STRATEGY FOR SUSTAINABLE DEVELOPMENT OF THE PANAMA CANAL WATERSHED (PANAMA CANAL AUTHORITY)

(TC-98-06-48-3)

EXECUTIVE SUMMARY

Requester:	Government of Panama	
Executing agency:	Panama Canal Authority (PCA)	
Amount and source:	IDB (Japan Special Fund):	US$1,000,000
	Local:	US$2,238,000
	Total:	US$3,238,000
Terms:	Implementation period:	18 months
	Disbursement period:	24 months

Objectives: The principal objective of the operation is to support the decision-making process pertaining to natural resources management in the Canal watershed, particularly in regard to the water projects included in the Canal expansion program, so that the program will include: (i) environmental practices that are acceptable according to international standards; (ii) a participatory approach that considers the opinions and interests of the residents of the watershed region; and (iii) economic criteria for studying environmental issues. The activities to be carried out will result in the formulation of a master plan for sustainable development of the watershed, and a formal framework for a more complete and balanced process of analysis and decision-making that will greatly benefit the PCA in the future.

Description: To achieve these objectives, a set of activities is planned for implementation in three components: (i) strengthening of management capacity; (ii) establishment of a comprehensive regional baseline; and (iii) analysis of scenarios and formulation of the master plan.

The proposed technical-cooperation operation will finance consulting services and consultation and consensus-seeking workshops needed to help formulate the strategy for sustainable development of the Canal watershed. In light of the progress in transferring responsibility for water resources management to the PCA, the project will develop

intra-institutional capacity for defining a master plan for sustainable development of the watershed. The tasks and activities identified in each component will require: consulting services for an approximate total of 375 consultant-months; 30 consultation workshops at the watershed regional level and 10 national consensus-seeking workshops. The activities required to achieve these objectives are described in detail in Annex II, Terms of Reference.

Social and environmental review: The operation will have a positive environmental and social impact, inasmuch as it is designed to support the country in making decisions on water projects for possible Canal expansion, based on internationally accepted environmental practices and using economic criteria to examine environmental and social issues. The environmental and social review of the Profile recommended that the evaluation of the different scenarios clearly include an alternative with no Canal expansion plans (see paragraphs 2.18 and 2.20). In addition, specific recommendations were given for the terms of reference (see Annex II) and were incorporated therein.

Benefits and beneficiaries: The operation will yield significant benefits in terms of governance, by supporting an orderly, transparent and participatory decision-making process. Specifically, the operation will help to develop a multisectoral framework for managing a watershed that is strategically important to the national economy, by improving the PCA's environmental management capacity and interinstitutional coordination for sustainable management of the Canal watershed, through the Interinstitutional Commission on the Canal Watershed [Comisión de la Cuenca Hidrográfica del Canal] (CICH). The beneficiaries of the operation will be the Government of Panama; the PCA and other public institutions and agencies having environmental jurisdiction, activities and responsibilities in the watershed, such as the National Environmental Authority [Autoridad Nacional del Ambiente] (ANAM) and the Ministry of Agricultural Development (MIDA), among others; and the residents of the watershed.

Risks: Two risks have been identified: (i) Given the size of the program, it will be necessary to build a national consensus on the management of natural resources in the watershed. Such a consensus should involve the PCA as well as other national institutions responsible for the watershed and its inhabitants. In order to mitigate this risk, the operation will provide means by which the PCA and the CICH can give Panamanians progress reports on the program in a transparent manner. In order to ensure continuity in this process, the PCA and CICH staffs will receive advisory support in the areas of conflict management and policy communication. In addition, the PCA is working actively with support from the United Nations Development Programme (UNDP) to hold a national dialogue in order to seek a

consensus with the general public, providing information and explaining the merits and significance of the program to the authorities. (ii) In view of the complexity of the decisions involved, it is likely that negative opinions on the expansion program will intensify in the rural communities of the watershed and that the process will become politicized. To mitigate this risk, the PCA is developing an information strategy with the communities and institutions, and the proposed technical cooperation will support the PCA so that the water project designs will take community viewpoints into account, by way of a participatory strategy.

The Bank's country/ regional and sector strategy:

The Bank's strategy is aimed at achieving more equitable, sustainable socioeconomic growth supported by a modern State. This strategy encompasses four objectives: (i) to expand the benefits of social policy, particularly toward vulnerable and/or disadvantaged groups; (ii) to foster sustainable development; (iii) to stimulate sustained economic growth; and (iv) to strengthen governance. The proposed operation is in line with the current strategy and is consistent with the Bank's new strategy, which was approved by its Programming Committee for 2001-2003. The new strategy focuses mainly on consolidating sustainable growth and is very much in line with the government's program, as it promotes better use of natural resources, would be a key element in defining the Canal expansion projects, and would foster sustainable development in the Canal watershed.

Special contractual conditions:

None.

Exceptions to Bank policy:

None.

I. BACKGROUND

A. Introduction

1.1 This document presents the plan of operations for studies and activities needed to help formulate the Strategy for Sustainable Development of the Panama Canal Watershed, which is to be produced by the Panama Canal Authority with nonreimbursable financing from the Japan Special Fund. The proposed operation focuses on developing a system to support the PCA in its decision-making on water project alternatives in the watershed, identifying actions, and defining the guidelines of a sustainable development program for the Canal watershed.

1.2 The PCA requested Bank support for the process of drawing up a strategy for sustainable development of the Panama Canal watershed. The Ministry of Economy and Finance (MEF) endorsed the request and indicated an interest in seeking nonreimbursable funding to put together a technical-cooperation operation in support of the process.

B. Canal area reversion process

1.3 The Torrijos-Carter Treaties, which governed the transfer of the Panama Canal and the Canal Zone, known as the interoceanic region, were signed in September 1977. By way of a 1993 law, the government created the Interoceanic Regional Authority [Autoridad de la Región Interoceánica] (ARI) to manage, care for and maintain the reverted properties[1]. The law authorized the ARI to draft and submit for approval by law the **general plan** and **a natural resources conservation plan for the interoceanic region (the Regional Plan)**. The plans, approved under Law 21 of 1997, govern the development of the interoceanic region, land use and land-use planning.

1.4 The Bank has been supporting Panama throughout the reversion process by financing the various studies and plans referred to above. Loan 778/OC-PN (US$9.1 million) funded the following activities: (i) reorganization and strengthening of the ARI; (ii) drafting of the regional development plan for the eastern watershed region; (iii) drafting of the general plan for the use, conservation and development of the Canal area; and (iv) drafting of the urban development plan for the Atlantic and Pacific metropolitan areas (administered by the Ministry of Housing.

1.5 The Panama Canal Authority was created by Law 19 of June 1997 to take charge of canal operations. At the same time, the PCA was assigned responsibility for management, maintenance, use and conservation of water resources in the Canal watershed. On 31 December 1999, the Panama Canal became Panamanian property under the sovereignty, Constitution and laws of the Republic of Panama, which gained absolute right to the Canal's financial management, expansion, maintenance,

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[1] Land, buildings, facilities and other property the possession and ownership of which will revert to the Republic of Panama under the 1997 Treaties and Annexes thereto.

physical safeguarding and planning for national development purposes. The PCA fully assumed its duties on 1 January 2000 as an autonomous State-owned corporation, in contrast to its prior nonprofit status.

1.6 The PCA has charge of the management, maintenance, use and conservation of the water resources of the Canal watershed. ANAM is responsible for maintaining the Canal's natural and biological resources, which need to be a national priority in view of the importance of the Canal watershed for the nation's economy. The Law authorizes the PCA to operate in coordination with the corresponding specialized agencies, most notably ANAM and MIDA, for the management, conservation and use of the natural resources of the Canal watershed and to approve strategies, policies, programs and projects, both public and private, that may affect the watershed.

1.7 To coordinate these activities, the PCA was authorized to establish and regulate an Interinstitutional Commission on the Canal Watershed (CICH), which is now in operation and in the process of defining its operating system. The Commission is responsible for coordinating efforts, initiatives and resources for the preservation and management of the watershed and for fostering sustainable development, in consideration of the responsibilities set forth in Resolution 16 of the Authority's board of directors. The Commission is headed by the Administrator of the PCA and has as its members the following organizations: the Ministries of Housing, Interior and Justice, and Agricultural Development (MIDA); ANAM; ARI; and two nongovernmental organizations (those designated are CARITAS Arquidiocesana and NATURA) with an interest in the watershed. In view of the importance of the Commission, the Authority has given priority to strengthening it as well as some of the organizations associated with the watershed, so it can take the reins of environmental management gradually.

C. The Canal watershed

1.8 The Canal watershed, the adjacent cities and the interoceanic region form Panama's economic hub, which generates 75% of GDP and of exports and is home to half the country's population. The watershed covers approximately 552,761 hectares divided into two regions, the old watershed or eastern region (339,649 hectares) and the western region (213,112 hectares). The watershed has large stands of natural forest safeguarded by a series of protected areas that support an impressive array of biodiversity. A regional plan already exists for managing the eastern region, whereas more studies are needed for the new western region to ensure that its resources are well managed and protected.

1.9 The eastern region contributes 95% of the raw water that is treated to supply the 1.4 million residents of the Panama City-Colón metropolitan area, so it is crucial to ensure the quantity and quality of this resource. In the near future there will be serious problems in meeting the water demand of the nearby populace, especially in view of the conversion of military bases to residential, tourist and commercial uses that will require a large water supply.

1.10 Farming and ranching have traditionally been the principal productive activities, and the agricultural frontier has been pushed back as the original forest cover has diminished. Technical studies show a marked ecological deterioration, caused mainly by deforestation and subsequent soil erosion, and by sedimentation and general pollution of water bodies. Water availability is affected by unusual events such as the El Niño phenomenon, which drastically restricted normal Canal operations in 1997-98.

1.11 Under Law 44 of August 1999, the government delimited the watershed, including new reserve areas in the western region. This action will ensure that water from this region's principal rivers can be used to meet the heavier water demand in the future, particularly the demand generated by population growth, industrial development and expansion of the Canal's capacity in the coming years. Watershed management represents a considerable challenge for the PCA and will require comprehensive management capabilities and extensive involvement of the CICH.

D. Expansion of Canal capacity

1.12 In 1987, a Trilateral Commission (Panama, Japan and the United States) was created to carry out a **study of alternatives for expansion of the Panama Canal.** The results of this study were presented in 1993. Recent demand projection studies indicate that, in the next 50 years, the number of transits of the Canal could rise to double the current average of 13,100 per year (36 transits/day). Major shipping companies are already using post-Panamax vessels, especially for bulk and container transport. These ships cannot pass through the present-day Canal unless it is appropriately modernized, which would entail expansion and improvements to the existing infrastructure as well as larger volumes of water.

1.13 The Canal is currently able to handle a traffic demand of 37 ships per day in a 24-hour period in Canal waters. In view of the constant increase in ship traffic and the capacity restrictions, the PCA is implementing a Canal modernization project to increase its capacity from 37 to 42 ships per day by the year 2003. Nevertheless, forecasts of traffic and water demand for the population indicate that a total of 50 additional lockages[2] will be required to meet the needs of the year 2050.

1.14 In order to meet the challenges of the future, since 1998 the PCA (formerly the Canal Commission) has been carrying out a series of studies to determine the feasibility of expanding the Canal's capacity to handle more ships, including larger-capacity vessels, for the next 50 years. These studies have compared various options and alternatives, including a series of water projects that would utilize the flows of the rivers in the western region (reservoir systems on the Coclé del Norte, Indio and Caño Sucio rivers) and deepen the navigation channels of Gatun Lake in order to increase the water storage capacity in the eastern region. The scope of these studies so far has placed greater emphasis on engineering aspects than on sociocultural, economic or environmental considerations.

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[2] A lockage equals the volume of water needed for one ship to pass through the Canal's three locks and represents 55 million gallons of water used.

1.15 The increased-flow alternatives being studied include water projects that would bring about major changes in the sociocultural (involving possible resettlements) and economic conditions of the communities and local hydrology, including changes in the freshwater ecosystems and environmental processes of the watersheds in both the western region from where the water would come, and the eastern region to which it would be directed. Even if these projects are not carried out in the immediate future, the mere fact of securing the water resources of the western region as a "future water reserve" would impose restrictions on other productive activities of the inhabitants of the watershed and its areas of influence. These changes and their direct and indirect impact on hydroenvironmental and socioeconomic systems need to be stated precisely and their costs ultimately internalized for each alternative under study, including the option of maintaining the region as a "future water reserve."

1.16 The hydrological, environmental, sociocultural and economic studies necessary for making decisions that will optimize the use of water resources in the eastern region and ensure additional water resources in the western region for possible future expansions, will be complex and will involve many actors, in view of the magnitude of the alternatives being studied. Such studies will require improved coordination among the various PCA departments, and efforts to that end have already begun. The complexity of the alternatives under consideration requires an orderly, transparent decision-making process, with leadership and coordination provided by watershed management agencies. Therefore, regardless of the decision eventually made, it is necessary to strengthen and implement: (i) the Authority's Environmental Management Division (ESM), for handling the new responsibilities involved in watershed management and environmental management of Canal operations; (ii) the CICH, giving it the capacity and tools to manage conflicts and build the needed consensus for the sustainable development of the watershed; (iii) a comprehensive baseline that includes community consultation and a georeferenced information system as a model and instrument for evaluating and monitoring the outcomes of the decisions; and (iv) a decision support system for analyzing the different scenarios, with their technical, environmental, sociocultural and economic variables.

1.17 The aforementioned considerations will make it possible to develop a framework for comprehensive water resources management that is consistent with environmental management and in line with the sociocultural values of the populace. The activities to protect and manage natural resources and improve the quality of life in communities located in the watershed and its area of influence will be the hallmark of the strategy for sustainable development of the watershed.

E. Coordination with other agencies and donors

1.18 A number of international development agencies are supporting or have plans to support government efforts in the Canal watershed. USAID has been working to implement an environmental information and monitoring system for the eastern region (currently managed by the PCA and ANAM) on forest cover, hydrology and soils, biodiversity, and human activity. In addition, USAID is working with the

PCA on institutional strengthening through training and technical advisory support provided to the CICH; identification of alternative management approaches; and identification and implementation of financing mechanisms for environmental management. USAID is also supporting ANAM in delimiting five national parks in the eastern region, developing policies and rules for activities carried out there, and providing equipment and staff training.

1.19 In view of the presence of several institutions and donors in the watershed, interinstitutional coordination will be sought through the PCA and CICH. All possible efforts will be made to avoid unnecessary new studies or overlapping with the work being carried out by other donors, especially in regard to the baseline. The aim will be to gather and systematize the available information in the baseline and to identify information gaps and fill them with the technical-cooperation activities.

II. OBJECTIVES AND DESCRIPTION

A. General objective

2.1 The principal objective of the operation is to support the decision-making process pertaining to natural resources management in the Canal watershed, particularly in regard to the water projects included in the Canal expansion program, so that the program will include: (i) internationally accepted environmental practices; (ii) a participatory approach that considers the opinions and interests of residents of the watershed region; and (iii) economic criteria for studying environmental issues. The activities to be carried out will result in the formulation of a master plan for sustainable development of the watershed, and a formal framework for a more complete and balanced process of analysis and decision-making that will greatly benefit the PCA in the future.

B. Specific project objectives

2.2 To strengthen the PCA's technical and institutional framework, especially its Environmental Management Division (ESM), the CICH and local governments, in order to ensure sound, coordinated management of natural resources, especially water resources, and environmental protection with clearly defined relationships among government institutions and between those institutions and civil society.

2.3 To establish a comprehensive regional baseline[3] and create a georeferenced information system as a model and instrument for evaluating and monitoring the outcomes of decisions.

2.4 To establish a decision support system for analyzing the different scenarios with their hydroenvironmental, sociocultural and economic variables, as well as technical and engineering variables.

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[3] Baseline: a set of data that describe the environmental, social and economic aspects of the current situation and how they might change in the future if the project is not implemented.

2.5 Through a participatory process with local communities, to identify elements for formulating a master plan for watershed development, including possible remedial short- and medium-term actions to mitigate the negative effects of the water projects, and actions to support productive activities and improve the quality of life in rural areas.

C. Project description

2.6 The technical-cooperation operation will finance consulting services and consultation and consensus-seeking workshops to help formulate the strategy for sustainable development of the Canal watershed. In light of the progress in transferring responsibility for water resources management to the PCA, the project will develop intra-institutional capacity and will have features for formulating a master plan for sustainable development of the watershed. The tasks and activities identified in each component will require: consulting services for an approximate total of 375 consultant-months; 30 consultation workshops at the watershed regional level and 10 national consensus-building workshops.

2.7 To achieve these objectives, a set of activities is planned for implementation in three components: (i) **strengthening of management capacity**; (ii) **establishment of a comprehensive regional baseline; and** (iii) **analysis of scenarios and formulation of the master plan.** The first component is aimed at the entities responsible for guiding the decision-making process. The second will generate information on social, environmental and economic trends which is necessary for assessing the various alternatives. The third component will provide models and a strategy for examining the regional impacts associated with the different scenarios. Responsibility for general coordination of the operation will be assumed by the Technical-Cooperation Coordination Unit, included in the first component, to ensure effective coordination and dovetailing of the specific activities and studies of the three project components described below.

1. Strengthening of management capacity (US$658,000)

2.8 This component will finance specific activities related to strengthening: (i) the management capacity of the PCA; (ii) the CICH; and (iii) local governments and community-based organizations. It includes financing for consulting services by Panamanian and foreign experts in support of specific activities, for an estimated total of 85 consultant-months.

a. **PCA management capacity.** The strengthening will be aimed at adopting a focus for decision-making within the PCA so as to give comprehensive and concurrent attention to water, environmental, sociocultural, economic and engineering considerations. The following activities are planned in order to achieve this end: (i) formation of a Technical-Cooperation Coordination Unit; (ii) strengthening of ESM; and (iii) design and implementation of a georeferenced database.

(i) **Technical-Cooperation Coordination Unit (UCCT).** Since the PCA needs to develop its capacity for information management and analysis, evaluation of regional impact and application of decision-making models, support will be provided to set up a UCCT using staff from the PCA, particularly from the Canal Capacity Office, the Finance Department and ESM. This unit will have support from experts contracted to carry out activities related to the implementation of the technical cooperation.

(ii) **Environmental Management Division (ESM).** Support will be provided to ESM in two areas of work: (i) environmental management of the direct impacts of canal operations (monitoring of discharges, waste management, etc.) and the environmental management tasks in the Canal watershed prescribe by law; and (ii) environmental analysis of Canal improvement and expansion projects and management of the associated mitigation plans.

(iii) **The PCA's georeferenced database.** Information obtained on projects under way in both the public and the private sector will be kept in the database, which is currently being designed by the PCA. The technical-cooperation operation will provide resources to finish compiling documents from the first phase of the work and analyze this information. The georeferenced database will contain information on studies and projects, the information gathered in the baseline studies, and metadata that describe that information and how to retrieve it. Financing will also be provided for a second stage to design the format of the interfaces, quick search methods, etc., and a third stage to georeference all of the above using the PCA's geographic information system in order to support the work of the CICH and the preparation of the master plan for watershed development.

b. **Strengthening of the CICH.** Funds have been budgeted for the CICH for training, advisory support and monitoring in order to complete the activities currently under way to make the Commission operational, in the following areas: conflict management, policy communication, specific regulations for the CICH, training for area coordinators in fields such as natural resource management and community participation. The primary objective is to ensure that the CICH participates effectively in the decision-making process in particular. The support will be given by individual experts, which will enable the CICH executive board to become operational more quickly and remedy any weaknesses typical of a newly formed commission that will be handling highly complex matters.

c. **Strengthening of local governments and community-based organizations.** The local governments, especially those in the Canal's western region, will receive support to build capacity for designing and implementing environmental management tasks, so they can move towards full participation in the environmental management of the watershed. Support for the community-based

organizations will be given through training and technical assistance activities, to give them an effective voice in the watershed development process.

2. Establishment of a comprehensive regional baseline (US$1,630,000)

2.9 This component provides for specific activities to assess the situation of the Canal watershed, including data-gathering and analysis of sociocultural considerations based on community consultations, as well as environmental, socioeconomic, infrastructural and institutional considerations. To facilitate this work, the proposed technical cooperation includes resources for systematizing the results of the national census in regard to the watershed. Four very experienced consulting firms would be hired for the activities described below, for an estimated total of 195 consultant-months. Work would be done concurrently on:

a. Eastern region baseline

2.10 The baseline for the eastern region will be based on existing information in the ARI's regional plan, the monitoring system and the database managed by the PCA. This work will be supplemented with the results of the 2000 national census and other studies currently being carried out in the region by other donors. If necessary, community consultations will be held to identify issues that hold priority for the community in light of its traditions and cultural norms.

b. Western region baseline

2.11 Since there is little information for this region, constructing its baseline will entail more of an effort. The information for the baseline will be obtained from parallel studies in three areas – environmental, sociocultural and socioeconomic – covering the entire western region and its area of influence. The results of this data-gathering will be used to do a comprehensive analysis for decision-making as indicated below. The information will be useful in formulating the master plan of sustainable development for the future of the region, whether or not the projects under consideration are carried out. The following studies are planned for this region: (i) gathering and analysis of environmental data; (ii) gathering and analysis of sociocultural and community-consultation data; and (iii) gathering and analysis of socioeconomic information.

(i) Gathering and analysis of environmental data

2.12 These activities will begin shortly with PCA resources, supported by a consulting firm chosen through an open call for proposals organized by the PCA. The plan calls for a comprehensive database on environmental and cultural features and on biophysical processes in the respective sub-basins and areas of influence. The database will be designed for incorporation into the georeferenced system mentioned in paragraph 2.8a.(iii) and for use in assessing regional impacts.

2.13 The tasks to be carried out include: (i) determine the types of habitats in the direct-and indirect-impact areas and sub-basins of the western region, and draw up habitat maps; (ii) inventory of flora and fauna within the direct-impact area, the

indirect-impact areas and representative sections of the sub-basins; (iii) profiling of aquatic communities within the direct- and indirect-impact areas and the sub-basins; (iv) summary of information on special-interest species and their habitats; (v) summary of biophysical processes related to the hydrology system, including hydrometeorological information on silting and water quality; (vi) inventory of cultural sites and evaluation of potential additional sites. This information will facilitate preparation of a data baseline for future environmental and cultural analyses and evaluations and as input data for decision support models.

(ii) Gathering and analysis of sociocultural and community-consultation data

2.14 These activities have already begun with PCA resources, especially activities that are part of the watershed communities information phase, for which a participatory strategy has been agreed upon and an information booklet devised. There has been progress in surveying the region and holding information workshops with the authorities and the local community. Provision has also been made to gather the necessary information and factor the community-consultation findings into the analysis so as to quantify the sociocultural impact (potential resettlements) of the water projects, individually and collectively, on the direct-impact and indirect-impact areas.

2.15 The proposed activities include: (i) decide on the targeting and methodology of the community consultations; (ii) determine cultural land use within the project areas, prepare cultural land-use maps and rate the sustainability of the cultural uses; (iii) hold community consultations; (iv) study the sociodemographic dynamic; (v) examine the traditional economy's market outlets; (vi) systematize the communities' proposals for sustainability and mitigation; and (vii) draw up profiles of productive projects and communities. This information will be used in the future to assess the impact of the proposed projects on socioeconomic and sociocultural resources, involuntary resettlement and the way of life of residents in the affected areas.

(iii) Gathering and analysis of socioeconomic information

2.16 The necessary information will be gathered to develop analytical tools to quantify the cost of the socioeconomic impact of the water projects, individually and collectively, on the direct- and indirect-impact areas. The impacts will be organized into two groups for each water project: (i) the value of the direct-impact areas that would be removed from any economic activity as a result of the projects, and (ii) the economic impact on the direct- and indirect-impact areas as a result of the projects.

2.17 The following are some of the planned activities: (i) determine current and potential land uses within the project areas, prepare land-use maps and identify the principal economic ties of the direct-impact areas to other neighboring areas within and outside of the project watersheds; (ii) do inventories of infrastructure resources in the direct- and indirect-impact areas; (iii) do inventories of individual and

community structures in the direct-impact areas; (iv) study land tenure; (v) review the demographic features of the direct- and indirect-impact areas; (vi) review the epidemiological characteristics of the direct- and indirect-impact areas; (vii) do inventories of potentially valuable environmental resources; and (viii) design and set up a tool in the manner of a social accounting matrix to quantify the basic elements of the economic structure of the direct- and indirect-impact areas for the water projects under study.

3. Analysis of scenarios and formulation of the master plan (US$950,000)

2.18 This component will provide for two studies for: (i) analysis of regional watershed development scenarios using the information in the baseline and in the water projects; and (ii) the master plan for watershed development. Using a series of tools including decision support models, information will be assembled so as to project in time and space the implications of carrying out the alternatives under consideration, including that of maintaining the watershed as a future water reserve. Support will also be provided for the decision-making process and for extracting the most important information for formulating the sustainable development strategy for the watershed. Two consulting firms with extensive international experience will be contracted for this work, for an estimated total of 75 consultant-months.

a. Analysis of watershed development scenarios

2.19 These analyses will require a decision support system to integrate all the factors, consisting of a series of analysis tools or models combined with regional development scenarios that bring together all of the environmental, sociocultural, economic and technical considerations. For each set of decisions, the models will indicate changes that may be expected in the key elements of the comprehensive regional baseline, that could have possible future consequences, both favorable and adverse, from a technical, environmental, sociocultural and economic standpoint. This process will make it possible to identify measures to mitigate the direct and indirect impacts of the various alternatives.

2.20 The planned activities include: (i) select and calibrate a set of models (decision support tools) for consistent management of the data gathered in order to assess the impact of the project alternatives; (ii) run time and space projections of regional development patterns in the western region and surrounding areas under different scenarios.[4] The scenarios should be based on a series of internal and external factors that precisely reflect the Panamaian government's decision-making setting. The aim being to help all of the actors visualize the process of regional change in a

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[4] As an illustration, the scenarios could include projections of development trends in the western region and its area of influence at intervals of 5, 15, 25 and 50 years, assuming that: (a) there will be no new investments in water projects (base-case or "no change"scenario); (b) the decision is to deepen Gatun Lake (investment scenario outside the western region); (c) the decision is to invest in a single reservoir on the Indio River and diversion towards the eastern watershed; (d) the decision is to invest in a system of reservoirs on the Indio, Sucio and Coclé del Norte rivers and diversion towards the eastern watershed. A series of scenarios will in fact be included, since there may be several possible reservoir/diversion combinations.

comprehensive manner; (iii) assess the direct and indirect regional impacts of the scenarios devised; (iv) design the potential initial mitigation strategies for each scenario, which will become part of a master plan for sustainable development of the watershed to be produced during the following stage; and (v) run a comparative analysis of scenarios based on their local and regional impacts, including their effects and mitigation costs, as well as a residual risk analysis.

b. Master plan for watershed development

2.21 The objective is to draw up a master plan for sustainable development of the Canal watershed. The plan will be based on the baseline studies, runs of the decision support models during the earlier phases for the western region, and reviews of the existing plan for the eastern region. These activities are expected to generate a set of guidelines and milestones that reflect broad consensus about a sustainable future for the watershed, along with an activity-and-investment package that could ultimately be submitted for consideration to obtain financing.

2.22 The activities include: (i) locally articulate the conditions for sustainable development for one or more of the scenarios refined through modeling; (ii) express the regional development goals as milestones that are achievable within a specified time frame; (iii) obtain and process detailed aerial photographs of the entire watershed, for use in drawing up plat maps, supporting the land titling process and other planning purposes; (iv) design and examine a series of sustainable development activities and investments, such as natural resource conservation initiatives, community development, and activities to improve the standard of living in the watershed communities; and (v) develop a strategy for phased implementation of the program.

D. Project components and outputs

2.23 Table II-1 summarizes the activities and outputs expected in achieving the objectives set forth for this technical cooperation. The activities are described in Annex II, Terms of Reference.

TABLE II-1
SUMMARY OF COMPONENTS/ACTIVITES AND OUTPUTS

COMPONENTS/ACTIVITIES	OUTPUTS	AMOUNT (US$)
Strengthen management capacity		658,000
-Strengthen PCA	Creation of the UCCT. Environmental analyses of projects.	
-Strengthen CICH	As-needed support in addition to that provided by USAID.	
-Strengthen local governments and community-based organizations	Environmental management capacity. Training and assistance for community-based organizations.	
-Georeferenced database	Database. Georeferenced information.	
Comprehensive baseline for the watershed		1,630,000
Eastern region baseline	Consultation-based updating of the ARI's regional plan.	
Western region baseline	Habitat maps. Inventory of flora and fauna. Cultural resources inventory.	
-Hydroenvironmental considerations	30 workshops for consultation and community proposals. Cultural use plan.	
-Sociocultural considerations	Inventory of infrastructure. Social accounting matrix. Summary of socioeconomic impact.	
-Socioeconomic considerations		
Analysis and formulation of master plan		950,000
Analysis of watershed development scenarios	Analysis models – Mitigation measures for the different alternatives.	
Master plan for watershed development	Guidelines for drawing up the sustainable development program.	
	Aerial photographs for cadastre use and land titling. Western region.	

E. Project costs, sources of financing and disbursements

2.24 The total cost of the technical-cooperation operation would be US$3,238,000. The Bank's contribution would be US$1,000,000, provided from the Japan Special Fund on a nonreimbursable basis; the PCA's contribution would be US$2,238,000. An estimate of the cost breakdown, consultant-months and financing is given in Table II-2.

Table II-2
Estimated costs, times and financing plan

COMPONENTS	Total consultant-months	Financing and costs (US$)		
		Japan Fund	PCA	Total
Strengthening of management capacity	**85**	**250,000**	**408,000**	**658,000**
Strengthening of PCA				
-Tech.-Coop. Coordination Unit (12 months consulting services, US$10,000/month)	12	120,000	0	120,000
-Environmental management expert (6 months consulting services, US$8,000/mo.)	6	48,000	0	48,000
-Environmental analysis expert (4 months consulting services, US$4,000/month)	18	0	72,000	72,000
-Support staff (7 months consulting services, US$2,000/month)	7	0	14,000	14,000
Strengthening of CICH (24 months consulting services, US$4,000/month and 16 months consulting services, US$8,000)	40	52,000	250,000	302,000
Strengthening of local governments (10 months consulting services, US$4,000/month)	10		40,000	40,000
Georeferenced metadatabase (consulting firm for 6 months)	12	30,000	32,000	62,000
Comprehensive baseline for watershed	**195**	**350,000**	**1,280,000**	**1,630,000**
Eastern region baseline				
--Updating of ARI regional plan. (4 months consulting services)		20,000	150,000	170,000
Western region baseline				
--Hydroenvironmental studies (consulting firm for 12 months)	120	100,000	500,000	600,000
--Socioeconomic studies (consulting firm for 9 months)	40	100,000	300,000	400,000
--Sociocultural studies (including community consultation) (consulting firm for 8 months)	35	130,000	330,000	460,000
Analysis and formulation of the master plan	**75**	**400,000**	**550,000**	**950,000**
Comprehensive analysis of hydro-environmental, socioeconomic and sociocultural data (including decision support models) (consulting firm for 6 months)	50	230,000	300,000	530,000
Master plan for sustainable development (consulting firm for 7 months)	25	170,000	250,000	420,000
TOTAL	**375**	**1,000,000**	**2,238,000**	**3,238,000**

Note: The costs include 40 consultation and consensus-building workshops. The consulting costs are all-inclusive (including fees, benefits, travel, general expenses and consulting firm overhead) and were calculated using rates of US$2,000 to US$4,000/month for Panamanian consultants and US$8,000 to US$12,000/month for international consultants.

III. PROJECT RATIONALE

3.1 In view of the importance of the Canal and its watershed to the national economy and global commerce, it is both a national and an international priority to ensure safe passage for ships through the Canal, sufficient water supply for future development, and effective management and protection of natural resources in the Canal basin. The proposed operation is in line with the Bank's strategy inasmuch as it promotes better use of natural resources and fosters sustainable development in the Canal watershed.

3.2 The proposed operation is needed to finance activities that are essential to the formulation of a Canal watershed development strategy that will make for rational utilization of natural resources. It will help to determine the medium- and long-range feasibility of Canal expansion. It will also be an effective means of improving the environmental management practices of the institutions that share responsibility for managing the natural resources of the watershed, particularly CICH member agencies. As a watershed development strategy is defined, the operation will ultimately improve institutional coordination of management and the quality of environmental services.

3.3 This operation will enable the government and the Bank to provide the basic elements needed for decision-making in regard to subsequent loan operations, in particular the various phases of the program for sustainable development of the Canal watershed.

IV. ORGANIZATION AND IMPLEMENTATION

A. Executing agency and organization

4.1 This technical-cooperation operation will be implemented by the Panama Canal Authority with support from a Technical-Cooperation Coordination Unit (UCCT) in the Occupational Safety, Environment and Canal Protection Department. The unit will be composed of PCA staff and will be headed by a PCA-appointed coordinator, with advisory support from four experts contracted with the technical-cooperation funding to perform very specific tasks. The unit will have a Technical Advisory Committee composed of representatives from the Canal Capacity Department, Finance Department, Environmental Management Department, and Corporate Communication Department. The UCCT, as the operating and support arm of the PCA, will be responsible for monitoring the project activities and actions and will be the focal point for dealings with the Bank.

4.2 The responsibilities of the UCCT will include but will not be limited to: (i) coordination, supervision and overall control of the technical-cooperation project; (ii) assistance to working groups or coordinators of the various departments involved in the activities; (iii) monitoring and supervision of calls for proposals or bids and of the awarding of contracts for goods or services; (iv) preparation of the work plan, commitment timetables, requests and justifications for disbursements,

rendering of accounts and presentation of financial statements at the end of the project; and (v) monitoring of compliance with the Bank's rules.

4.3 The Bank's Panama Country Office will have responsibility for the operation during implementation, with ongoing support from the designated project team (PN-0139). This arrangement will ensure that the results of the various studies will be included in the analysis of the water projects and in the future program. The Country Office will provide administrative support to the PCA. [Support for the Environment and Natural Resources Management Division (RE2/EN2) will assist in supervision and monitoring].

4.4 When organizing the project's implementation, the consultants will work closely together and with the ARI, MIDA, ANAM, the PCA, other governmental and nongovernmental organizations, multilateral and bilateral agencies (World Bank, USAID, JICA) that play an active role in the area, and organized segments of the community that stand to benefit from development of the Canal watershed.

B. Implementation and disbursement periods

4.5 The implementation period for the operation will be 18 months, with a disbursement period of up to 24 months calculated from the signing date of the letter of agreement between the government, the PCA and the Bank. The consulting services will be completed no later than 14 months after the date on which the local and/or international consulting firm(s) or individual consultant(s) is (are) hired to provide professional services.

C. Revolving fund

4.6 To facilitate payment procedures, the project team recommends the creation of a revolving fund with a maximum amount of US$100,000, the equivalent of 10% of the Bank's total contribution. This percentage advance is justified because the studies will be commissioned simultaneously and there will be a constant demand for payment in view of the rapid project implementation schedule.

D. Recognition of prior expenditures

4.7 Given the fact that the PCA has resources available and has placed priority on initiating some of the activities identified in the technical-cooperation operation, the Authority went ahead, with the Bank's support, on contracting consulting services to begin project activities such as: (i) strengthening PCA management; (ii) definition of a community information strategy; and (iii) creation of a database. Accordingly, the PCA has asked the Bank to recognize the expenditures made from its own resources (local counterpart), totaling US$250,000 since 22 February 2000, and will submit a list of its outlays on previously agreed activities. In accordance with the Bank's guidelines, the PCA has begun the process of press announcements and registering and prequalifying firms interested in responding to the calls for proposals. As a result of this substantial progress on the operation, a completion date of October 2002 is envisaged.

E. Project accounting and auditing

4.8 The PCA's administrative system, in particular its Finance Department, will keep separate accounting records for the project. The records will be kept in separate, specific accounts on the books, with itemizations of funds coming from the Bank and from the local counterpart, as well as the use of project resources on funded activities for each component, broken down by source of financing. The accounting system will be structured to facilitate account consolidation, preparation of annual project financial statements, and requests and justifications for Bank disbursements. At the end of the project, the PCA, through the UCCT, will present to the Bank a project financial statement audited by an independent auditing firm acceptable to the Bank. The cost of the audit will be defrayed with project funds.

F. Procurement procedures

4.9 Standard Bank procedures will be used for the procurement of goods and services and the contracting of consulting services. International competitive bidding will be required for procurement of goods over US$350,000 and for consulting services for amounts over US$200,000. Procurement and contracting below these thresholds will be carried out in accordance with current PCA procedures. In matters regarding the selection and contracting of consulting services and procurement of goods, the PCA, with support from the UCCT, will contract directly for services, with Panamanian or foreign consultants or consulting firms, after clearance from the Bank.

V. MONITORING AND EVALUATION SYSTEM

5.1 The Bank's project team will continue to operate throughout the technical-cooperation implementation period, in close coordination with the Country Office in Panama, to monitor the activities proposed in this plan of operations and ensure that the results of the studies will be reviewed and included in the analysis of the future operation (PN-0139).

5.2 Administrative technical missions over the course of the project will enable the PCA and the Bank to evaluate progress on the studies and the community consultation process and ascertain whether targets have been achieved. Based on the findings of these evaluations, agreements will be made for any changes that may be required in order to meet the project's objectives.

5.3 The PCA, through the UCCT, will review and submit the reports of each study to the Bank, in accordance with work plans agreed on with the consultants hired with the technical-cooperation resources.

VI. BENEFITS AND RISKS

6.1 The operation will yield significant benefits in terms of governance, by supporting an orderly, transparent and participatory decision-making process. Specifically, the

operation will help to develop a multisectoral framework for managing a watershed that is strategically important to the national economy, by improving the PCA's environmental management capacity and interagency coordination for sustainable management of the Canal watershed, through the CICH. The beneficiaries of the operation will be the Government of Panama; the PCA and other public institutions and agencies with environmental jurisdiction, activities and responsibilities in the watershed, such as ANAM and MIDA, among others; and the residents of the watershed.

6.2 Two risks have been identified: (i) Given the size of the program, it will be necessary to build a national consensus on the management of natural resources in the watershed. Such a consensus should involve the PCA as well as other national institutions responsible for the watershed and its inhabitants. In order to mitigate this risk, the operation will provide means by which the PCA and CICH can give Panamanians progress reports on the program in a transparent manner. In order to ensure continuity in this process, the PCA and CICH staffs will receive advisory support in the areas of conflict management and policy communication. In addition, the PCA is working actively with support from the UNDP to hold a national dialogue in order to seek a consensus with the general public, provide information and explain the merits and significance of the program to the authorities. (ii) In view of the complexity of the decisions involved, it is likely that negative opinions on the expansion program will intensify in rural communities of the watershed and that the process will become politicized. To mitigate this risk, the PCA is developing an information strategy with the communities and institutions, and the technical cooperation proposed here will support the PCA so that the water project designs will take community viewpoints into account, by way of a participatory strategy.

VII. CERTIFICATION AND RECOMMENDATION

7.1 The Chief of the Bank's Japan Fund certifies that sufficient resources are available in the Japan Special Fund, up to the equivalent of US$1,000,000, to finance the activities specified in this plan of operations. The Environment and Natural Resources Management Division (RE2/EN2), with the support of the Bank's Country Office in Panama (COF/CPN) and in consultation with the Panama Canal Authority, recommends approval of this plan of operations and the use of resources of the Japan Special Fund for a total amount equivalent to US$1,000,000 to finance the proposed operation described herein, on a nonreimbursable basis.

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PROPOSED RESOLUTION

PANAMA. NONREIMBURSABLE TECHNICAL COOPERATION TO THE "AUTORIDAD DEL CANAL DE PANAMA" TO FINANCE A STRATEGY FOR SUSTAINABLE DEVELOPMENT OF THE PANAMA CANAL WATERSHED.

The Board of Executive Directors

RESOLVES:

1. 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 Japan Special Fund, to enter into such agreements as may be necessary with the "Autoridad del Canal de Panamá (ACP)" and to adopt such measures as may be pertinent to cooperate in the financing of a strategy for sustainable development of the Panama Canal Watershed.

2. That up to the amount of US$1,000,000 is authorized for the purpose of this resolution, chargeable to the resources of the Japan Special Fund.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.