

SOLID WASTE MANAGEMENT PROGRAM

(JA-0035)

EXECUTIVE SUMMARY

BORROWER AND GUARANTOR: Government of Jamaica

EXECUTING AGENCY: Ministry of Local Government, Youth and Community Development

AMOUNT AND SOURCE:

IDB:	US\$11,500,000 (OC/IFF)
Local counterpart funding:	US\$ 5,000,000
Total:	US\$16,500,000

FINANCIAL TERMS AND CONDITIONS:

Amortization period:	25 years
Disbursement period:	3.5 years
Interest rate:	variable
Inspection and supervision:	1%
Credit fee:	0.75%
Currency:	U.S. dollars from the Single Currency Facility

OBJECTIVES: The objective of the project is to improve the environmental and sanitary conditions of the solid waste disposal site in the Kingston Metropolitan Area (KMA) and other non-active sites around the country, as well as to develop an action plan for a national solid waste management program.

DESCRIPTION: The project will consist of the following components:

a. Priority investments at Riverton (US\$9.0 million)

The investments and activities at the Riverton site will include the following: (i) up-grade access and control infrastructure; (ii) remedial works to prevent pollution; and (iii) community based recycling.

b. Closure of existing dumps (US\$1.5 million)

Approximately fourteen (14) non-active disposal sites will be closed. Works will start in two pilot sites and will be extended to the rest after assessing the effectiveness and success of the pilots. The pilot sites will be Lakes-Pen and Mineral Heights. The closure will include cover material, revegetation,

evaluation of the amount of composting and leachate production, identification of downstream receptors of pollution and an environmental monitoring program for surface and groundwater where necessary. Post-closure operation will include the control of illegal dumping and community awareness activities.

c. National solid waste management action plan
(US\$1.6 million)

The following tasks and activities will be completed to prepare the National Action Plan: (a) preparation of the national solid waste management policy; (b) national plan for Industrial-commercial-institutional (ICI) waste minimization, hazardous waste management, special waste management, and medical waste management; and (c) island-wide disposal site selection.

**RELATIONSHIP OF
PROJECT IN BANK'S
COUNTRY AND SECTOR
STRATEGY:**

The Bank has a two fold strategy in Jamaica, one to support the establishment of satisfactory macroeconomic conditions, and the other to promote an improved environment for long-term private sector-led growth and development. The Bank will seek to attain these objectives by concentrating its activities in five principal areas: (i) financial sector restructuring and reform, (ii) private sector development, (iii) public sector modernization, (iv) social development, promoting accessibility of social services, and (v) environmental management, aimed at long-term sustainable use of natural resources, adequate water supply and waste management. The proposed project will contribute to better environmental management through the improvement of the sanitary conditions especially of the KMA. The improvement of the solid waste services are an important part of the overall betterment of inner city neighborhoods and social attention to low income communities. Bank support in environmental regulation and monitoring will lead to improved environmental management of public services.

**ENVIRONMENTAL/
SOCIAL REVIEW:**

Positive environmental, health and safety benefits will result from the execution of the project. Environmental control and monitoring are designed to detect trends in any environmental impacts over time. Observations of unacceptable pollution or safety problems will trigger mitigating action to reduce the impacts or safety hazards to acceptable levels.

The design and operational improvements will reduce the existing negative impacts on water quality in the Duhaney river and will improve the safety and health

of the sorters. The operation will impose restrictions on site access and usage; provide leachate, dust, livestock grazing and litter control; and provide fire prevention and establish buffer zones. Through ongoing monitoring programs, the results of implementation strategies can be measured and evaluated and adjusted as needed.

BENEFITS:

The proposed Program will result in significant environmental and health benefits from improved collection, transportation, disposal and the reduction of littering and illicit dumping. This will lead to a cleaner environment, less water and soil pollution, with a resulting positive impact on quality of life, recreation and health.

RISKS:

Risk: Residential developments with volatile communities are located at the entrance of the Riverton landfill. The access and the operation of the landfill are controlled by some community members with whom the landfill operator must negotiate. Mitigants: A sociological profile of the community has been carried out and an on-going process of negotiation with the community and the leaders is underway with the participation of the Project Executing Unit (PEU), the Social Development Commission (SDS), political leaders and MP&M. The community activities and landfill site operations will be developed with the participation of NGOs respected by the community.

Risk: Local vested interest or local communities may oppose a change towards a more transparent system for contracting refuse collection. Such opposition may understandably be based on a fear that a change may create unemployment in the communities with serious social and political consequences. Mitigants: A radical and immediate change in contracting refuse collection is not realistic at the present time in the whole city of Kingston. Thus, the project aims at a progressive change in which a first step is the selection of some communities where changes will be implemented to showcase results in order to create acceptance in other communities.

Risk: The tipping fees may not be accepted by private hauling companies that dispose non-residential refuse at Riverton. Mitigant: During project preparation interviews were held with representatives of these companies who expressed no opposition to the fees. To facilitate implementation, the fee will be phased-in and linked to visible improvements in access and management at the landfill site. In addition, the

enforcement capacity of MP&M will be strengthened with training and equipment.

**SPECIAL
CONTRACTUAL
CLAUSES:**

As conditions precedent to first disbursement the Bank will require:

(i) the additional staffing of the Project Executing Unit comprising of a senior technical officer, financial officer and an administrative assistant (see paragraph 3.2).

(ii) the final design, tender and bidding documents of the works at the Riverton Landfill, and satisfactory evidence of the consultation process with the Riverton community, including the agreements and actions taken to satisfy the community requirements and needs in the design of the facilities (see paragraph 3.4).

(iii) satisfactory evidence of the Government's commitment to transfer the assets arising from the project for the benefit of MP&M and/or the future institution to be in charge of the collection and disposal of solid waste, as a capital contribution to this company (see paragraph 3.22)

(iv) the agreement between the PEU and MP&M establishing accounting procedures, satisfactory to the Bank, to be followed for the proper recording of project expenses -Bank financing and counterpart contribution- in the MP&M's financial records and in the PEU project accounting records (see paragraph 3.22).

(v) an implementation plan for transparent and competitive contracting procedures for the refuse collection (see paragraph 4.9).

(vi) the establishment of an introductory tipping fee to cover operation, maintenance and depreciation of new works and equipment in year one of execution and a five-year implementation plan to cover the cost of operation, maintenance and depreciation of all the new works and equipment of the Riverton landfill (see paragraph 4.15).

Reports

The PEU will share annual reports with the Bank with the results of the monitoring program, including the environmental monitoring, during the period of project execution and 5 years thereafter (see paragraph 3.23).

**POVERTY-TARGETING
AND SOCIAL SECTOR
CLASSIFICATION:** This operation qualifies as a social equity/poverty reduction project, as described in the indicative targets mandated by the Bank's Eighth Replenishment.

**EXCEPTION TO BANK
POLICY:** None.

**PROCUREMENT
METHOD:** International competitive bidding will be obligatory for purchases of more than US\$250,000 for goods and services and US\$2,0 million for construction works. Bidding of amounts below these ceilings will take place in accordance with local legislation.

I. FRAME OF REFERENCE

A. Macroeconomic aspects

- 1.1 The central issue underlying the Jamaican macroeconomic performance is the fiscal deterioration. The estimated deficit of the central government budget for 1998/99 is 8% of GDP. This is attributable to increased spending partly due to higher debt servicing costs and fall-out from the large interventions which the Government has undertaken in order to rescue distressed financial institutions and other private sector enterprises.
- 1.2 The Government priority with respect to short-term macroeconomic policy has been to maintain price stability. The recent trend of declining inflation rates has been sustained as inflation declined from 9.2% in 1997 to 7.9% in 1998. This relatively low inflation is attributable to a tight monetary policy. The Government has also intervened in foreign exchange markets, whenever necessary, in order to defend the exchange rate; this has been facilitated by the increased stock of reserves in recent years. The monetary policy has resulted in an accumulation of net international reserves. In addition, interest rates are high, and have contributed to significant debt service costs with adverse impacts on output. It should be noted that interest rates have declined continuously since early 1998.
- 1.3 The performance of most economic sectors has been sluggish. GDP declined by 2.4% in 1997 and 0.7% in 1998. Some growth was experienced in the bauxite/alumina sector where total production grew by 5.5% in 1998. Likewise, performance in the tourism sector continues to be positive with a 2.8% increase in stop-over arrivals in 1998.
- 1.4 The most pressing immediate challenges of the GOJ are the need to bring the fiscal deficit under control while promoting a climate of economic growth. The Government intends to tackle the budget deficit by strengthening its collection machinery and by cutting expenditure and implementing an active debt management strategy.

B. Issues on solid waste management

- 1.5 Jamaica has a total population of 2.5 million people that generates approximately 840,000 tons of waste annually. Half of this amount is generated by the Kingston Metropolitan Area (KMA) alone. In the KMA, households and markets contribute between 50% and 70% of the waste stream, with the remaining amount being generated primarily by industrial, commercial and institutional sources. Current capacity for accurately determining quantities and characteristics of waste produced is limited.

1. Waste collection

- 1.6 Approximately two-thirds of the waste generated is collected, the remaining being disposed in vacant lots, gutters, drains and gullies. This gives cause for considerable environmental, social and aesthetical concerns.
- 1.7 The KMA has the highest service coverage in the country (80%). This area is divided into twenty collection zones for waste pick up, which is carried out by a combination of the Metropolitan Parks and Markets (MP&M), a public agency, and private contractors. The city is served by modern equipment owned by MP&M; however, truck maintenance problems have resulted in a fleet downtime ratio of almost 50%. Although substantial technical and economical improvements in the provision of cleansing services to the city have been made, efficiency of the collection system still can be improved. Rationalization of collection routes and organization of schedules is needed to reduce system costs, with improvements in the fleet maintenance program.
- 1.8 The goal of the Ministry and MP&M to bring a more efficient and technical approach to solid waste management operations has been obstructed by long standing social norms that have been derived from the historical and social divisions in the communities. A fight for turf control exists in these neighborhoods and is supported by some members of the community that will not allow outsiders to work within their community boundaries. This practice results from the scarcity of work and a resultant passion of the communities to own whatever work or employment that is available.

2. Waste disposal

- 1.9 Presently 15 dumps are being used regularly for waste disposal purposes. Most of the sites are found in areas of permeable soils, therefore, high risk of groundwater pollution. The waste is poorly compacted, lacks proper drainage and leachate control, and cover material is used only intermittently. Frequent wild fires occur and uncontrolled human and animal activity on-site exists. Controlled or sanitary landfills do not exist in Jamaica today.
- 1.10 Usually, municipal solid waste contains toxic materials at the time it is disposed on dumps. It is estimated that a total of 10,000 tons per year of hazardous waste are generated in the country. Except for some simple incineration facilities at very large hospitals, no adequate facilities for the treatment and safe disposal of hazardous waste exist in the country. The lack of information on the characterization of the hazardous waste stream impedes the design and implementation of an environmentally-sound management program for its collection and disposal.
- 1.11 Waste minimization activities to reduce the waste stream are limited in Jamaica. It is estimated that only 5 percent of the municipal solid waste is recycled, with food waste from large

kitchens, used as pig fodder, and returned glass bottles making up most of this volume. Small quantities of iron scrap, aluminum, and cardboard are also recovered and sold locally. Backyard composting takes place on a very limited scale.

- 1.12 The large number of sites in the country, each with a limited capacity, represents an inefficient solution to waste disposal in Jamaica. Because traditional economies of scales in this type of activity are not taken into consideration, a high average unit cost of disposed waste is being achieved. A national waste disposal strategy that defines facility sizes and site locations to minimize overall system cost is required.
- 1.13 Out of the 15 existing dumps in the country, the Riverton site serving the KMA is considered the most problematic site from an environmental and social point of view. The site is being operated without any formal operating or development procedures, safety and health protection, or environmental safeguards. As a result, burning, dust, smoke, odor and vermin problems are affecting the surrounding residential areas negatively and require immediate mitigating measures.
- 1.14 The Riverton site is located in the southeastern corner of the Parish of St. Catherine, approximately 7.5 km northwest of the Kingston downtown area. Riverton receives approximately 60% of the waste stream in the country. Residential developments with volatile communities, known as Riverton City and Riverton Meadows, are located at the entrance to the site. Operations had become very difficult during outbreaks of violence. To prevent criminal activities, security is arranged as part of the contract with the community association. The surrounding community is economically dependent on the landfill both directly and indirectly. The development of the site should be cognizant of the social and economic impact it may have on this community.
- 1.15 The only form of on-site waste diversion at Riverton consists of more than 200 sorters who pick through the waste looking for recyclable material. At any given time, the number of sorters working in the active tipping area ranges from a few to several dozens. Safety and health problems are a concern. The sorting activities are not organized and large quantities of potentially recyclable material are missed. Some recycling does occur through the collection system and not all material is obtained from the dump as some is diverted and turned over to the recyclers enroute to the dump.

C. Legal and institutional arrangements for solid waste management

1. Legal framework

- 1.16 Jamaica has three main waste management related Acts. The Litter Act assigns powers to Parish Councils to order the removal of litter and issues fines for littering. The Public Health Act

enables Parish Councils to establish local boards of health and gives the boards the power to enact regulations for the collection and disposal of waste materials. The Natural Resources Conservation Authority Act regulates the establishment and operation of waste management facilities.

- 1.17 The Litter Act contains relatively detailed provisions for solid waste management and requires little in the way of implementing regulations. A major shortcoming, however, is that it does not deal with illegal dumping. In addition, limited parish council capabilities have resulted in only a partial enforcement of the provisions of the Act. The Public Health Act and the Natural resources Conservation Authority Act can be described as general framework statutes that require detailed regulations to be effective. Draft regulations for both statutes have recently been prepared but have not yet been promulgated.

2. Institutional arrangement

- 1.18 The responsibility for solid waste management has historically been under the jurisdiction of many bodies. However, three institutions play a major role: The Ministry of Local Government, Youth and Community Development (MLGYCD), the Parish Councils (PCs) and the Parks and Markets Companies (P&Ms). The other organizations which play a smaller role are: Ministry of Housing and Environment (MHE), Natural Resources Conservation Authority (NRCA), Ministry of Health (MOH) and the Town and Country Planning Authority.
- 1.19 The MLGYCD has assumed the lead national government role for the development of comprehensive solid waste management policies and programs. However, its current capacity to issue sector policies or to offer operational guidelines is very limited. At present, its major role is processing the annual budgets and the allocation of funds for the provision of waste management-related services.
- 1.20 Parish Councils (PCs) have a statutory duty to provide solid waste management services within their respective area of jurisdiction. For that purpose, PCs contract the Parks and Markets Companies (P&Ms) to provide public cleansing, street sweeping and residential garbage collection, and the operation of the disposal facilities. However, PCs have no control over the provision of services because funding is managed directly by the MLGYCD.
- 1.21 The P&Ms were created between 1986 and 1989 as autonomous companies under the Jamaican Company Act and operate as agencies of the PCs in the delivery of solid waste management services. Annual budgets of the P&Ms are approved by the MLGYCD. In addition to their public cleansing responsibilities, most of the P&Ms are also responsible for the maintenance of parks, as well as the operation and maintenance of local markets within parishes. The program delivery capabilities of several of these companies are limited.

- 1.22 The Natural Resource Conservation Authority (NRCA) administers the NRCA Act aimed to regulate planning, building and operation of any solid waste facility. Through its Environmental Control Division, the Ministry of Health (MOH) plays also an important regulatory role, setting up standards for pollution and undertaking planning tasks. However, these agencies are in the process of establishing regulations and procedures, but lack enforcement and compliance capabilities.
- 1.23 Property owners pay a Land and Property tax that is designed to cover public services such as solid waste management. These tax revenues are dedicated to finance the Parish councils through the Parochial Fund with the first option being to finance the solid waste services. Funding for these services is also provided by annual budgetary allocations from the central government through the MLGYCD.
- 1.24 Commercial and industrial collection is generally contracted with private companies. There is a considerable capacity within the private sector to provide refuse collection services. The private sector contractors do not own or operate any disposal facility. Some of the P&Ms companies have attempted to expand their services into the commercial/industrial market as a mean of increasing their revenues. However, this practice is meeting with strong resistance from the private sector hauling companies.

D. Project role in the Bank's country strategy

- 1.25 The Bank has a two fold strategy in Jamaica, one to support the establishment of satisfactory macroeconomic conditions and the second, to promote an improved environment for long-term private sector-led growth and development. The Bank will seek to attain these objectives by concentrating its activities in five principal areas: (i) financial sector restructuring and reform; (ii) private sector development; (iii) public sector modernization; (iv) social development, promoting accessibility of social services; and (v) environmental management, aimed at long-term sustainable use of natural resources, adequate water supply and waste management. The proposed project will contribute to better environmental management through the improvement of the sanitary conditions especially of the KMA. The improvement of the solid waste services are an important part of the overall betterment of inner city neighborhoods and social attention to low income communities. The support of the public sector in environmental regulation and monitoring will lead to an improved environmental management of public services.

E. Project rationale

- 1.26 During recent years the GOJ has been working in the development of a national solid waste program. Feasibility studies have been undertaken without conclusive results on several aspects, an important one being the location of some of the key sites for final

disposal. While additional studies were taking place, the government, aware of the critical situation in the Riverton dump, requested to stage Bank support in two phases.

- 1.27 In consequence, the proposed program is a first stage in a long term strategy in the sector that calls for the minimization of the environmental and health hazards associated with inadequate solid waste collection and disposal, as well as the promotion of waste reduction practices in the population. During the first stage the more urgent disposal problems in the Kingston Metropolitan Area will be addressed, non-active dumps around the country will be closed, regulations for appropriate management of special and hazardous waste will be established, the enforcement capacity will be strengthened, and cost recovery mechanisms will be implemented.
- 1.28 During the first stage, the MLGYCD will develop a new solid waste management policy, which will include the proposed creation of the Solid Waste Management Agency, a clear definition and assignment of functions among the new agency, the Parish Councils and other entities, and the design of a country-wide waste disposal system which will minimize investment, operation and transportation cost to best serve the needs of the country. The guiding principles for the development of this policy are: (i) long term sustainability of the service; (ii) efficiency and high quality of service; and (iii) highest possible coverage.
- 1.29 Once the first stage is successfully completed and the new sector policy is in place, a second stage to carry out a comprehensive country-wide investment program will be undertaken, in which ample participation of the private sector is anticipated.

II. THE PROJECT

A. Purpose

- 2.1 The objective of the project is to improve the environmental and sanitary conditions of the solid waste disposal site in the Kingston Metropolitan Area and other non-active sites around the country, as well as to develop an action plan for a country-wide solid waste management program.

B. Description of the project

- 2.2 The project will consist of the following components: (i) priority investments and remedial activities of the Riverton disposal site; (ii) closure of existing non-active dumps; and (iii) nation-wide action plan for integrated solid waste management.

1. Priority investments and remedial activities at Riverton

- 2.3 The investments and activities at the Riverton site will include the up-grade access and control infrastructure and remedial works to prevent pollution at the site. In addition, a community based recycling program will be implemented.

a. Up-grade access and control works (US\$1.4 million)

- 2.4 The safe access to the landfill will include a paved, 7 meters wide new access road from Portland Ave to the landfill entrance and a new entrance bridge across Duhaney river. The control facilities will include a fully electronic, low profile truck weigh scale with steel deck and platform; scale house-office building, maintenance building and fuelling facilities; site administration building; small load depository; and security fencing and gate-house.

b. Remedial activities (US\$6.2 million)

- 2.5 The remedial activities will consist of the development of 5 landfill cells within the existing waste footprint. The first cell will reach up to approximately 2.5 meters over existing ground. The works include the configuration of the outer slopes, construction of a wet weather tipping area and establishment of on-site roads. The cells will provide volume for up to three years of operation. Future landfill cells will be developed in two additional stages elevating the site to a 5.5 meters and 8.5 meters, over existing ground, respectively to provide space for two additional years of operation. The operation will require provision of cover material and the purchase of the equipment .
- 2.6 The operation of the landfill will be supported by proper staffing with a landfill site manager and 5 technical assistants. Training and consulting services for landfill operations will be an integral

part of the execution. Consulting services will include site operation, safety and health briefings, leachate management, environmental monitoring, and hydrogeology support.

c. Community based recycling (US\$1.2 million)

- 2.7 Recycling and training activities will be organized with the participation of the Riverton Community. To support these activities, two facilities will be constructed: a recycling depot 15 meters long by 2.5 meters wide and a materials recovery building (10 meters high, area 18 x 30 meters). In addition, sorting tables, cardboard baler and conveyors will be provided.

2. Closure of existing non-active dumps (US\$1.5 million)

- 2.8 Approximately 14 non-active disposal sites with high risk of pollution will be closed. Works will start in two pilot sites and will be extended to the rest after assessing the effectiveness and success of the pilots. The pilot sites will be Lakes Pen and Mineral Heights. The closure will include cover material, revegetation, evaluation of the amount of composting and leachate production, identification of downstream receptors of pollution and an environmental monitoring program for surface and groundwater. Post-closure operation will include the control of illegal dumping and community awareness activities.

3. National Integrated Solid Waste Management Action Plan
(US\$1.8 million)

- 2.9 The following tasks and activities will be completed to prepare the National Action Plan: (a) a national solid waste management policy; (b) national plan for Industrial-commercial-institutional (ICI) waste minimization, hazardous waste management, special waste management, and medical waste management; and (c) nation-wide disposal site study. As part of these activities, new regulations will be prepared to facilitate the operation, enforcement and monitoring of the hazardous, special and medical waste components. In addition, training will be provided in technical, operational and enforcement activities of solid waste management. Public awareness and education will be an integral part of the activities.

a. Solid waste management policy

- 2.10 Consulting services will be provided to support the GOJ in the development of the national solid waste management policy which will include institutional reforms, implementation of a long term cost recovery strategy and the preparation of new legislation and regulations. A policy unit will be established at the MLGYCD and the National Waste Management Agency will be created by mid 2,000. The new sector framework will promote: (i) Separation of the roles of policy formulation and regulation from operation; (ii) Establishment of contractual procedures to foster efficiency and competition, promotion of private sector participation in the

provision of collection, transfer and disposal services; and (iii) Long term financial sustainability.

b. ICI, hazardous, special and medical waste management

- 2.11 Consulting services and training will be provided for the following: (i) capacity building in NRCA, Ministry of Health and MP&M; (ii) ICI waste audits; (iii) generators (waste producers) capacity building; (iv) pilot projects to reduce, recycle and re-use (3Rs); and (v) feasibility studies, including engineering designs for final disposal of hazardous and medical waste.

c. Nation-wide disposal site study

- 2.12 Updated studies to complete the previous feasibility work which will now conclude with the final programme of regional sites and the engineering for each of the selected sites. This will include: (i) consultation with stake holders; (ii) preparation of an environmental impact assessment; (iii) preparation of preliminary design, technical specifications and operating manuals for each disposal facility and transfer station; and (iv) preparation of tender and bidding documents for final design, construction and operation of the facilities. Whereas previous programmes have proposed and the GOJ has accepted the principle of regional landfill sites, it proposes to build on these previous works and in principle the interventions in this programme will start where the previous tasks ended.

C. Cost and financing

1. Cost

- 2.13 The total cost of the project is estimated at US\$16.5 million equivalent, of which the Bank will finance up to US\$11.5 million equivalent, or 70% of the total project cost.
- 2.14 The cost of works and equipment was based upon an up-dated feasibility study with a preliminary design, including an operational manual for the Riverton landfill, conceptual designs for the support infrastructure and technical specifications of the equipment. The cost of the technical assistance and studies were based upon unit costs and amounts with the level of effort defined by the feasibility studies. All costs refer to November 1998. The following table presents the components contributing to the cost of the project.

COST AND FINANCING (US THOUSAND DOLLARS)				
CATEGORIES	IDB	LOCAL	TOTAL	%
I. ADMINISTRATION AND ENGINEERING	1,000	225	1,225	7.4
1.1 Administration	500	225	725	4.4
1.2 Engineering-studies (PPF)	500		500	3.0
II. DIRECT COST	8,300	4,300	12,600	76.4
2.1 Riverton Landfill	5,500	3,500	9,000	54.5
2.2 Closure of dumps	1,000	500	1,500	9.1
2.3 SWM Action Plan	1,300	300	1,600	9.7
2.4 Final Disposal study	500		500	3.0
IV. UNALLOCATED COST	1,300	390	1,690	10.2
4.1 Escalation	300	100	400	2.4
4.2 Contingencies	1,000	290	1,290	7.8
V. FINANCIAL COST	900	85	985	6.0
5.1 Interest	785		785	4.8
5.2 Commitment Fee		85	85	0.5
5.3 FIV	115		115	0.7
TOTAL	11,500	5,000	16,500	
PERCENTAGE	69.7	30.3		100.0

a. Cost analysis

(i) Administration and Engineering (US\$1.225,000)

- 2.15 It includes: (i) administration (US\$725,000) to cover the cost of administrative support of the executing agency, salaries of the technical staff of the PEU and office equipment; and (ii) engineering/studies (US\$500,000), to cover the cost of final design and bidding documents for the works at Riverton and support for the start up of the project. The latter are under way with resources from the PPF-1169/OC-JA of the revolving credit line PPF-015-JA.

(ii) Direct cost (US\$12.600,000)

- 2.16 It includes: (i) Investment in the Riverton landfill (US\$9.000,000) consisting of the access road and bridge, the control and administrative buildings, scale and safety equipment, consulting services to supervise and monitor the landfill operation and development, and the purchase of equipment for the operation of the

landfill; (ii) the closure of non-active dumps (US\$1.500,000) which comprised works and operations to close 14 dumps, monitoring equipment and periodic reporting; and (iii) Preparation of the solid waste management action plan (US\$1.600,000) comprising consulting services, studies, training, equipment and pilot cases, educational and awareness campaigns and the nation-wide feasibility final disposal study (US\$500,000).

(iii) Unallocated cost (US\$1.690,000)

- 2.17 To cover the cost of contingencies (US\$1.290,000) and escalation (US\$400,000) corresponding to approximately 5% of the investment expenditures.

2. Financing

- 2.18 Pursuant to Bank policy, Bank financing will be from the Ordinary capital/IFF facility. Disbursement will be in US dollars from the single currency facility. The following terms would apply: (i) variable interest rate; (ii) 0.75 % credit fee; (iii) 1% inspection and supervision fee; (iv) 3.5 year disbursement period; (v) 3.5 year grace period; and (vi) 25-year amortization period.
- 2.19 Local counterpart resources in the amount of US\$5.0 million will be contributed by the GOJ through the MLGYCD. The contribution will come from the Parochial Fund financed property tax collections. The viability of the contribution is justified in Chapter V.

III. EXECUTION OF THE PROJECT

A. Executing agency

- 3.1 The Ministry of Local Government, Youth and Community Development will be the executing agency of the project. A Project Executing Unit (PEU) was established under the Ministry's Permanent Secretary with the main role of ensuring an efficient execution of the project and inter-institutional coordination, including liaison activities with the regulatory and monitoring agencies. As a result of this role, it is expected that the Unit will evolve at the end of the project into the Ministry's policy unit responsible for solid waste management. Its location, reporting directly to the Permanent Secretary, ensures speed in the decision making process during project execution.
- 3.2 The PEU consists of a small staff of three professionals: a manager and two senior technical officers. The technical officers will provide expertise in the areas of waste minimization, landfill engineering, policy and legislation and public education. In addition, the PEU will be strengthened with a senior technical officer, a financial officer, and an administrative assistant. **The hiring of a senior technical officer, financial officer and administrative assistant for the PEU is condition prior to first disbursement.**
- 3.3 The PEU is responsible for the following activities: (i) execution of the priority investments and remedial activities at the Riverton site, for which, MP&M will have operating responsibilities once the site is completed. This activity comprises: taking the leadership in the joint planning with MP&M of the works to be done, hiring of the contractors, and controlling the timely and efficient execution of this component; (ii) contracting and supervising the closure of the non-active dump sites; (iii) contracting the studies and coordinating the activities for the national integrated management action plan; (iv) contracting and supervising the nation-wide disposal site study; (v) ensuring the continuous functioning of a proper system of internal financial control for the project, including the setting up of separate bank accounts for the project funds, the timely processing of requests for counterpart and Bank funds, the presentation of financial and technical information and financial statements in accordance with Bank requirements, and the timely external audits of financial statements. During project execution, the PEU will also be responsible for ensuring that the assets arising from project investments for the benefit of MP&M are properly recorded and depreciated in MP&M company books; and (vi) ensuring that procurement of works, goods and consulting services take place in accordance with Bank policy and that Bank contractual clauses are complied with.

B. Mechanisms for execution of the project

1. Priority investments and remedial activities at Riverton

- 3.4 The PEU will contract all the works with specialized construction companies. Contracts for the works will be tendered through competitive bidding, in accordance with Bank procedures. Preliminary designs were completed for all up-grade access and control works at the Riverton landfill. The final designs, bidding and tender documents are being prepared by using the resources of the project preparation facility. **The presentation of final designs, tender and bidding documents and satisfactory evidence of the consultation process with the Riverton community, including the agreements and actions taken to satisfy the community requirements and needs in the design of the facilities are conditions prior to first disbursement.**
- 3.5 The purchase of equipment will follow international competitive bidding. The equipment supplier will guarantee the availability of parts and services, and will provide operator training upon delivery. The performance and technical specifications have been provided in the feasibility studies. The equipment will be transferred from the MLGYCD to the MP&M as a capital contribution.
- 3.6 A local NGO with experience in community based development and knowledge of the social conditions of the Riverton City and Riverton Meadows community will be selected to organize and give technical assistance to the sorting and recycling program.
- 3.7 After construction and purchase, the facilities and equipment required for the operation of the Riverton landfill will be transferred from the MLGYCD to the MP&M. MP&M will have the responsibility of operating and maintaining the landfill site with its own staff, and supervise the activities to be developed with the community of Riverton. The PEU will periodically report the operational performance of the landfill and the environmental monitoring results.

2. Closure of existing non-active dumps

- 3.8 A specialized engineering company will be contracted to carry out the closure of the two dumps selected as pilot cases, Lakes Pen and Mineral Heights. After assessing the results of the pilot cases, due to the scattered location of the dumps, specialized firms will be contracted to close the remaining non-active dumps. The PEU will present a yearly program for the non-active dump closures. The PEU will assist the local Parish Councils and respective Parks and Markets company in the closure follow up and monitoring program. The PEU will share annual reports with the Bank with the results of the environmental monitoring program -ground and surface water quality- during the period of project execution and 5 years thereafter.

3. National waste management action plan

- 3.9 The PEU will hire and supervise the consulting services to develop the national integrated solid waste management action plan and implement the ICI, hazardous, special and medical waste components. The PEU will contract international and national consultants to support NRCA, MP&M, the Ministry of Health and the private sector generators of waste. The NRCA coordinates on existing inter-agency waste management committee. The PEU will be represented on this committee and will create a subcommittee on solid waste management (IWMT). This team, under the coordination of the PEU, will be responsible for the coordination of the inter-agency activities of the national waste management plan. The creation of the subcommittee with technical representatives of the MLGYCD, Ministry of Health, NRCA, MP&M and two representatives of the private sector will help to implement the proposed plan.
- 3.10 The consultants in close coordination with IWMT will prepare technical and policy papers to be consulted with stakeholders. These papers will be the basis for the policy formulation under the guiding principles of long term sustainability, efficiency and quality of the service.
- 3.11 The establishment of cost recovery mechanisms will assure efficiency and quality of the service while keeping financial sustainability. The introduction of tipping fees will be phased-in with the execution of the works, the improvement of operational and sanitary conditions at the Riverton site, as well as with the strengthening of the enforcing capacity and community awareness to prevent illegal dumping.
- 3.12 Updated work to complete the feasibility study will be contracted to update the country-wide solid waste disposal study during the first year of execution through international competitive bidding. The results of the study to be shared with the Bank, will be used as the basis for the development and evaluation of the second phase of the solid waste management program covering the entire country.
- 3.13 The results of the studies will allow the GOJ to take the following actions: (i) Prepare and table in Parliament a Solid Waste Management Act; (ii) Establish the new institutional structure for solid waste management - the policy unit at the MLGYCD and the Solid Waste Management Agency; and (iii) Implement the proper policy and regulations to allow private operators to be engaged in the future waste management system operation through competitive, transparent and performance based process. This together with the lessons learned from the first stage, an assessment of end-of-project benchmarks and the roles of local entities and the Solid Waste Management Agency in collection and disposal will permit to evaluate Bank support for the next stage.

C. Implementation schedule and project preparation status

- 3.14 The feasibility studies were completed in December 1998. The final construction design and bidding documents for all works at Riverton are under preparation with PPF resources and expected to be ready by August 30, 1999. The terms of reference for the consulting services and technical specification for the equipment are ready. Additional terms of reference for the consulting services required for the second year of execution -hazardous and medical waste studies- and for the closure of non-active dumps will be prepared by the PEU during the second semester of 1999.
- 3.15 Implementation at Riverton consists of the execution of two contracts during the first year for the construction of the access infrastructure and the facilities at the landfill. The first contract will include the access road, the bridge over the Duhaney river and the provision of electricity. The second contract will include all building for administrative, technical and operational support of the landfill operations. The construction of all physical works of the project are scheduled to be completed during the second year of execution. The purchase of equipment will be phased according to the operational needs and institutional development.
- 3.16 The consulting services and training for the development of the national solid waste action plan will start in the first year of execution. The project will be executed in three years from the date of the loan contract. The following table presents a summary of the projected investment schedule and financing sources.

INVESTMENT SCHEDULE DIRECT COST (US DOLLARS)				
YEAR	IDB	LOCAL	TOTAL	%
1	3,500	1,500	5,000	36
2	3,800	2,200	6,000	43
3	2,000	825	2,825	21
TOTAL	9,300	4,525	13,825	100

D. Maintenance

- 3.17 The availability of adequate resources, including trained staff to supervise and monitor the operations, as well as properly maintain the facilities and equipment is critical for the implementation of a dependable collection and disposal system. The project provides resources for financing the Director of the PEU and four senior officers. In the first quarter of each year, beginning with the fiscal year after which the facilities are constructed and for five consecutive years, the borrower will submit a report to the Bank,

in a format to be agreed upon, demonstrating that the facilities are being maintained in accordance with the requirements specified in the manual of operations of the Riverton landfill.

E. Procurement

- 3.18 Bank procedures will be followed in the procurement of works, goods and consulting services. International competitive bidding will be followed for purchases of more than US\$250,000 for procurement of goods and related services and US\$2.0 million for construction works. Bids below these ceilings will take place in accordance with local legislation. Consulting services will be hired in accordance with Bank procedures.

F. Land acquisition

- 3.19 The property on which the works will be constructed belongs to the GOJ. The right of way for the new access road to the Riverton landfill has already been obtained by the GOJ. In keeping with Bank policy, before issuing a call for bids on works, the GOJ will have to demonstrate that it holds legal title to the land on which the works will be constructed.

G. PPF re-payment

- 3.20 As part of project preparation, the equivalent of US\$500,000 was provided through the PPF revolving credit line, PPF/015-JA, and the loan 1169/OC-JA to finance the final designs and preparatory activities of the project. The first disbursement under the loan must include the amount spent from the PPF loan, up to US\$500,000.

H. Project accounting

- 3.21 The Borrower will be responsible for establishing separate bank accounts to receive the funds originating from loan and local counterpart resources. Disbursements from these accounts will be the responsibility of the PEU.
- 3.22 The PEU will establish a project accounting system with the guidance of COF/CJA on the Bank requirements. In order to ensure the proper and timely recording of project expenses in the project accounting books and the related assets that should be recorded in the MP&M books, and prior to first disbursement the Borrower will present to the Bank the following: (i) **Satisfactory evidence of the Government commitment to transfer the assets produced by the project for the benefit of MP&M and/or the future institution to be in charge of the collection and disposal of solid waste, as a capital contribution to this company;** and (ii) **an agreement between the PEU and MP&M establishing accounting procedures, satisfactory to the Bank, to be followed for the proper recording of project expenses -Bank financing and counterpart contribution- in the MP&M's financial records and in the PEU project accounting records.**

In addition, the PEU will present a project accounting system chart of accounts.

I. External auditing

- 3.23 A firm of Chartered Accountants satisfactory to the Bank will be contracted during the first year to audit the project and MP&M financial statements during project execution. This firm will also render an opinion on the propriety of the accounting treatment related to asset accounting -proper timing of recording and depreciation- in MP&M's books for investments arising from the project for the benefit of MP&M, as well as an opinion on the compliance of all financial clauses.
- 3.24 The PEU will present the audited financial statements of the project and of MP&M during the period of project execution, within 120 days after the closing of the fiscal year. To avoid delays in external auditing for lack of funds and to strengthen independence, the cost of external auditing has been included in the project with Bank financing.

J. Supervision of the project

- 3.25 The Country Office in Jamaica will take primary responsibility for supervising the project. The Bank will establish inspection procedures so as to ensure satisfactory completion and to verify compliance with agreed measures for environmental monitoring as part of the annual reports. The parameters to be monitored and reported will include operational and financial aspects of the landfill management including: compaction of the waste, number of fires, volume of recycling, revenues from tipping fees, water quality. The closure of the non-active dumps will be monitored by health and pollution detection indicators. Advances in the national Solid Waste Policy will be reported as Amendments to the law, regulations and institutional development is achieved. The Logical Framework of the project shows the indicators to be used during the supervision of the execution (see Annex III-2).
- 3.26 During the second year of execution, after the draft national action plan for solid waste management and the revised nation-wide disposal sites feasibility study are presented, a mid-term evaluation mission, with the participation of the Project team and COF/CJA, will take place to verify the achievements of the project and the expected implementation of the policy and institutional reforms for solid waste management. These studies will be used as a basis for an eventual second phase of a country-wide solid waste management program. An important aspect during the mid-term evaluation will be to assess the effectiveness of the implementation of cost recovery mechanisms, as well as the potential negative effects of increase illegal dumping and the measures taken to control this problem.

K. Environmental aspects

- 3.27 Positive environmental, health and safety benefits will result from the execution of the project. Environmental control and monitoring are designed to detect trends in any environmental impacts over time. Observations of unacceptable pollution or safety problems will trigger mitigative action to reduce the impacts or safety hazards to acceptable levels.
- 3.28 An evaluation of the environmental impact of the proposed activities and a preliminary risk assessment was introduced into the landfill design. An extensive sociological study was carried out with the communities of Riverton City and Riverton Meadows, which included the scavengers and the formal and informal leaders of these communities. Sociological profiles were also prepared for the inner city communities where violence and control by street leaders are prevalent.
- 3.29 During project preparation, an intensive and continuous process of public consultation and participation was followed. Meetings were held with the solid waste steering committee including two workshops to discuss planning, environmental and social aspects. The field work for the sociological studies included surveys and extensive personal interviews with residents and community leaders. The final proposal of the project was discussed at a public meeting held at Riverton Meadows on January 25, 1999.

1. Environmental and social impacts

- 3.30 The design and operational improvements will reduce the existing negative impacts on the water quality in the Duhaney river and will improve the safety and health of the scavengers. The operation will (i) pose restrictions on site access and usage; (ii) provide dust, livestock grazing and litter control; and (iii) provide fire prevention and establish buffer zones. Results of implementation strategies can be measured and evaluated through ongoing monitoring programs.
- 3.31 The operation of the Riverton dump poses a high level of pollution from runoff water and leachate that freely runs to the Duhaney river and the underlying aquifer. Sorters and animals are severely affected by hazardous and medical waste that is indiscriminately disposed at the site. The risk of accidents by trucks and heavy machinery is high, and frequent fires create an unsafe environment.
- 3.32 The proposed activities will drastically reduce negative impacts. The remedial actions will cover only the actual footprint of the disposal site, no new land will be required. Runoff water will be controlled, although there will still be percolating leachate moving downward to the aquifer at a much lower rate. The aquifer has already been polluted and there are no useful groundwater resources at the site. Odor will be a minor problem because sufficient cover material will be provided. Relatively small

amounts of methane gas are currently produced, gas monitors will be installed. A low migration of landfill gas is expected due to the fine texture of the underlying soil and the high water table beneath the waste. Fire will be prevented by a combination of operational practices, immediate response and appropriate equipment and training.

- 3.33 Some negatives impacts will be present. Dust is generated by machinery operating on the site and from vehicles bringing waste for disposal. Limiting access to the site and wetting the surfaces will control this fugitive dust. Noise from bulldozers and trucks may be a problem. The Duhaney river physically separates the site from the inhabited area and the operations are planned at the furthestmost end of the site.

2. Mitigation plan

- 3.34 The mitigation plan will include the following:

- a. Fencing and employment of security staff to prevent unauthorized access and vandalism.
- b. Organization of recycling and processing activities with the community.
- c. A ban of hazardous and medical waste from residential waste disposal; as an interim measure, all hazardous and medical wastes will be disposed at a secure designated cell.
- d. Landfill mining to provide cover material.
- e. Collection of storm water and implementing operational procedures to prevent overland flow.
- f. Provision and enforcement of the use of safety equipment and procedures during operations.
- g. Monitoring surface water quality, groundwater and air quality.
- h. Fire protection with safe operational practices, training and fire control equipment.

- 3.35 During the first year of execution, with the results of the monitoring program an environmental baseline will be established. The results of the monitoring program will be reported twice a year and the results will be made available to the public.

IV. THE EXECUTING AGENCY

- 4.1 The Borrower will be the Government of Jamaica. The project will be executed by the Ministry of Local Government, Youth and Community Development through a project execution unit (PEU) under the Ministry's Permanent Secretary. The Metropolitan Parks and Markets (MP&M) will have implementation responsibilities for the investments at the Riverton site.
- A. The Ministry of Local Government, Youth and Community Development (MLGYCD)
- 4.2 The MLGYCD is nominally the sector's head. It became operational in January 1998. Prior to this date, the Ministry of Local Government also included public works. According to its corporate plan, the MLGYCD is responsible for the following functions: (i) the administration of the twelve Parish Councils and the Kingston and St. Andrew Corporation; (ii) solid waste management; (iii) development of a participatory community development process; (iv) showcasing the Jamaican talent in the visual and performing arts; (v) establishment of mechanisms for the observance of national and international anniversaries; (vi) care for the elderly; (vii) maintenance of the national system of fire services; and (viii) inculcation of the nation's youth with positive values and respect for the national heritage.
- 4.3 The MLGYCD has portfolio responsibility for a number of agencies including the Parish Councils/KSAC, Fire Brigade and the Social Development Commission. The five Parks and Markets companies are contracted by the Parish Councils/KSAC to provide solid waste management services.
- 4.4 The following table shows the Ministry budget execution figures for fiscal years 1997 and 1998 and its budget for fiscal year 1999 (fiscal years run from April 1 to March 31). The figures are expressed in thousand of US dollars at December 1998 prices.

MINISTRY OF LOCAL GOVERNMENT YOUTH AND COMMUNITY DEVELOPMENT BUDGET EXECUTION IN THOUSANDS OF US DOLLARS (DEC 98)			
	FY 1997	FY 1998	FY 1999
	ACTUAL	ESTIMATE	BUDGET
Whole Ministry			
Current Expenditures	64,169	54,331	68,250
Capital A - Govern. funds	72,731	50,178	7,289
Capital B - Multinat. funds	44,824	37,013	1,010
Total	181,723	141,522	76,549
Transfers to all P&Ms			
Current Expenditures*	21,059	15,179	16,107
Capital A - Govern funds	1,366	2,802	2,195
Total	22,425	17,981	18,302
Transfers to MP&M			
Current Expenditures	13,899	11,704	9,077
Capital A - Govern funds	423	842	683
Total	14,322	12,546	9,760

4.5 The Jamaican public sector works with three basic budgetary categories: (i) current expenditures to finance recurrent costs; (ii) capital A to investments financed with government funds only; and (iii) capital B to cover investments financed with multinational or bilateral funds. In the case of the MLGYCD, only funds from the current expenditure and capital A budgets are transferred to the P&Ms.

4.6 As explained in Paragraph 4.2, prior to 1998, the Ministry of Local Government also included public works. Thus, the chart reflects a major drop in total ministry funds from US\$141.5 million in FY 1998 to US\$76.5 million in FY 1999. Total transfers to all P&Ms, have declined in real terms from US\$22.4 million in FY 1997 to an expected US\$18.3 million in FY 1999. The bulk of these transfers went to MP&M which received from 53% to 69% of the total. In addition to the transfers shown in the chart, MP&M received a fleet of 52 trucks between April and August 1998 with an approximate value of US\$4 million financed with capital B budget.

B. Metropolitan Parks & Markets Limited (MP&M)

4.7 Incorporated in 1984 under the provisions of Company Act, MP&M is a wholly-owned government company that operates within the Kingston and St. Andrew Corporate area. In addition to its mandate for

solid waste management, MP&M activities include the cleaning of gullies and drains to reduce risk of flooding and health hazards, the maintenance and operations of public markets, the maintenance of major parks, median strips and verges, and official government residences, security services for parks and markets, and the operation of a municipal bus terminus. MP&M maintains a close relationship with local communities in the area, involving residents in provision of some services as a means to generate jobs. This broad and diverse set of functions has diverted management attention and personnel away from solid waste management, pointing out the need to reexamine the functions of MP&M and to shift some of the responsibilities not involving SWM to the Parish Councils.

- 4.8 The MP&M Board of Directors is appointed by and reports to the Minister of MLGYGD. The company's organizational structure comprises an Administration and Finance Division, an Operations Division, a Planning and Research Unit and Community Relations Unit, all reporting to the Managing Director. The company's staff consists of 362 employees, of which 86% are involved in activities related to Parks, Markets and Security.
- 4.9 The bulk of SWM actual work is performed by 80 contractors who in turn employ 600 persons. MP&M also has 74 contractors for its work in Parks and Markets who in turn employ 460 persons. The company's contracting procedures have been politically influenced over time, resulting in economic inefficiencies as subjective selection of contractors has impeded achieving a cost-effective refuse collection service. MP&M is currently committed to implement contracting procedures that will ensure an efficient and high-quality collection service. **Evidence of a plan for the implementation of transparent and competitive contracting procedures for the refuse collection in MP&M is a condition prior to first disbursement.**
- 4.10 Financial administration is the responsibility of an executive manager for finance and administration, a post presently vacant. A computerized financial accounting system and the control of receivables, payables and payroll function have been established satisfactorily under an Accounts Manager.
- 4.11 MP&M plans to generate internal funds from operations through the implementation of a cost recovery system. This system requires the setting up of financial planning, a basic cost accounting system, cash flow analysis, a billing and collection system and the timely production of financial results and complete statements, activities which do not exist at present. This plan will include the timing for the hiring of the financial manager to be charged with the organization of the financial functions necessary to support the administration and monitoring of the cost recovery system.

- 4.12 The following table presents the income statement of MP&M for fiscal years 1997 to 1999, adjusted for depreciation expenses for assets acquired for the exclusive use of the company through Capital B financing (Paragraph 4.7).

METROPOLITAN PARKS AND MARKETS INCOME STATEMENT IN THOUSANDS OF US DOLLARS (1998 PRICES)					
	HISTORICAL				
	FY 1997	FY 1998	FY1999*	Average	Percent
INCOME					
Transfers from MLG	14,322	12,545	11,130**	12,666	97.6
Interest Income	630	25	17	224	1.7
Other Income	13	155	86	85	0.7
TOTAL INCOME	14,965	12,725	11,233	12,974	100.0
EXPENSES					
1. <u>Operation and Maintenance (O&M)</u>					
Collect. Disposal & Cleansing	9,496	6,748	6,132	7,459	57.5
Administration	1,290	1,703	1,746	1,580	12.2
Parks Operations	1,426	1,568	1,311	1,435	11.1
Other O&M expenses	2,110	2,035	1,489	1,878	14.4
Subtotal	14,323	12,053	10,679	12,352	95.2
2. <u>Depreciation</u>					
Registered Assets	284	181	171	212	1.6
Truck Fleet	0	0	382	127	1.0
Subtotal	284	181	553	339	2.6
TOTAL EXPENSES	14,606	12,234	11,233	12,691	97.8
NET INCOME (DEFICIT)	359	491	0	284	2.2

* Estimated.

** Government budget allocation until December 1998 was approximately US\$9.8 million.

- 4.13 MP&M depends almost entirely on government transfers which until 1997 consisted of resources from the government Consolidated Fund. For FY 1998 and FY 1999, about 50% of the transfers came from resources of the property tax that by law are directed to finance solid waste operations. Transfers averaged US\$11.8 million, or 97.6% of the total company revenues. As a result of increasing fiscal constraints, budget allocations decreased by 12% between 1997 and 1998. For 1999, assuming that total revenue will cover

all estimated operation, maintenance and depreciation expenses, a new revenue decrease of 11% will result.

- 4.14 The most important expenses category is public cleansing, which includes all costs associated with collection and final disposal of solid waste. Annual public cleansing expenses are on average US\$7.4 million, or about 60% of total operation and maintenance expenses. Other important categories include administration and parks operations. Administration expenses have been increasing over time due to Government efforts to upgrade the compensation schemes.
- 4.15 As is the case of governmental organizations financed by budget allocations, MP&M expenses in FYs 1997 and 1998 kept pace with available resources and as a result revenues were sufficient to cover operation, maintenance and depreciation expenses, generating a surplus. For FY 1999, a zero surplus has been assumed considering past financial performance of the company. Because of the fiscal restrictions by the Government, additional allocation cuts in MP&M's budget may be expected in the future. To avoid liquidity problems, MP&M is committed to implement cost recovery measures, starting with establishment of a tipping fee at Riverton City disposal site. **The establishment of an introductory tipping fee to cover operation, maintenance and depreciation of new works and equipment in year one of execution and a five year implementation plan to cover the cost of operation, maintenance and depreciation of all the new works and equipment of the Riverton landfill, will be a condition prior to first disbursement.** The effects of a gradual implementation of tipping fees are analyzed in the Chapter V.

V. VIABILITY AND RISKS

A. Technical and environmental justification

- 5.1 The Jamaica Solid Waste Management Program is a technically, environmentally and socially viable interim alternative for solid waste disposal in the Kingston Metropolitan Area. The interim program will provide a solution for the following five years for the safe disposal of residential, commercial and special solid waste. Hazardous and medical waste will be separated and temporarily disposed of in designated cells, until a longer term solution is implemented using the results of the studies to be developed in the proposed program. The design of the remedial actions at Riverton and the operation protocol to be implemented will provide an adequate level of protection for human health and the environment.
- 5.2 Technology options for final disposal were assessed during the pre-investment studies. The continuation of operations at Riverton with remedial actions to transform the actual dump to a sanitary landfill is considered the best environmentally acceptable technical solution. An updated country-wide study for disposal site selection will be prepared and the results of this study will define the longer term solution for final solid waste disposal.
- 5.3 The design of the project and actions proposed are the results of studies centered on the formulation of an appropriate strategy for the reorganization of the sector considering the technical, environmental and social challenges, and the institutional changes that are taking place.
- 5.4 The various project components were designed by specialized consultants in close coordination with the Inter-agency Solid Waste Steering Committee and with the PEU after this unit was established. The designs and studies are consistent with the technically and financially most appropriate alternatives to improve the refuse collection and resolve the main deficiencies of the solid waste disposal.
- 5.5 The infrastructure works are simple in terms of engineering and technology, conceptual and preliminary designs were prepared. The final design and bidding documents are under preparation with resources from the project preparation facility. Technical specifications have been provided for the purchase of machinery and equipment.
- 5.6 The cost estimates were sufficiently detailed and prepared on the basis of unit cost analysis and updated price information. Based on the technical review performed, the project estimated costs are considered reasonable and appropriate.

- 5.7 The institutional strengthening of the environmental authorities would ensure that the GOJ is properly equipped to enforce the environmental regulations. The support of MP&M, with outside expertise in the operational aspects, in addition to the training activities will assure the proper management of the landfill.
- 5.8 The environmental management activities coupled with the community awareness and environmental education program will permit accomplishing the health and environmental objectives of the project.

B. Institutional viability

- 5.9 The execution of the project requires an executing unit with full time dedication to the project and the implementation of a coordinating mechanism to follow up the inter-agency activities. The institutional framework should have political support to expedite the decision-making process involving reviewing, adopting and applying the results of the studies. To facilitate this, the PEU has been endowed with technical personnel with knowledge of the sector and has been located at the highest level of the MLGYCD where it resides will have the capacity to authorize or to negotiate with other national authorities the adoption and application of results. In addition to qualified PEU personnel who will be charged with overall contract administration, the project includes funds to finance consultants who will support the PEU in contracting and supervision activities. The establishment of the Inter-agency waste management team will also facilitate the process.

C. Economic analysis

- 5.10 The remedial investment activities to be implemented at the Riverton disposal site are considered standard procedures from a technical and environmental point of view, and therefore are taken as minimum cost solutions. Nevertheless, as part of the national disposal sites study, location and size of the different sites will be selected to minimize investment, operation and waste transportation costs, taking into account regional waste production and economies of scales associated with landfill operations.
- 5.11 An estimation of the average economic cost of disposal activities, or cost per unit of tipped waste at the Riverton site is presented in this section. The management of the landfill aim to gradually improve operations, minimize environmental and health impacts, and maximize the available disposal capacity within the existing footprint of waste at the site. For the purpose of the analysis, a five-year planning horizon was considered, which is an equivalent period to the expected useful life of the site after the Program.
- 5.12 The following table presents annual investment and operating costs associated with the disposal activities. These costs consider appropriate site access and traffic, control and documentation of

incoming waste, site operations, landfill development, environmental control and monitoring, personnel training, as well as expenses associated with site safety and health procedures. The annualized cost of the disposal activities, using a discount rate of 12%, was estimated at US\$2.73 million.

COSTS FOR SANITARY LANDFILL ACTIVITIES AT RIVERTON (IN THOUSAND US DOLLARS)					
	YEARS				
	1	2	3	4	5
I. CAPITAL EXPENSES	3,275	2,987	2,025		
Equipment & Supplies	1,016	2,659	1,880		
Facilities	1,306	200			
Road Operations	538				
Other Expenses ^{a/}	415	128	145		
II. OPERATION AND MAINTENANCE (O&M)	373	866	1,090	1,090	1,090
Labor	127	127	127	127	127
Equipment	246	739	963	963	963
III. TOTAL (I+II)	3,648	3,853	3,115	1,090	1,090
IV. ANNUALIZED VALUE = 2,734					

a/ Includes training, as well as environmental and safety expenses.

- 5.13 Estimates of the amount of waste tipped at Riverton are highly inaccurate due to the lack of formal documentation procedures to account for incoming waste volumes or generators. These estimates range anywhere from 840 tonnes per day (tpd) to 1,500 tpd. The more conservative figure of 840 tpd was assumed for the purpose of this analysis. Considering a total of six operating days per week for the site, the solid waste disposed at Riverton is estimated to be in the order of 262.080 tonnes per year. Based on the above estimates, the average cost of disposal activities at the Riverton site will be approximately US\$9.00 per tonne of waste.

D. Financial viability

- 5.14 The application from the beginning of the period of the tipping fee for disposal activities equal to their average economic cost may result in the increase of illegal dumping because of the lack of adequate enforcement and public information at present. It is expected that the enforcement system and the public awareness campaign will be gradually implemented during project execution, with the full systems in place by the end of the fifth year of execution.

5.15 Thus, to minimize the risk of illegal dumping and given the expected implementation of enforcement and public awareness systems during project execution, an action plan for the establishment of tipping fees is presented and its feasibility evaluated in the following table. The action plan calls for an introductory fee that covers operation, maintenance, and depreciation of investment in year 1 of project execution. This fee is estimated to be equivalent to US\$4 per tonne. Starting on year 3, the tipping fee will increase in 50% given the assumption that the enforcement and public awareness systems will be partially developed. Finally, the tipping fee is expected to reach the average economic cost level by year 5.

TIPPING FEE					
	Year 1	Year 2	Year 3	Year 4	Year 5
Tariff per tonne	4.0	4.0	6.0	6.0	9.0
Number of tonnes	262,080	275,184	289,074	303,489	318,689
(In thousand of US dollars)					
Revenue	1,048	1,101	1,734	1,821	2,868
Expenses and Results					
O&M	373	866	1,090	1,090	1,090
Results after O&M	675	235	644	731	1,778
Depreciation	655	1,253	1,658	1,658	1,658
Results after Dep.	20	(1,018)	(1,014)	(927)	120
Coverage of O&M (%)	100	100	100	100	100
Coverage of Dep. (%)	100	18.7	38.9	44.1	107.2

5.16 The proposed action plan for the establishment of tipping fees will ensure the coverage of 100% of operation and maintenance, and the coverage of increasing levels of depreciation from 19% in year 2 to 107% in year 5. Furthermore, funds will be generated after coverage of operation and maintenance from a minimum of US\$235,000 in year 2 to a maximum of US\$1.8 million in year 5. It is estimated that 40% of the total revenues will arise from property taxes used to cover the tipping fees to be paid by public collection operators for residential solid waste and the remaining 60% from tipping fees to be paid by private collection operators for commercial solid waste.

5.17 In line with the above, for the disposal operations at the Riverton site, the loan contract will require the borrower to cover through tipping fees 100% of operation and maintenance, and no less than 40% of depreciation at the third year after signature of the contract and no less than 100% at the fifth year. Evidence of the

approval of a tipping fee that covers operation, maintenance and depreciation expenses of investment in year 1, as well as the corresponding action plan will be condition prior to first disbursement.

5.18 To evaluate the effect of the tipping fee action plan on the consolidated level of operations of MP&M as a whole, the projected income statement was prepared. The projection covers only a period of three years (FY 2000 to FY 2002) to make it comparable with the three years historical record presented in Chapter IV and because a longer term projection is irrelevant in the circumstances that MP&M will cease to exist in the medium term as a result of the sector reorganization.

5.19 In the projected income statement, cash expenses for existing operations were projected using accounting or technical data depending on which data provided the best estimate. Depreciation was computed using an estimation of the last historical year book values. Project expenses, depreciation and revenue from tipping fees were computed (see Paragraph 5.15). Finally, the transfers from MLGYCD represent the amount required to cover non project cash expenses -expenses other than those at the Riverton site-, plus a conservative amount equivalent to 5% of the book value of non project assets as an allowance for its replacement.

5.20 A summary of the income statement follows.

METROPOLITAN PARKS AND MARKETS SUMMARY INCOME STATEMENT IN US DOLLARS (AT DECEMBER 1998 PRICES)			
	PROJECTED		
	FY 2000	FY 2001	FY 2002
Income			
Transfers from MLG	10,604	10,522	10,513
Other Income(Includes tipping fees)	1,150	1,233	1,836
Total	11,754	11,755	12,349
Expenses (Includes collection, disposal, and other MP&M operations)	10,811	11,252	11,437
Results before depreciation	943	503	912
Total Depreciation	1,208	1,806	2,211
Results after Depreciation	(265)	(1,303)	(1,299)
Operation Expenses Cover (%)	100	100	100
Depreciation Cover (%)	78	28	41

- 5.21 The statement above shows that while total expenses remain on the average at levels similar to those experienced in the historical period, around US\$12.3 million annually, transfers from the MLGYCD, are expected to be around US\$10.6 million annually, or about US\$2.1 million less than the annual historical average. This decrease in government budgetary contributions is due to the effect of the revenues from the tipping fees. It is estimated that 60% of the transfers from MLGYCD will come from resources from the property tax to finance operations other than disposal. The other 40% will arise from resources of the Government Consolidated Fund.
- 5.22 Total revenues -tipping fees and transfers from the government- will cover 100% of operation and maintenance costs, leaving a positive cash balance that will vary annually from US\$0.9 million and US\$0.5 million. Coverage of depreciation will vary from a high of 78% in FY 2000, to a low of 28% in FY 2001.
- 5.23 As the sector is reorganized and full cost recovery principles are entrenched in its operations, a decrease in government transfers and an increase in depreciation coverage can be expected. This is a realistic medium-term goal for SWM operations. An important first step in this direction is being taken with the project.

E. Risks, issues and mitigants

- 5.24 Risk: Residential developments with volatile communities are located at the entrance of the Riverton landfill. The access and the operation of the landfill are controlled by some community members with whom the landfill operator must negotiate. Mitigants: A sociological profile of the community has been carried out and an on going process of negotiation with the community and the leaders is under way with the participation of political leaders and MP&M. The community activities and landfill operations will be developed with the participation of NGOs respected by the community.
- 5.25 Risk: Local vested interest or local communities may oppose a change towards a more transparent system for contracting refuse collection. Such opposition may understandably be based on a fear that a change may create unemployment in the communities with serious social and political consequences. Mitigants: A radical and immediate change in contracting refuse collection is not realistic at the present time in the whole city of Kingston. Thus, the project aims at a progressive change in which a first step is the selection of some communities where changes will be implemented to showcase results in order to create acceptance in other communities.
- 5.26 Issue: The tipping fees may not be accepted by private hauling companies that dispose non residential refuse at Riverton. Mitigant: During the project preparation interviews were held with representatives of these companies who expressed no opposition to the fees. To facilitate the implementation, the fees will be phased-in and linked to visible improvements in access and

management of the site. In addition, the enforcement capacity of MP&M will be supported with training and equipment.

JAMAICA SOLID WASTE MANAGEMENT PROGRAM (JA-0035)
BIDDING SCHEDULE
TENTATIVE PROCUREMENT PLAN

Equipment					
Landfill operation equipment					
Lot 1	70	ICB	NO	1,000	99/II
Lot 2	70	ICB	NO	2,700	00/I
Lot 3	70	ICB	NO	1,900	00/I
Consulting					
CI, hazardous and special waste program	70	ICB	YES	950	99/II
Riverton development	70	ICB	YES	550	99/II
Disposal study	100	ICB	YES	500	99/II
Medical waste	70	ICB	YES	300	99/II
Works and Improvements					
Access road and bridge	50	LB	NO	800	99/I
Buildings (Riverton)	50	LB	NO	800	99/II
Landfills closure (5 lots)	66	LB	NO	1,500	99/II

International calls for proposals
International competitive bidding
Local bidding
Local call for proposals

Local bidding regulations

- Under US\$10,000, contracts may be awarded without tenders.
- Over US\$10,000 and less than US\$50,000, contracts may be awarded without tenders, but written quotations shall be obtained.
- Over US\$50,000, tenders must be invited in the local press.

JAMAICA SOLID WASTE MANAGEMENT PROGRAM (JA-0035) LOGICAL FRAMEWORK

NARRATIVE SUMMARY	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPACT AND CONDITIONS
GOAL :			
To improve health, sanitary and environmental conditions in the Kingston Metropolitan Area (KMA).	1. City health indicators. 2. Reduction of 50% on the number of complaints related to waste collection and disposal.	1. Yearly reports of health indicators. 2. Reports from MP&M.	1. Correlation between proper waste management and public health. 2. Community participation is sustained.
COMPONENTS :			
Riverton landfill development.			
Closure of nonactive dumps.			
National solid Waste action.			
PURPOSE :			
Safe and efficient disposal of solid waste for KMA.	1.1 Compaction of 700 kg/m ³ is obtained at the Riverton landfill. 1.2 Reduction in number of fires, 50% year 1 and 80% year 3. 1.3 Odors not detectable from landfill and sorting activities. 1.4 No increase in baseline contaminant concentration in downstream monitoring stations. 1.5 25% increased recycling by December 2001 at Riverton. 1.6 Revenues from tipping fees. Cover operation maintenance and depreciation end of year 5.	1.1 Data received from landfill. 1.2 Number of reports (negative) from residents in the district. 1.3 Data from monitoring program. 1.4 Data from landfill operations and accounting	1.1 Other environmental factors remain constant or improve. 1.2 No significant changes in Jamaican waste management needs. 1.3 Community leaders cooperate with the program.

NARRATIVE SUMMARY	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
PURPOSE :			
Permanent closure of non-active dumps.	<p>2.1 Increase of safely decommissioned dumps. Closure of 2 pilot sites by January 2001. Closure of 12 additional sites by end of project execution.</p> <p>2.2 No increase in base-line contamination from downstream monitoring stations.</p> <p>2.3 Number of illegal dumping sites reduced by 50% by the year 2001.</p>	<p>2.1 Closure reports.</p> <p>2.2 Environmental Monitoring reports.</p> <p>2.3 Environmental audits (NRCA).</p>	<p>2.1 Closure is enforced, no new refuse is accepted at the sites.</p>
National solid waste action plan is developed	<p>3.1 Advances in legislative reform in solid waste. Amendmends in Litter Act in year 1. Establishment of the Solid Waste Management Agency in year 2.</p> <p>3.2 Increase in number of licensed garbage haulers in the KMA. 20% in year 1, 40% in year 2 and 60% in year 3.</p> <p>3.3 Increase in coverage area in KMA watershed served under transparent contracting for waste collection.</p> <p>3.4 Number of trained staff.</p>	<p>3.1 PEU reports.</p> <p>3.2 PEU report.</p> <p>3.3 PEU reports.</p> <p>3.4 Records from professional development.</p>	<p>3.1 The GOJA supports the development of the new policy for SWM.</p>

NARRATIVE SUMMARY	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
OUTPUTS :			
Physical facilities built and in operation.	1.1 First phase of the Riverton landfill built and in operation by January 2000 to specs.	1.1 Direct observation & inspection of facilities.	1.1 Facilities well-operated and maintained.
Riverton community receives additional income from recycling activities	1.2 Income generation increase 10% per year.	1.2 Yearly reports from the Riverton Association.	1.2 Market for compost and recyclables.
			1.3 Change in public's attitude and actions.
Pollution is prevented from non-active dumps.	2.1 Approximately 14 non-active dumps are closely monitored.	2.1 Direct observation & inspection of facilities and environmental monitoring reports.	2.1 Legislation is enforced.
Solid waste policy measures are implemented.	3.1 Policy unit at MLGYCD is created by December 1999.	3.1 Report.	
ICI, hazardous and medical waste plan is completed.	3.2 Solid waste management agency is created by June 2000.	3.2 Report.	
Country-wide final disposal study is completed.	3.3 New legislation and regulations are tabled to Parliament by the year 2000.	3.3 Report.	
	3.4 Agencies start implementing actions by June 2000.	3.4 MLGYCD report.	
	3.5 Feasibility study recommendations are accepted by GOJ.	3.5 Report with action plan approved.	
ACTIVITIES :			
	BUDGET	ANNUAL REPORTS	(Activity to Output)
Build access to Riverton.			1. Designs are feasible ("buildable")
Build cells at Riverton site.			2. Objections by public (individually handled).

NARRATIVE SUMMARY	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
ACTIVITIES :			
	BUDGET	ANNUAL REPORTS	(Activity to Output)
<p>Hire contractors.</p> <p>Conduct operational assistance program.</p> <p>Hire consultants.</p> <p>Implement community awareness program.</p> <p>Secure financing.</p> <p>Procure operational equipment.</p> <p>Hire contractors for pilot closures.</p> <p>Start environmental monitoring.</p> <p>Evaluate results from pilot.</p> <p>Hire contractors for all dump closure.</p> <p>Conduct and implement recommendations of ICI, hazardous and medical waste programs.</p> <p>Conduct routing study.</p> <p>Conduct final disposal site study.</p>			<p>3. Climate conditions are favorable.</p> <p>4. Industrial relations are favorable.</p> <p>5. Private sector interest</p> <p>6. Other proposals rejected if not compatible.</p> <p>7. Posts created and filled</p> <p>8. Recommendations accepted by politicians.</p> <p>9. Timely action by other Government Ministries (Health, NRCA, Finances).</p>

PROPOSED RESOLUTION

JAMAICA. LOAN ___/OC-JA TO THE GOVERNMENT OF JAMAICA
(Solid Waste Management 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 Government of Jamaica, as Borrower, for the purpose of granting it a financing for the execution of a Solid Waste Management Program. Such financing will be for the amount of up to eleven million five hundred thousand United States of America dollars (US\$11,500,000), from the Single Currency Facility of the ordinary capital resources of the Bank, and will be subject to the "Special Contractual Conditions" and the "Terms and Financial Conditions" set forth in the Executive Summary of the Loan Proposal.

PROPOSED RESOLUTION

JAMAICA. PARTIAL PAYMENT OF INTEREST ON LOAN ____/OC-JA
TO THE GOVERNMENT OF JAMAICA

(Solid Waste Management 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 as administrator of the Intermediate Financing Facility Account (the "Account"), to enter into such contract or contracts as may be necessary with the Government of Jamaica, as Borrower, and to adopt other pertinent measures to use the resources of the Account to pay a portion of the interest due by the Borrower on outstanding balances of the loan authorized by Resolution DE-[]/99, in accordance with the provisions set forth in Document FN-263-2, as amended, approved by the Board of Executive Directors on December 31, 1983.