
- 1.4 In the context of a Federal System of government with strong provincial authority, government responsibilities for environmental and water resource related actions in the Matanza Basin are complex and overlapping. The far Eastern portion of the Basin is governed by the Municipality of the City of Buenos Aires (the Municipality) and the Central and Western portion is governed by the Province of Buenos Aires. These Governments have their own Ministries of Works and Environment and local legislation for zoning and environmental licensing and control. Additionally, nine municipal Governments fall within the Province of Buenos Aires (Lanus, Lomas de Zamora, Esteven Echeverria, Canuelas, Almirante Brown, General las Heras, Marcos Paz, and La Matanza). Each of these municipalities' regulations are subject to Provincial level environmental legislation. Finally, Federal Government legislation establishes minimum environmental norms and standards for provincial legislation.

B. The problem

- 1.5 The Matanza-Riachuelo Basin is beset with a series of environmental problems arising from the lack of planning, rapid urbanization, lack of enforcement of environmental legislation, and inadequate

resources for development of infrastructure. These problems include flooding, land use planning, industrial and domestic contamination.

1. Flooding

- 1.6 One fourth of Argentina's national territory is repeatedly flooded. Flood effects are commonly judged as extremely severe in the Northeast, the Pampa pasture, and metropolitan Buenos Aires in the Reconquista and Matanza-Riachuelo basins. 1/ Today, annual frequent and continual seasonal flooding occurs in over 10% of the Matanza-Riachuelo basin. Major flooding occurred in the area in 1959, 1967, 1982, 1985, and 1994. The 1985 flood, which was the most serious, affected over 300,000 inhabitants and damaged more than 69,000 homes.
- 1.7 To deal with the problem, the Province (with the assistance of Italian financing) developed a comprehensive flood control plan in 1990 2/. At about the same time, the Municipality developed a flood control plan using its own resources. Shortly thereafter a series of works were initiated which began for the first time to systematically address the flooding problem in the province and the municipality.
- 1.8 The flood control plans' impact, however, were reduced by several factors. First, the problem was so serious and the infrastructure deficit so great in relation to the resources available that the few works undertaken could have had nothing but modest results. Second, there was no coordination in planning of drainage works between the Province and the Municipality. Finally, Provincial legislation did not permit restrictions on land and water use in areas highly vulnerable to flood damage. 3/
- 1.9 The proposed program presented in the following chapter will provide sufficient resources so that a "critical mass" of works will significantly improve flood control. Additionally, the presence of a permanent basin level committee will ensure that

1/ The 1994 World Development Report cited Argentina as having one of the lowest levels of infrastructure quality and quantity among upper-middle-income nations.

2/ In addition to assistance in planning the Italian Government provided US\$70 million in export credit to finance pumping stations.

3/ This issue was recently resolved through passage of a new national flood protection law permitting more comprehensive local rules concerning land and water use. The new law charges the provinces with determining river margins (previously the preview of the Federal government) and encourages the establishment of land use restrictions based on these zone distinctions to discourage development in high flood risk areas. Land use restrictions in flood risk areas are now being applied in the Province.

flood control efforts (in addition to other environmental actions) are coordinated between the Municipality and the Province.

2. Contamination

- 1.10 Today, along with the rivers in the Reconquista Basin, the Matanza-Riachuelo's Eastern tributaries are the most polluted in Argentina. With dissolved oxygen contents ranging from 0-3 mg/l and biochemical oxygen demand exceeding 20mg/l, nearly all of the tributaries in the Basin's Eastern half are environmentally categorized as severely polluted and unable to sustain aquatic life. There is evidence that this deterioration is gradually spreading to tributaries in the Western half of the region of the Basin. This contamination is the direct result of:
- a. 280,000 cubic meters per day of domestically generated sewage which are dumped into the Basin's rivers. Of this less than 5% is treated;
 - b. 82,000 cubic meters of untreated industrial waste enter the waterways daily from 2000 industries such as tanneries, meat processing, petrochemicals, and textiles. It is estimated that 65 of the regions's largest industries contribute 90% of this pollution by dumping untreated discharges directly into the Basin's waters; 4/
 - c. large petroleum terminals spill an estimated 8.3 tons of oil per day into the waters of the Basin; and
 - d. twenty-nine large illegal dump sites located on or near the basin's tributaries generating surface run off and leachate which enters the waters of the Basin.

3. Land use

- 1.11 Flooding, contamination and the lack of land use planning have had a tremendous impact on land use along water courses in the basin, particularly in the lower basin area (the Riachuelo River) where the river is the border between the Province and the Municipality. In some of the oldest and most highly urbanized areas of Buenos Aires, public spaces (parks and public walkways), industrial sites and commercial areas are very deteriorated. As these areas have fallen into disrepair, land values have fallen correspondingly.
- 1.12 Near the mouth of the Riachuelo in the area of La Boca y Barracas, the Municipality has initiated a flood control and urban-

4/ For items a. and b., it is estimated that the waste discharged contains on average 111 metric tons of biological oxygen demand and 118 metric tons of suspended solids daily. The source of BOD is 51% industrial origin and 49% other sources including those of domestic origin.

improvement program to begin the process of rejuvenating this historically significant area. As discussed in Chapter II, the proposed program will build on these efforts.

C. The context

- 1.13 Since 1990, the Argentine Federal Government, the Province of Buenos Aires, and the Municipality have become increasingly concerned with environmental issues. In 1992, as the first concrete step to control domestic pollution in the area, a 30 year concession was signed with Aguas Argentina's to improve water supply and provide sewage disposal facilities for 7,000,000 residents of greater Buenos Aires and the Municipality and the area's principal industries. The concession area includes most of the Matanza-Riachuelo Basin.
- 1.14 With the decision to deal with environmental issues more systematically, the Government began to adopt a River basin level approach to environmental management and flood control. In 1993, a US\$280 million Bank financed program for the Reconquista River Basin was approved and discussions were initiated for a US\$500 million World Bank-financed flood protection project in the Parana River Basin. 5/
- 1.15 In 1993, the Federal Government created the Secretaría de Recursos Naturales y Ambiente Humano which was charged with the development of national environmental policy. Almost simultaneously the Bank approved a US\$30 million loan for institutional strengthening of environmental management, Programa de Desarrollo Institucional Ambiental (PRODIA). In 1994 The Federal Government was given authority to intervene at the Provincial level in environmental issues through a constitutional amendment allowing it to apply certain minimum standards of environmental protection at provincial and local levels. In Buenos Aires Province a decree regulating licensing was approved in 1996 completing the creation of a viable legal system for enforcement of industrial pollution control.

D. Presentation of the Basin Plan

- 1.16 It is within this context that in 1993, the Comité Ejecutor del Plan de Gestión Ambiental y Manejo de la Cuenca Hídrica Matanza-Riachuelo (CEMR) was established under the Economic Ministry's Public Works Sub-Secretariat. Members of the CEMR included representatives from the Federal Government, the Province and the Municipality.
- 1.17 The CEMR was tasked specifically with developing a Plan for Environmental Management of the Matanza-Riachuelo River Basin. The

5/ This loan was approved in October 1996.

plan was to be a medium-term planning document whose interventions would be supervised by the CEMR and financed with resources from the IDB, Provincial and Federal Governments as well as other donors. Studies, financed with the Government's resources and the Bank's pre-investment and project preparation facilities, included a diagnoses of the current situation and recommendations related to flood control, control of domestic and industrial effluents, land use planning, and urban environmental rehabilitation.

- 1.18 In March 1995, the CEMR presented a first draft of the Plan for Management of the Matanza-Riachuelo Basin to a large public audience of non-governmental organizations and interested citizens. Three options for a program in the Basin were presented: (i) a modest effort emphasizing improved planning with a modest investments in drainage and contamination clean-up so as to improve the River's appearance; (ii) a moderate effort with investment in public spaces, substantially more investment in flood control, and improvement in river quality sufficient to allow recreational use without direct contact; and (iii) a more ambitious effort which would involve substantial investment in public spaces in green areas and areas of historical significance, resolve all flooding problems, and clean the river sufficient for physical contact. There was broad support for a coordinated program of environmental management for the Basin and for flood and contamination control efforts. Among those attending, there was a preference for a program which would invest substantial resources in flood control, reduce industrial contamination, and invest moderately in green spaces.

E. Change in the CEMR

- 1.19 In September 1995, due to the slow pace of project preparation and keen interest at the senior levels of the Argentine Government, responsibility for further development of the Plan was transferred by Presidential Decree to the Secretary of Natural Resources and Human Environment (a cabinet level Ministry) who was charged with coordinating the CEMR with the Ministers of Works for the Province and the Federal Capital Municipality as members of the committee. In addition to being responsible for elaboration of the plan, the decree also broadened the Committee's responsibilities to include execution of the plan and interjurisdictional coordination of actions related to clean-up of the Basin.
- 1.20 With this senior level, the CEMRs staff and budget grew quickly. In 1996 its annual budget reached nearly US\$10,000,000 and US\$18,000,000 by 1997. These budgets financed: (i) preparation of the proposed program; (ii) salaries of 21 highly trained technicians working in a variety of environmental disciplines; (iii) a series of actions directly related to clean up of the river including cleaning of abandoned cars and boats as well as cleaning of river margins; and (iv) initiating the process of renegotiation of the concession with Aguas Argentinas.

F. Summary-the Program, an integrated approach to basin management

1. The Bank financed program

- 1.21 The problems outlined above are complex and interrelated and can only be dealt with in the context of a permanent basin level committee both to coordinate the Matanza-Riachuelo Management Plan and the disparate environmental actions taking place in the Basin. The proposed program, described in the next chapter, will support the CEMR in these efforts by: (i) supporting the development of a permanent basin level committee; (ii) financing a critical mass of "structural measures" to reduce flooding; (iii) providing a comprehensive technical assistance package to strengthen two local environmental agencies and direct technical assistance in industrial pollution control to the Basin's major polluters; (iv) financing efforts to improve final disposal of solid waste including elimination of solid waste dumps; and (v) initiate a process of urban rehabilitation in the basin.

2. Advancing the works of Aguas Argentinas

- 1.22 In addition to the measures financed by this program, the CEMR is participating in the renegotiation of the Aguas Argentina's concession with the objective of advancing the construction schedule for key sewage treatment works within the basin. The current timetable for construction of these works would mean that the goal of recreational use of the river established in the plan for management of the basin without direct contact would be reached in the year 2015. Negotiations now underway would advance the timetable for construction of sewage works in the Basin so that the river could be used for recreational use by in 2006. The proposed program does not require the advancement of works to meet its objectives.
- 1.23 Central to successful conclusion of the negotiations is obtaining a "bridge loan" of about US\$300,000,000 to finance this accelerated timetable. With Aguas Argentinas fully leveraged, an outside source of financing will be required. The European Investment Bank may finance up to US\$70,000,000 and the CEMR is exploring possible commercial bank financing and a possible guarantee mechanism through the Bank's Private Sector Department (PRI).

G. Bank strategy 6/

- 1.24 Bank actions in Argentina concentrate on modernization of the State, poverty reduction, and improving productivity. In the area of environment, the paper states that the Bank should support "comprehensive watershed management" as well as the "strengthening of institutions enforcing environmental regulations." By financing the development of a basin authority and an integrated set of

6/ The Country's strategy was discussed in paragraph C. (The Context).

environmental sub-projects for the Basin the Bank is directly supporting a comprehensive watershed management approach. Providing technical assistance to the two local entities charged with environmental pollution control directly contributes to enforcing of environmental regulations.

H. Experience of the Bank and other donors

- 1.25 Although performance has improved considerably over the past year, the Bank's experience with the execution of Argentina's two environmental projects has been mixed. Six months to meet the initial conditions to disbursement and long lead times in contracting during the project's initial stages delayed execution of the environmental institutions project (PRODIA), a US\$30 million loan approved in 1993. Progress made in the last year (the loan is now 40% disbursed) has been substantial and includes development of environmental legislation in several key provinces including Buenos Aires. This legislation, which has already been approved, will form the legal basis for the industrial pollution control effort carried out as part of this program.
- 1.26 The second project, Sanitation and Flood Control for the Reconquista River Basin, has been very slow in execution due to: (i) problems in creating and staffing the executing agency for the program; (ii) the large number of conditions to initial disbursement and disbursement for works; (iii) the lack of information on the industrial base in the region resulting in a long lead time required to prepare an industrial pollution control plan (one of the key conditions to initial disbursement); (iv) the lack of definition of a responsible authority for industrial pollution control in the Basin; and (v) an overly ambitious role defined for the Basin authority.
- 1.27 Emphasizing the importance of significant advances in execution of the Reconquista program for approval of the proposed program, the Bank has worked with senior provincial and federal officials and the new staff of the project's executing unit to reformulate the loan. The result is that over the past 18 months the number of conditions have been reduced, an industrial pollution control plan which identifies the Reconquista Basin's major polluters has been developed, a responsible authority has been identified to enforce industrial pollution legislation (the Secretaría de Medio Ambiente for the Province), and the scope of the basin level authorities role was reduced. The long-term contract manager for the program has been in place for more than a year and key designs for sanitary works are nearly completed. 1/
- 1.28 The design of the proposed program incorporates lessons learned from the Reconquista loan. Specifically, in the proposed project:

1/ For further details see the Argentina annex to the Bank's 1996 Annual Report on Portfolio Management.

(i) the CEMR was created to develop the basin plan and is, therefore, in place and functioning prior to project approval (the Reconquista program created the basin committee); (ii) the CEMR's authority is far narrower than Reconquista's Committee leaving responsibility for most program execution in this operation to local authorities; (iii) authorities to execute industrial control measures have been identified and legally established; (iv) industries for the industrial pollution control sub-program have been identified and dialogue initiated during preparation of the program (in Reconquista this was done after approval); and (v) the proposed operation contains a complimentary program of technical assistance to industries for pollution control.

II. THE PROGRAM

A. Objectives

- 2.1 The program's overall objective is to improve management of the Matanza-Riachuelo Basin's natural resources through coordination of environmentally related actions. The program will finance four sub-program designed to: (i) strengthen and coordinate efforts of local government institutions whose activities can positively affect the environment of the area; (ii) reduce the incidence of flooding; (iii) reduce contamination levels; and (iv) initiate a process of urban rehabilitation. Sub-programs to be financed are high priority activities identified as part of the Master Plan developed by the CEMR.

B. Execution

- 2.2 As detailed in Chapters III and IV, responsibility for ensuring execution of the Plan to clean up the basin, interjurisdictional coordination of actions related to clean-up of the basin, and overall coordination of the Bank financed program will rest with the CEMR. The national level Secretaría de Recursos Naturales y Ambiente Humano will continue to serve as the CEMR's Chairperson with the Ministro de Obras y Servicios Públicos of the Province of Buenos Aires and the Secretaría de Producción y Servicios as members. 8/
- 2.3 Adapting a structure and approach similar to the Potomac River Basin Commission (PRBC), the Committee has twenty one highly qualified technical staff organized by subject area (see Chapter III for more detail). It is anticipated that some limited technical assistance will be provided by the PRBC (or a similar institution) in refining its technical organization. The Committee will become a strong technical body maintaining a very small but highly trained technical staff. It will have no regulatory authority but will maintain a reputation for neutrality and independence between the interests of political jurisdictions focusing its efforts (and recommendations) on those issues which benefit the environment of the Basin.
- 2.4 The CEMR's workplan will be set annually by its members. The CEMR will serve as the program's executing agency coordinating all aspects of program execution. However, actual execution of most works will rest with local authorities. The CEMR will only execute studies and works which are pilot in nature or truly multi-

8/ The CEMR's membership and mandate is established by Presidential decree.

jurisdictional, leaving execution of major works the responsibility of the appropriate local authorities.

- 2.5 The loan contract will require that the borrower provide the financial resources for the CEMR to continue functioning as a basin level authority for the life of the loan contract.
- 2.6 Co-executors for the program will be: (i) for works in flood control the Ministerio de Obras y Servicios Públicos for the Province of Buenos Aires (for works in the Province) and the Secretaría de Producción y Servicios for the Municipality of Buenos Aires (for works in the Municipality); and (ii) for industrial contamination the Secretaría de Medio Ambiente for the Province of Buenos Aires and the Sub-Secretaría de Medio Ambiente for the Municipality. The CEMR will be take the lead in executing the solid waste and urban interventions sub-programs, and supervise development of the contingency planning/alert system and continue clean-up efforts on the River's banks to remove abandoned boats and vehicles.

C. Benefits

- 2.7 Benchmarks for each of the subprograms are discussed below. The Program will have a significant effect on the environment for those 3 million people residing in the Basin. By providing a critical mass of drainage and flood control works, the program will largely resolve the flooding problem in the most flood prone areas for a period of recurrence of 100 years. Industrial effluents will be reduced with improvement in water quality, land use will be improved, and key public spaces upgraded. Finally with the CEMR's broader mandate and larger staff and budget, it will continue to play an increasingly active role in coordinating inter-jurisdictional actions to improve management of the basin.

D. Descriptions

- 2.8 This US\$500 million program will finance four sub-programs. These subprograms represent an integrated approach to addressing the environmental problems outlined in the first chapter. The program's four subprograms are:
 - a. industrial pollution control (US\$51.68 million);
 - b. flood control and drainage works (US\$343.89 million);
 - c. solid waste management (US\$4.99 million); and
 - d. urban rehabilitation (US\$18.4 million).

1. Industrial pollution control (US\$51.68 million)

a. Benchmarks

- a. effluent control programs for the basin's 65 largest industries developed and implemented;
- b. 1000 industries in the basin inventoried and licensed;
- c. improvements in the capacity of the Province's Secretary of Environment and the Municipality's Sub-Secretaría de Medio Ambiente to enforce compliance with environmental legislation; and development and implementation with the CEMR of a public awareness campaign on contamination issues in the Basin;
- d. studies and bidding documents developed for a treatment plant and final disposal site for hazardous wastes within the Basin;
- e. a contingency plan for natural and technological disasters and water quality monitoring in place by year four; and
- f. abandoned boats 9/ and vehicles removed from the river and bank and reforested.

b. Activities

(i) Industrial pollution control plan (US\$1 million)

- 2.9 Using a model developed in North America and Eastern Europe for environmentally motivated low cost waste minimization and cleaner production measures for older industries, the World Environmental Center (WEC) 10/ (an international non-governmental organization will provide direct technical assistance to most of the basin's 65 major polluters (which account for 80% of industrial discharges) to develop and implement pollution control measures. WEC will be coordinating its activities with the Secretaría de Medio Ambiente for control efforts in the Province and the Sub-Secretaría de Medio Ambiente for efforts in the Municipality. WEC's services will be financed through a technical cooperation financed by the Evergreen Fund 11/.
- 2.10 The loan contract is structured so that new commitments for flood control and drainage works will be linked to agreements for industrial compliance. During year one of the program, agreement will be reached with 15 of the major industries to control their

9/ Includes both smaller boats and larger cargo ships.

10/ The WEC coordinates the work of corporate volunteers (frequently retired technicians) who have specialized in industry specific control measures.

11/ Should Evergreen funds not materialize, technical assistance will be procured with loan funds using Bank bidding procedures.

industrial discharges. Once this target is reached, 40% of loan resources can be committed for flood control and drainage works. During year two of the program, agreement will be reached with an additional 15 industries (for a total of 30). Meeting this target is a condition to the next 20% of loan commitments (for a total of 60% to be committed). During year three of the program, agreement will be reached with an additional 15 industries (for a total of 45). Meeting this target is a condition to the next 10% of loan commitments (for a total of 70% to be committed). Finally, during year four of the program, agreement will be reached with the remaining 20 industries (for a total of 65). Meeting this target is a condition for the final 30% of loan commitments for flood control and drainage works.

- 2.11 In addition to industrial pollution control for the 65 major industries, 1000 polluters will be inventoried and licensed by month 48 of the program. A licensed industry either complies with or has developed a timetable for complying with environmental legislation. Finally, a contractual clause will require publication of the results of the effluent control program including industries complying with environmental legislation.

(ii) Institutional capacity of industrial pollution control entities (US\$10 million)

- 2.12 In addition to direct assistance to the basin's 65 major polluters, direct technical assistance and equipment to upgrade the capacity of the Province's Secretaría de Medio Ambiente and the Municipality's Sub-Secretaría de Medio Ambiente will be financed to enforce compliance with industrial pollution legislation. Training will also be provided to compliment assistance provided by PRODIA. Beginning in year two of the program, these entities will also begin to focus efforts on continued monitoring the major polluters and on beginning to work with the approximately 1000 "second tier polluters." Finally, the program will provide technical assistance to develop a basin-wide public awareness campaign on the clean up of contamination in the basin.

(iii) Hazardous industrial waste disposal (US\$0.390 million)

- 2.13 The program will also finance development of studies and bidding documents to establish a hazardous waste disposal facility in the Basin, the preparation of bidding documents for a private concession to construct and manage the facility, and incentive schemes to reduce hazardous waste production.

(iv) Contingency planning (US\$18 million)

- 2.14 The program will finance the development of a contingency planning alert system for natural and technological disasters within the Basin's systems and water courses. The program will include a system for predicting flooding, a plan for measures to be taken to minimize damage from flooding and technological disasters, and an ongoing system to measure water quality. Terms of reference have been developed for the plan and consultants (under supervision of the CEMR) will be hired beginning year one of the program.

(v) River clean-up (US\$22.29 million)

- 2.15 The CEMR will continue its efforts to remove abandoned vehicles, boats, and cargo ships from the River. This activity, which is interjurisdictional, was initiated by the CEMR last year when it began contracting for this clean-up in the area of la Boca to complement a drainage program are initiated by the Municipality. Remaining clean-up efforts will focus on the highly urbanized Eastern portion of the basin where the problem is most severe. Also included will be cleaning up of river banks and some reforestation.

2. Flood control and drainage works (US\$343.89 million)

a. Benchmarks

- 2.16 A significant reduction of the incidence of flooding in the basin for a period of recurrence of 100 years.

b. Activities

(i) Drainage (US\$76.61 million)

- 2.17 The Master Plan for the basin identifies 38 suburban and semi-urban sub-basins whose drainage systems are inadequate or non-existent and where flooding occurs on average less than every two years. The plan prioritizes sub-basins using criteria of population density and extent of damage due to flooding. Fifteen sub-basins were designed and an economic analysis undertaken. Based on the results of this analysis (see Chapter V) and available financing, major drainage works will be constructed in nine basins.

- 2.18 Areas where drainage works will be constructed are highlighted in the corresponding map. Specifically, in the Municipality of Buenos Aires works will be constructed in three areas of Boca Barracas and the Area Sur. In the Province of Buenos Aires, works will be undertaken in Unamuno, Arroyo del Rey, Maciel Riachuelo, and La Matanza. Final designs for over 80% of these works have been completed. A detailed description of each of these works is included in the technical file.

(ii) Macro-Drainage (US\$265.489 million)

- 2.19 The Matanza-Riachuelo floods frequently due to storms occurring in periods slightly more than every two years and to a phenomena known as the "Sudestadas", a dramatic rising of river levels due to a rise in the levels of the Rio de la Plata and the Atlantic Ocean (from tides and winds). Dikes and pumping stations will be constructed along the Riachuelo (six pumping stations and 8 kilometers of dikes) to prevent this flooding. Works will be constructed for period of recurrence of 100 years (see Chapter V).

(iii) Resettlement (US\$1.8 million)

- 2.20 Construction of the sewerage works in the Basin will require the resettlement of approximately 37 families residing in the Eastern portion of the Basin in the Province of Buenos Aires (15 families in the area of San Francisco de Asis, Lanus and 22 in Lomas de Zamora). Before construction of works, families will be resettled in phases to coincide with the schedule of works. The Bank's has approved a final resettlement plan. A condition will require evidence of resettlement 60 days prior to initiating works. Residents will be offered resettlement which is as close as possible to existing residences in comparable housing to be constructed. In some cases houses now occupied will be physically moved to a new sites. Physical resettlement (i.e construction and/or movement of houses) will be undertaken by the construction contractor.

3. Solid waste management (US\$4.99 million)

a. Benchmarks

- a. A management plan for solid waste final disposal in the basin will be developed; and
- b. five of the major illegal dump sites in the Basin will be eliminated and these sites converted to public use spaces.

b. Activities

(i) Solid waste management plan (US\$0.30 million)

- 2.21 Illegal dumping, poorly managed dump sites, and high costs of solid waste disposal, have all contributed to the problem of inadequate solid waste disposal in the basin. The program will develop a solid waste management plan including identification of key dumping cites for upgrading and/or developing new sites, and prepare bidding documents for solid waste disposal in the basin.

(ii) Illegal dump site clean-up and conversion
(US\$4.69 million)

- 2.22 Five of the largest illegal dump sites, estimated to occupy fourteen hectares of public land adjacent to the basins tributaries (located in the municipalities of Santa Catalina, Canuelas, General las Heras, and Marcos Paz) will be cleaned-up. Four of the sites will be converted to sanitary land-fills and the fifth (in Santa Catalina) will be converted to parkland. Contracting for these works will be supervised by the CEMR. Once the works are completed they will be transferred to the appropriate municipality for operation and maintenance.

4. Urban rehabilitation (US\$18.4 million)

a. Benchmarks

- a. Development and implementation a land use plan for the basin;
- b. development of a road works plan to compliment drainage and flood protection works; and
- c. urban interventions (key public spaces upgraded).

- 2.23 This fourth sub-program will take advantage of program financed environmental improvements through improved land use. Areas which were previously unusable due to flooding, contamination, and/or abandonment will have a recreational value as public spaces, parks, walkways and revitalized historical areas.

b. Activities

(i) Land use management plan (US\$0.65 million)

- 2.24 A review of the land use regulations in force in the Lower Basin in the municipalities of Avellaneda, Lanús and Lomas de Zamora in the Province of Buenos Aires, and in the city of Buenos Aires, detected wide variations in those regulations and some significant inconsistencies in the land uses permitted in the different jurisdictions.
- 2.25 The program will finance a study to define in detail land uses and standards on building, urban development and the use of public spaces that minimize land use conflicts and ensure the sustainability of benefits from the investments financed by the program. The program will also finance the initial costs of implementing the Land Use Plan in the municipalities. This involves consolidating efficient procedures for planning, intermunicipal coordination and supervision. The CEMR will be responsible for this coordination, and will hire consultants to advise the municipalities in the Plan's first three years of execu-

tion. The contract will include a clause requiring implementation of the Plan by the fourth year of the program.

(ii) Road works plan (US\$0.450 million)

- 2.26 Both the Municipality and Province of Buenos Aires are considering complementary road investments that may be needed as a result of the flood-protection works. These investments include the construction of new streets (continuation of Av. 27 de Febrero along the banks of the Riachuelo) and new bridges to link the city of Buenos Aires with the municipalities of Avellaneda, Lanús and Lomas de Zamora.
- 2.27 The program will finance the feasibility studies for these investments so that appropriate plans may be made for their execution. The investments will be executed outside the program.

(iii) Urban rehabilitation in the Lower Basin
(US\$17.3 million)

- 2.28 The program will finance improvements that enhance the value of local areas degraded by the flooding and unsanitary condition of the Riachuelo. These improvements will recover the public areas degraded by flooding, mitigate the impact of the hydraulic works on the landscape, and promote the social and economic integration of the communities with the city.
- 2.29 The following rehabilitation works will be financed (for locations see map): (i) La Boca neighborhood (city of Buenos Aires, improvement of the public areas of the tourism sector); (ii) Isla Maciel (improvement of a public space); (iii) the Transbordador in La Boca (restoration of an old bridge, improvement of a public space); (iv) the Mercado del Pescado (Fish Market) area (improvement of a green space in an historic area); (v) the Puente Alsina station (opening of new public spaces); (vi) the Puente de la Noria area (improvement of an urban space); and (vii) Villa Diamante (opening of new urban spaces).
- 2.30 To examine the feasibility of the urban improvement projects three of the seven projects were developed, and constitute a representative sample of these investments. The projects developed are the La Boca neighborhood, the Mercado del Pescado area, and the Puente Alsina station, and will cost an estimated US\$9 million. These projects will be carried out in the first two years of the program. The others are scheduled for the fifth year of the program upon completion of the drainage works. The projects of this sample were developed to the draft project stage and subjected to an analysis of technical, economic, financial, institutional and environmental prefeasibility.

E. Costs of the program

- 2.31 The total cost of the program is estimated at US\$500 million, distributed as shown in the following illustrative financial plan:

Illustrative Budget			
	Total per Fund		
Category	IDB	Local	Total
I. <u>Direct Costs</u>	<u>15,000</u>	<u>36,684</u>	<u>51,684</u>
Industrial pollution control			
Industrial pollution	1,000	0	1,000
Institutional capacity	5,000	5,000	10,000
Hazardous waste	0	390	390
Contingency planning	9,000	9,000	18,000
River clean up	0	22,294	22,294
Flood control/drainage	<u>204,146</u>	<u>139,748</u>	<u>343,894</u>
Drainage	55,051	21,561	76,612
Macro drainage	149,095	116,387	265,482
Resettlement	0	1,800	1,800
Solid waste management	<u>4,127</u>	<u>867</u>	<u>4,994</u>
Solid waste plan	0	300	300
Illegal dump sites	4,127	567	4,694
Urban rehabilitation	<u>9,200</u>	<u>9,200</u>	<u>18,400</u>
Land use plan	325	325	650
Road plan	225	225	450
Urban interventions	8,650	8,650	17,300
PPF repayment	1,277	0	1,277
II. <u>Contingencies</u>	<u>13,750</u>	<u>12,551</u>	<u>26,301</u>
III. <u>Financial costs</u>	<u>2,500</u>	<u>50,950</u>	<u>53,450</u>
Interest	0	45,915	45,915
Commission	0	5,035	5,035
FIV	2,500	0	2,500
Totals	250,000	250,000	500,000
	50%	50%	100%

- 2.32 The Bank will finance 50% of program costs, or US\$250 million in ordinary capital in US dollars.

Terms and Conditions	Foreign Exchange (OC)
Interest	Variable
Credit fee	0,75%
Inspection and supervision	1%
Disbursement	5 years
Grace period	5 years
Amortization period	20 years

F. Local contribution

- 2.33 Resources for local counterpart, which represent 50% of total costs, will be provided by the Federal Government, the Province of Buenos Aires and the Municipality of Buenos Aires.

III. EXECUTION OF THE PROGRAM

A. The borrower and executing agencies

- 3.1 The borrower will be the Argentine Nation and the executing agency the CEMR.
- 3.2 Co-executors for the program will be: (i) for works in flood control the Ministerio de Obras y Servicios Públicos for the Province of Buenos Aires (for works in the Province) and the Secretaría de Producción y Servicios for the Municipality of Buenos Aires (for works in the Municipality); and (ii) for industrial contamination the Secretaría de Medio Ambiente for the Province of Buenos Aires and the Sub-Secretaría de Medio Ambiente for the Municipality.
- 3.3 The co-executing agencies will be responsible for providing the local contribution for the components they respectively execute, and will remain responsible for the maintaining and operating the works they have executed. It will be a condition prior to the first disbursement that agreements are signed between the executing agency and the co-executing agencies establishing the conditions for the transfer of financial resources. These agreements will include the obligation of the co-executing agency to provide the local contribution promptly with due diligence, to operate and maintain the works, and to fulfill the obligations that may be established in the contract for the Bank's loan.

B. The Executive Committee

- 3.4 The CEMR will be the Bank's only interlocutor. The organizational chart shows that the Executive Director, who is responsible for all management action to accomplish the CEMR's purposes, reports as directly to the Committee. Under the Executive Director are: (i) a Technical and Environmental Advisory Unit headed by a supervisor in charge of control and oversight of technical operations; (ii) a Financial Administration Advisory Unit; (iii) a Legal Advisory Unit; (iv) an Advisory Unit on Bids and Contracts; and (v) a Management Control Unit.
- 3.5 A thorough review of the CEMR's structure indicates that it has the capacity to supervise the execution of this program and that the basic requirements are present for appropriate control of financial resources.

C. Basin authority

- 3.6 Under its establishing decree, the CEMR has the function of carrying out the Plan for Environmental Management and Control of the Matanza-Riachuelo River Basin and of launching the institutional

arrangements proposed in it. Accordingly, the CEMR has the functions of a basin authority.

- 3.7 Subsequently, a decree of September 26, 1996, defined the Committee's specific functions. Its functions are those of a basin authority, which includes coordinating measures by the several jurisdictions.
- 3.8 The CEMR is funded with allocations from the National Budget. The budgetary appropriation for 1997 was US\$8.3 million, which covers its operating costs, studies relating to its work as a basin authority, and river clean-up activities. The budget allocation proposed for 1998 is for the equivalent of US\$14 million. This budget is adequate to carry out the proposed program.
- 3.9 To ensure future resources for the CEMR, the contract will commit the borrower to allocate to the CEMR financial resources to continue with its functions as basin authority upon completion of the program and throughout the life of the contract.

D. Designs

1. Drainage and flood control

- 3.10 These program works have been prepared as a specific program. The final designs of the different drainage works to be executed were drawn up on the basis of the basin management plan. Most (80%) of these designs have been completed.
- 3.11 The flood control works were designed to handle a one-hundred year flood. The storm drains of the different basins were designed to evacuate rainfall of 2-year recurrence verified for a 5-year period.

2. Urban rehabilitation

- 3.12 The studies for preparation of the Land Use Plan will be contracted by the CEMR. The CEMR will be responsible for supervising of the studies and for coordinating the participation of the municipal governments. The CEMR will see to it that the municipal governments incorporate the Plan's proposals in their regulatory plans and other legal instruments of land-use regulation.
- 3.13 The CEMR will also contract studies for formulation of the Road Works Plan.
- 3.14 Bidding of urban rehabilitation works will be the responsibility of the CEMR following procedures acceptable to the Bank. When the works have been completed, they will be transferred to the municipal governments, which will assume responsibility for their operation and maintenance. The loan contract will require an

agreement signed with the municipal governments before calls for bids are issued for these works.

E. Lands, rights of way, and easements and resettlement

- 3.15 The proposed program will not pose any significant problems in the purchase of lands since works will be constructed on public lands. ^{12/} Nevertheless, the contract will require that before the call for bids on a specific work, the executing agency will have to demonstrate ownership and the availability of the lands needed for its construction.

F. Resettlement

- 3.16 A draft resettlement plan has been reviewed and approved by the Bank and comments have been provided to the CEMR. All 37 families will be relocated in very close proximity to existing residences. In most cases, families have been interviewed and sites for relocation have been identified. The relocation will take place under the CEMR's supervision. To facilitate phasing, the contractor for the drainage works will also undertake the construction of the new and/or movement of existing housing. The final settlement plan has been approved by the Bank. The contract will require evidence that the resettlement has taken place 60 days prior to initiating works.

G. Recovery of costs

- 3.17 The beneficiaries of the project works in the Province and the Municipality will contribute to the recovery of costs through the real property taxes to be levied on the increased value of their properties.
- 3.18 For this tax actually to be collected, the appraised values of those properties will have to be kept up to date. In the Province, where most of the project works will be located, fiscal revaluation is based on an ongoing program of surveys of local values and on the cadastral updating of undeclared areas by aerophotogrammetric surveys. Under this project the Province's Ministerio de Obras y Servicios Públicos will inform the Cadastral Department of the improvements generated by execution of the project.
- 3.19 With respect to the Buenos Aires Municipal Government, the entire procedure and all the mechanisms for cadastral updating will be reviewed and reformulated as part of the program to strengthen the Municipal Government being financed by the Bank (AR-0218).

^{12/} With the exception of a plot of land that is being transferred to the government under the urban rehabilitation subprogram.

- 3.20 The loan contract and the agreements transferring resources to the provincial and municipal governments shall stipulate that these two jurisdictions present plans for improving tax collection in the area of the project within twelve months of completing the first drainage works. These plans will include a timetable for implementation.

H. Maintenance

- 3.21 The agreements transferring the resources to the Provincial and Municipal Governments will establish that these two jurisdictions are responsible for proper operation and maintenance of the works.
- 3.22 The sanitary landfill component must be maintained and operated by the municipal governments in whose jurisdictions they are executed. It will be established as a condition for the call for bids for each sanitary landfill that an agreement be signed between the CEMR and the municipal government, in which the latter agrees to maintain and operate the facility.

I. Term for execution and investment timetable

- 3.23 The term for disbursement of the loan resources will be five years. This term is based on experience with similar programs in the country and on the availability of the local counterpart contribution.
- 3.24 The following table summarizes the investment timetable of the program.

Investment Timetable for the Program (US\$ thousands)				
Year	IDB	Local	Total	%
1	26,735	36,876	63,611	12.7
2	81,146	63,245	144,391	28.9
3	93,142	71,985	165,127	33.0
4	44,679	49,285	93,694	18.8
5	4,286	28,922	33,208	6.6
Total	250,000 50%	250,000 50%	500,000 100%	100

J. Bidding arrangement and timetable

- 3.25 Procurement of goods and services and the letting of contracts for the construction of works will be carried out in accordance with the Bank's procedures. International competitive bidding will be obligatory for procurement valued at more than US\$350,000 for goods and services and at US\$5 million for construction contracts. Bidding in amounts below these thresholds will comply with the

national legislation. It is estimated that with these limits 70% of the amount of all bidding for the program's execution will be international.

- 3.26 The contracts for works and services will be divided into packages as indicated in Annex III-1.

K. Recognition of expenditures

- 3.27 The Committee has asked the Bank to recognize as part of the local counterpart contribution expenditures made since June 1996 totaling up to US\$47 million. Of this figure, US\$31 million are for a main collector in the Matanza sub-basin, now under construction, and US\$16 million for studies and other expenses of the CEMR for preparation of the project. The Bank has reviewed the procedures and agrees to this request.

L. Advance of funds

- 3.28 Per the new advance of funds procedure, a 5% advance of the total loan amount will be provided in the form of a revolving fund.

M. Environmental considerations

- 3.29 On February 21, 1995, the Bank's Environmental Committee classified the program as category III because of its potential impacts on the environment. The environmental impact studies were made available to the public on July 24, 1997. The environmental summary of the program was considered by the CESI on September 19, 1997.

- 3.30 No procedure exists in Argentina for environmental licensing of works to be constructed under the Program. However, both the Sub-Secretaría de Medio Ambiente of the Municipality of Buenos Aires and the Secretaría de Política Ambiental have received and concur with the EIA including the mitigating measures it proposes during construction of works. The co-executors will ensure that environmental mitigation procedures are followed during construction.

N. Control and monitoring of the operation

- 3.31 Annual reviews will be held of the program. These reviews will measure the progress toward meeting program's objectives in both physical works and in meeting industrial pollution control targets. Industrial compliance with individual agreements will be closely reviewed. One or two members of the project team from Headquarters will participate in these reviews. Within the first 90 days of each year, the CEMR will present to the Bank the annual financial statements for the program. These reports will be certified by the Auditor General de la Nación.

0. Compilation of data

- 3.32 The executing agency will compile and process data for presentation to the Bank in annual reports starting in the second year of execution and for three years after its completion. The first report will include a detailed description of the procedure by which those data are compiled and processed. The borrower agrees to undertake an ex-post evaluation of the program.

IV. FINANCIAL AND INSTITUTIONAL ANALYSIS

A. Financial analysis

1. Purpose of the analysis

- 4.1 The financial analysis has been undertaken to determine the capacity of the Province and Municipal Governments to provide local counterpart for the Program and to take on additional debt.

2. Budget of the Province of Buenos Aires

- 4.2 The local counterpart for the works to be executed by the Provincial Government will be funded through budgetary appropriations.

- 4.3 Budgetary performance is summarized below:

Budget performance (US\$ thousands)					
	1993	1994	1995	1996	1997 to 30/6
Current income					
Provincial	3,525	3,951	3,871	4,490	2,576
Federal	2,657	3,041	3,218	3,434	1,983
Total current income	6,182	6,992	7,089	7,924	4,559
Current expenditures	5,675	6,469	6,814	7,161	3,953
Current savings	507	523	475	763	606
Capital resources	389	467	588	538	1,135
Capital expenditures	665	953	1,005	1,494	951
Surplus	231	37	58	-193	790

- 4.4 The Province's current income in the period under review was enough to cover its current expenditures and leave a current surplus in each year of about US\$500 million, which in 1996 climbed to US\$763 million. The budget shows a surplus in each of the years considered except 1996, when a deficit of US\$193 million was reported.
- 4.5 In the period under review, the Provincial Government is considered to have maintained an acceptable financial situation, with a current surplus that enabled it to amortize debt and participate in the financing of its own investments.

3. Indebtedness of the Province of Buenos Aires

- 4.6 The Province's long-term debt as of June 30, 1997, was US\$1,070 million, of which securities issued by the Provincial Government accounted for US\$745 million, debt to international agencies for US\$135 million, and amounts owed to various creditors for the balance. The debt ratio is considered acceptable for the total amount comes to 12% of current annual income and is of long-term maturity.

4. Budget of the Buenos Aires Municipal Government

- 4.7 The counterpart for works executed by the Municipality will come from its fiscal resources. The results of budget performance for the last four years are shown below:

Budget Performance Buenos Aires Municipal Government (US\$ millions)				
	1993	1994	1995	1996
Current income	2,936	2,943	2,728	2,743
Current expenditure	2,803	2,681	2,506	2,721
Current savings	133	262	222	22
Capital income	4	2	1	5
Remainder for capital expenditures	147	264	223	27
Capital expenditures	<u>260</u>	<u>253</u>	<u>231</u>	<u>345</u>
Surplus (deficit)	<u>-123</u>	<u>11</u>	<u>-8</u>	<u>-318</u>

- 4.8 The capital income has been minimal and during the period considered the city made no use of long-term credit. Until 1996 part of the investment program could be financed from current savings, but in that year these practically disappeared, leaving no internal funds for capital expenditures, but a deficit of US\$318 million. As previously mentioned, the Municipality made no use of long-term credit, and the deficit was financed with suppliers' and contractors' credit. To cover this deficit the Municipality is seeking long-term financing (see below).

5. Indebtedness of the Buenos Aires Municipal Government

- 4.9 There is no information on how this indebtedness has fared. The new Municipal Government established it at US\$1,095 million on Dec. 31, 1996, distributed as follows:
- a. a debt to the Banco de la Municipalidad of US\$436 million, the largest component of which is a balance of US\$362 million in trust funds. These funds are resources set aside for payments to suppliers and contractors;

- b. a balance of US\$481 million owed to suppliers and contractors. The Municipal Government has devised a plan for the payment of these debts consisting in that contractors and suppliers must accept discounts amounting to up to 35% of the outstanding balance in order to be paid in terms of up to 18 months;
 - c. international agencies are owed a balance of only US\$23 million; and
 - d. US\$95 million owed to other banks.
- 4.10 The indebtedness is essentially at short term, and consists of financing accorded by suppliers and contractors.
- 4.11 The Municipality's current indebtedness is not high, totaling 36% of its annual current income. However, that debt, being at short term, is causing liquidity problems, and a decision to float a long-term bond issue to replace the present debts has been made. This decision is regarded as sound. This long-term financing will resolve the Municipality's financial problems over the short-term enabling it to participate in the Program.

B. Institutional

1. Province of Buenos Aires

a. Ministerio de Obras y Servicios Públicos

- 4.12 This Ministerio, acting through its Departamento Hidráulico, would be co-executing agency for the flood control and drainage sub-program.
- 4.13 The functions of this Departamento Hidráulico are to propose policies on water resources and management and draw up plans for works, perform studies and prepare projects. It is now emphasizing the expansion, reconstruction and extension of the existing water supply system, which has deteriorated. The budget and distribution of functions and responsibilities in the Department have been examined and are considered adequate for program execution.

b. Secretaría de Medio Ambiente para la Provincia

- 4.14 The newly created Secretaría de Medio Ambiente para la Provincia (SEP) will be responsible for supervising the Program's industrial pollution control program in the Province. The Secretaría currently has a small technical staff of 60 professionals and an annual budget of US\$1.5 million. The Secretariat's staff and structure are considered adequate for program execution.

2. Provincial Environmental Secretariat

a. Secretaría de Producción y Servicios

- 4.15 The works in Buenos Aires municipality will be executed by the Secretaría de Producción y Servicios, while those relating to the environment will be entrusted to the Sub-Secretaría de Medio Ambiente, in the Secretaría de Planeamiento Urbano y Medio Ambiente.
- 4.16 The Secretaría de Producción y Servicios frames policies and implements the projects and programs needed for performance of the public services, urban maintenance and the execution of public works. It also implements policies relating to the management of transportation and traffic. The budget and distribution of functions and responsibilities in the Secretaría have been examined and are considered adequate for program execution.

b. Sub-Secretaría de Medio Ambiente

- 4.17 The Sub-Secretaría de Medio Ambiente has an adequate staff of 125 professionals and a budget of US\$3 million for the performance of its functions under the program. Its functions are to frame policies and design plans to improve the quality of the urban environment and to propose regulation and preservation standards to favor an adequate quality of life and appropriate use of natural resources, and control their use. The Sub-Secretaría's staff and structure are considered adequate for program execution.

V. FEASIBILITY OF THE PROGRAM

A. Technical feasibility

1. Drainage

- 5.1 The program is considered feasible and justified from the technical standpoint, for it meets the need to solve problems of floods caused by lack of adequate drainage, and of environmental pollution caused by the absence or inadequacy of installations for the collection, treatment and final disposal of liquid industrial wastes. The studies and final designs of the projects have been done in accordance with generally accepted engineering standards and principles. The designs are for technically feasible least-economic-cost alternatives.
- 5.2 The experience of the Hydraulics Department of the Ministry of Public Works and Services of the Province of Buenos Aires and of the Secretariat for Production and Services of the Buenos Aires Municipal Government in programs similar to the one here proposed guarantees that they have the technical and administrative capacity needed to execute the works. In addition, there are domestic and foreign enterprises qualified to execute the works and supply the materials and equipment.
- 5.3 The execution timetable has been drawn up in light of the characteristics of the works and the periods required for the processing of prequalifications and bidding operations.

2. Urban rehabilitation

- 5.4 The decision to include urban rehabilitation investments in the Plan for the Environmental Management and Control of the Matanza-Riachuelo River Basin promotes a comprehensive solution to the environmental problems that impair the quality of life of the population and limit efficient use of the urban land resources in that basin. These investments will assure the sustainability of the investments for flood control and sanitation by providing for the effective regulation of land uses and the appropriate planning of investments in road infrastructures in the basin. At the same time, the urban rehabilitation works envisaged will demonstrate the potential for development of the use of lands now under utilized because of environmental deterioration of the basin.
- 5.5 The terms of reference, budgets and execution mechanisms agreed upon for performance of the studies of the land use and road works plans, and for support in the first three years of execution of the land use plan, have been reviewed and are adequate.

- 5.6 The seven proposed urban rehabilitation investments, which include areas of greenery, improvement of historic areas, and new open spaces, are the result of a study of alternatives. The solutions adopted are those of least cost that meet the specifications of the project.

3. Industrial pollution control

- 5.7 A water quality model was developed as part of the Basin Plan. Simulating different scenarios, the plan shows that removing 80% of the industrial contamination and collecting and treating domestic waste (which will be implemented in the near future) would have a significant impact on the quality. Using this scenario, water would be of sufficient quality for recreational use without direct contact. No economic analysis was undertaken for this sub-program because of the lack of information regarding costs. However, in terms of benefits it is estimated that at least half of the population of Buenos Aires will benefit from improvement in the River's water quality. In terms of the sub-program's financial viability, similar programs using technical assistance to help industries comply with environmental legislation have proven highly cost effective in enhancing productivity while reducing contamination.

B. Financial feasibility

- 5.8 The resources of the local contribution would be provided by the Province and Municipality of Buenos Aires and the National Government.
- 5.9 The Province of Buenos Aires would contribute US\$169.7 million, of which US\$31 million would be in works to be recognized. These resources would be provided from allocations to be made in the province's coming budgets.
- 5.10 Financial projections show that in each projected year current income will be sufficient to cover current expenditures. The projection of the Province's income and expenditures during execution of the program may be found in the technical files.
- 5.11 The works maintenance costs to be borne by the Province are US\$2 million a year. In view of the income level in the Province and its capacity to generate current savings, it is considered that the Province will have no difficulty in allocating the resources for this purpose.
- 5.12 The contribution of the Buenos Aires Municipal Government to execution of the project would be US\$14.9 million, and its cost for maintenance of the project works would come to US\$300 thousand a year.
- 5.13 The financial projection indicates that the fiscal situation will improve in the coming years, current savings will increase, and

that investments in works will be maintained at the level of US\$160 million. However, in 1998 and 1999 the Municipal Government will need to secure long-term financing to improve its liquidity. The municipality is in the process of securing such financing.

- 5.14 The resources of the program would be administered by the CEMR through its accounting administration unit. This unit would be responsible for administration of the resources and for the maintenance of all financial information required for execution of the program. There is an internal auditing office with the technical capacity to provide adequate control, and the execution mechanism provided would enable the CEMR to control the use of resources by its co-executing agencies.

C. Environmental feasibility

- 5.15 To identify and propose measures for the reduction or avoidance of negative environmental impacts by the program, consultants commissioned by the CEMR performed an Environmental Impact Assessment (EIA) of the works of the winning alternative. This study was presented to the Secretaría de Medio Ambiente of the Buenos Aires Provincial Government and to the Sub-Secretaría de Medio Ambiente of the Municipality. The EIA identified several specific impacts, which contributed to the preparation of the basic project and to the estimation of the costs of the works.

D. Socioeconomic feasibility

- 5.16 A socioeconomic evaluation was made of three of the program's activities: storm drainage, flood control, and urban rehabilitation. The evaluation was based on a comparison of the economic costs and benefits in the situations with and without the project for the storm drainage and flood control, and on considerations of minimum cost, cost efficiency and the benefit-cost analysis for urban rehabilitation.
- 5.17 The costs considered in the evaluation were the incremental investment, operation and maintenance costs valued at efficiency prices in foreign exchange in July 1997.

1. Storm drainage

- 5.18 For the 15 sub-basins chosen in the master plan, the networks were designed to serve the basin as a whole. This first approximation yielded projects of low economic profitability. It was decided to make the network smaller so as to maximize the present value of the net benefit. Of the 15 sub-basins optimized, 14 were found profitable. Some of these had to be discarded owing to budgetary restrictions. To do this, they were ranked on the basis of their benefit-cost ratios, and the 9 of the highest value were chosen.
- 5.19 The analysis took as benefits of drainage the increased well-being of the inhabitants of the area from the reduction of damage to

property (residential benefits), and from the saving of traffic costs caused by flooding of arterial thoroughfares. The value of the residential benefits was estimated on the willingness to pay (DAP). The DAP was determined by the contingent evaluation method, which yielded an average value of US\$17.7 per family per month.

5.20 The DAP information was obtained in a representative survey (500 subjects). The information on the number of beneficiaries was obtained from the cadastral files and by field reconnaissance. The average growth rate of occupancy of the areas is 0.56% a year, with a range between 0.2 and 1.1% for the different sub-basins.

5.21 The results of the analysis of the viable projects are as follows:

Sub-basin	Population (year)		Investment cost (US\$ millions)	NPV (US\$ millions)	IRR (%)
	2000	Rate/year			
Arroyo Unamuno	56,600	0.5	17.9	3.2	17.0
Arroyo del Rey	202,000	1.1	70.8	26.9	23.2
Maciel Riachuelo	25,349	1.2	12.4	2.1	17.1
La Matanza I and III	126,908	0.3	91.8	8.6	15.2
La Matanza II	20,983	1.2	8.7	3.4	23.3
Boca-Barracas C	12,679	0.2	6.0	1.6	19.3
Boca-Barracas G	42,626	0.2	8.7	11.0	40.4
Boca-Barracas Z4	28,869	0.2	4.5	6.4	42.9
Rest of South Area Sur	167,060	0.2	19.7	48.1	59.7

5.22 The highly profitable projects (Boca Barracas and South Area) are very old network systems (50 to 100 years) that require small investments to avert flooding from local rainfall.

2. Hydraulic control of the Matanza-Riachuelo river

5.23 The Riachuelo is overflowed frequently by storms of less than a 25-year recurrence and by the so-called Sudestadas phenomenon, which is a damming of the Riachuelo when the level of the River Plate and the Atlantic Ocean is raised by tides and southerly winds. A combination of these phenomena with a recurrence of 25 years affects a population of 234,000 inhabitants and one with a recurrence of 50 years a population of 312,000 inhabitants.

5.24 The benefits considered were of four categories: (i) averted damage to housing units in residential areas; (ii) averted damage to industrial plants; (iii) recovery of the value of vacant lots; and (iv) reduction of damage and expenditures for the cleaning of public areas, including vehicular thoroughfares.

- 5.25 The averted damage to housing units was obtained by measuring the increase in well-being through the willingness to pay (DAP). This measurement also included the reduction of nuisances caused by floods. To obtain the averted damage to industrial plants and public areas (categories ii and iv) a survey was conducted, and the damage was weighted by the probability of occurrence of the given phenomenon. The recovery of value of vacant lots was calculated by a hedonic equation, which was estimated on a sample of 380 observations.
- 5.26 For the economic analysis an analysis of alternatives was also developed to decide on the capacity of the canal. It was found that the net benefit was maximized for discharge capacity for an event with a 100-year recurrence. The results were as follows:

Recurrence period (years)	Beneficiary population	Investment costs ^{1/} (US\$ millions)	NPV (US\$ millions)	IRER (%)
25	234,000	85.6	12.4	16.4
50	312,000	85.7	34.5	23.5
100	326,000	85.9	47.6	27.4

^{1/} The investment costs are similar because 40% of them are for pumping stations to remove rainwater when the river is in spate, and are equal for any recurrence period. In addition, the difference in height of the dikes for the different recurrence periods is about 20 centimeters.

3. Urban rehabilitation projects

- 5.27 A sample was prepared of three projects for the types of projects to be carried out under the program. This sample was used to devise the methodology for evaluation of the projects not included in it. The types of projects are: (i) urbanization of publicly-owned lots; and (ii) recovery of public spaces.

a. Lot urbanization

- 5.28 The purpose of urbanizing vacant lots is to recover public spaces. Projects of this type are evaluated by calculating the flow of net financial benefits and obtaining the present value of and internal rate of return on the operation. The analytical assumptions are the price (US\$195/m²) and the time of sale of the lots. The former was estimated on the selling prices per m² of land in the area in the records of real estate agents. For the time of sale it was assumed that the lots would be sold in the first two years after they had been urbanized. The results were as follows:

	Values (US\$ thousands)
1. Costs	2,821
2. Benefits (sale)	6,182
3. Net present value (12%)	1,536
4. IRR	32%

b. Recovery of public spaces

- 5.29 The purpose of these projects is to improve or lay down pedestrian walks for the recreation of the population. They were prepared on the basis of the least-cost analysis of construction alternatives. The projects were evaluated using a cost-efficiency indicator (cost per beneficiary) on the assumption that the beneficiaries would be the inhabitants residing within 700 m of the site. The ceiling value (US\$129 per beneficiary) was obtained by dividing the average cost of a unit of walk length by the number of inhabitants corresponding to the mean density in the municipality of Buenos Aires (US\$115 inhab./ha). The purpose of using this indicator was to invest in the more densely population areas of the basin. The results for the projects in the sample were as follows:

Neighborhood	Cost net of taxes (US\$ thousands)	Number of beneficiaries	Cost per beneficiary
Boca-Caminito	2,524	30,963	82
Mercado del Pescado	2,099	17,475	120

The projects present costs per beneficiary below the previously set ceiling figure. It is therefore recommended that this project be financed.

4. Sensitivity analysis

- 5.30 A sensitivity analysis was done of the benefits, and especially of the estimated parameters that could affect the result of the economic evaluation. Those parameters are the willingness to pay (DAP) for hydraulic control of the Matanza-Riachuelo river, the DAP for the storm drainage projects, and the price and time of sale of the urbanized lots. An additional sensitivity analysis was done of the investment costs.
- 5.31 This analysis consisted in finding the values of the parameters that make the project unfeasible. Then the probability of occurrence of those values was calculated. The results for the projects to be financed by the program show low probabilities (below 20%) of unfeasibility, and the results of the economic analysis are therefore robust.

- 5.32 In regard to the costs, the critical costs that would make the project unfeasible and the changes that would produce them were calculated. The increase in costs must be more than 30% to make unfeasible all the projects except the La Matanza I and II project, which shows little room (15.5%) for rising before reaching the critical cost. However, the costs are at the executive design level, and are hence not expected to be more than 10% higher.

E. Analysis of beneficiaries

1. Capacity to pay

- 5.33 The beneficiaries will contribute to recovery of the costs through the increased value of their properties, which will raise their property taxes. The value of property will rise 30% (according to the econometric models) as will the real property tax. Considering that the beneficiaries are now paying less than 2% of their family incomes in property taxes, they can afford that increase. It is noted that this tax increase is less than the DAP, and is hence considered adequate from the economic standpoint.

2. Impact on low-income groups

- 5.34 The number of beneficiaries whose family incomes were below the Bank's low-income ceiling was calculated to determine whether the program could be classified as poverty targeted and whether, therefore, the program's matrix could be modified. This ceiling is set at US\$110 per capita a month in November 1995. Using the distribution of beneficiaries' incomes it was found that 25.2% and 27.9% of the beneficiaries of the streamflow control and storm drainage projects have low incomes. In conclusion, the program cannot be said to be aimed at reducing poverty.

F. Risks

- 5.35 The program has two principal risks. First, the program with its four subprograms, requires strong inter-jurisdictional coordination (ie. between the Province of Buenos Aires and the Municipal Capital) to ensure that all of the activities move forward and the program's impact is maximized. This has slowed preparation of the program and will likely contribute to delays in execution. The presence of a strong CEMR to coordinate execution (the CEMR's strength as demonstrated by its performance over the past year has improved dramatically), however, should enhance the likelihood of success.
- 5.36 A second risk has been Argentina's poor performance in Bank and other donor program's requiring enforcement of industrial pollution control legislation (see Chapter II). Linking disbursements to industrial pollution control targets as proposed would provide a strong incentive to achieve those targets, although it could carry the risk of slowing the pace of execution in the event of delays in the sub-program.

AR-0136. Environmental Management of the Matanza-Riachuelo Basin - Project Logframe 1/

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
the environmental of the Matanza-Riachuelo	- Ongoing and functioning basin committee.	- Committee has an adequate budget.	- Political will exists management of the basin. - Disparate government entities (of different political will cooperate.
contamination levels. the incidence of flooding. solid waste management. land use.	1. Reduction in discharges in 65 individual plants and 1000 smaller industries. 2. Reduction in number of floods and reduction in property damage as compared to earlier similar incidences in Boca Barracas, Area Sur, Maciel, Arroyo del Rey, Unamuno y La Matanza. 3. 5 of the basin's largest dump sites are eliminated. 4. 8 new public spaces are developed (from previously unusable areas) and utilized.	1. Plant verification. 2. On site verification. 3. Site visits. 4. Site visits.	1. Technical assistance p industries is effective 2. Flood control plan is conceived. 3. Municipalities agree to sites. 4. Municipalities maintain
cts to comply with mental legislation. ries are licensed and red. drainage works including and pumping stations and drainage works including networks and drain inlets. ban areas are upgraded for use. are cleaned up.	1. Contracts are signed with largest 65 industries and 1000 additional industries are licensed. 2. Works are constructed for 100 years recurrence. 3. Public spaces in previously deteriorated areas are utilized. 4. Largest dump sites eliminated.	1. Site visits. 2. Records and plant visits. 3. Site visits. 4. Legal documentation.	1. Newly developed legisla effective and political exists to apply it. 2. Environmental condition disbursement are met so works can be constructed 3. Drainage works are comp that previously unusable areas become usable. 4. Political will exists to the basin wide authority

ution of flood control	<u>PROJECT COSTS</u> ('000 of US\$) 1. US\$343.89 million.	1. Site visits.	- Project financing is a
cal assistance to 65 ries, institutional thening of environmental es, contingency planning lean-up.	2. US\$51.68 million.	2. Site visits.	
se plans, construction in ban areas.	3. US\$18.4 million.	3. Site visits.	
ing dump sites to land	4. US\$4.99 million.	4. Examination of legal documentation.	

benchmarks are included in the text and in the loan's conditionality.

BIDDING PLAN (AR-0136)						
Item	Lots	Financing%		Method	Cost US\$000	Publication of bidding announcement (Sem/year)
		IDB	Local			
CIVIL WORKS						
1. Dikes	6	80	20	LPI	38,600	I/98
2. Storm drains Boca-Barracas	3	80	20	LPI	19,200	I/98
3. Storm drains Maciel-Riachuelo (Avellaneda)	2	80	20	LPI	12,400	I/98
4. Storm drains La Matanza I	3	80	20	LPI	19,300	II/98
5. Urbanization and architectural works (B. Aires munic.	3	80	20	LPI	7,500	II/98
6. Urbanization and architectural works (B. Aires prov.)	5	80	20	LPI	10,900	II/98
7. Storm drains in rest of South Area	4	80	20	LPI	19,700	I/99
8. Storm drains Arroyo del Rey (Lomas de Zamora)	6	80	20	LPI	70,800	I/99
9. Pumping stations	6	80	20	LP1	40,000	II/99
10. Storm drains La Matanza II	3	80	20	LPI	9,200	I/00
11. Storm drains La Matanza III	5	80	20	LPI	20,100	I/00
12. Storm drains Unamuno (Lomas de Zamora)	3	80	20	LPI	17,900	I/00
13. Rehabilitation of storm drains	4	80	20	LPI	7,000	I/00
14. Additional storm drains (La Matanza)	3	-	100	LPI	22,500	II/00
CONSULTANCIES						
15. Land use	1	10	90	LPI	500	II/98
16. Road works	1	10	90	LPI	500	II/98
17. Industrial pollution control	4	10	90	LPI	3,500	I/98
18. Technical support to environmental agencies	2	10	90	LPI	3,500	I/98
19. Technical support to the Basin Authority	1	10	90	LPI	250	I/99
20. Management and disposal of hazardous wastes	1	10	90	LPI	300	I/99
21. Comprehensive solid waste management	1	10	90	LPI	750	I/99

LPI = International public bidding
LP = Public bidding

PROPOSED RESOLUTION

ARGENTINA: LOAN No. /OC-AR TO THE NACION ARGENTINA

Environmental Management of the Matanza-Riachuelo River Basin 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 Nación Argentina, as Borrower, for the purpose of granting it a financing to cooperate in the execution of the Environmental Management of the Matanza-Riachuelo River Basin Program. Such financing will be for the amount of up to two hundred and fifty million dollars of the United States of America (US\$250,000,000), which are part of the Single Currency Facility of the Ordinary Capital resources of the Bank, and will be subject to the "Terms and Financial Conditions" and "Special Contractual Conditions" of the Executive Summary of the Loan Proposal.