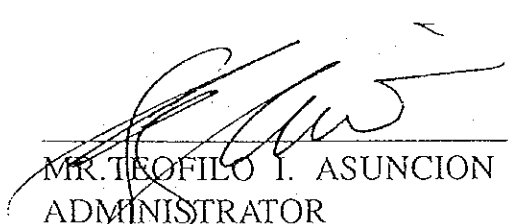


FIGURE 5
WATER DEMAND PROJECTION

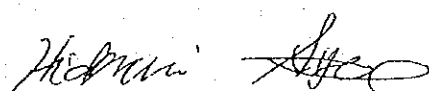
IMPLEMENTING ARRANGEMENT
ON
THE TECHNICAL COOPERATION
FOR
THE STUDY ON WATER SUPPLY AND SEWERAGE
MASTER PLAN OF METRO MANILA
IN
THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN
METROPOLITAN WATERWORKS AND SEWERAGE SYSTEM
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Manila, April 15, 1994



MR. TEOFILO I. ASUNCION
ADMINISTRATOR
METROPOLITAN WATERWORKS
AND SEWERAGE SYSTEM



DR. HIDENORI AYA
LEADER OF THE PREPARATORY
STUDY TEAM
JAPAN INTERNATIONAL
COOPERATION AGENCY

I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct the Study on Water Supply and Sewerage Master Plan of Metro Manila in the Republic of the Philippines (hereinafter referred to as "the Study") and exchanged the Note Verbal with GOP concerning the implementation of the Study.

Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of GOJ, will undertake the Study in accordance with the relevant laws and regulations in force in Japan.

On the part of GOP, Metropolitan Waterworks and Sewerage System (hereinafter referred to as "MWSS") shall act as a counterpart agency to the Japanese Study Team and also as a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangement between JICA and MWSS under the above mentioned Note Verbal exchanged between the two governments.

II. OBJECTIVE OF THE STUDY

The objectives of the Study are;

1. to formulate a master plan on the development of water supply, sewerage and sanitation system for areas under MWSS jurisdiction up to the year 2015 through upgrading of service level, expansion of service coverage, and improvement of institutional and financial status of MWSS, and
2. to transfer technology in planning skills to the Philippine counterpart personnel.

III. STUDY AREA

The Study area will cover the following 6(six) cities and 31(thirty-one) municipalities in Metro Manila, Cavite Province and Rizal Province under the jurisdiction of the MWSS.

Cities in Metro Manila

Manila

Pasay

Quezon

Caloocan

Mandaluyong

Municipalities in Metro Manila

Las Piñas

Makati

Malabon

Marikina

Muntinlupa

Navotas

Parañaque

Pasig

Pateros

San Juan

Taguig

Valenzuela

Cavite City

Municipalities in Cavite Province

Noveleta

Kawit

Rosario

Imus

Bacoor

Municipalities in Rizal Province

Montalban

San Mateo

Antipolo

Cainta

Taytay

Angono

Teresa

Binangonan

Morong

Cardona

Baras

Tanay

Pililla

Jala-jala

IV. SCOPE OF THE STUDY

In order to achieve the objective mentioned above, the study will cover the following items.

1. Basic study

- 1) Collection and review of existing data/information.
- 2) Review of completed, on-going and planned water supply, sewerage and sanitation projects.
- 3) Assessment of existing water supply, sewerage and sanitation services and facilities with regards to their coverage rate, service level and operation and maintenance conditions.
- 4) Assessment of present conditions of water environment and health of the population.
- 5) Assessment of present policies, strategies, organizational and managerial status of MWSS.

2. Setting planning framework

- 1) Projection of land use.
- 2) Projection of population growth.
- 3) Projection of economic growth.
- 4) Projection of the change in industrial structure.

3. Water supply plan

- 1) Projection of water demand by areas and water consumption unit.
- 2) Basic policies on water supply.
- 3) Plan for the expansion and development of water supply.
- 4) Plan for the improvement of the efficiency of operation and maintenance.

4. Sewerage and sanitation plan

- 1) Basic policies on sewerage and sanitation.
- 2) Sewerage development plan.
- 3) Sanitation improvement plan for the areas not to be covered by conventional sewerage system.
- 4) Plan for the renewal of facilities.

5. Project packaging

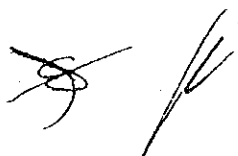
- 1) Project packaging and preliminary cost estimation.
- 2) Prioritization of projects.
- 3) Target level of cost recovery and plan for financial arrangement.

6. Institutional development plan

- 1) Plan for defining responsibility of organizations.
- 2) Plan for legislative measures.
- 3) Plan for the efficient and effective tariff collection.
- 4) Plan for the improvement of the efficiency of management and day-to-day operation.
- 5) Human resource development plan.
- 6) Plan for the improvement of the function of research and development.
- 7) Plan for information, education, communication and public participation.
- 8) Plan for encouraging the development of domestic water industry.

7. Expected benefits

Overall benefits of the master plan measured in terms of financial, economic, environmental and health condition improvement.



V. STUDY SCHEDULE

The study will be carried out in accordance with the attached tentative work schedule.

VI. REPORTS

JICA will prepare and submit the following reports in English to GOP.

1. Inception Report;
Twenty (20) copies at the beginning of the work in the Philippines.
2. Progress Report(1);
Twenty (20) copies within 4(four) months after commencement of the work in the Philippines.
3. Interim Report;
Twenty (20) copies within 8(eight) months after commencement of the work in the Philippines.
4. Progress Report (2);
Twenty (20) copies within 10(ten) months after commencement of the work in the Philippines.
5. Draft Final Report;
Twenty (20) copies within 14(fourteen) months after commencement of the work in the Philippines.
GOP shall submit its comments to JICA within one (1) month after the receipt of the Draft Final Report.
- 6 Final Report;
Forty (40) copies within two (2) months after JICA's receipt of the said comments on the Draft Final Report.

VII. UNDERTAKING OF GOP

In accordance with the Note Verbal exchanged between GOJ and GOP, GOP shall accord privileges, immunities and other assistance to the Japanese Study Team (hereinafter referred to as "the Team") and, through the authorities concerned, take necessary measures to facilitate the smooth conduct of the Study.

1. GOP shall be responsible for dealing with claims which may be brought by third parties against the members of the Team and shall hold them harmless in receipt of claims and liabilities arising in the course of, or otherwise connected with the discharge of their duties in the

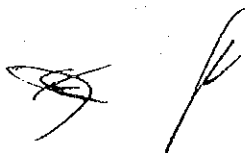
implementation for the Study, except when such claims or liabilities arise from gross negligence or willful misconduct of the above-mentioned members.

2. MWSS shall, at its own expenses, provide the Team with the following, if necessary, in cooperation with other agencies concerned:
 - (1) available data and information related to the Study,
 - (2) counterpart personnel and support staff necessary for the Study,
 - (3) suitable office space with necessary equipment in Metro Manila, and
 - (4) credentials or identification cards to the members of the Team.
3. MWSS shall make necessary arrangements with other governmental and non-governmental organizations concerned for the following:
 - (1) to secure the safety of the Team,
 - (2) to permit the members of the Team to enter, leave and sojourn in the Philippines for the duration of their assignment therein,
 - (3) to exempt the members of the Team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into and out of the Philippines for the conduct of the Study,
 - (4) to exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study,
 - (5) to provide necessary facilities to the Team for remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Study,
 - (6) to secure permission for entry into private properties or restricted areas for the implementation of the Study,
 - (7) to secure permission for the Team to take all data and documents (including maps, photographs) related to the Study out of the Philippines to Japan, and
 - (8) to provide medical services as needed. Its expenses will be chargeable on the members of the Team.

VIII. UNDERTAKING OF GOJ

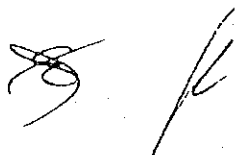
In accordance with the Note Verbal exchanged between GOJ and GOP, GOJ, through JICA, shall take the following measures for the implementation of the Study.

- (1) To dispatch, at its own expense, the Team to the Philippines.
- (2) To pursue technology transfer to the Philippine counterpart personnel in the course of the Study.



IX. CONSULTATION

JICA and MWSS shall consult with each other in respect of any matter that may arise from or in connection with the Study.



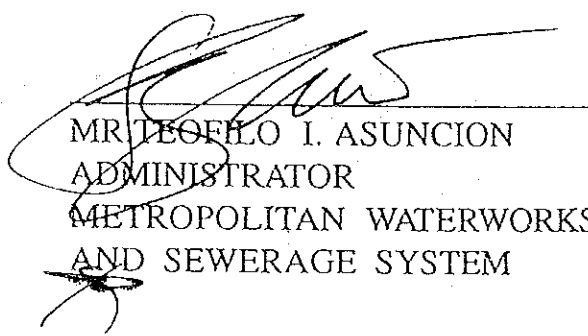
TENTATIVE WORK SCHEDULE

MONTH DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WORK IN THE PHILIPPINES																				
WORK IN JAPAN																				
REPORT PRESENTATION	▲ IC/R				▲ P/R (1)				▲ IT/R		▲ P/R (2)				▲ DF/ R			▲ F/R		
REMARKS	IC/R: Inception Report DF/R: Draft Final Report P/R: Progress Report F/R: Final Report IT/R: Interim Report																			

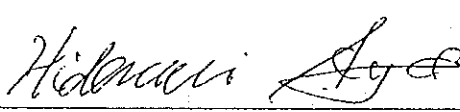
MINUTES OF DISCUSSIONS
ON
THE IMPLEMENTING ARRANGEMENT
ON
THE STUDY ON WATER SUPPLY AND SEWERAGE
MASTER PLAN OF METRO MANILA
IN
THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN
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Manila, April 15, 1994



MR. TEOFILO I. ASUNCION
ADMINISTRATOR
METROPOLITAN WATERWORKS
AND SEWERAGE SYSTEM



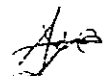
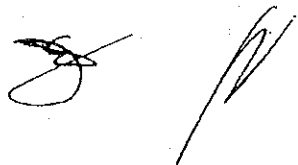
DR. HIDENORI AYA
LEADER OF THE PREPARATORY
STUDY TEAM
JAPAN INTERNATIONAL
COOPERATION AGENCY

Based upon the official request of the Government of the Republic of the Philippines, Japan International Cooperation Agency (hereinafter referred to as "JICA") organized and sent a Preparatory Study Team, headed by Dr. Hidenori Aya, to the Republic of the Philippines from April 3rd, 1994 to April 19th, 1994 to discuss the Implementing Arrangement on the Study on Water Supply and Sewerage Master Plan of Metro Manila (hereinafter referred to as "the Study").

During its stay, the Team had a series of discussions with officials of Metropolitan Waterworks and Sewerage System (hereinafter referred to as "MWSS") and other authorities concerned of the Government of the Philippines. As a result, both the Preparatory Study Team and MWSS agreed on the Implementing Arrangement.

The following are the major items discussed in connection with the above Implementing Arrangement.

1. Both sides agreed that the Study will be basically based on the components discussed in the "Supplement to the Implementing Arrangement" as attached hereto, though some modifications may be necessary in defining details of the Study.
2. Water works under MWSS bulk selling scheme will be considered in connection with the assessment of the capacity of water resources and treatment facilities.
3. Urban surface runoff shall be considered as a part of sewerage system.
4. Both sides recognized the importance of the coordination among governmental agencies on the issues that affects the jurisdiction of the agencies other than MWSS. Consequently, both sides agreed to organize issue-oriented meetings with related agencies on an ad hoc basis during the course of the Study.
5. The outcome of the data and analysis of the Manila Second Sewerage Project, which is currently being studied by the Original Engineering Consultants, Co., Ltd., will be incorporated into the Master Plan.
6. MWSS confirmed that it will provide the Japanese Study Team with office space that can accommodate approximately twenty (20) persons and furniture including telephones, electricity outlets, and air conditioners.



7. Both sides recognized that in this particular Study, discussions between the Japanese Study Team and MWSS on policies and alternatives are the major part of the Study. To secure the effectiveness of the Study, MWSS confirmed that it will organize a counterpart team in MWSS headed by the Senior Deputy Administrator and the Deputy Administrator for Engineering and assign both full-time and part-time counterpart personnel with expertise in such fields as;

- a. overall policy formulation on water supply, sewerage and sanitation services,
- b. water supply planning,
- c. sewerage and sanitation planning,
- d. operation and maintenance,
- e. organization and management, and
- f. financial planning.

The counterpart team will be set up by the time the Study starts in the Philippines.

8. The Japanese side informed that JICA is ready to accept one (1) counterpart personnel to Japan for one month during Japanese fiscal year 1994. The selection of the candidate will be done in close collaboration with Mr. Hirotaka Honda (Japanese expert) and the Japanese Study Team.

9. MWSS shall ensure that specific support shall be extended to the members of the Japanese Study Team to facilitate the issuance of visas.



Supplement to the Implementation Arrangement

I. Expected outcome of the Study

The master plan is expected to help policy makers and planners of MWSS and other related organizations to have long-term goals, targets and strategies for the development of waterworks, sewerage and sanitation system of areas under MWSS jurisdiction. The master plan will also serve as a guideline for the prioritization of future projects.

Therefore, the Study will focus mainly on the formulation of basic policies (goals and target), comparison of alternative measures to attain goals and targets, and logical explanation for the best alternative, taking into consideration institutional and financial status of MWSS and its capacity building.

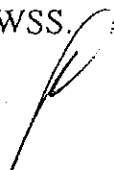

The physical aspects of facility plan for waterworks, sewerage and sanitation system will basically be confined to schematic diagram, preliminary location and capacity plan. The details of facilities need to be defined in future feasibility studies and detailed designs with sufficient back data.

II. Specific items of the scope of the Study

The scope of the Study will include, but not be limited to, following aspects.

1. Basic study

- 1) Collection and review of existing data/information on;
 - a. natural conditions,
 - b. socio-economic conditions,
 - c. national development plans,
 - d. metropolitan development plans, and
 - e. other information relevant to the Study.
- 2) Review of completed, on-going and planned water supply, sewerage and sanitation projects.
- 3) Assessment of existing water supply, sewerage and sanitation services and facilities with regards to their coverage rate, service level and operation and maintenance conditions.
- 4) Assessment of present conditions of water environment and health of the population.
- 5) Assessment of present policies, strategies, organizational and managerial status of MWSS.



2. Setting planning framework

- 1) Projection of land use.
- 2) Projection of population growth.
- 3) Projection of economic growth.
- 4) Projection of the change in industrial structure.

3. Water supply plan

- 1) Projection of water demand by areas and water consumption unit.
- 2) Basic policies on water supply;
 - a. target level of water production,
 - b. target coverage rate in terms of population and area, and
 - c. target level of services in terms of service hour, distribution level and water quality at consumers.
- 3) Plan for the expansion and development of water supply;
 - a. assessment of water resources,
 - b. definition of distribution scheme,
 - c. expansion/development plan of water supply facilities including water source, treatment, transmission and distribution, and
 - d. staged development plan.
- 4) Plan for the improvement of the efficiency of operation and maintenance;
 - a. plan for reducing non-revenue water, and
 - b. plan for the renewal of facilities.

4. Sewerage and sanitation plan

- 1) Basic policies on sewerage and sanitation;
 - a. target level of water environment and sanitary condition,
 - b. target coverage rate in terms of population and area,
 - c. policies on accepting industrial wastewater,
 - d. projection of the quantity of wastewater by area, and
 - e. zoning criteria for disposal mode.
- 2) Sewerage development plan;
 - a. assessment of the mode of collection,
 - b. definition of sewerage scheme,
 - c. target return period of urban surface runoff,
 - d. expansion/development plan of sewerage facilities including collection, treatment and disposal, and
 - e. staged development plan.

- 3) Sanitation improvement plan for the areas not to be covered by conventional sewerage system;
 - a. zoning of areas by treatment mode,
 - b. improvement/development plan of sanitation facilities including collection, treatment and sludge disposal, and
 - c. staged development plan.
 - 4) Plan for the renewal of facilities.
5. Project packaging
- 1) Project packaging and preliminary cost estimation on;
 - a. construction projects,
 - b. rehabilitation projects,
 - c. organization and management improvement projects,
 - d. human resource development projects, and
 - e. other relevant projects.
 - 2) Prioritization of projects.
 - 3) Target level of cost recovery and plan for financial arrangement.
6. Institutional development plan
- 1) Plan for defining responsibility of organizations.
 - 2) Plan for legislative measures.
 - 3) Plan for the efficient and effective tariff collection.
 - 4) Plan for the improvement of the efficiency of management and day-to-day operation.
 - 5) Human resource development plan.
 - 6) Plan for the improvement of the function of research and development.
 - 7) Plan for information, education, communication and public participation.
 - 8) Plan for encouraging the development of domestic water industry.
7. Expected benefits
- Overall benefits of the master plan measured in terms of financial, economic, environmental and health condition improvement.

List of Attentdants

MWSS

Mr. Rolando E. Roca	Manager, Planning and Programming Department
Mr. Graciano B. Calayan, Jr.	Manager, Planning division, Planning and Programming Department
Mr. Alfredo C. Abalos, Jr.	Principal Engineer A Planning division Planning and Programming Department

JICA PREPARATORY STUDY TEAM

Dr. Hidenori Aya

Ms. Kae Yanagisawa

Mr. Yasuyki Sato

Mr. Osamu Ikeda

Mr. Shigeo Kanai

Mr. Kiichiro Sakaguchi

Mr. Kazuhiro Nakaishi

Questionnaire to MWSS in relation to
the Study on Water Supply and Sewerage Master Plan of Metro Manila

MWSSの回答

1. On-going and Implementation-determined Projects:

別冊 Annex I

Please provide us with a list of water supply, sewerage and sanitation projects that MWSS is implementing or going to implement with project title, duration, amounts, fund sources, reasons for delay if delayed, and brief description. (Kindly use attached Formats 1, 2 & 3)

2. Other projects so far studied or planned for MWSS but not implemented:

Explain reasons for abandonment or changes.

3. How should JICA' master plan deal with (on-going) projects already studied or proposed or commenced ? What is MWSS's intention regarding implementation or modifications of "Water Supply, Sewerage and Sanitation Master Plan of the Philippines 1988 - 2000" prepared by the Philippines Government ?

本質問に続く

Explanation: The coming JICA's master plan study would be different from past master plan studies conducted for other cities in the sense that MWSS has many projects already studied and proposed. MWSS has commenced some of them already. MWSS may have an intention to commence some other projects in the near future. Those projects commenced or to be implemented in the near future will have to be incorporated, as it is or with modifications, in the Master Plan to be prepared by JICA. An important part of the master plan study would be an in-depth technical and financial review of the projects so far studied and planned.

However, if for example, MWSS has determined to implement certain projects which require such a large funds that MWSS would have no extra budget left for implementing other projects by the year 2000, then it is not appropriate for the JICA study team to propose new fund-requiring projects by that time, and large part of the master plan would have to be based on the implementation of the on-going projects at least for some period. We will appreciate it if you could give your comments on this matter.

4. Please comment on the MWSS' prioritization of objectives of sewerage system development.

同上

In general, sewerage system development objectives include removal of sewage water from life areas, prevention of sewage water flowing into life areas, improvement of water quality of rivers and sea. Naturally, sewerage development areas and types of facilities to be constructed would differ according to the priority.

5. Please identify and explain the problems and constrains of MWSS in order of importance. 本質問に続く
6. What do you expect of JICA's master plan ? What aspects should be studied most importantly ? 同上
7. Is MWSS independent from Department of Public Works and Highways (DPWH) ? 同上
8. Does MWSS have an authority to decide on implementation of investment projects without obtaining approval from other governmental agencies of Philippines ? 同上
9. Please explain MWSS's responsibility sharing and relationship with other relevant agencies including DPWH, Department of Health, Department of Local Governments DLG, National Water Resource Boards (NWRB), Local Water Utilities Administration (LWUA), Metro Manila Authority (MMA) and city or municipal governments ? 同上
10. Please explain MWSS' organizational reform plans if any. Provide a planned organization chart if any. 同上
11. Kindly explain if MWSS has intention to request the Philippines government to change laws and regulations relevant to MWSS or its services. 同上
12. Please provide all information listed in Attachment 1,2 and 3 同上
13. Please kindly prepare a list of reports, documents, and books that may be useful for preparation of a master plan, and that MWSS can provide the Master Plan Study Team with. 同上

Formulation of a master plan for MWSS requires much information of various types including:

- 1) Studies on waterworks, sewerage and sanitation carried out for MWSS
- 2) Public health conditions in MWSS Service Area (MSA)
- 3) Natural conditions in MSA
- 4) Socio-economic conditions in MSA
- 5) Physical infrastructure in MSA
- 6) Economic development plan for MSA
- 7) Laws and regulations concerning MWSS and its services

Attachment 1

List of Information Needed Concerning MWSS

1. Organization chart of MWSS 別冊 Annex I
2. MWSS's Financial Statements (income statement and balance sheet during the past 5 years) 別冊 Annex A
3. Future revenue projection 別冊 Annex B
4. The latest information (brochure if any) on water supply and sewerage service performance and service coverage of MWSS. 別冊 Annex B
5. Current water quality monitoring organization and activities. (number of staff, monitoring places, frequency, method, and parameters.) 別冊 Annex C
6. Water quality monitoring data (piped water, ground water, river, reservoir and sea water, sewage treated water) 別冊 Annex C
7. List of environmental monitoring equipment

Attachment 2

Information Needed on the MWSS' Existing Waterworks, Sewerage and Sanitation Systems

1. Information on the Existing Waterworks

別冊 Annex B

1.1 Water resources

別冊 Annex 2

- 1) Dams and reservoir (Location map and capacity)
- 2) Surface water and river (Maps and intake capacity)
- 3) Well (locations and capacity)

別冊 Annex D & 4

1.2 Purification plant

別冊 Annex E

- 1) Location
- 2) Treatment method
- 3) Capacity

1.3 Water transmission pipes

別冊 Annex 3

- 1) Locations (main water pipes)
- 2) Supply method
- 3) Capacity

1.4 Water distribution

別冊 Annex 3

- 1) Service reservoir (Locations and capacity)
- 2) Pumping stations (Location, capacity, pressure)
- 3) Distribution network or zone (locations, area, population)
- 4) Criteria for water consumption amount (estimated per capita per day water consumption) 別冊 Annex F

2. Information on the Existing Sewerage and Sanitation Systems

別冊 Annex G

2.1 Major sewage collection system (with diagram, map and description)

2.2 Sewage treatment plants (location, method, capacity, discharge point of treated water)

2.3 Septic tanks (number, population, typical system, desludging frequency, etc.)

2.4 Latrine (number, population, other information)

Attachment 3

List of Information Needed Concerning Metro Manila

1. Information on conditions on public health in the Study area including waterborne diseases.
2. List of laws and regulations related to MWSS services and their relevant importance to MWSS as well as water quality standards (ambient and emission) to be followed by MWSS B1111 Annex H
3. Socio economic conditions of the Study area
 - 1) Population (past, present and future) and households,
 - 2) Slum (population, area, future plans for slum)
 - 3) GDP (Gross domestic products in the Metro Manila area) by sectors
 - 4) Number of business establishments (factories, restaurants, hotels, offices)
4. Outline of economic development plan for Metro Manila area
5. Description and a map of land utilization in Metro Manila area as well as future land utilization plan if any
6. Information on the solid waste management
 - 1) Responsible organizations
 - 2) Amount of waste produced
 - 3) Amount of waste collected
 - 4) Amount of waste disposed
 - 5) Places of major disposal sites
 - 6) Methods of disposal (open dumping ?)
 - 7) Waste collection service coverage in terms of population
 - 8) Number of scavengers in the Metro Manila area.
 - 9) Annual budget for solid waste management used in Metro Manila area
7. Information on transportation systems (Road and railway, etc.)
 - 1) Map showing transport systems
 - 2) Information on traffic volume
 - 3) Information (outline) of the future development plan
8. Electricity
 - 1) Population that receive electricity in the Metro Manila area
 - 2) Total consumption of electricity in the Metro Manila area
 - 3) Electricity production amount by types of energy sources
9. Natural conditions
 - 1) Physical conditions (Geographic map, geological map, hydrogeological map, etc.)
 - 2) Meteorological data (Precipitation, temperature, humidity, sunshine hours, evaporation)
10. List of Philippine consultants (company name, address, contact person, and field of services) that are capable of participating in the coming master plan study. B1111 Annex I

MWSS の回答 (質問3から11への回答)

質問番号

(上記質問以外への回答は別冊資料参照。)

↓
#3. a) For the first part, the JICA' Master Plan (MP) will review and fit the priorities and implementing scheme based on the criteria set by JICA for those projects that were already proposed but not yet implemented. However, for those on-going projects, JICA' MP will only consider/use the information regarding the said projects.

b) For the second part, the MWSS will only concentrate on the expansion program within the service areas. If such will be affected, proper coordination and dissemination of information to the concerned agencies will be done so that JICA's MP will be followed strictly.

#4. Generally, the MWSS objectives for sewerage system involves the improvement of its facilities in the central collection system in Manila as well as the Ayala Sewerage in Makati. In addition, to maximize the capacity of existing network in order to accommodate as many covered population as possible.

#5 Problems and constraints of MWSS can be broken down into different areas, such as:

SOURCE

At present, MWSS main source of supply is the Angat-Multipurpose Dam. The said dam being owned and controlled by National Power Corporation (NPC) wherein we are only allotted 22 cms.

NON-REVENUE WATER (NRW)

To date, NRW is set at 57% which means that MWSS' Revenue is only 43%. The main sources of NRW are as follows:

- a) Illegal tapping/connections
- b) Leakages
- c) Metering Problems

IMPLEMENTATION SCHEME FOR ALL PROPOSED PROJECTS

All proposed and on-going projects lack proper training in the implementation aspect and all were conceptualized based on a short term measures. These definitely affect not only the services rendered but also the financial status of MWSS.

UPGRADING/REHABILITATION OF EXISTING FACILITIES

For effective management and better service, the MWSS needs a good, if not a better one, operable and in reviving conditions of all its existing facilities such as, treatment plant, pumping stations, reservoirs, leak repair equipment, public communications, etc.

FINANCIAL STATUS

f6. MWSS expects JICA's MP to be more comprehensive enough to prioritize expansion programs/projects with proper concept and training for implementation scheme; both for water supply and sewerage system in Metro Manila.

f7. No, the present system shows that the secretary of DPWH automatically the chairman of MWSS Board of Trustees- the policy makers of the system.

f8. This should be treated on a case-to-case basis.

f9. Other relevant agencies have their own functions and responsibilities, but all of them, have one or common function-that is to serve the public of their basic needs.

f10. Privatization of MWSS : Activities which may be more efficiently, effectively and economically undertaken by the Private Sector. Either by sale of lease of physical assets, management and maintenance contracts or BOT schemes.

f11. Yes, the new anti-water pilferage Act of 1993, which is now pending in Congress for approval is promulgated. The Act penalize the unauthorized tapping of waterlines and the use of tampered water meters.

f1n:acc/ws5

付属資料 5. 主要面会者リスト

訪問先	面会者	役職
マニラ首都圏水道下水道公社 Metro Manila Waterworks and Sewerage System (MWS S)	Mr. Teofilo I. Asuncion	Administrator
MWS S	Mr. Eduardo M. Del Fierro	Senior deputy administrator
MWS S	Mr. Leovigildo S. Veroy	Deputy Administrator
MWS S	Mr. Rolando E. Roca	Manager, Planning & Programming Department
MWS S	Mr. Graciano B. Calayan, JR	Planning division manager, Planning & Programming Dept.
MWS S	Mr. Alfredo C. Abalos, JR	Principal engineer A, Planning Division, Planning & Programming Dept.
MWS S	Mr. Reymundo S. Esguerra	Chief, Corporate Planning Group
MWS S	Ms. Geap de los Reyes	Manager, Personnel Management Dept.
MWS S	Ms. Auporo S. Canape	Acting manager, Financial Control & Budget Dept.
MWS S	Mr. Francisco A. Arellano	Chief, Research and Development Division
MWS S	Mr. Senen S. Dizon	Assistant project manager, Umiray-Angat Transbasin Project
MWS S	Mr. Fernando	Manager, Water Resource & Treatment Dept.
MWS S	本田裕孝	JICA 専門家
国家経済開発庁 National Economic and Development Authority (NEDA)	Ms. Josefina U. Esguerra	Director IV, Public Investment Staff
NEDA	Mr. Librado F. Quitariano	Chief, Water Resource Division
NEDA	Ms. Florante Igtiben	Officer in charge, ASPAC Div.
NEDA	種田博 (Oita Hiroshi)	JICA 専門家
公共事業道路省 Department of Public Works and Highways (DPWH)	Mr. Manuel M. Bonoan	Assistant secretary for planning
DPWH	Ms. Elisa P. Josen	Project manager II, URPO
DPWH	Ms. Linda M. Templo	Engineering V, Planning Service
DPWH	塚田幸広	JICA 専門家

訪問先	面会者	役職
環境資源省 Department of Environment and Natural Resource (DENR)	Mr. Esterlito M. Pinlac	Chief, Water Quality Management Section, Environmental Quality Division
Metropolitan Environment Improvement Program (MEIP)	Ms. Beket Gozom	National project coordinator
National Water Resources Board (NWRB)	Mr. Luis Soza	Chairman
National Irrigation Authority (NIA)	Mr. Florentino R. David	Senior engineer A
Local Water Utilities Administration (LWUA)	Mr. Simplicio C. Belisario, JR	Deputy administrator, Engineering Service
Metropolitan Manila Authority (MMA)	Mr. Edgardo H. Cayton	Deputy General Manager for Planning
MMA	Mr. Albert J. Lesca	Director, Project Management Office of Solid Waste
MMA	戸澤潮	JICA 専門家 (都市計画)
MMA	秋田 (Akita Junji)	JICA 専門家 (廃棄物)
アジア開発銀行 Asian Development Bank (ADB)	Mr. Javier M. Gomez, PE	Manager, Water Supply and Urban Development Division (EAST)
ADB	Mr. Byungwook Stephen Park	Senior financial analyst, Water Supply & Urban Development Division (EAST)
海外経済協力基金マニラ駐在事務所	江島真也	駐在員
海外経済協力基金マニラ駐在事務所	和田義郎	駐在員
オリジナル設計株式会社	酒井甫	マニラ第二下水プロジェクトマネジャー
オリジナル設計株式会社	松本	マニラ第二下水プロジェクトチーム団員

付属資料 6. 現地調査経費資料

今回の本格調査においては該当なし。

付属資料 7. ローカルコンサルタントリスト

本格調査に協力可能なローカルコンサルタントのリストをMWS Sに求めたところ、下記の八つのコンサルタント会社の紹介があった。住所および提供出来るサービス分野については別紙のMWS S回答書を参照のこと。

1. DM Consunji
2. F.F. Cruz & Co., Inc.
3. DCCD Engineering Corporation
4. TCGI Engineers
5. Environmental Primemovers of Asia, Inc.
6. Philippine Technical Consultants Inc.
7. Schema Konsultant, Inc.
8. EDCOP

本件への協力可能フィリピンコンサルタント会社リスト (MWS S作成)

LIST OF PHILIPPINE CONSULTANTS

NAME OF CONSULTANTS	ADDRESS	SPECIALIZATION/ SERVICE OFFERED
1. DM Consunji	1881 Pres. Quirino Ave. Ext. Pandacan, Manila	-Gen. Engineering and Building Contractors
2. F. F. Cruz & Co. Inc.	800 E. delos Santos Ave. Quezon City	-Power Plants, Ports and Harbor -Highways and Bridges -Earthworks and Dams -Dredging & reclamation -Runways & landing Strips -Pipelaying and sewerage system -all civil & architectural works -all kinds of survey works
3. DCCD Eng'g. Corporation	SDL Condmn. Office Bldg. 112 Amorsolo St. Legaspi Village, Makati, M.M.	-Feasibility Studies Project Management and Construction Supervision -Commercial and Industrial Buildings -Water Resources Engineering -Transport Engineering -Electrical and Mechanical Engineering -Structural Engineering -Power Generation, Trans- mission and Distribution -Solid & Industrial Wastes -Land Development
4. TCGI Engg.	6th floor, JAKA II Bldg. Legaspi Village, Makati Metro Manila	-Project Feasibility Studies -Multi-Discipline Eng'g. Design -Construction Management and Supervision -Water And Environmental Affairs -Transport System -Commercial and Industrial
5. Environmental Primemovers of Asia, Inc.	Suite 106, ALCCO Bldg., Ortigas Ave., Greenhills, San Juan, Metro Manila	-Earth and Environment -Engineering -Water Resources -Waste Management
6. Philippine Technical Consultants Inc.	3rd floor, Legaspi Towers 200, Paseo de Roxas, Makati, Metro Manila	-Bid Analysis -Construction Supervision -Cost Estimates and Supervision -Design & Supervision

- Feasibility Studies
 - Contract Management
 - Agricultural Studies
 - Socio-Economic Studies
 - Water treatment Plant
 - Project Planning
 - ports, piers and wharves
 - harbors and reclamation design
7. SCHEMA 9th floor, Hongkong Bank
KONSULT, INC. Centre, San Miguel Ave.,
cor. Tektite Rd. Ortigas
Complex, Pasig, M.M.
- Building Systems
 - Site Development
 - Water & Environmental
Engineering
 - Transportation Engineering
8. EDCOP 5th floor, Marvin Plaza
Building, 2153 Pasong Tamo
cor. Herrera Sts. Makati,
Metro Manila
- Power generations
 - highways and bridges
 - Ports and harbors
 - Airports
 - Irrigation
 - Flood Control
 - Industrial and municipal
water supply
 - Sewerage
 - Commercial & Institutional
Buildings
 - Town Planning and housing
 - Rural electrification
 - Industrial plants and
environmental Impact
Studies

付属資料 8. 主要収集資料

I. 一般情報

資料名	発行者	発行年
1. 公害防止関連法 (環境基準等)	DENR	-
2. The Code on Sanitation of the Philippines	DOH	-
3. Philippines Water Code (1991)	NWRB	1991
4. Water Supply, Sewerage and Sanitation Master Plan of the Philippines (1998~2000)	フィリピン政府	1988~2000
5. Rural Water supply and Sanitation Master Plan	フィリピン政府	1982. 7
6. NEDA Board Resolution No. 4 and No. 5	NEDA	-
7. Philippine Statistical Yearbook	DOH	1993.10

II. MWSSとその事業に関する情報

II-1 MWSS

資料名	発行者	発行年
1. Law Related to MWSS Services	MWSS	-
2. MWSS Organizational Chart	MWSS	-
3. Organizational Chart of Sewerage System DEP.	MWSS	-
4. MWSS Strategic Plan (Toward Philippines 2000)(1994~2000)	MWSS	-
5. MWSS's Financial Statements	MWSS	1988~1993
6. MWSS Total Water and Sewerage Statistics	MWSS	1984~1993
7. Data for Water Supply and Sewrage Master Plan Study	MWSS	-
8. MWSS's History	MWSS	-

II-2 水道事業

資料名	発行者	発行年
1. Existing Water Sources and Other Raw Water Facilities	MWSS	-
2. MWSS Schematic of the Proposed 1982 Distribution System	MWSS	1982
3. MWSS Deep Wells Water Production	MWSS	1991~1994
4. MWSS 管理井戸Location Map	MWSS	-

付属資料 9. 関連資料

資 料 名	発 行 者	発 行 年
1. Metro Manila Flood Control and Drainage Program	DPWH	1993. 8
2. フィリピン国マニラ洪水対策計画調査	JICA	1990. 3
3. Philippines-Japan Policy Dialogue; Economic Cooperation-Metro Manila Urban Environmental Priority Proposals for Future Cooperation	MMA	1994. 2
4. Report No. 11852-PH Philippines Environmental Sector Study Toward Improved Environmental Policies and Management	World Bank	1993. 12
5. Environmental Management Strategy Final Report	World Bank	1992. 11
6. Country Report (Water Pollution Control)	DENR	1993~1994
7. The Philippine Natural Resources Accounting Project	DENR	-
8. Framework Plan of LAGUNALAKE BASINS (NWRC)	DENR	-
9. Progress Report 1993	MEIP	1993
10. MEIP-Manila	MEIP	-
11. Philippine Health Statistics	DOH	-
12. ICC Guidelines and Procedures	NEDA	-
13. NEDA組織図	NEDA	-
14. 外国援助プロジェクトリスト	NEDA	-

5. MWSS Manila Water Supply III Summary Engineering Project (Report)	MWSS	1984. 7
6. Staff Appraisal Report, Philippines Angat Water Supply Optimization Project (Report)	World Bank	1989. 8
7. Angat Water Supply Optimization Project 配管ルート図	OECD	-
8. Technical Assistance to Philippines for Manila North-East Water Supply Project (Report)	ADB	1991. 4
9. Proposed Loan-Manila South Water Distribution Project (Philippines) (Report)	ADB	1991. 11
10. フィリピン国パナヨ浄水場修復計画調査 報告書	JICA	1992. 3
11. フィリピン国マニラ首都圏地下水開発計画調査 報告書	JICA	1992. 6
12. Information on Water Quality Monitoring (Data, number of staff, etc.) Equipment	MWSS	-

II-3 下水道事業

資 料 名	発 行 者	発 行 年
1. Technical Assistance to Philippines for Second Manila Sewerage Project (Report)	ADB	1990. 11
2. MWSS Second Manila Sewerage Project Feasibility Study, ADB T. A. No. 1423-PHI Main Report	ADB	1991. 11
3. Information on the Existing Sewerage and Sanitation Systems	MWSS	-
4. Septic Tank 平断面図	MWSS	-
5. Metro Manila Sewerage and Sanitation Project Wastewater Management for Metro Manila	MWSS	-
6. Wastewater Management for Metro Manila	MWSS	-
7. Managing Water Resources to meet Megacity Needs Metro Manila Case Study (Executive Summary)	MWSS	-

JICA