

付属資料 1. 要請書

REPUBLIC OF THE PHILIPPINES
Metropolitan Cebu Water District

APPLICATION for the
GOVERNMENT OF JAPAN

The Study on Metro Cebu Sewerage System Development

September 2002

M/24

I. PROJECT DIGEST

(1) PROJECT TITLE

THE STUDY ON METRO CEBU SEWERAGE SYSTEM DEVELOPMENT

(2) LOCATION

Metro Cebu, Region VII (See Annex A)

(3) EXECUTING AGENCY

Name of Agency:

Metropolitan Cebu Water District (MCWD)

Number of Staff of the Agency

	<u>Regular Employees</u>	<u>Casual Employees</u>	<u>Total</u>
Operation & Maint Group	161	100	261
Pipelines Maint Group	104	99	203
Technical Services Group	47	41	88
Administrative Group	84	18	102
Finance Group	90	10	100
General Manager's Office	52	11	63
TOTAL			817

*Financial Data*Amount (₱ Million)
Year 2000

Annual Gross Revenue	715
Annual Net Revenue	692
Annual Collection	708
Annual O&M Expenses	355

Organizational Chart

Refer to Annex B.

(4) JUSTIFICATION OF THE PROJECT

Present Condition of the Sector

The Metropolitan Cebu Water District (MCWD) is a government owned and controlled corporation set up in 1974, although the original waterworks system started operation in 1911. It is responsible for water supply within Cebu City and seven other surrounding towns and cities with a total population of 1,445,527

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people. It envisions itself to be a progressive and economically viable utility that will provide adequate, safe, potable and affordable water and an effective sewerage system for Metro Cebu.

Metro Cebu has a humid tropical climate with an annual mean temperature of 27.4 °C and average relative humidity of 78%. The average annual rainfall is 1,637 mm, and July receives the highest rainfall while March the lowest. The rainy season extends from June to December.

There is no comprehensive sewerage system in Metro Cebu. In some areas, septic tanks are used while various kinds of pit latrine are used in other areas. In most cases, overflows from soakaways and leaching pits go to ditches and natural water bodies. It is reported that in Cebu City, 39% of the population use water sealed cistern flush (to septic tanks) toilet, 10% use water sealed pour-flush, 11% use pit latrines, while the rest use other types of toilet facilities. Commercial establishment and high-income residential areas use water carried system with septic tanks. Most of the medium and low-income people use pit or other types of latrines. Hence, the present sewerage disposal practices are threat to the environment and public health.

A number of studies found direct relation between the poor sanitation condition prevailing in Metro Cebu area and the degraded public health condition. It is reported that water born diseases are among the top five causes of infant mortality in Metro Cebu. Another study showed that there exists a strong correlation among health, hygiene, literacy and income in the Metro Cebu area.

Sectoral Development Policy of the National/Local Government

There have been no comprehensive sewerage systems in Metro Cebu. The growing population of Metro-Cebu is presently experiencing degraded public health conditions, increasing number of epidemic brought about by water-borne diseases, increasing infant mortality, and other related social problems. This problem has not been addressed directly by the neither national nor the local government, except for some development studies that is yet to be implemented and functional.

Problems to be Solved in the Sector

Overall sanitation condition in the Metro Cebu area is an urgent concern. Improvement of the existing system is a must such that adequate excreta disposal facilities should be provided. The growing population of the metropolis will further aggravate and deteriorate the living conditions of the residents. Likewise, a new water supply scheme with the construction of a new dam is being planned and will be implemented in the near future. Increased amount of water supply will consequently result in increased amount of wastewater to be generated, which will

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be discharged into the coastal area. If not properly treated, this will be a threat to natural environment and the government's thrust on environmental conservation. Therefore, a comprehensive study consisting of a Master Plan and Feasibility Study for the future wastewater disposal system has become necessary.

Outline of the Study

The study will consist of the following:

- A. Master Plan Study:
- Data gathering
 - Field reconnaissance survey
 - Socio-economic analysis
 - Master Plan formulation
 - Information Education and Communication Program for Sewerage and Sanitation Sector
- B. Feasibility Study
- Topographic Survey of proposed site
 - Cost estimation and project evaluation
 - Evaluation of financial requirement
 - Formulation of implementation plans
 - Preparation of EIA
 - Preparation of detailed study
 - Preparation of financing strategy/approach for sewerage sector

Objective of the Study

The objective of the study is to focus on the improvement of sanitation in the Metro-Cebu area. The area has no comprehensive sewerage system. The present sewerage disposal practices are generally poor and threatening to public health and hygiene. In line with the implementation of a large scale water supply program, a large amount of wastewater is expected to overflow. This will create a severe environmental deterioration if proper collection and treatment system will not be in place.

Prospective Beneficiaries

The prospective beneficiaries of the study will be the residents of Metro-Cebu, i.e., the four cities of Cebu, Mandaue, Lapulapu and Talisay; and the four municipalities of Compostela, Liloan, Consolacion, and Cordova.

The Project's Priority in the National Development Plan/Public Investment

The project is one of the projects under the Cebu Integrated Area Development Master Plan of the Government and is included in the Medium Term Program.

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(5) DESIRABLE TIME OF COMMENCEMENT OF THE PROJECT

- Expected date of start - June 2002
- Expected date of completion - October 2003

Refer to the Study Schedule below.

(6) PROSPECTIVE FUNDING SOURCE AND/OR ASSISTANCE

The Government of Japan through the Development Study Program of the Japan International Cooperation Agency (JICA-DSP).

II. TERMS OF REFERENCE OF THE PROPOSED STUDY

(1) NECESSITY OF THE STUDY

The need for a comprehensive Master Plan and Feasibility Study for the Metro-Cebu Sewerage System has been necessitated due to the following facts:

- a) The general level of sanitation in the Metro Cebu area is not satisfactory. Only few areas are served with proper facilities for excreta disposal. Sewerage and excreta are disposed directly in the environment. Inadequate capacity of existing system causes overflowing. A consequence of these is the increasing incidents of water borne diseases.
- b) In near future, implementation of large scale water supply programs is planned to secure current potable water deficit in the Metro Cebu area. This will increase a large amount of wastewater. Without proper collection and treatment system, the wastewater will create a severe environmental deterioration.
- c) Cebu is famous for its scenic beauty in the Philippines which calls many tourists through the year. Direct discharge of wastewater to the coastal area brings about serious pollution to the coastal area and further the sea itself, however, none of the practical study has been made since long time before.

(2) NECESSITY OF THE JAPANESE TECHNICAL COOPERATION

The Cebu Integrated Area Development, which was already done by the JICA team in 1994 has included the Metro Cebu Sewerage System Development Project. The initial studies thereto will be vital in correlating all the necessary tasks and plans for the success of this program. Integration of all the plans is necessary to facilitate all concerns towards the vision of making Metro-Cebu a progressive urban metropolis in Southern Philippines.

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(3) OBJECTIVES OF THE STUDY

a) General Objective

To raise the living standard of residents of Metro Cebu by providing a healthy, hygienic, and clean environment through an effective sewerage system.

b) Specific Objective

The specific objectives of the Study are:

- To establish a Sewerage System Master Plan up to the target year of 2020 for Metro Cebu,
- To implement a Feasibility Study of the most prioritized project, and
- To transfer technical knowledge to counterpart personnel.

(4) STUDY AREA

Metro Cebu lies at the center of the island province of Cebu, which comprises of four cities (namely; Cebu, Mandaue, Lapulapu and Talisay) and four municipalities (namely; Compostela, Liloan, Consolacion, and Cordova). The combined land area of Metro Cebu together with Mactan Island is about 677 km².

(5) SCOPE OF THE STUDY

The study will be composed of :

Master Plan Study

- Collect and review all the available relevant data and information on natural and socio-economic aspects
- Conduct field reconnaissance for wastewater disposal facilities and sanitation practices.
- Conduct socio-economic analysis of Metro Cebu to determine population growth, urban expansion, and industrial development
- Make overall wastewater generation projection for 2010 and 2020 for Metro Cebu
- Analyze and compare all possible collection and disposal option. Pilot area should be identified for the implementation phase, with scenario of expanding the system to adjacent areas and possibly to the entire Metro Cebu in the future.
- Formulate a Master Plan for sewerage system for Metro Cebu
- Conduct Information Education and Communication Program for Sewerage and Sanitation Sector
- Select the most prioritized alternative to be implemented urgently as a

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Feasibility Study

Feasibility Study

- Conduct topographic survey for proposed major facilities as needed
- Prepare basic design of facilities, cost estimation and project evaluation
- Evaluate financial and economic feasibility, including willingness to pay survey.
- Prepare implementation program for the project
- Conduct Environmental Impact Assessment (EIA) of the project
- Propose improvement of institutional capacity in order to ensure sustainability of the proposed sewerage system
- Prepare financing strategy/approach for sewerage sector

(6) STUDY SCHEDULE

The study shall be carried out for 16 months.

The tentative work schedule is as shown below.

Work Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preparatory Work in Japan		■														
First Field Work in Philippines			■	■	■	■	■									
First Home Work in Japan						■	■	■								
Second Field Work in Philippines										■	■	■	■	■		
Second Home Work in Japan																■
Third Field Work in Philippines																■
Third Home Work in Japan																

(7) EXPECTED MAJOR OUTPUT OF THE STUDY

A Master Plan report that would contain the following (at the end of the month 10 from the commencement of the project):

- Frame work plan for sewerage system development in Metropolitan Cebu up to the year 2020
- Basic design of sewerage systems-related structures
- Implementation schedule
- Operation and Management Plan of MCWD for sewerage system.

A Feasibility Study report that would contain the following (at the end of the month 16 from the commencement of the project):

- Feasibility Study on the prioritized projects
- Organization
- Monitoring system
- Cost to be allocated to each sector
- Operation and Maintenance Method

(8) REQUEST FOR THE STUDY TO OTHER DONOR COUNTRIES, IF ANY

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None

(9) OTHER RELEVANT INFORMATION, IF ANY

None

III. FACILITIES AND INFORMATION FOR THE STUDY TEAM

(1) ASSIGNMENT BY THE IMPLEMENTING AGENCY OF COUNTERPART

Local Counterpart Staff

- 1. Team Leader
- 2. Hydrologist
- 3. Sewerage Engineer
- 4. Sewerage Process Engineer
- 5. Facilities Planner
- 6. Organizational & Institutional Expert
- 7. Environmental & Social Expert
- 8. Cost Estimator/Implementation Planner
- 9. Financial & Economic Expert

(2) AVAILABLE DATA, INFORMATION, DOCUMENTS, MAPS ETC., RELATED TO THE STUDY

- Socio-economic data - NEDA
- Hydrologic Data - NWRB, DPWH, PAGASA, Univ. of San Carlos - WRC
- Health Standards - DOH
- Water Resources Dev't Plans - MCWD, LWUA, NWRB
- Environmental Data - DENR, Cebu Provincial Gov't.
- Land Use - DILG, Cebu Provincial Gov't.
- Maps - NAMRIA

(3) OFFICE ACCOMODATION

An office space sufficient to accommodate study team member with sufficient desks and chairs, a telephone set and air conditioner.

IV. GLOBAL ISSUE

(1) ENVIRONMENTAL COMPONENTS

An environmental study will be conducted for the project to determine its possible impact to the environment. This will include identification of environmentally critical areas, the presence of endangered species and investigation of the present

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land use, water management, waste disposal management, and projected overall development in the study area.

(2) ANTICIPATED ENVIRONMENT IMPACTS

Construction and operation of the proposed sewerage system may cause negative effects and these shall be given utmost consideration in the study.

(3) WOMEN AS MAIN BENEFICIARIES OR NOT

Implementation of the project will benefit both sexes of the population because the project is not gender-oriented.

(4) PROJECT COMPONENTS WHICH REQUIRES SPECIAL CONSIDERATION FOR WOMEN

None.

(5) ANTICIPATED NEGATIVE IMPACTS ON WOMEN

None.

(6) POVERTY REDUCTION

The realization of this study and eventual implementation of the projects will improve access to one of the most basic human needs, sanitation. This will result in upliftment of the health and living standard of the people and improvement of the economy of Metro Cebu and consequently, of the country as a whole.

(7) ANY CONSTRAINTS AGAINST THE LOW INCOME PEOPLE CAUSED BY THE PROJECT

None. The project will instead benefit the low income people who could not afford to be sick and spend for hospitalization. The project will benefit their livelihood as it will provide a safe and healthy place for them to live in.

V. UNDERTAKING OF THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

In order to facilitate a smooth and efficient conduct of the Study, the Government of the Republic of the Philippines shall take necessary measures:

- (1) to secure the safety of the Study Team.
- (2) to permit the members of the Study Team to enter, leave and sojourn in the Republic of the Philippines in connection with their assignment therein, and exempt them from alien registration requirement and consular fees.

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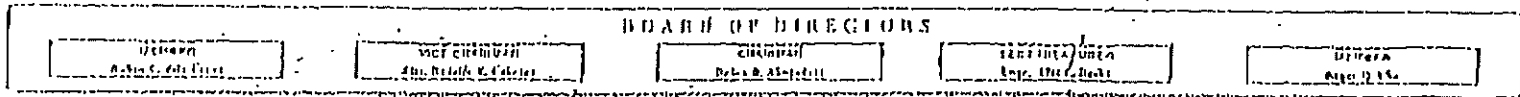
- (3) to exempt the Study Team from taxes, duties and any other charges on equipment, machinery and other materials brought into and out of the Republic of the Philippines for the conduct of the Study.
- (4) to exempt the Study Team from income taxes and other similar levies in connection with any emoluments or allowances paid to members of the Study team for their services in connection with the implementation of the Study.
- (5) to provide necessary facilities to the Study Team for remittances as well as utilization of the funds in the Republic of the Philippines from Japan in connection with the implementation of the Study.
- (6) if necessary, to secure permission for entry into private properties or restricted areas for the conduct of the Study.
- (7) if and when necessary, to secure permission for the Study Team to take all necessary data, documents and materials related to the Study out of the Republic of the Philippines to Japan in accordance with Philippine regulations
- (8) to provide medical services as needed, however, expenses will be chargeable to members of the Study team.
- (9) The Government of the Republic of the Philippines shall bear claims, if any arises against member(s) of the Japanese Study Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claim arise from gross negligence or willful misconduct on the part of member of the Study Team.
- (10) The Metropolitan Cebu Water District shall act as counterpart agency to the Japanese Study Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
- (11) The Government of the Republic of the Philippines assures that the undertakings by the Philippine Government referred to in this form will be ensured for smooth conduct of the Development Study by the Japanese Study Team.

Metropolitan Cebu Water District

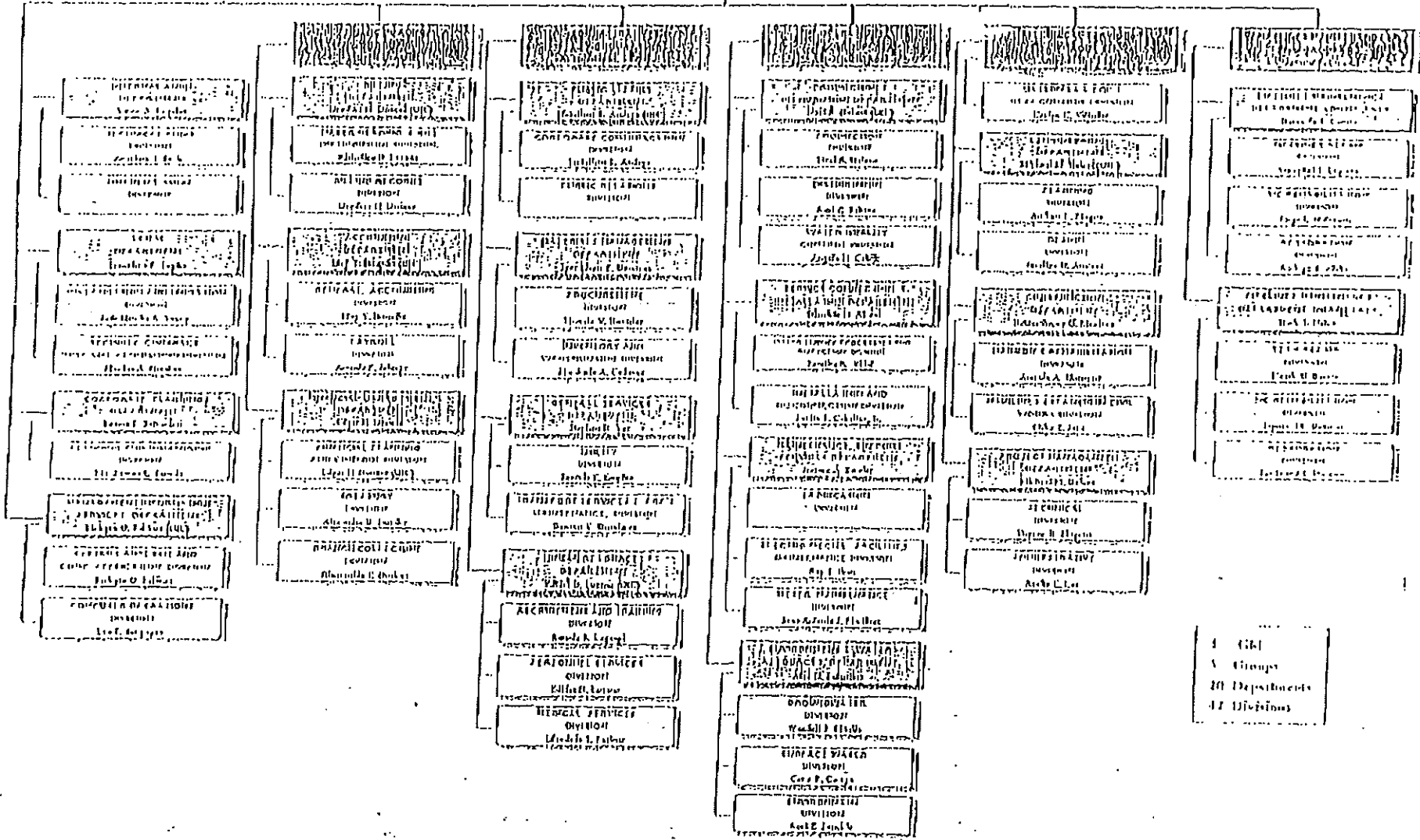
Table of Organization

December 1960

Annex B



OFFICIALS AND STAFF



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REPUBLIC OF THE PHILIPPINES
Metropolitan Cebu Water District

APPLICATION for the
GOVERNMENT OF JAPAN

Master Plan and Feasibility Study
on
Water Resources Development for Metro Cebu

September 2002

I. PROJECT DIGEST

(1) PROJECT TITLE

The Study on Water Resources Development for Metro Cebu

(2) LOCATION

Cebu Island (See Annex A)

(3) EXECUTING AGENCY

Name of Agency

Metropolitan Cebu Water District (MCWD)

Number of Staff of the Agency

	<u>Regular Employees</u>	<u>Casual Employees</u>	<u>Total</u>
Operation & Maint Group	161	100	261
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Financial Data

Amount (₱ Million)
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Annual O&M Expenses	355

Organizational Chart

Refer to Annex B.

(4) JUSTIFICATION OF THE PROJECT

Present Condition of the Sector

The Philippines, being in the typhoon belt, is blessed with abundant rainfall. In recent years, however, the country has been experiencing water and food shortages due to severe dry spell and to the increasing demand for water. The rapid growth of the economy, the improving standard of living and the increasing population invariably gave rise to increased water demand.

The Government has been trying to minimize the negative effects of the dry spells

by instituting palliative measures but the incidence of water shortage is getting frequent in some areas of the country. For example, from 1997 until this year, severe dry spell due to the El Nino phenomenon affected the watershed area of Metro Cebu, the country's city with economic development potential based on tourism industry. However, during the peak demand of water in the month of May, water shortage has been extremely severe, which results in discouragement of tourist bound for Metro Cebu. Some area within island province of Cebu, the basic human needs, i.e. potable water, cannot be reached, resulting in difficulty to alleviate the poverty existing in the area. Water-borne disease, such as ameba dysentery, is present in the area, since residents rely on their domestic water from water springs available. Domestic water supply in island province of Cebu is one of the most urgent obstacles to be tackled immediately. Therefore, identification and formulation of development plans for water resources for Metro Cebu are required urgently.

Sectoral Development Policy of the National/Local Government

As early as the 1990's, the Philippine Government already anticipated an impending water crisis and started to identify possible solutions. This led to the conceptualization of the Water Summit in 1994. Then, in 1995, Congress enacted Republic Act. No. 8041 known as the National Water Crisis Act of 1995 which embodies the government's thrust to provide sufficient supply of water in all areas in the country.

In line with this thrust, the Master Plan Study on National Water Resources Management in the Republic of the Philippines was carried out in 1997 under a technical cooperation extended by JICA. The Study confirmed the possibility of a severe water shortage in Cebu in the coming years. According to the Study, the annual water demand of Metro Cebu in 1995 was 59 million tons and during this year, the water supply capacity was hardly sufficient to provide the demand. The projected water demand in the year 2025 is 342 million tons, i.e. 5.8 times that of 1995. Water resources development in the area is considered a must in order for the area to be developed.

Various agencies and authorities have studied alternative schemes to develop water sources for Cebu. JICA's Nationwide Master Plan Study proposes a few development scenarios as possible water resources development sources. The outcome of the Study has been accepted by its Steering Committee, which decided to promote the development scheme. The Committee strongly recommended to conduct the master plan and feasibility study on the proposed development schemes as the first step in the promotion.

Metro Cebu Water District is the government's agency mandated for water supply and sewerage within Metropolitan Cebu. It was created to be responsible for achieving a scientific and orderly development of all water supply and sewerage systems for Cebu consistent with the principles of optimum utilization, conservation and protection to meet present and future needs.

Description of the Study Area

Metro Cebu has a humid tropical climate with an annual mean temperature of 27.4 °C and average relative humidity of 78%. The average annual rainfall is

1,637 mm, and July receives the highest rainfall while March the lowest. The rainy season extends from June to December.

Established in 1974, the Metropolitan Cebu Water District (MCWD) is responsible to supply drinking water for the Metro Cebu area. The service area of MCWD covers four cities (Cebu, Talisay, Mandaue, Lapulapu) and four municipalities (Liloan, Consolacion, Compostela, Cordova). As of December 2000, the total population within the MCWD service area is approximately 1.5 million people. Out of the total service area of 677km², MCWD presently supplies water to 260 km². Breakdown of population and status of water supply within MCWD service area as of December 2000 are as follows:

	Population	connections	supply(m3/day)	% supplied
Cebu City	718,821	54,982	63,250	42%
Mandaue City	259,728	11,575	13,350	25%
Lapu-lapu City	217,019	4,380	5,050	10%
Talisay City	148,110	3,747	4,300	15%
Consolacion	62,298	1,923	2,200	16%
Cordova	34,032	459	550	7%
Liloan	64,970	1,887	2,200	34%
Compostela	31,446	731	850	43%
Total	1,536,424	79,684	91,750	29%

Source : MCWD 2001 (estimated at 225 LPCD : 5.1capita/connection)

As noted above, MCWD supplies average of 29% of the total population in the area. While 42% is served within Cebu City, only 7% is served in Municipality of Cordova.

Although the water supply needs of this area have been partially met for many decades by abstraction of groundwater by both MCWD and private well owners from the coastal limestone aquifer, the ground source is now no longer adequate and is threatened with over-exploitation and eventual salinization. Study conducted by Water Resources Center at University of San Carlos concluded that in 1975, seepage of saline water was near the shoreline and in the south, intruded areas did not reach Barangay Pardo. However, due to the over-exploitation of groundwater in the area, the saline water edge has presently moved beyond the Pardo church to the foothills and has passed Fuente Osmena, on the Provincial Capital to the hills behind the Palace of Justice, about 4 km inland.

Individual surface water source for Metro Cebu has been seriously studied. For example in 2001, MCWD studied BOT scheme Mananga II, which concluded that the present Mananga II scheme is infeasible under BOT scheme. However, future plan for water resources development for Metro Cebu is largely dependent on private sector participation. Piece-meal approach of implementing "water supply bids" from independent water producers (IWPs) to provide water to MCWD has been made in the year 2001. However, a comprehensive Master Plan based on updated Feasibility Study for water resources development for Metro Cebu is not available. Considering the increasing demand forecasted by the JICA Study mentioned above, it is pertinent to prepare the overall master plan for the water resources development for the Metro Cebu, with the national government's attention and assistance.

Problems to be Solved in the Sector

The alarming rate of increase in the demand for water in Metropolitan Cebu coupled with decreasing supply warrants urgent response from the Government. The most realistic solution would be the implementation of the water development scheme proposed in the Master Plan Study on National Water Resources Management. However, it is expected that the full realization of the scheme proposed would take more than 10 years from the commencement of the Study. Therefore, there is an urgency to commence the study immediately considering the worsening water shortage in Metropolitan Cebu.

Outline of the Study

The master plan would cover the following:

- (1) Review of existing water resources development plans within Metro Cebu: dam, weir and ponds projects within Metro Cebu, alternative scheme for Mananga II Dam, Lusaran Dam, desalination using waste heat, Kot Kot River development, etc.
- (2) Review of ground water exploitation within Metro Cebu.
- (3) Discharge measurement of the selected river along the cross section adjacent to the established hydrologic station.
- (4) Hydrologic data collection, study and analysis
- (5) Study on the water demand by sectors (municipal, irrigation, industry, etc) in Metropolitan Cebu.
- (6) Water Balance Study
- (7) Geologic data collection, study and soil mechanical analysis
- (8) Geological surveys at the proposed dam site and quarry site including core drillings
- (9) Land use surveys and social and environmental impact assessment
- (10) Study on the watershed management
- (11) Study on overall operation and management for MCWD.
- (12) Study on improvement of unaccounted water for MCWD.

The Feasibility Study would cover the following:

- (1) Feasibility Study on the prioritized scheme for water resources development based on the Master Plan;
- (2) Preliminary design of water supply facilities
- (3) Basic design of structures for water supply
- (4) Estimations of cost and benefit
- (5) Study on implementation schedule
- (6) Preliminary study on implementing organization
- (7) Study on cost allocation
- (8) Study on the methods for operation and maintenance
- (9) Economic and financial assessment
- (10) Social Development Study
- (11) Environmental Impact Assessment

Objective of the Study

- (a) General Objective

To further promote the economic activities of Metropolitan Cebu area and its surroundings by providing sufficient supply of water, through water resources development. This will further enhance the economic development of the entire province of Cebu.

(b) Specific Objective

To determine the technical, social, economic and environmental feasibility of the alternative schemes to come up with final recommendations on the most appropriate water resources development Master Plan up to the year 2020. To strengthen the operation and management of MCWD, including improvement in status of unaccounted water.

Prospective Beneficiaries

Residents of Metropolitan Cebu and its vicinity area.

The Project's Priority in the National Development Plan/Public Investment

The project is one of the priority projects of the Government and is included in the Medium Term Investment Program. The current Administration encourages and puts high priority on water resources development for the overall economic development within Metropolitan Cebu.

(5) DESIRABLE TIME OF COMMENCEMENT OF THE PROJECT

- | | | |
|-------------------------------|---|-----------|
| - Expected date of start | - | June 2002 |
| - Expected date of completion | - | May 2004 |

Refer to Annex C for the Study schedule.

(6) PROSPECTIVE FUNDING SOURCE AND/OR ASSISTANCE

The Government of Japan through the Development Study Program of the Japan International Cooperation Agency (JICA-DSP).

II. TERMS OF REFERENCE OF THE PROPOSED STUDY

(1) NECESSITY OF THE STUDY

The Philippines, being in the typhoon belt, is blessed with abundant rainfall. In recent years however, the country has been experiencing water and food shortages attributable to the uneven distribution of rainfall, severe dry spell due to the El Nino phenomenon and to the increasing demand for water. The rapid growth of the economy, the improving standard of living and the increasing population invariably gave rise to the increased water demand.

Metropolitan Cebu is among the areas severely affected. Severe dry spell in 1997 and 1998 affected the watershed within the area. This event affected not only the residents of Metropolitan Cebu area but also the farmers cultivating paddies in the irrigation areas in its vicinities, who is tapping water from the area

for irrigation purposes. During the visit of President Macapagal-Arroyo to Cebu in December 2001, the president confirmed that the development of water source for the Metropolitan Cebu is vital for the further economic development in the area.

In 1997, the Master Plan Study on National Water Resources Management was carried out under the technical cooperation of JICA. The Study proposes comprehensive water resources development master plan of Metropolitan Cebu and vicinity area. The study proposal include appraisal of ground water developmental potentials as well as appraisal on the development scenarios, including Mananga II Dam, Lusaran Dam, Kot Kot River development, small dams, and desalination. The MCWD is thus seeking technical assistance from JICA in the conduct of a feasibility study on water resources development to look into the potentials of these rivers as possible sources.

(2) NECESSITY OF THE JAPANESE TECHNICAL COOPERATION

Successful transfer of technology provided by JICA's Master Plan Study on National Water Resources Management as well as Metro Manila Water Resources Development projects are expected to apply to this project as well.

(3) OBJECTIVES OF THE STUDY

a) General Objective

To further promote the economic activities of Metropolitan Cebu area and its surroundings by providing sufficient supply of water through water resources development. This will further enhance the economic development of the entire province.

b) Specific Objective

To determine the technical, social, economic and environmental feasibility of the alternative schemes to come up with final recommendations on the most appropriate water resources development Master Plan up to the year 2020; to strengthen the operation and maintenance of MCWD, including improvement in status of unaccounted water.

4) STUDY AREA

Metropolitan Cebu. (See Annex A)

5) SCOPE OF THE STUDY

The study team shall undertake the following;

Master Plan Stage:

- (1) Review of existing water resources development plans within Metro Cebu: dam, weir and ponds projects within Metro Cebu; alternative scheme for Mananga II Dam, Lusaran Dam, Kot Kot River development, desalination, etc.
- (2) Review of ground water exploitation within Metro Cebu.

- (3) Discharge measurement of the selected river along the cross section adjacent to the established hydrologic station.
- (4) Hydrologic data collection, study and analysis
- (5) Study on the water demand by sectors
- (6) Water Balance Study
- (7) Geologic data collection, study and soil mechanical analysis
- (8) Geological surveys at the proposed dam site and quarry site including core drillings
- (9) Land use surveys and social and environmental impact assessment
- (10) Study on the watershed management
- (11) Study on overall operation and management for MCWD.
- (12) Study on improvement of unaccounted water for MCWD.

Feasibility Study Stage:

- (1) Feasibility Study on the prioritized scheme for water resources development based on the Master Plan;
- (2) Preliminary design of water supply facilities
- (3) Basic design of structures for water supply
- (4) Estimations of cost and benefit
- (5) Study on implementation schedule
- (6) Preliminary study on implementing organization
- (7) Study on cost allocation
- (8) Study on the methods for operation and maintenance
- (9) Economic and financial assessment
- (10) Social Development Study
- (11) Environmental Impact Assessment

(6) STUDY SCHEDULE

The study shall be carried out for 24 months.

(7) EXPECTED MAJOR OUTPUT OF THE STUDY

A Master Plan report that would contain the following (at the end of the month 12 from the commencement of the project):

- Frame work plan for water resources development in Metropolitan Cebu and its vicinity up to the year 2020
- Basic design of dam and/or other water resources development-related structures
- Implementation schedule
- Operation and Management Plan of MCWD, including recommended methodology for Non-Revenue Water reduction.

A Feasibility Study report that would contain the following (at the end of the month 24 from the commencement of the project):

- Feasibility Study on the prioritized projects
- Organization
- Monitoring system
- Cost to be allocated to each sector
- Operation and Maintenance Method

- (8) REQUEST FOR THE STUDY TO OTHER DONOR COUNTRIES, IF ANY

USTDA (USA) is presently conducting pre-feasibility study on the Mananga II water resources development scenario.

- (9) OTHER RELEVANT INFORMATION, IF ANY

None

III. FACILITIES AND INFORMATION FOR THE STUDY TEAM

- (1) ASSIGNMENT BY THE IMPLEMENTING AGENCY OF COUNTERPART

Local Counterpart Staff

Team Leader

Assistant Team Leader/Dam Engineer

Hydrologist

Geologist

River Engineer/Hydraulic Engineer

Structural Engineer

Soil Mechanical Engineer

Environment Specialist

Economist/Financial Expert

Cost Estimator

Institutional (Cooperate Operation and Maintenance) Expert

Specialist in Non-Revenue Water Problem

Administration staff

Social Development Coordinator

- (2) AVAILABLE DATA, INFORMATION, DOCUMENTS, MAPS ETC. RELATED TO THE STUDY

Type of Data

Socio –economic data

Hydrologic Data

Geologic Data

Water Resources Dev't plans in the study area

Irrigation plan

Hydropower generation plan

Environmental data

Land Use

Water Right

Maps

Source

NEDA

MCWD, DPWH, PAGASA,
Univ. of San Carlos – WRC.

BSR

MCWD, LWUA, NWRB

Cebu Province, NIA

NPC

Cebu Province, DENR

Cebu Province, DILG

NWRB

NAMRIA

- (3) OFFICE ACCOMODATION

An office space sufficient to accommodate study team member with sufficient desks and chairs, a telephone set and air conditioner.

IV. GLOBAL ISSUE

(1) ENVIRONMENTAL COMPONENTS

An environmental study will be conducted for the project to determine its possible impact to the environment. This will include identification of environmentally critical areas, the presence of endangered species and investigation of the present land use, water management and projected overall development in the study area.

(2) ANTICIPATED ENVIRONMENT IMPACTS

Construction of the proposed dam may cause negative effects on the watershed and such effects will be given utmost consideration in the study.

(3) WOMEN AS MAIN BENEFICIARIES OR NOT

Implementation of the project will benefit both sexes of the population because the project is not gender-oriented.

(4) PROJECT COMPONENTS WHICH REQUIRES SPECIAL CONSIDERATION FOR WOMEN

None.

(5) ANTICIPATED NEGATIVE IMPACTS ON WOMEN

None.

(6) POVERTY REDUCTION

The realization of this study and eventual implementation of the projects will improve access to one of the most basic human needs, potable water. This will result in upliftment of the health and living standard of the people and improvement of the economy of the entire province, of the entire Visayas and thus country as a whole.

(7) ANY CONSTRAINTS AGAINST THE LOW INCOME PEOPLE CAUSED BY THE PROJECT

None.

V. UNDERTAKING OF THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

In order to facilitate a smooth and efficient conduct of the Study, the Government of the Republic of the Philippines shall take necessary measures:

- (1) to secure the safety of the Study Team.
- (2) to permit the members of the Study team to enter, leave and sojourn in the Republic of the Philippines in connection with their assignment therein, and exempt them from alien registration requirement and consular fees.
- (3) to exempt the Study team from taxes, duties and any other charges on equipment,

machinery and other materials brought into and out of the Republic of the Philippines for the conduct of the Study.

- (4) to exempt the Study team from income taxes and other similar levies in connection with any emoluments or allowances paid to members of the Study team for their services in connection with the implementation of the Study.
- (5) to provide necessary facilities to the Study team for remittances as well as utilization of the funds in the Republic of the Philippines from Japan in connection with the implementation of the Study.
- (6) if necessary, to secure permission for entry into private properties or restricted areas for the conduct of the Study
- (7) if and when necessary, to secure permission for the Study team to take all necessary data, documents and materials related to the Study out of the Republic of the Philippines to Japan in accordance with Philippine regulations
- (8) to provide medical services as needed, however, expenses will be chargeable to members of the Study team.
- (9) The Government of the Republic of the Philippines shall bear claims, if any arises against member(s) of the Japanese Study team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claim arise from gross negligence or willful misconduct on the part of member of the Study team.
- (10) Metro Cebu Water District shall act as counterpart agency to the Japanese Study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
- (11) The Government of the Republic of the Philippines assures that the undertakings by the Philippine Government referred to in this form will be ensured for smooth conduct of the Development Study by the Japanese Study team.

MINUTES OF MEETING
FOR
THE MASTER PLAN AND FEASIBILITY STUDY
FOR IMPROVEMENT OF WATER SUPPLY AND SANITATION
IN METRO CEBU

IN


REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN
METRO CEBU WATER DISTRICT
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

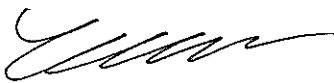
Cebu, November 3rd, 2004



Mr. Armando H. Paredes
General Manager
Metro Cebu Water District



Mr. YOKOKURA, Junji
Leader,
Preparatory Evaluation Study Team
Japan International Cooperation Agency
(JICA)



Mr. Romeo C. Escandor
Regional Director
National Economic & Development Authority
Region VII

In response to the official request of development studies of the Government of Republic of the Philippines, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Evaluation Study Team, headed by Mr. YOKOKURA Junji (hereinafter referred to as "the Mission"), to the Philippines from October 24th to November 23rd, 2004 to discuss the draft Implementation Arrangement (hereinafter referred to as "I/A") for the Master Plan and Feasibility Study for Improvement of Water Supply and Sanitation in Metro Cebu (hereinafter referred to as "the Study").

During the stay in the Philippines, the Mission carried out field surveys in the study area, and held a series of discussion with Metro Cebu Water District (MCWD), Cebu Province, Cebu City, DOF, NEDA, DENR, NWRB, LWUA and other authorities concerned. The list of those whom the Mission met with is shown in Appendix 1.

The minutes of meeting have been prepared for the better understanding of the draft I/A agreed upon between MCWD and the Mission.

The main items that were discussed and agreed by both sides are summarized as follows.

1 The title of the Study

Both the Philippine side and the Mission agreed to name the Study as following after integrating the 2 studies requested.

Revised: the Master Plan and Feasibility Study for Improvement of Water Supply and Sanitation in Metro Cebu

Original: Master Plan and Feasibility Study for Water Resources Development for Metro Cebu
The Study on Metro Cebu Sewerage System Development

2 The draft Implementation Arrangement

Both MCWD and the Mission agreed on the draft I/A tentatively as Appendix 2, however the Mission recommended that "V. Scope of the Study" and "VII. Schedule of the Study", should be modified to avoid the duplications and to make the Study consistent with the activities related to the watersheds management in Metro Cebu area. The Mission requests that MCWD coordinates with other institutions conducting the studies on water resources in Metro Cebu.

MCWD and the Mission continue the dialogue to consider modifying the terms of references (TOR) of the Study through JICA Philippines office. The Mission will prepare the draft TOR according to Appendix 2 and convey it to MCWD by the end of December 2004 for references to discuss with the institutions concerned.

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After reaching the agreement on TOR between the Philippine side and the Mission, JICA Headquarters will proceed to examine the Study following the process of the JICA guidelines of environmental and social considerations.

The representative of JICA Philippines office, on behalf of JICA, will sign on I/A just after the approval of JICA Headquarters to implement the Study.

3 The JICA guidelines of environmental and social considerations

The Mission explained the JICA guidelines of environmental and social considerations and the Philippine side agreed to implement the Study according to the guidelines.

The Study is categorized as "B" at this stage and the Mission will conduct the provisional scoping with MCWD during the stay in order to review the category.

4 The institutional arrangement to implement the Study

1) A steering committee

A steering committee, where MCWD is responsible for the secretariat support, was proposed to set up in order to guide and supervise the Study. MCWD and the Mission agreed that the functions of the Steering Committee would be as following.

- 1) To coordinate the Study with development plans of the LGUs in the Metro Cebu area
- 2) To consider coordination mechanisms for the comprehensive water resources management of watershed(s), which is(are) investigated in the Study
- 3) To consider coordination mechanisms for the sustainable management of the groundwater basin, which is investigated in the Study

MCWD agreed to organize the Steering Committee and the technical working groups if the Study is ready to commence. The Steering Committee would be composed of MCWD and the regional offices of DENR, NEDA, DPWH, and the LGUs in Metro Cebu area, that are Cebu City, Mandaue City, Lapu Lapu City, Talisay City, Municipalities of Consolacion, Lil-oan, Compostela, Cordova, and all other relevant organizations.

MCWD mentioned that MCWD would chair the Steering Committee and take responsibility of the secretariat support.

MCWD will inform their final structure and members to JICA Philippines Office in writing. The JICA Study Team and JICA Philippines office will attend the Steering Committee as observers.

2) The system of MCWD

The Mission pointed out that the following issues should be cleared before the Study. MCWD agreed to set the appropriate system in MCWD to implement the Study.

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(1) Rural Water Supply in Metro Cebu area

MCWD would like the Study to cover water supply systems of Level II in rural areas of Metro Cebu in order to improve the coverage of water supply services. MCWD, however, has no division in charge of the rural water supply.

The Mission mentioned that MCWD needed to assign appropriate personnel of responsible divisions to conduct the Study with the coordination of LGUs.

(2) Sewerage Improvement plan in Metro Cebu area

The Mission found that each LGU of Metro Cebu area is required to prepare the sewerage improvement plan on her own under the guideline of HLURB and that MCWD has no division in charge of the sewerage system.

The Mission mentioned that MCWD needed to assign responsible personnel and to set up a system to comprehend sewerage improvement plans of all the cities and municipalities in Metro Cebu area.

5 Selection of the components of which the feasibility study is carried out

After the Master Plan is completed, MCWD and JICA will discuss which components the JICA Study Team should carry out the feasibility study of.

MCWD and the Mission agreed that the criteria to select the component(s) would be as following at least.

- 1) Urgency
- 2) Financial viability
- 3) Social and Environmental sustainability
- 4) Technical viability

6 Capacity building

Both sides emphasized the importance of technical transfer in the process of the Study to facilitate the capacity building and human resources development of the Philippine side.

7 Undertaking of the Government of the Republic of the Philippines

- 1) As to VIII. (3) of the draft I/A, the Mission requested MCWD that the Philippine side takes necessary procedures to permit the Study Team to take available data (including maps and photographs) and information related to the Study. MCWD will take responsibility for the arrangement that the Philippine side would provide convenience to the Study Team as far as possible according to laws and regulations of the Philippines.
- 2) As to VIII. (3) of the draft I/A, the Mission requested MCWD that counterpart personnel of the Study should be selected before the commencement of the Study for ensuring better cooperation.
- 3) As to VIII. (3) of the draft I/A, MCWD agreed that the office space with equipment such as desks, chairs, bookshelves, air-conditions, telephone lines and electricity would be provided for the use of the Study Team.

End of sheet

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[Signature]

(A)

The list of those whom the Mission met with

At Cebu

Metro Cebu Water District:

- Mr. Armando H. Paredes, General Manager
- Mr. Michael M. Balazo, OIC AGM Technical Service Group
- Mr. Edgar H. Donoso OIC Finance Group
- Mr. Ernie T. Delco AGM Operations Group
- Ms. Rowan E. Tenedo, Division Manager, Corplan

Cebu Province:

- Ms. Gwendolyn Garcia, Governor

Cebu Municipality:

- Mr. Paul Villarete, City Planning and Development Coordinator

National Economic & Development Authority Region VII:

- Mr. Romeo C. Escandor, Regional Director
- Ms. Madelyn SL. Escandor, Chief Economic Development Specialist
- Ms. Maria Sostheleen M-Corre, Senior Economic Development Specialist

At Manila

Department of Finance:

- Ms. Nieves Osorio, Undersecretary

National Economic & Development Authority:

- Mr. Joseph Capistrano (Econ. Devt. Specialist)
- Mr. Florante Igtiben (Chief Asia Pacific), Public Investment Staff
- Mr. Librado Quitarano, OIC-Director
- Mr. Narciso Prudente, Infrastructure Staff

Department of Environment and Natural Resources:

- Mr. Demetriol Ignacio, Undersecretary for policy and planning

National Water Resource Board:

- Mr. Romeo B. Alikpala, Executive Director

Local Water Utilities Administration:

- Mr. Lorenzo H. Jamora, Administrator

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IMPLEMENTATION ARRANGEMENT
FOR
THE MASTER PLAN AND FEASIBILITY STUDY
FOR IMPROVEMENT OF WATER SUPPLY AND SANITATION IN METRO CEBU

IN

REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

METRO CEBU WATER DISTRICT
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY

Cebu, [date]



Mr. Armando H. Paredes
General Manager
Metro Cebu Water District

Mr.
JICA Philippines Office



Mr. Romeo C. Escandor
Regional Director
National Economic & Development Authority
Region VII

I. INTRODUCTION

In response to the request of the Government of Republic of the Philippines (hereinafter referred to as "the Philippines side"), the Government of Japan decided to conduct the Master Plan and Feasibility Study on Water Resources Development for Metro Cebu and the Study on Metro Cebu Sewerage System Development.

From October 24 to November 23, JICA dispatched the preparatory evaluation study team and signed on the minutes of meeting on the above-mentioned studies between Metro Cebu Water District and the JICA study team on November 3rd and agreed to proceed to implement "the Master Plan and Feasibility Study for Improvement of Water Supply and Sanitation in Metro Cebu" (hereinafter referred to as "the Study") named after integrating the two studies requested by MCWD.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Philippines side.

The present document sets forth the Implementation Arrangement with regard to the Study.

II. Objectives of the Study

The Study has the following objectives:

- (1) To formulate a master plan on water resources development and management in order to supply domestic, municipal and industrial water and improve the sanitary condition in Metro Cebu;
- (2) To conduct a feasibility study on the priority project(s), which will be selected in the process of formulation of the master plan;
- (3) To carry out the technical transfer to the Philippines counterparts in the courses of the Study.

III. Study Area

The Study will cover Metro Cebu area and its surroundings as attached Annex I.



- (1) Water Resources Development: Metro Cebu area and its surroundings in Cebu Island
- (2) Water supply & distribution: MCWD' s service area
- (3) Sewerage & sanitation improvement: MCWD' s service area

IV. Target Year

The Target year of the Master Plan shall be 2020.

V. Scope of the Study

[Phase I] Formation of a Master Plan

1. Review and analysis of the present situation

1-1 Collection and review of existing data and information

- (1) policies, laws, regulations and custom related to water resources development and management, water supply and sanitation
- (2) social and economic condition and demographic features
- (3) topographical data and maps
- (4) meteorological, hydrological and hydrogeological data
- (5) soil and geological data
- (6) water quality
- (7) land use patterns
- (8) water utilization and water right in related watershed and groundwater

1-2 socio-economic survey

- (1) household survey to estimate the willingness to pay for the water and sanitation improvement
- (2) public health condition of some selected groups related to water and sanitation
- (3) analysis of the vulnerability of the poor to the water and sanitation condition

1-3 Investigation of the physical conditions and the operation & maintenance system of existing facilities

- (1) the water resources development facilities
- (2) the water supply and distribution system
- (3) the sanitation system

2. Formulation of the Master Plan

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- 2-1 Analysis of a future socio-economic framework to 2020
- 2-2 Projection of future water demand and wastewater generation
 - (1) projection of population growth, urban expansion and industrial development
 - (2) scenario analysis of the demand changes by sectors
- 2-3 Analysis of the potential of water resources development
 - (1) review of the meteorological characteristics of the watersheds
 - (2) review of the hydro-geological characteristics of the groundwater basin, including the development of comprehensive groundwater modeling
 - (3) estimation of the potential of surface water and groundwater in consideration of the sustainability
- 2-4 Review of the water balance of demand and supply in the watersheds and groundwater basin
- 2-5 Formulation of the comprehensive water resource management master plan (water resources development and water supply & sanitation system)
 - (1) key strategies and concepts
 - (2) institutional arrangement plan
 - (3) capacity development plan
 - (4) water resources development and management plan (including groundwater)
 - (5) water supply and distribution system improvement plan
 - (6) sanitation improvement plan
 - (7) management, operation and maintenance of water supply and distribution system and sanitation system
 - (8) technical assistance for initial environmental examination (IEE)
 - (9) staged implementation plan
 - (10) preliminary cost estimation and financial plan
- 2-6 Identification of priority project(s) for the feasibility study

[Phase II] Formation of an Action Plan (including Feasibility Study)

- 3-1 Supplementary surveys of social and natural conditions and conduct of pilot activity, if necessary
- 3-2 Formation of Capacity Development Action Plan
- 3-3 Feasibility Study of the most prioritized alternative(s)

- (1) preliminary design
 - (2) technical assistance for environmental impact assessment(EIA)
 - (3) cost estimates
 - (4) economic and financial analysis
 - (5) implementation schedule
 - (6) project evaluation
- 3-4 Preparation of recommendations for implementation arrangements including organizational set-up, financing strategy etc

VI. SCHEDULE OF THE STUDY

The Study will be carried out in accordance with the tentative schedule as attached Annex 2.

VII. REPORTS

JICA shall prepare and submit the following reports in English to the Government of the Philippines.

1. Inception Report
Thirty (30) copies at the commencement of the first work in the Philippines. (This report will contain the schedule and methodology of the Study.)
2. Progress Report(I) :
Thirty (30) copies at the end of the first field work in the Philippines. (This report will summarize the findings in the first field survey.)
3. Interim Report:
Thirty (30) copies at the commencement of the second work in the Philippines. (This report will contain the results of analysis of the first work in Japan.)
4. Progress Report(II) :
Thirty (30) copies at the end of the second field work in the Philippines. (This report will summarize the findings in the second field survey.)
5. Draft Final Report
Thirty (30) copies about 3 months before completing the Final Report.

The Government of the Philippines shall submit its comments within one (1) month after receipt of the Draft Final Report.

7 Final Report:

Thirty (30) copies with digital archive within about two (2) month after JICA' s receipt of the comments on the Draft Final Report.

VIII. UNDERTAKINGS OF THE GOVERNMENT OF THE PHILIPPINES

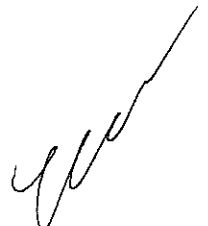
1. The Government of the Philippines shall take necessary measures to facilitate the smooth conduct of the Study;

- (1) To permit the members of the Japanese Study Team (hereinafter referred to as "the Team") to enter, leave and sojourn in the Philippines for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees;
- (2) To exempt the members of the Team from taxes, duties and any other charges on equipment, machinery and other material brought into the Philippines for the implementation of the Study;
- (3) 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;
- (4) To provide necessary facilities to the Team for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the study;

2. The Government of the Philippines shall be responsible for dealing with claims which may be brought by third parties against the members of the Japanese Study 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 of the study, except when such claims or liabilities arise from gross negligence or willful misconduct of the above mentioned members.

3. Metro Cebu Water District shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned :

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- (1) Security-related information on as well as measures to ensure the safety of the Team;
- (2) Information on as well as support in obtaining medical service;
- (3) Available data (including maps and photographs) and information related to the Study;
- (4) Counterpart personnel;
- (5) Suitable office space with necessary equipment; and
- (6) Credentials or identification cards.

IX. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, the Team to the Philippines
2. to perform technology transfer to the Philippines counterpart personnel in course of the Study

X. OTHERS

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

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付属資料3 . 主要面談者リスト

JICA Philippines Office

Mr. Shozo Matsuura	Resident Representative
Mr. Hirohiko Takata	Deputy Resident Representative
Mr. Kenji Kasamatsu	Project Formulation Advisor, Human Development Group

DENR

Mr. Demetrio Ignacio	Undersecretary for Policy and Planning
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EOJ

Dr. Koji Sasaki	Health Attache, Economic Section
Mr. Toshiaki Mabuchi	Second Secretary, Economic Affairs

DOF

Ms. Nieves Osorio	Undersecretary
-------------------	----------------

JBIC Representative Office in Manila

Mr. Osamu Murata	Chief Representative
Ms. Hiroko Kosaka	Expert, Water Sector

NEDA

Mr. Joseph Capistrano	Specialist, Economic Development
Mr. Florante Igtiben	Chief, Asia Pacific Division
Mr. Librado Quitarano	OIC – Director
Mr. Narciso Prudente	Infrastructure Staff

NWRM

Mr. Romeo B. Alikpala	Executive Director
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LWUA

Mr. Lorenzo Jamora	Administrator
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University of San Carlos

Fr. Herman van Engelen	Director, Water Resources Center
Ms. Fe B. Walag	Project Manager for Water REMIND, Water Resources Center
Mr. T. Albert Nauta	Resident WRM Specialist for Water REMIND

Province of Cebu

Ms. Gwendolyn Garcia Governor
Mr. Adolfo Quiroga Head, Provincial Planning & Development Council (PPDC)

NEDA Region VII

Mr. Romeo Escandor Director
Ms. Madelyn Escandor Chief Economic Development Specialist

DPWH Region VII

Mr. Juanito Abergas Regional Director

DOST

Mr. Edilberto Paradela Chief, Technical Division

Metro Cebu Water District (MCWD)

Mr. Armando H. Paredes General Manager
Mr. Ernle T. Delco Assistant GM, Operation Group
Mr. Michael M. Balazo Assistant GM, Technical Service Group
Mr. Edgar H. Donoso Assistant GM, Finance Group
Mr. Bassanio T. Canete Assistant GM, Pipeline maintenance Group
Mr. Vesmino M. Santiago Assistant GM, Administrative Group
Mr. Angelo H. Cabije Head, Water Quality Control Division
Mr. Roel E. Panebio Head, Environmental Division

Cebu City

Mr. Paul Villarete City Planning and Development Coordinator
Mr. Joel Reston OIC, CPDO
Mr. Dionisio Guaniza Head, Department of Public Services (DPS)
Mr. Norman Del Mar OIC, Sewerage Treatment Plant, DPS
Mr. Antonio B. Sanchez City Engineer, Department of Engineering & Public Works (DEPW)
Mr. Nilo Lastimado Head, Sanitary, Office of the Building Official
Mr. Emar Montejo Geographic Information System (GIS) Department

Mandaue City

Mr. Renee P. Tariman City General Services Officer

Ms. Delia B. Rodrigo	Head, City Planning & Development Council (CPDC)
Mr. Dexter Fortuna	OIC, CPDO
Mr. Eduardo Carba	OIC, CPDO
Mr. Gregorio Omo	Asst. City Engineers, Office of the Building Official

Lapu-lapu City

Mr. Cesario I. Silawan	Head, City Planning & Development Council (CPDC)
Ms. Perla T. Anar	Asst. City Planning & Development Coordinator
Mrs. Erlinda Beduya	Head, Urban Poor Affairs Office

Talisay City

Mrs. Christine Homez	Head, City Planning & Development Coordinator
----------------------	---

Consolacion Municipality

Mr. Sigfried Catalonia	Municipal Administrator
Ms. Sally Falang	Municipal Planning

Compostela Municipality

Mr. Carmelo Tejero	Head, Municipal Planning & Development Coordinator
--------------------	--

Liloan Municipality

Mr. Epifanio Jordan	Head, Municipal Planning & Development Coordinator
Ms. Maria Roble	Municipal Local Government Operation Office

Cordoba Municipality

Mrs. Leonides Ator	Head, Municipal Planning Development Council
--------------------	--

Department of Environment & Natural Resources (DENR), Region VII

Mr. Jun Erasmo Vallafane	Regional Director, Environmental Management Bureau
Mr. Vicente Caliser	Protected Area Superintendent, PAWD
Mr. Eduardo M. Inting	Chief, Forest Resources Development Division

National Statistic Office, Region VII

Mrs. Atty Lilia B. Tandoc	Regional Director
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CUSW (Cebu Uniting for Sustainable Water Foundation, Inc.)

Fr. Margarito Alingasa	President
------------------------	-----------

Mr. Zosimo Pupos Executive Director

SWCF (Soil and Water Conservation Fund)

Mr. William Granert Executive Director

The Japanese Chamber of Commerce and Industry of Cebu, Inc.

Mr. Toshiyuki Haga Secretary General

DBP (Development Bank of the Philippines)

Ms. Marissa David Deputy Project Manager for EISCP Phase 2

Dr. Ramon Abracosa Consultant for EISCP Phase 2

Mactan Rock Industries, Inc.

Mr. Antoio Camelo P. Tompar President / CEO

Ayala Corporation

Mr. Wilfrido Atienza Associate Director, Corporate Strategy

Mr. Nicholas Dy Project Development Manager, AC Capital

Manila Water

Mr. Benjamin Velasco Senior Project Development Officer

Mr. Selwyn Cabaluna Manager, Pumping Section, Water Supply Department

付属資料4 . 打合せ議事録

日付	2004年10月25日(月)	時間	9:00 am ~ 12:00 pm
場所	MCWD		
面談者	Mr. Armando H. Paredes (General Manager) Mr. Ernle T. Delco (Assistant GM, Operation Group) Mr. Balazo Michael M. (OIC, Technical Service Group) M. Donoso Edgar H. (OIC, Finance Group Manager)		
調査団	岩堀、福田		
聞き取り概要			
<p>JICA 調査団のスケジュール確認後、質問票について説明を行い、基本的事項である A 様式の質問については、I/A 協議開始までに書面での回答を要請した。引き続き行った、MCWD の上下水道事業の現状ならびに要請内容についての聞き取り概要は以下のとおり。</p>			
<p>1 . 上水道の現状と将来の水需要 :</p> <ol style="list-style-type: none"> 1) 現在 14 万 m³の水供給を行っている。その内 85%が地下水源である。 2) 水需要は年間 3%の割合で増加しており、2020 年までの水源開発計画をマスタープランで明確にしたい。 3) しかしながら、セブは水源に限られており資金的に表流水の水源開発が難しいということも認識している。従って、地下水を含む開発可能量から水需要を抑制する Demand Management が必要であることも認識している。 <p>マスタープランでは、淡水化プラント、バージによる水運搬、河川下流部での伏流水利用、生活用水の雨水利用等、開発可能はいろいろなメニューを検討して、水源の多様化を図ることも必要と考えている。セブは沖縄の水理・地質状況とよく似ていると聞いているので、沖縄での経験が何か生かせないかと期待している。</p>			
<p>2 . MCWD の理事会の構成と地元還元 :</p> <ol style="list-style-type: none"> 1) WD が複数の市・町にまたがる場合、設立法上 75%以上の接続がある市長が WD の理事 (5 名) を任命することになっている。また、総裁 (General Manager) は理事会が任命することになっている。(従って、州政府は組織的には直接関与していないことになる。) <p>水源のある市・町に対しては、MCWD の収入の 1%を支払っている。</p>			
<p>3 . 長期負債とローンの借り換え :</p> <ol style="list-style-type: none"> 1) 現在、LWUA に約 12 億ペソ (約 24 億円) の長期債務がある。計 4 つのローンを借りており一番長いもので 2012 年が返済期限となっている。金利は 12.5%である。 2) また現在 DBP (Development Bank of Philippine) と融資の話を進めている。金利が 10.5%で LWUA より 2%安いので、6 億ペソを借り入れて LWUA の長期債務の半分を返済するつもりである。 			

4. 水道料金値上げについて：
- 1) 水道料金値上げの承認権限はかつて LWUA にあったのが、現在は規程が変わって NWRB に移っている。値上げのプロセスは地元で公聴会 (Public hearing) を行い、特に強い反対がない限り、水道料金値上げの申請を NWRB に行って承認を得ることになっている。市、州政府は公聴会の 1 参加者という位置付けである。公聴会は 1 回のみ開催。
 - 2) カルメンプロジェクトが完成すると、完成後 4 年連続して水道料金を 15% づつ値上げする必要がある (合計 60%)。しかしながら、この案はまだ公聴会を開いておらず、NWRB にも承認の申請を行っていない。
 - 3) 現在、水道料金の平均は 21 ペソ。貧困層には公共水栓があり、料金も通常の 60% にしている。
5. 無収水削減について：
- 1) 現在、無収水率は 32% である。15 年前から無収水削減に取り組んでおり、50% からここまで減少させた。今後 15 年で 20% まで減少させたい。
 - 2) 現在、各配水区にテレメーターシステムの導入を図っているところである。来年の最初の 4 半期には設置完了予定である。無収水削減プログラムの策定を協力してほしい。
6. 村落部の給水事業：
- 1) 法律上は村落部であっても WD がカバーしている市・町は WD の責任範囲である。
 - 2) しかしながら、レベル I については中央政府の DPWH の予算で地方自治体がやったり、国会議員予算でやったりしており、MCWD は関知していない。
 - 3) レベル II, III については、村落の周辺に適当な水源があって採算がとれる場合には MCWD がやるが、そうでない場合は地方自治体任せになっている。
 - 4) 村落部のデータは Water REMIND Project が持っていると思う。また、Pilot Project を実施するとも聞いている。
7. 下水道整備について：
- 1) 法律上は、WD の上水道区域は原則として下水道も WD の責任範囲となったが、事実上は採算が取れないので地方自治体に任せたままとっている。
 - 2) JICA マスタープランでは、どれくらいの施設が必要で、整備の仕方もいろいろあると思うが、住民の支払い能力からどのくらい国の補助がないと出来ないのかを明確にしてもらいたい。採算が取れるものがあるならば実施したいが、採算が取れないならば地方自治体に任せたままで、MCWD が下水道整備をやるつもりはない。
 - 3) JICA 調査ではマスタープランのみで F/S は特に考えていない。

日付	2004 年 10 月 25 日	時間	9 am ~ 10 am
場所	JICA Philippines Office		
面談者	松浦所長、高田副所長、笠松所員		
調査団	横倉団長、佐々原、益田、白石、大久保		
協議概要			

横倉団長より、本事前調査の方針、作業スケジュール等に付き説明があった。松浦所長からは、水資源計画に関してはポテンシャルと優先順位を十分検討し、整合性のある水供給計画を策定する方向が必要とのコメントがあった。

日付	2004年10月25日	時間	1 pm ~ 2 pm
場所	DENR		
面談者	Mr. Ignacio (Undersecretary)		
調査団	横倉、佐々原、益田、白石、大久保		

協議概要

調査団長より、JICA 調査の背景、作業方針、内容、スケジュールにつき説明があった。また、DENR の組織体制、管轄業務、環境ガイドラインの有無、Region VII の活動などに関して質問があった。DENR からは、Clean Water Act が 2004 年 3 月に施行され、現在実施に向け準備中であるとの説明を受けた。DENR の主な活動は、表流水及び地下水の水質管理、森林の管理であり、表流水に関してはモニタリングを行なっている。また、行政改革によって、NWRB が DENR に移管されることとのことである。環境管理にかかわる法律に関しては DENR のホームページで検索できるとのことである。JICA 調査団からは DENR に係る質問表の作成を要請した。

日付	2004年10月25日	時間	3 pm ~ 4 pm
場所	日本大使館		
面談者	佐々木氏、真淵氏		
調査団	横倉、佐々原、益田、白石、大久保		

協議概要

調査団長より、JICA 調査の背景、作業方針、内容、スケジュールにつき説明があった。本格調査は来年4月ごろ開始予定であり、ワークショップの開催を想定している。フェーズ II では、FS を含むアクションプランであることを説明した。要請された検討事項としては、地下水涵養型取水ダムの検討、財務・組織の検討、南部埋立地の利用、日系企業の支援対策、水源開発のアイデア、水道料金の設定、制度面の検討、LGU へのファンディング、実施機関の能力強化などがあげられた。

日付	2004年10月26日	時間	7:30 am ~ 9 am
場所	Hotel Inter Continental		
面談者	Ms. Osorio (Undersecretary)		
調査団	横倉、佐々原、益田、白石		

協議概要

まず、団長より JICA 調査の説明があった。来年四月より 18 ヶ月の調査が実施される予定である。事務次官からは、MCWD へのファンディングに関しては BOT や BOO などがオプションとしてあり、アラヤが進めるカルメン導水に付き説明があった。ICC の承認が得られ、NWRB の料金承認、公聴会の開催が予定されているとのこと。MCWD の民営化についても触れ、MCWD の自主的な意向を尊重するとのコメントがあった。LWUA の DOF への移管について説明があった（実際は、DPWH に移管されるとの政府発表が 11 月下旬にあった）。

日付	2004 年 10 月 26 日	時間	10 am ~ 11 am
場所	JBIC		
面談者	村田所長、小坂氏		
調査団	横倉、佐々原、益田、白石		
協議概要			
<p>村田所長よりフィリピンにおける JBIC の活動に付きご説明があった。JBIC 案件は年間で 1,000 億円程度であり、うち 700 から 800 億円が直接融資（80 件）、200 億円程度が DBP、土地銀行などからの融資となっている。住民移転の問題で 2 年ほど滞っている案件としては、アグノ河川改修、パシッグ・マリキナ河川改修がある。MCWD への融資については、LWUA の代わりとなる融資先を検討する必要があるとのコメントがあった。民活資金の活用も視野に入れるべきであろう。</p>			

日付	2004 年 10 月 26 日	時間	1 pm ~ 2 pm
場所	NEDA		
面談者	Mr. Joseph Capistrano Specialist, Economic Development Mr. Florante Igtiben Chief, Asia Pacific Division Mr. Librado Quitarano OIC – Director Mr. Narciso Prudente Infrastructure Staff		
調査団	横倉、益田、白石		
協議概要			
<p>カルメン導水の評価は NEDA マニラ本部が行なっているとのこと。NEDA としては、JICA 調査から選ばれる優先プロジェクトの実施はなるべく円借款で行なうことを希望している。JICA 調査団からは質問表作成を要請した。</p>			

日付	2004 年 10 月 26 日	時間	3 pm ~ 4 pm
場所	NWRB		
面談者	Mr. Alikpala (Executive Director)		
調査団	横倉、佐々原、益田、白石		
協議概要			

Alikapala 氏より、NWRB の組織及び管轄業務について概略説明があった。現在セブ都市圏を対象として地下水調査を NWRB が実施しており、近いうちに報告書が提出されるとの情報を得た。セブは地方分権が浸透しており、各地方自治体の権利主張が活発であり、総合的な計画が必要であるとのコメントがあった。調査団より、NWRB に係る質問表作成を要請した。

日付	2004 年 10 月 27 日	時間	1 pm ~ 2 pm
場所	水資源センター (サン・カルロス大学)		
面談者	Engineer Walag (Deputy Director) Mr. Nauta (Resident Manager for Water REMIND)		
調査団	横倉、佐々原、益田、白石、大久保、福田		
協議概要			
<p>団長からの JICA 調査説明後、Walag 氏より Water REMIND の概略説明があった。2002 年から 5 年間のプロジェクトであり、今後 1 年半でアクションプランを策定する予定であるとのこと。本案件が Water REMIND プロジェクトのスコープと一部重なることが両者によって確認された。至急、両プロジェクトのデマケを明らかにすべく MCWD 調整の上、会議を行なうことになった。</p>			

日付	2004 年 10 月 27 日	時間	4:30 pm ~ 5 pm
場所	Provincial Office		
面談者	Gov. Garcia		
調査団	横倉、佐々原、益田、白石、大久保、福田		
協議概要			
<p>ガルシア知事への表敬訪問。知事より Water REMIND プロジェクトとよく協議し、連携して進めるよう要請された。</p>			

日付	2004 年 10 月 28 日	時間	9 am ~ 12 pm
場所	MCWD		
面談者	Mr. Paredes, General Manager		
調査団	横倉、佐々原、益田、白石、大久保、福田		
協議概要			
<p>益田団員より本件に関するプレゼンテーションがあった。パレデス局長からは、Water REMIND の目的、作業工程、委員会構成、などが説明された。JICA 調査とのデマケにつき調査団と協議。JICA 調査項目を Water REMIND 側に提示し、回答を得ることとした。また、MCWD 側からマナンガ計画の再検討、コトコト川中規模ダム計画、淡水化の検討、地下水シミュレーション、民活化事業計画などを JICA 調査で実施するよう要請があった。沖縄における水資源計画が本件に適用できないかもしれないとコメントがあった。カルメン導水計画の現況につき MCWD より説明があった。2008 年完成を目指し、料金設定が検討中とのこと。</p>			

日付	2004年10月28日	時間	1 pm ~ 2 pm
場所	NEDA Region VII		
面談者	Ms. Madelyn Escandor, Division Chief		
調査団	横倉、佐々原、益田、白石		
協議概要			
<p>団長より JICA 調査の概要が説明された。NEDA よりセブ都市圏の地域計画の現況、特に上下水に係る問題が説明された。NEDA 側より、NEDA Region VII は Water REMIND に参加していないこと、JICA 調査を円滑に進めるためにはセブ市及び MCWD と協議して、Water REMIND 側と調整することが必要とのコメントがあった。</p>			

日付	2004年11月02日	時間	9 am ~ 12 pm
場所	MCWD		
面談者	Mr. Paredes Mr. Escandor (Director) Ms. Escandor (Division Chief)		
調査団	横倉、佐々原、益田、白石、大久保、福田		
協議概要			
<p>パレデス局長より JICA 調査と Water REMIND 調査を同時期進行させることが説明された。両調査で提言された内容については Steering Committee にて最終的に評価される対応にするとの提案がなされた。11月3日に SW 協議のサインを行なうこととなった。比側のサイナーは MCWD と NEDA Region VII とする。</p>			

日付	2004年11月02日	時間	2:30 pm ~ 3:30 pm
場所	MCWD		
面談者	Mr. Paredes Fr. Engelen (WRC) Engineer Walag (WRC)		
調査団	横倉、佐々原、益田、白石、大久保、福田		
協議概要			
<p>エンゲレン神父より WRC の設立、活動、セブ都市圏水資源の問題と Water REMIND の趣旨説明がなされた。ワラッグ氏より、アクションプランの内容、作業進捗、データの収集につき説明があった。1年半後にアクションプランが策定される。その後モニタリングを実施する計画であるとの説明を受けた。WRC より JICA 調査で下水計画を実施して欲しいとの要請あり。JICA 調査に対しては必要なデータ・資料を提供するとの確約がなされた。</p>			

A. QUESTIONS

1. Implementation body and relevant organizations and Institutions (回答は 収集資料リスト D-24 参照)

Please clarify the role, functions and responsibility of the relevant main organizations both of central and the provincial governments to implement the water and wastewater projects in Metro Cebu with the interface among each organization. (Refer to table A 1.1)

2. Confirmation of the priority and contents of the requested study (the Master Plan and Feasibility Study on Water Resources Development and Management for Metro Cebu) (回答は収集資料リスト D-24 参照)

2-1 Background of the study

- (1) Please explain clearly the relation of the study with the national and/or provincial policy and strategy in water resources planning and management in Metro Cebu or Cebu Province.
- (2) Please describe clearly the relation between the study and other related plans such as Cebu Central Regional Plan, Metro Cebu Urban Development Plan, Provincial Land Use Plan, River Basin Environmental Protection Plan, Cebu Central Agricultural Development Plan and so on.
- (3) Please clarify the priority of the requested study with the selection criteria in provincial and national levels from the overall, water supply and sanitation viewpoints.

2-2 Outline of the study

- (1) Please clarify the study area with location and size, and with present and projected total population, urban and rural population, served population from the viewpoint of water supply and sanitation.
- (2) Related Projects schedule and components (commissioned, on-going and planned)

Please describe the schedule of projects, which are related to the study such as water resources development, water and sanitation in Metro Cebu, in detail with allocation of fund from central, provincial, foreign and own fund respectively including design, temporary works, construction, installation, testing and commissioning, etc.

2-3 Counterpart organization

- (1) Please explain the role and responsibility of MCWD in water supply and sanitation works.
- (2) Please explain the institution or organization for management, operation and maintenance of the plants and facilities for water resources management, water supply and sanitation.
- (3) Please explain the structure of water tariff.

3. Questions on water resources (回答は収集資料リスト D-24 参照)

- (1) Please explain in detail water resources development projects for Metro Cebu with F/S reports, if implemented, and your evaluations, including all the proposed water supply projects.
- (2) Please explain the severest problems and urgent needs for water supply system in Metro Cebu.
- (3) Please explain in detail the proposed Carmen Water Diversion Project, including present status, environmental assessment.
- (4) Please explain in detail the water rights, water uses and water demands in the major rivers such as Kot Kot, Lusaran, Mananga rivers and groundwater basin.
- (5) Please explain the Presidential Proclamation for the river basin conservation in the major rivers in Metro Cebu.
- (6) Please explain the law and regulation to manage the groundwater and the coordination mechanism to maintain the groundwater resources in Metro Cebu.

4. Questions on water supply (回答は収集資料リスト D-24 参照)

4-1 Basic policy on private sector participation

- (1) What do you think about private sector participation as your business partner for securing fund for development and providing much better water supply services to customers?
- (2) Please describe your planned water supply development project by BOO or BOT scheme, if any.
- (3) What do you think about a possibility of MCWD becoming a joint venture company with domestic and/or foreign private companies in the near future?

4-2 Water demand and water supply development plan

- (1) Please describe future water demand projection forecast by MCWD.
- (2) Please describe your target for expansion of water supply area in the future.
- (3) Please describe your plan or scenario for water resources and water supply facilities development corresponding to the above water demand projection.
- (4) Please explain the policy/strategy toward the improvement of water and sanitation in Metro Cebu area and the rule to demarcate the responsibility between MCWD and LGUs in Metro Cebu area.

4-3 Water tariff policy

- (1) Please explain the tariff policy to the customers (domestic, commercial, industrial)
- (2) Please show your observation on the Willingness to pay of the domestic customers in consideration of the different socio-economic conditions.
- (3) Are there any special measures for the vulnerable or the poor?

5. Questions on sanitation and sewerage (回答は収集資料リスト D-24 参照)

- (1) At present what are the most crucial problems regarding to the water-related sanitation situation in Metro Cebu area? Please explain concrete facts and data.
- (2) Please explain the policy/strategy and the plan to improve the water-related sanitation in Metro Cebu area. And which organizations are in charge of the planning, management and monitoring of the water-related sanitation in Metro Cebu area.
- (3) Please explain the main factors to deteriorate the water-related sanitation and their loads to the environment.
- (4) Please explain what kinds of measures are implemented and which organizations are responsible to improve the water-related sanitation in Metro Cebu area. What is the role of MCWD ?
- (5) There are some water treatment facilities in Metro Cebu. Please explain about the implementation systems (their organization structures, the financial situations, their financial statements of recent years, facilities, service zones, customers' characteristics, tariff systems).
- (6) Please make clear present and projected population of Metro Cebu area, which MCWD is responsible for improving the sanitation, and clarify the priority areas.
- (7) Please explain the organization of MCWD to improve the sanitation in

Metro Cebu area.

- (8) Are there any donors, private funds or NGOs concerned to the improvement of environment of water sewerage/hygiene of Metro Cebu area?

6. Questions on social and environmental issues (回答は収集資料リスト D-24 参照)

6-1 Land acquisition of the project sites

- (1) Please explain the procedure of land acquisition.
- (2) Please explain the countermeasures or activities to resolve the difficulty of land acquisition related to the water resources development in Metro Cebu.

6-2 Relocation of houses on project sites (Refer to the Attached sheet A 4.1)

- (1) If it is probable to relocate houses on the project site, please describe the followings:
 - a. The rough estimate of expenses
 - b. The necessary period
 - c. Necessary procedures and related government organizations

6-3 Social and Environmental matter

- (1) Please explain the procedure for the preparation of EIA on the projects
- (2) Please introduce local stakeholders
- (3) Please fill the attached sheets for social and environmental consideration.
(Refer to attached sheet A 4.1)

7. Plan and project list by other donors (回答は得られなかったが、過去に行なった開発計画の報告書は MCWD に保管されていることを確認している)

Please list up the plans and projects regarding water supply and sanitation performed by other donors commenting donor's name, outline of project, served population, project area, cost, present situation of progress and describe, if any, the relation between the study and those listed project and plan.

B. REQUIRED DATA AND INFORMATION

No.	Item	Availa- bility (Y/N)	Agency of Information Source	Name of Materials
1.	Development Plan			
1.1	<p>National and regional development plan</p> <p>(1) National development plan for water supply and sanitation sector</p> <p>(2) Public Investment Program</p> <p>(3) Five Year Plan, if any</p> <p>(4) Regional development plan for Cebu Central Province</p> <p>(5) Land use plan of Cebu Central</p> <p>(6) Latest Economic Survey of the Province</p> <p>(7) Other related plan or project both of central and provincial government</p>	Y	NEDA NEDA Region VII Each city and municipality	
1.2	<p>Water supply development plan</p> <p>(1) Development plan of Water Supply for the province and Metro Cebu</p> <p>(2) Full content of the previous studies including all available M/P, F/S and D/D reports</p> <p>(3) Report of Carmen Water Diversion Project</p> <p>(4) Report of the related studies such as river basin protection and water quality surveys.</p>	Y	MCWD	
1.3	<p>Sanitation development plan</p> <p>(1) Development plan of Sanitation for the province and Metro Cebu</p> <p>(2) Full contents of sewerage schemes</p>			
1.4	<p>Other related project</p>	Y	NEDA Region VII	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
2.	Related Organization & Counterpart Agency			
2.1	Main Organizations of Central Government (1) Organization chart (2) Number of personnel (3) Budgetary arrangement	Y	DPWH DOF DOH	
2.2	National Water Resources Board (NWRB) (1) Organization chart (2) Number of personnel (3) Budgetary arrangement (4) Role, function and responsibility	Y	NWRB	
2.3	Local Water Utilities Administration (LWUA) (1) Organization chart (2) Number of personnel (3) Income and expenditures in water supply and sanitation in the past five years (4) Plan of income and expenditures in water supply and sanitation in the next ten years	Y	LWUA	
2.4	Other Related Organizations such as NEDA and DENR (1) Organization chart (2) Number of personnel (3) Role, function and responsibility	Y	NEDA NEDA Region VII DENR DENR Region VII	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
2.5	Cebu Provincial Office (1) Organization chart of Cebu Provincial Office (2) Organization chart of departments concerned to water supply and sanitation (3) Role and responsibility (4) Number of personnel (5) Budgetary arrangement	Y	Cebu Provincial Office	
2.6	Cebu Municipal Office (1) Organization chart of Metro Cebu Office (2) Organization chart of departments concerned to water supply and sanitation (3) Role and responsibility (3) Number of personnel (4) Budgetary arrangement	Y	Cebu City Lapu-lapu City Mandaue City Talisay City Consolacion Compostela Liloan Cordova	
2.7	MCWD (1) Organization chart of MCWD (2) Role of each department and section, and number of personnel	Y	MCWD	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
3.	<p>Law and regulation regarding water supply and sanitation</p> <p>(1) Water laws</p> <p>(2) Laws and regulations regarding water resources development and water right</p> <p>(3) Laws and regulations regarding water supply</p> <p>(4) Laws and regulations regarding sanitation and sewage</p> <p>(5) Laws regarding the environmental protection</p> <p>(5) Drinking water quality standard</p> <p>(6) Water effluent quality standard</p> <p>(7) Other relevant laws and regulations</p>	Y	NWRB DENR LWUA	
4.	Data and information regarding natural conditions of the project area			
4.1	<p>Maps and other information</p> <p>(1) Topographic maps; scale 1/100,000, 1/50,000 and 1/25,000</p> <p>(2) Geological maps; scale 1/100,000, 1/50,000 and 1/25,000</p> <p>(3) Other geological data</p> <p>(4) Hydro-geological maps 1/100,000, 1/50,000 and 1/25,000</p> <p>(5) Other hydrological and hydro-geological data</p> <p>(6) Land use maps and vegetation maps</p> <p>(7) Earthquake data (acceleration)</p> <p>(8) Maps that distinguish between urban and rural area; scale 1/10,000 or 1/25,000</p>	Y	DENR NAMRIA Cebu City Mandaue City Lapu-lapu City WRC of San Carlos Univ.	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
4.2	<p>Meteorological and hydrological data</p> <p>(1) Meteorological data for the project area at least for the last 10 years</p> <ol style="list-style-type: none"> 1) Air temperature – monthly mean 2) Humidity - monthly mean 3) Wind direction & velocity- monthly mean 4) Evaporation – monthly 5) Precipitation - daily, monthly & annual 6) Measurement stations and its maps 7) Climate maps <p>(2) Hydrological data of the water sources as long as possible in the existing dams</p> <ol style="list-style-type: none"> 1) Discharge - daily, monthly & annual 2) Water level - daily & monthly 3) Water quality – turbidity, DO, COD or BOD, Suspended solid 4) Measurement stations and maps 	Y	<p>WRC of San Carlos Univ.</p> <p>PAGASA</p> <p>DA</p> <p>DPWH</p> <p>DENR</p>	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
5.	Data and information regarding water supply system			
5.1	Key indicator of water supply in the year 2001, 2002 and 2003 (1) Population of Metro Cebu area (2) Number of the served population and coverage (3) Number of water supply connection (4) Capacity of water production by source of water (5) Average daily water production (6) Average daily water consumption (effective water) (7) Ration of effective water (8) Average water consumption per person per day (9) Number of staff in MCWD	Y Y Y Y Y Y Y Y Y	MCWD MCWD MCWD MCWD MCWD MCWD MCWD MCWD MCWD	
5.2	Data on water consumption (1) Number of water supply connection and daily water consumption by water user in the year 2001, 2002, and 2003 1) Domestic use 2) Public use 3) Industrial use 4) Commercial use (2) Water consumption data other than MCWD water 1) Domestic use 2) Industrial use 3) Tourism and hotel use	Y N N	MCWD	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
5.3	<p>Existing water supply facilities</p> <p>(1) Inventory of wells and pumping stations with location map</p> <p>(2) Water treatment plants</p> <p> 1) Location map of intake and water treatment plant</p> <p> 2) General layout plan and flow-diagram of water treatment plan</p> <p>(3) Water desalination plant</p> <p> 1) Location map and general layout plan</p> <p> 2) Specification of desalination plant</p> <p> 3) Operation cost</p> <p>(4) Water distribution network</p> <p> 1) The latest map of existing water distribution network with boundary of each water distribution district</p> <p> 2) Inventory of existing water distribution network (pipe length by kind of pipe and diameter)</p> <p> 3) Inventory of reservoir tanks</p> <p> 4) Present monitoring and control system of water distribution network</p> <p> 5) The latest map of the planned water distribution network</p>	<p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>	<p>MCWD</p> <p>MCWD</p> <p>Mactan Rock Industries Inc.</p> <p>MCWD</p>	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
5.4	<p>Mapping system of the water distribution network</p> <p>(1) Kind of computer software for mapping system</p> <p>(2) Number of computer used at present</p> <p>(3) Scale of map and kind of information compiled in the existing mapping system</p>	<p>Y</p> <p>Y</p> <p>Y</p>	<p>MCWD</p> <p>MCWD</p> <p>MCWD</p>	
5.5	<p>Unaccounted for water</p> <p>(1) The latest data on a ratio of unaccounted for water</p> <p>(2) Contents of unaccounted for water (e.g. water leakage, water loss by meter defect, illegal connection and official use)</p> <p>(3) Present measurement system of a ratio of unaccounted for water</p> <p>(4) Present water leakage condition of each water distribution district</p> <p>(5) Present and planned program for reduction of unaccounted for water</p> <p>(6) Target for reduction of unaccounted for water</p> <p>(7) List of available water leakage detection devices and pipe repairing tools</p>	<p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>	<p>MCWD</p> <p>MCWD</p> <p>MCWD</p> <p>MCWD</p> <p>MCWD</p> <p>MCWD</p> <p>MCWD</p>	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
5.6	Water tariff and financial status (1) The latest water tariff (2) Present measurement system of water meter (3) Water charge collection system (4) Collection ratio of water charge in the last 3 years (5) Annual report of the last 3 years (6) Audit report showing income statement and balance sheet of the year 2001, 2002 and 2003	Y Y Y Y Y Y	MCWD MCWD MCWD MCWD MCWD MCWD	
5.7	Water quality (1) Water quality monitoring system 1) Water sampling point 2) Frequency 3) Parameter of water quality test (2) The latest water quality test records of raw water and treated water in dry and rainy seasons (3) List of equipment for water quality test in the MCWD's laboratory (4) Current issues and problems on water quality	Y Y Y Y	MCWD MCWD MCWD MCWD	
5.8	Human resource development (1) Present training and retraining program in MCWD (2) Kind of training and retraining course utilized in outside of MCWD (3) Budget for training and retraining in MCWD	Y Y Y	MCWD MCWD MCWD	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
5.9	Data and information regarding water supply facilities other than MCWD (1) Rural water supply facilities within Metro Cebu area (2) Water supply facilities operated by Cebu Municipal Office (3) Water supply facilities operated by other cities and towns (4) Desalination plant and other water supply facilities operated by private entities	N Y Y Y	Cebu city Each city and town Mactan Rock Industries Inc.	
6.	Data and information regarding sanitation system			
6.1	Key indicator of sanitation in the year 2001, 2002 and 2003 (1) Population served by sewerage (2) Number of sewerage connection (3) Capacity of sewerage treatment plants (4) Average daily treated water amount (5) Population served by septic tanks (6) Number of septic tanks (7) Total capacity of septic tanks	N N N	Cebu city Metropolitan Cebu Sewerage and Sanitation Project (1995)	STP (10,000m ³ /day) 2,500m ³ /day 218,000 (HH) 120,600)
6.2	Data on waste water amount (1) Waste water per capita per day (2) Domestic waste water per day (2) Industrial waste water per day (3) Commercial waste water and others per day	N		

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
6.3	<p>Outline of existing sanitation facilities</p> <p>(1) General layout drawings of the existing sanitation system including treatment plant, pumping station, etc.</p> <p>(2) Inventory of the above sanitation system and year of construction</p> <p>(3) Treatment plants</p> <p>1) Location map of the plants</p> <p>2) Layout plan and flow-diagram of the plants</p> <p>3) Specification of the plants</p> <p>(4) Sewer pipeline network</p> <p>1) The latest map of existing sewer network with boundary of each waste water district</p> <p>2) Inventory of existing sewer network (pipe length by kind of pipe and diameter)</p> <p>3) Location map of pumping stations</p> <p>4) Inventory of pumping stations</p> <p>5) The latest map of the planned sewer network</p>	<p>Y</p> <p>N</p> <p>Y</p> <p>Y</p> <p>N</p> <p>Y</p> <p>N</p> <p>N</p> <p>N</p>	<p>Cebu city</p> <p>Cebu city</p>	<p>STP (aerated Lagoon) Flow chart</p> <p>STP (aerated Lagoon) Flow chart</p>
6.4	<p>Sewerage tariff and financial status</p> <p>(1) The latest sewerage tariff</p> <p>(2) Present measurement system of waste water</p> <p>(3) Tariff collection system</p> <p>(4) Collection ratio in the last 3 years</p> <p>(5) Connection charge</p> <p>(6) Annual average income per household (Upper class, Middle class and Lower class)</p>	<p>Y</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p>	<p>Cebu city</p> <p>Cebu city</p>	<p>Actual treatment charge (2.1Peso/m³)</p>

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
6.7	<p>Operation and maintenance of the sanitation system</p> <p>(1) Organization chart of Operation and maintenance including number of administration, operation and maintenance</p> <p>(2) Number of staff for sanitation in MCWD</p> <p>(3) History of improvement or rehabilitation</p> <p>(4) Maintenance record</p> <p>(5) Present condition and problem with related to the function, operation and personnel, etc.; (quantity, quality of raw and treated water, electric power shortage, ability of personnel and management, etc.)</p>	<p>Y</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p>	MCWD	MCWD
6.8	<p>Human resource development</p> <p>(1) Present training and retraining program in MCWD</p> <p>(2) Kind of training and retraining course utilized in outside of MCWD</p> <p>(3) Budget for training and retraining in MCWD</p>	Y	MCWD	

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
7.	Socio-Economic, Environmental matters			
7.1	Statistic data 1) Census of the country 2) Census of the Province 3) Social and economic index (both of the country and the province)	Y	National Census Statistical Office NEDA NEDA Region VII Cebu Provincial Office	
7.2	Others (1)Environmental policies and standard 1)Responsible agency and its organization chart 2)Laws, regulations and guidelines (2)Laws and guidelines related to Environmental impact assessment (EIA) (3)Existing and planned electrical supply capacity with the unit price for the project area. (4) Public health 1) Statistical data of epidemic disease including water-borne disease in project are (for the last five years) 2) List of hospitals (5) Social environment 1) Administrational border map 2) Information on distribution of low income people settlement 3) List of NGOs (6) Natural environment 1) Location of particular area officially protected for natural conservation and environmental protection in and around project area	Y Y Y Y Y Y	DENR DENR NPC Each LGU Each LGU DENR	

Table A 1.1 Roles and Responsibility among the concerned organizations

Please provide present role and responsibility with demarcation between organizations below. (MCWDによって作成された)

	Roles	Authorization	Implementation	Related Activity
Water Resource Development & Maintenance	Policy making	NWRB	NWRB	
	Guideline / Regulation	NWRB	NWRB	
	Project Planning	MCWD	MCWD	NWRB/DENR/LGU/NEDA
	Study / Survey	MCWD	MCWD	
	Designing facilities	MCWD	MCWD	
	Construction	LGU/DPWH/DENR	MCWD	
	Operation & Maintenance	LGU/NWRB/LWUA	MCWD	DENR
	Water quality monitoring	MCWD	MCWD	DOH
Water Supply System (Rural)	Policy making	NWRB	NWRB	
	Guideline / Regulation	NWRB	NWRB	
	Project Planning	MCWD/LGU/DPWH	MCWD/LGU/DPWH	NWRB/DENR/NEDA
	Study / Survey	MCWD/LGU/DPWH	MCWD/LGU/DPWH	
	Designing facilities	MCWD/LGU/DPWH	MCWD/LGU/DPWH	
	Water quality monitoring & control for drinking	MCWD/LGU/DPWH	MCWD/LGU	DOH
	Construction	LGU/DPWH/DENR	MCWD/LGU/DPWH	
	Operation & Maintenance	LGU/DPWH/LWUA	MCWD/LGU	
Water Supply System (Urban)	Policy making	NWRB	NWRB	
	Guideline / Regulation	NWRB	NWRB	
	Project Planning	MCWD	MCWD	NWRB/DENR/LGU/NEDA
	Study / Survey	MCWD	MCWD	
	Designing Facilities	MCWD	MCWD	

	Water quality monitoring & control for drinking	MCWD	MCWD	DOH
	Construction	LGU/DPWH/ DENR	MCWD	
	Operation & Maintenance	LGU/NWRB/ LWUA	MCWD	
Sewerage System (Rural)	Policy Making	DENR	DENR	
	Guideline / Regulation	DENR	DENR	
	Project Planning	MCWD/LGU/ DPWH	MCWD/LGU/ DPWH	DENR/NADA/ LGU
	Study / Survey	MCWD/LGU/ DPWH	MCWD/LGU/ DPWH	
	Designing Facilities	MCWD/LGU/ DPWH	MCWD/LGU/ DPWH	
	Construction	LGU/DPWH/ DENR	MCWD/LGU/ DPWH	
	Operation & Maintenance			
	Promotion Planning			
	Hygiene education			
Sewerage System (Urban)	Policy Making			
	Guideline / Regulation			
	Project Planning		Not Answered by MCWD	
	Study / Survey			
	Designing Facilities			
	Construction			
	Operation & Maintenance			
	Promotion Planning			
	Hygiene education			

Please put the initials of Ministries, Departments and other organizations in applicable columns and describe each full name in the footnote.

Attached sheet A 4.1 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

Sheet No. I-1 Environmental Consideration

I-1-1 Name(s) of laws or guidelines

()

Is Environmental Impact Assessment (EIA) including Initial Environmental Examination (IEE) required for the project according to the laws or guidelines?

Yes No

If Yes, please mark the corresponding items:

Check	Item
	Required only in IEE (<input type="checkbox"/> Implemented <input type="checkbox"/> On-going <input type="checkbox"/> Planning)
	Required both IEE and EIA (<input type="checkbox"/> Implemented <input type="checkbox"/> On-going <input type="checkbox"/> Planning)
	Required only EIA (<input type="checkbox"/> Implemented <input type="checkbox"/> On-going <input type="checkbox"/> Planning)
	Others ()

I-1-2 In the case when EIA steps were taken, was the EIA approved by the relevant laws? If yes, please mark date of approval and the competent authority.

Check	Item
	Approved without a supplementary condition (Date of approval: Competent authority:)
	Approved with a supplementary condition (Date of approval: Competent authority:)
	Under Appraisal (Date of approval: Competent authority:)
	Not yet started an appraisal process
	Others ()

Sheet No. I-2 Social Consideration

I-2-1 Does the project include any of the following items?

Check	Item
	Involuntary resettlement (Scale: household persons)
	Groundwater pumping (Scale: m ³ /year)
	Land reclamation, development and cleaning (Scale: hectares)
	Logging (Scale: hectares)

I-2-2 Did the proponent have meetings with related stakeholders before this request?

Yes No

If Yes, please mark the corresponding stake holders:

Check	Stakeholder
	Administrative body
	Local residents
	NGO
	Others ()

I-2-3 Did the proponent consider alternative before this request?

Yes: Please describe outline of the alternatives

No

I-2-4 Is the project a new one or an on-going one? In the case of on-going one, have you received strong complaints, etc., from local residents?

New On-going (there are complaints) On-going (there are no complaints)

Others

()

Sheet No. I-3 Overall Confirmation

I-3-1 Are any of the following areas located inside or around the project site?

Yes No Not identified

If Yes, please mark corresponding items.

Check	Stakeholder
	National park, Protected area designated by the GoI (e.g. Coast line, wetlands, Reserved area for ethnic or indigenous people, Cultural heritage), and areas being considered for national parks or protected areas
	Virgin forests, tropical forests
	Ecological important habitat areas (Coral reef, mangrove, wetland, tidal flats)
	Habitat of valuable species protected by domestic laws or international treaties
	Likely salts cumulus or soil erosion areas on a massive scale
	Remarkable desertification trend areas
	Archaeological, historical or cultural valuable areas
	Living areas of ethnic indigenous people or nomads who have a traditional lifestyle or special socially valuable areas

I-3-2 Does the project have adverse impacts on the environment and local communities?

Yes No Not identified

Reason: ()

I-3-3 Please mark related environmental and social impacts, and describe their outlines.

Check	E & S Impacts
	Air pollution
	Water pollution
	Soil pollution
	Waste
	Noise and vibration
	Ground subsidence
	Offensive odors
	Geographical features
	Bottom sediment
	Biota and ecosystem
	Water usage
	Accidents
	Global warming

Check	E & S Impacts
	Involuntary resettlement
	Local economy such as employment and livelihood etc.
	Land use and utilization of local resources
	Social institutions such as social infrastructure and local decision-making institutions
	Existing social infrastructure and services
	The poor, indigenous of ethnic people
	Misdistribution of benefit and damage
	Local conflict of interests
	Gender
	Children's rights
	Cultural heritage
	Infectious disease such as HIV/AIDS etc.
	Others ()

Outline of related impacts:

()

付属資料6. 収集資料リスト (■収集資料/□専門家作成資料)

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料	専門家作成資料	JICA作成資料	テキスト	発行機関
A	法令・基準・統計資料						
A-1	Provincial Water Utilities Act of 1973 (As Amended)	図書	*				President of the Philippines
A-2	Philippine National Standards for Drinking Water	図書	*				LWUA
A-3	DENR Administration Order No.34: Revised Water Usage and Classification/ Water Quality Criteria Amending Section Nos. 68 and 69, Chapter III of the 1978 NPCC Rules and Regulations	図書	*				DENG
A-4	DENR Administration Order No.35: Revised Effluent Regulation of 1990, Revising and Amending the Effluent Regulations of 1982.	図書	*				DENG
A-5	Execution Order No.279: Instituting Reforms in the Financing Policies for the Water Supply and Sewerage Sector and Water Service Providers and Providing for the Rationalization of LWUA's Organizational Structure and Operations in Support Thereof	図書	*				President of the Philippines
A-6	2000 Census of Population and Housing (セブ都市圏の抜粋)	図書	*				National Statistic Office
B	開発計画関連資料						
B-1	The Central Visayas Medium-Term Development Plan 1999-2004	図書	*				Regional Development Council, Region VII
B-2	Comprehensive Land Use Plan & Zoning Ordinance, Final Draft, Planning Period: 2004-2014	図書	*				Municipality of Cordova
B-3	Mandaue City Development Strategy Program CY 2003	図書	*				City of Mandaue
B-4	Lapu-Lapu City Master Plan Study	図書	*				City of Lapu-Lapu
B-5	City Development Strategy Program, Lapu-Lapu City 1999-2020	図書	*				City of Lapu-Lapu
B-6	Talisay City, Comprehensive Land Use Plan 2001-2010 (抜粋)	図書	*				City of Talisay

付属資料6. 収集資料リスト (■収集資料/□専門家作成資料)

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料	専門家作成資料	JICA作成資料	テキスト	発行機関
B-7	Consolacion Minicipality, Complehensive Land Use Plan 2001-2010 (抜粋)	図書	*				Minicipality of Consolacion
B-8	Liloan Master Developemtr Plan (抜粋)	図書	*				Minicipality of Liloan
C	報告書・技術資料・図面(水資源開発)						
C-1	Topographical Map (Cebu City, 1:250,000)	図面	*				NAMRIA
C-2	Topographical Map (3721-I, Cebu City, 1:50,000)	図面	*				NAMRIA
C-3	Topographical Map (3721-IV, Toledo City, 1:50,000)	図面					NAMRIA
C-4	Topographical Map (3721-III, Carcar, 1:50,000)	図面	*				NAMRIA
C-5	Land Use and Forest Type Map (Cebu, 1:100,000)	図面	*				NAMRIA
C-6	Nautical Chart (Cebu Harbor, 1:30,000)	図面	*				NAMRIA
D	報告書・技術資料・図面(上下水道)						
D-1	Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP), Cebu, Volume I Main Report, December 2003	図書	*				GTZ and DILG in collaboration with Provincial Government of Cebu
D-2	Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP), Cebu, Volume II Appendices & Annexes, December 2003	図書	*				GTZ and DILG in collaboration with Provincial Government of Cebu
D-3	Annual Report 2001	図書	*				MCWD
D-4	Annual Report 2002	図書	*				MCWD
D-5	Annual Report 2003	図書	*				MCWD

付属資料6. 収集資料リスト (■収集資料/□専門家作成資料)

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料	専門家作成資料	JICA作成資料	テキスト	発行機関
D-6	MCWD Data Book as of 2001	図書	*				MCWD
D-7	MCWD Data Book as of 2002	図書	*				MCWD
D-8	MCWD Data Book as of 2003	図書	*				MCWD
D-9	MCWD Data Book as of June 2004	図書	*				MCWD
D-10	Metropolitan Cebu Water District, Presentation September 16, 2004	図書	*				MCWD
D-11	Artesian Wells Services: Organiation Chart, Budgetary Requirements for CY 2004 and Accomplishment Report for the month of December, 2003	図書	*				Department of Public Services, City of Cebu
D-12	Pre-Feasibility Study, Metoropolitan Cebu, Sewerage and Sanitation Project, November 1995	図書	*				Metropolitan Cebu Development Project Office and MCWD
D-13	Inception Report, Flood Mitigation and Drainage Study for Cebu City, July 2004	図書	*				City of Cebu
D-14	Topographic Drainage Influence Area Report, Flood Mitigation and Drainage Study for Cebu City, October 2004	図書	*				City of Cebu
D-15	Lapu-Lapu City Drainage Master Plan & Design, August 2003	図書	*				City of Lapu-Lapu
D-16	Schematic Diagram of North Reclamation Sewage Treatment Plant	図書	*				City of Cebu
D-17	Regulation No. 1785, Ordinance No. 1559 (上記下水処理場のセブ市と入居者の協定書)	図書	*				City of Cebu
D-18	Mactan Rock Industries, Inc. Company Profile & Diagram of Desalination Plant	図書	*				Mactan Rock Industries, Inc.
D-19	MCWDの月間生産水量運転記録 (2004年9月)	図書	*				MCWD
D-20	Drainage Network, South District, Urban Area, City of Cebu (GISで作成した図面・縮尺1:10,000)	図面	*				Cebu City GIS Center
D-21	Drainage Network, Norht District, Urban Area, City of Cebu (GISで作成した図面・縮尺1:10,000)	図面	*				Cebu City GIS Center

付属資料6. 収集資料リスト (■収集資料/□専門家作成資料)

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料	専門家作成資料	JICA作成資料	テキスト	発行機関
D-22	MCWDの井戸配置図	図面	*				MCWD
D-23	MCWDの上水道施設配置図及び配水管網図	CD(図面)	*				MCWD
D-24	MCWDの質問票の回答(A様式)	図書	*				MCWD
D-25	2004 Training and Development Program	図書	*				MCWD
D-26	MCWD Water Analyais, Frequency of Testing, List of Equipment (MCWDの水質検査関連資料)	図書	*				MCWD
E	環境・社会配慮関連資料						
E-1	Preliminary Review of Environmental Impact and Human Resettlement Issues for the Mananga II Project, September 2001	図書	*				MCWD submitted by Bechtel Internatiojal Inc., USA
E-2	Profile of the Five Protected Areas of Central Cebu	図書	*				DENR
E-3	Officially Classified Waterbodies in Region VII, Annual Average Value for BOD and DO for Rivers in Region VII, and Water Quality Monitoring results for Coastal Waters During the Period from 1990 to 2001	図書	*				DENR
E-4	Philippines, Environment Monitor 2003, Water Quality	図書	*				World Bank
E-5	Flow Chart of Scoping Process他IEE/EIA 関連資料	図書	*				DENR
E-6	Supporting Documents for Environmental Compliance Certificate (ECC) Application, Pursuant to P.D.1586 (The Environmental Impact Statement System)	図書	*				DENR
E-7	Lapu-Lapu City Imformal Settlers	図書	*				Urban Poor Affairs Office, Lapu-Lapu City
E-8	MCWD's Watershed Development Program/ Activities	図書	*				MCWD

付属資料7 . ローカルコンサルタントリスト

(1) 水資源関連

水資源に係るローカルコンサルタントに関してはセブ及びマニラにて調査を実施した。

ア) サン・カルロス大学水資源センター

同センターはセブ州における唯一の水資源関連の大学研究機関である。これまで DENR などの委託を受け、中部セブ地域の水文・気象解析、社会環境影響調査、地下水調査、海洋水質調査などを実施している。Water REMIND プロジェクトのローカルコンサルタントとしても重要な役割を果たしている。

住所：USC-Talamban, 6000 Cebu City

電話：63 32 3467941

代表者：Fr. Herman van Engelen

FAX：63 32 3460583

E-mail：wrc@usc.edu.ph

イ) Genson Surveying and Engineering Consultants

地元セブの測量会社として、ラプラプ市、マンダウエ市、セブ市の委託を受け、排水計画用の地形測量を実施した経験を有する。

住所：H. Cortes St. corner Sacris Rd., Casuntigan, Mandaue City, Cebu

電話：63 32 3456559/60

代表者：Mr. Vito Genson

FAX：63 32 3463501

E-mail：genson88@mozcom.com

ウ) Hydronet Consultants

セブ州を中心として水文・気象、水理、水資源、水質、上下排水、環境保全に係る調査計画を実施している。PCEEM のコンサルタントとして参加している。

住所：5th Floor Krizia Bldg., Gorordo Ave., Cebu City

電話：63 32 2330221

代表者：Dr. Danny Jaque

FAX：63 32 2330221

E-mail：hydronet_2004@yahoo.com

エ) Cebrian Geokonsult

地質調査、ボーリング調査を行なうコンサルタント会社である。ダムなどの地質調査が多い。

住所：Cebu City

電話：63 32 2324771

代表者：Engineer Claro Cebrian

オ) ENR Consultants, Inc.

ミンダナオ、ビサヤ地方で環境関連調査計画に多くの実績を持つ環境コンサルタント会社である。水質調査、土地利用、環境影響調査、社会環境調査、流域保全など広い範囲のサービスを行なう。ステークホルダー分析など住民参加型案件に特化している。DENR の案件実施が豊富である。

住所：FSS Building, 89 Scout Castor St., Quezon City

電話：63 2 3740758

代表者：Mr. Reynar Rollan

FAX：63 2 4137227

E-mail：reynar_rollan@orient.com.ph

カ) OIDCI

南部ルソン、ビサヤ、ミンダナオなどで地域開発に係る調査計画を実施している。世銀、アジア銀、JICA、JBIC など国際機関の技術協力案件に多くの経験を有する。NEDA 関連の案件に多くの経験を持つ。

住所：FSS Building, 89 Scout Castor St., Quezon City

電話：63 2 3740761

代表者：Mr. Dante de los Angeles

FAX：63 2 4132187

E-mail：oidci@orient.com.ph

(2) 上下水道関連

上下水道関連の社会・住民意識調査、環境影響調査、ならびにエンジニアリングサービスについては、現地の事情に詳しいセブ都市圏のコンサルタントと NGO を対象として調査を行った。

コンサルタント

SPACES (社会・住民意識調査、環境影響調査、エンジニアリングサービス)

住所：YY&Co. Building, Highway, Mandaue City

電話：(6332) 346-4186 Fax：(6332) 346-4186

E-mail ID：spaces-systems@skyinet.net

面談者：Mr. Pedro Adonis D. Compendio, Consultant

特徴：マングラウエ市にある大手のコンサルタントで、JICA、JBIC プロジェクトの経験がある。ベクテル社のマナンガ 2 プロジェクトにも参画して環境影響調査も行っている。また、現在実施中のセブ市の排水設計、マングラウエ市の排水設計も行っており、セブ都市圏の上下水道プロジェクトに精通したコンサルタントである。

TEKNO Water Services (社会・住民意識調査、エンジニアリングサービス)

住所：Room 203 H Franco Building, Highway, Mandaue City

電話：(6332) 422-5552 Fax：(6332) 422-6115

E-mail ID : teknowater@yahoo.com

面談者 : Mr. Abraham G. Licayan Jr, Consultant

特徴 : マンダウエ市にある小規模なコンサルタントである。上水道を専門とし、MCWD の漏水調査や無収水削減対策の調査を行っている。また、社会・住民意識調査の経験もある。

NGO

CUSW: Cebu Uniting for Sustainable Water Foundation, Inc. (社会・住民意識調査)

住所 : Door 14 Borromeo Arcade, F. Ramos St., Cebu City

電話 : (6332) 412-5678 Fax : (6332) 255-8172

E-mail ID : cusw@globelines.com.ph

面談者 : Mr. Zosimo Jerome N. Pupos, Jr. Executive Director

特徴 : 水資源の保全と持続可能な水利用の実現を目的として、1995 年にセブ市の市民団体、教育機関、民間研究所、州及び地方自治体関係機関によって設立された NGO 団体である。現在、Water REMIND Project から委託を受けて Barangay レベルの調査を行っており、パイロット・プロジェクトも実施予定である。

SWCF: Soil and Water Conservation Foundation, Inc. (社会・住民意識調査)

住所 : 169-G Ma. Christina Extension, Capitol Site, Cebu City

電話 : (6332) 253-8663 Fax : (6332) 255-7571

E-mail ID : swcf@gsilink.com

面談者 : Mr. Willian G. Granert, Executive Director.

特徴 : 1988 年に設立された NGO 団体である。主な活動内容は、自然保護、貧困緩和、マイクロ・クレジットによる村落住民の生計支援、村落住民への飲料水の供給等であり、村落の実態に詳しい NGO である。都市貧困層の支援も行っている。