

### 2.3.4 Other Significant Dimensions of Project Management

Other significant dimensions of project management included a) Flexibility Principle in Project Implementation; b) Partnership with DENR Executive Level; c) Continued Commitment of the Central Office to Manage and Lead; and d) Communication with a wide range of stakeholders.

#### a) Flexibility Principle in Project Implementation

Complexity and uncertainty had prevailed the project management from the onset of the Project. This resulted from the scale of the project, complexity of the project *per se* having interrelationship among the activities and with the existing policies, and use of a large number of local consultants. Therefore, various issues emerged in the course of the project such as identification of additional project components, complementary arrangement with other donor agencies and integration and consolidation of policies and guidelines. The JICA TAT has coped with such emerging issues through progressive elaboration of the Project. Flexibility principle in managing the Project had been a key management tool of the Project.

#### b) Partnership with DENR Executive Level

“Support from DENR Executive Level” was also a key recommendation made by the Mid-term Evaluation Mission that was undertaken at the latter part of Phase I. Continued commitment of the DENR executive level throughout Phase II was an essential element to ensure, among others, that:

- ✓ The guidelines and Policy Framework developed under the Project are authorized as EO/DAOs/MC or other appropriate policy instruments at an appropriate time for implementation;
- ✓ The ROs in each pilot region have adequate number of staff who can be assigned to work in the Technical Secretariat of WQMA-GB, and if necessary, the EMB Regional Directors will designate staff in other units for Secretariat work.

#### c) Continued Commitment of the Central Office to Manage and Lead

The commitment of the Central Office to manage and lead the Project remained a key to the success in Phase II. Management is primarily concerned with consistently producing key results expected by stakeholders. The specific areas needing the leadership of the CO are, among others, to:

- ✓ Align people by creating an effective and efficient management structure of the Project;

- ✓ Ensure that the sufficient budget is earmarked for traveling of 60 RO officers to Manila for Orientation/Workshop;
- ✓ Create Technical Committees for prioritized sectors for developing Industry-Specific Effluent Standards by designing and officially appointing professionals representing the target industries; and
- ✓ Establish direction in implementing the guidelines; and regularly monitoring and intervening in the activities.

**d) Communication with a wide range of stakeholders**

In order to facilitate the efficient operation of the Project, the JICA TAT explicitly defined a project communication strategy as summarized in Table 2.10. In developing the strategy our key aims have been to:

- ✓ Establish strong and flexible links with DENR/EMB and JICA;
- ✓ Facilitate easy access to project information;
- ✓ Establish strong links within the JICA TAT;
- ✓ Ensure that the wider reference group and the wider public have both easy access to relevant project information and sufficient facilities to enable effective consultation; and
- ✓ Develop efficient links with project sub-consultants and consultants responsible for other relevant studies.

The JICA TAT submitted reports to the Government of the Philippines and JICA Philippine Office periodically throughout the two (2) phases of the Project to keep relevant project authorities fully informed and ensure consistency of work with the overall coordination of project activities. At the end of each phase, it submitted project completion reports.

The list of reports prepared throughout the two phases is presented in Table 2.11.

Table 2.10 Project Communication Strategy

What	Who/Target	Purpose	When/Frequency	Type/Method(s)
Project Kick-off Meeting (First JCC)	DENR Executive level EMB CO JICA Philippines JICA Advisor	To finalize the strategies To alert stakeholders of project scope, risk, methodology and to gain buy in.	Within one month from the commencement of the Project in the Philippines	Meeting Based on the Inception report
Joint Coordination Meeting (JCC)	DENR Executive level EMB CO JICA Philippines JICA Advisor	To keep the relevant project authorities fully informed and ensure consistency of work with the overall project coordination activities.	Every 6 months from the onset of the Project	Meeting Based on the Progress Reports
Inception Report	DENR/ JICA	To keep the relevant project authorities fully informed and ensure consistency of work with the overall project coordination activities.	At the onset of the Project	Reports describing the work progress, accomplishments.
Progress Report	DENR/ JICA		Biannually	
Accomplishment Report	JICA		At the end of each fiscal year	
Project Completion Report	DENR/ JICA		At the end of the Project	
Calendar of Events	Consultants Focal Persons of CO and all ROs including Non-Pilot Regions	To inform major events of the Project To ensure coordination among the consultants and DENR/EMB	At the onset of the Project and when schedule is revised.	Excel formatted table distributed via hardcopy or electronically. May be posted on project website or CO Whiteboard.
Weekly Meeting	CO Focal Persons	To coordinate project activities		Meeting/Workshop
Consultation Meeting on WQMA Action Planning	Relevant authorities for WQMA Action Planning	To coordinate with relevant central level authorities for WQMA Action Planning.	At the latter period of FY 2008	
Donor Coordination Meeting	DENR, NEDA and donors	To coordinate with potential source of fund for implementing water quality management policies.	At the latter period of FY 2008	Meeting/Workshop as part of information dissemination activity
Philippines Water Quality Forum	Relevant government bodies	To disseminate the project experiences over the country.	At the latter period of FY 2010	
Project website	General Public in Japan General Public in the Philippines	To publicize JICA's involvement in the environmental improvement in the Philippines	At an earliest period of the Project	Web-site linked to EMB web site

**Table 2.11 Reports prepared throughout the Two Phases**

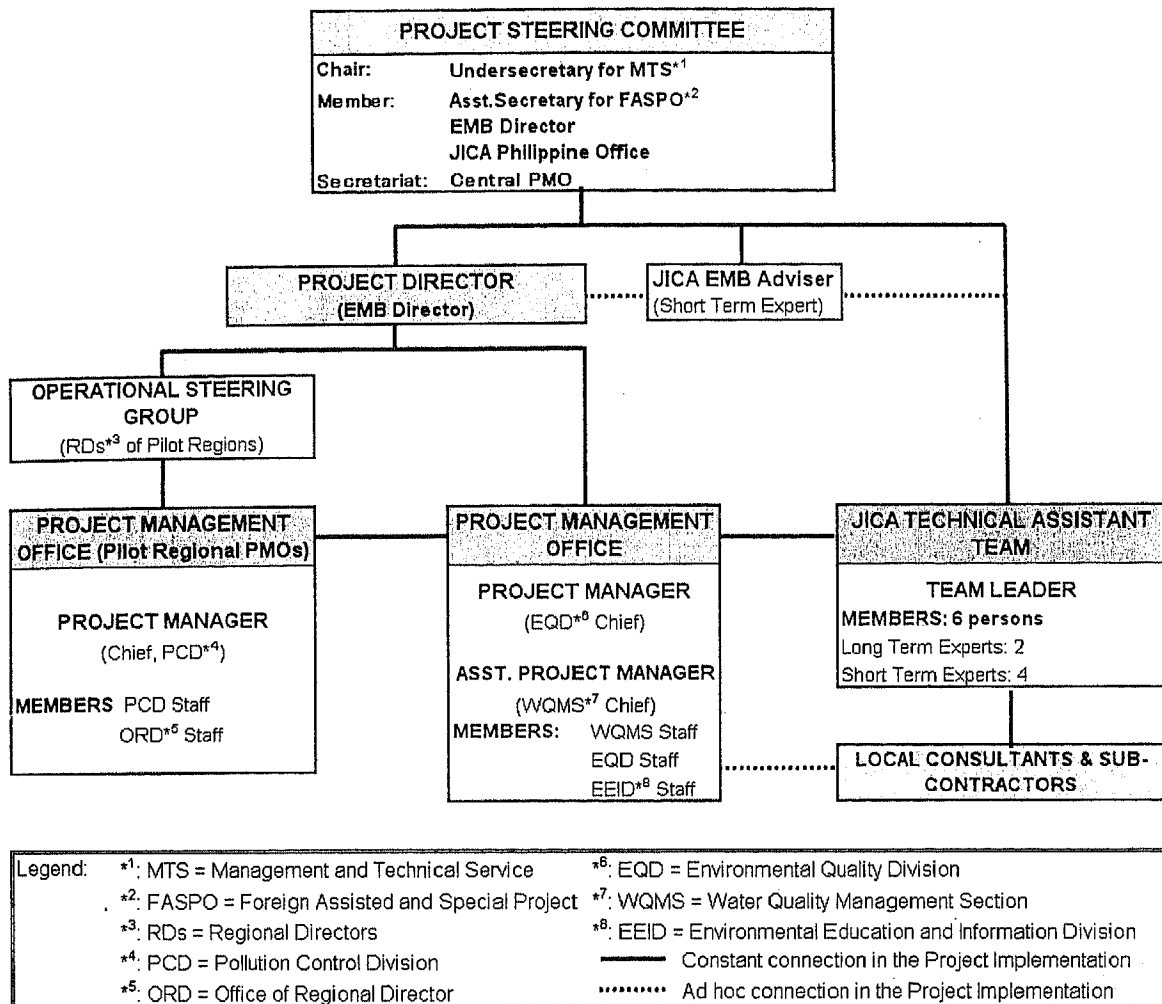
Phase	Fiscal Year	Report	Expected Time Framework
Phase I	FY2005	Inception Report	1 month after project commencement, March 2006
		Progress Report 1	2 months after project commencement, April 2006
	FY2006	Progress Report 2	4 months after project commencement, June 2006
		Progress Report 3	7 months after project commencement, September 2006
		Progress Report 4	10 months after project commencement, December 2006
		Progress Report 5	13 months after project commencement, March 2007
	FY2007	Progress Report 6	16 months after project commencement, June 2007
		Progress Report 7	19 months after project commencement, September 2007
		Progress Report 8	22 months after project commencement, December 2007
		Project Completion Report	At the end of the Phase 1, February 2008
Phase II	FY 2008	Inception Report	1 month after project commencement, June 2008
		Progress Report 1	6 months after project commencement, October 2008
		Progress Report 2	11 months after project commencement, March 2009
	FY 2009	Progress Report 3	18 months after project commencement, October 2009
		Progress Report 4	23 months after project commencement, March 2010
	FY 2010	Progress Report 5	28 months after project commencement, August 2010
		Progress Report 6	32 months after project commencement, January 2011
		Project Completion Report	32 months after project commencement, January 2011

At the end of each fiscal year, the JICA TAT submitted Japanese reports to JICA. They are Accomplishment Report 2008, 2009 and 2010.

#### **2.4 PROJECT IMPLEMENTATION ORGANIZATION**

The section focuses on the general and overall structure of the project implementation. The project implementation organization was set up with the Joint Coordinating Committee being the head composed of DENR-EMB, JICA Philippine Office, and the JICA TAT.

For DENR-EMB, the EMB Central Office with EQD and other concerned divisions/units, as well as Pilot EMB Regional Offices of Regions III, VI and XII with PCD involved in the organization. The Technical Evaluation Committee was brought under the Project Director, which functioned as an advisory body to the Project Director for endorsing guidelines and standards to the DENR Secretary for approval. The organizational structure is shown in Figure 2.3, while the River Basin Control Office (RBCO) was tentatively included in the organization but no function was made relating to its project activities.



**Figure 2.3 Project Implementation Organization**

### 2.4.1 Joint Coordinating Committee and Steering Committee

The Joint Coordinating Committee (JCC) was formed in order to (1) provide policy guidance for project implementation and (2) approve annual work plans. The JCC was assumed to be chaired by the DENR Secretary with permanent members composed of the EMB Director, the JICA Philippine Representative, NEDA Representative (On-call), DENR-FASPO Representative, Leader of Technical Assistance Team (hereinafter JICA TAT Leader), and the JICA Adviser.

The JCC meetings were held at least once every quarter to review the performance and output of the project, while the first JCC meeting was for draft final Inception Report. The JCC should also facilitate linkage with other agencies especially in formulating the policy implementation framework for Integrated Water Quality Management.

**2.4.2 DENR and EMB**

DENR is one of the line agencies of the Government of the Philippines, which has entrusted the implementation of the Project to the Environmental Management Bureau (EMB) as the agency to perform most of DENR’s mandates under the CWA.

**a) Steering Committee**

In line with the above, DENR Special Order No. 851, Series of 2005 was issued on 24 October 2005 for the “Creation of the Project Management Structure on JICA-DENR Capacity Development Project on Water Quality Management”. Further, DENR Special Order No. 790, Series of 2006 was issued on 18 September 2006 for the “Reconstitution of the Project Steering Committee of the JICA-DENR Capacity Development Project on Water Quality Management”. The table below presents the composition of the steering committee specified in the above-mentioned orders.

**Table 2.12 Composition of the Steering Committee**

Position	Special Order No. 851-2005		Special Order No. 790-2006	
Chair	Undersecretary for Management and Technical Services	Armando A. de Castro	Undersecretary for Environment	Ramon J. P. Paje
Member	Asst. Secretary for FASPO	Analiza R. Teh	Asst. Secretary for FASPO	Analiza R. Teh
Member	Director of EMB	Lolibeth R. Medrano	Director of EMB	Ely Anthony R. Ouano
Member	JICA Philippine Office		JICA Philippine Office	

This Steering Committee 1) provided policy directions and oversight of the Project; 2) reviewed the overall progress and annual expenditure of the Project as well as the achievement of the Annual Work Plan; and 3) reviewed and exchanged views on the major issues arising from or in connection with the Project.

As its functions are the same with those of JCC, the DENR has assumed this Steering committee shall work as the JCC.

**b) Project Management Office**

The Project Management Office has been created and is composed of the followings.

*CAPACITY DEVELOPMENT PROJECT ON WATER QUALITY MANAGEMENT*  
*Project Completion Report*

**Table 2.13 Members of the Project Management Office**

	Name	Office Designation	Position
1	Renato T. Cruz	OIC, EQD (EMB CO)	Project Manager
2	Marcelino N. Rivera Jr.	OIC, WQMS (EMB CO)	Assistant Project Manager
3	Leza A. Acorda-Cuevas	Supervising EMS (EMB CO)	EMB Lead Focal Person
4	Míchico Venus A. Navaluna	Supervising EMS (EMB CO)	Focal Person for WQM Funds and Sarangani Bay WQMA Action Planning and MSG
5	Consolacion P. Crisostomo	DMO IV (EMB CO)	Focal Person for Incentives and Rewards IBRS WQMA Action Planning and MSG
6	Sonia R. Barlis	Statistician II (EMB CO)	Focal Person for Database/Info Mgt. and MMO RS WQMA and MSG
7	Vizminda Osorio	Supervising EMS (EMB CO)	Focal Person for Revision of PCO Guidelines for Accreditation
8	Ella S. Deocadiz	Chief RDD	Member
9	Elenida R. Basug	Chief EEID	Member
10	Herbert Narisma	Chief MIS	Member
11	Vilma T. Cabading	Senior EMS (EMB CO)	Focal Person for Preparation of National and Regional Water Quality Status Reports (Pilot Regions) and MMO RS WQMA Action Planning
12	Nicanor E. Mendoza	Engineer IV (EMB CO)	Focal Person for Waste Water Charge System and Discharge Permits
13	Nolan B. Francisco	Senior EMS (EMB CO)	Technical Input
14	Samuel A. Fabro	Forester II (EMB CO)	Focal Person for Water Body Classification
15	Dominic Gonzales	Data Encoder (EMB CO)	Administrative Support
16	Zenaida Manuel	Data Encoder (EMB CO)	Administrative Support
17	Rowena Gersalia	Clerk II (EMB CO)	Administrative Support
18	Renato Vengco	Clerk III (EMB CO)	Administrative Support
19	Damian Rubio	Clerk III (EMB CO)	Administrative Support
20	Exuperio Lipayan	Chief, PCD	Focal Person in EMB Region 3
21	Dorren Torres	OIC, WQMS	Focal Person in EMB Region 3
22	Samson Guillergan	Chief, PCD	Focal Person in EMB Region 6
23	Nimfa Adolfo	OIC, WQMS	Focal Person in EMB Region 6
24	Ronnie Salmon	Chief, PCD	Focal Person in EMB Region 12
25	Alex Tacbobo	Chief, PCD	Focal Person in EMB Region 12
26	Leoncia Rellon	OIC, WQMS	Focal Person in EMB Region 12
	Ma. Victoria V. Abrera	Member	Chief of EPPD
	Elinor D. Malano	Member	WQMS Transferred to DOE at the early part in 2007
	Fernando C. Natnat	Member	WQMS

The functions of the PMO were to: 1) implement national level activities, such as policy and procedures development, IEC and training; 2) provide oversight to pilot EMB regions concerning project implementation; 3) designate EMB staff to participate as members of technical working group; 4) facilitate manpower assistance to the Project from other DENR units, if necessary; 5) advise the Project Director of project management concerns; 6) ensure that technical working groups fulfill assignments on time; 7) coordinate with regional offices and ensure that work and financial plans reflect project priorities; 8) monitor utilization of project assistance (equipment, training, experts) at the CO and RO level; 9) manage information system and WQ data network developed under the project; and 10) conduct project monitoring and evaluation, including performance reporting.

### 2.4.3 JICA and JICA Technical Assistance Team

JICA side is composed of the JICA Philippine Office, JICA Advisers and JICA TAT.

#### a) JICA Philippine Office

JICA Philippine Office, as representing the Government of Japan, performed the overall monitoring of the project implementation and has been a member of the JCC. JICA Philippine Office conducted bidding for consulting services and nominated consulting teams during Phase I. JICA Philippine Office also finalized specifications of equipment; performed bidding and procured the equipment in Phase I. The followings are the officers directly engaged in the Project.

Name	Position	Period of In-Charge
Shozo MATSUURA	Chief Representative	Feb. 2006 – Mar. 2008
Norio MATSUDA	Chief Representative	Apr. 2008 – To date
Harumi KITABAYASHI	Deputy Chief Rep.	Feb. 2006 – Sep. 2006
Kenzo IWAKAMI	Deputy Chief Rep.	Oct. 2006 – Mar. 2008
Masashi NAGAISHI	Deputy Chief Rep.	Apr. 2008 – Oct. 2010
Kiyofumi TAKASHIMA	Representative	Feb. 2006 – Mar. 2008
Makoto IWASE	Representative	Apr. 2008 – Mar. 2009
Naoto KUWAE	Representative	Apr 2009 – To date
Kristine May B. SAN JUAN	Program Officer	Feb. 2006 – Mar. 2008
Pablo LUCERO	Program Officer	Apr. 2008 – Mar. 2010
Kessy REYES	Program Officer	Apr. 2010 – To date

#### b) JICA Adviser

The advisers to JICA advised JICA Philippine Office in directions and monitoring the Project. Mr. Masahiro Ohta, who proposed the Project and prepared the Project Document,



completed his services at the end of March 2006. Mr. Senro Imai was subsequently nominated as the adviser JICA to closely monitor the project implementation during the entire period. Dr. Ramon Abracosa, a Manila-based consultant specializing in the environmental sector, assisted Mr. Masahiro Ohta in preparing the PD, provided needed technical advice and performed coordination arrangement.

Mr. Masahiro Ohta : February 19 to March 31, 2006

Mr. Senro Imai : February 27 to March 15, 2006 and conducted quarterly monitoring by the end of Phase II.

Dr. Ramon Abracosa : Intermittently for the entire period of Phase I.

**c) JICA Technical Assistance Team<sup>13</sup>**

The JICA TAT consists of three long-term experts and six short-term experts who have been assigned to the project and provided technical advice on the capacity development of EMB. The total duration of their assignment was 140 M/M. The long-term expert stayed in the country for more than three months and continuously worked with the counterparts, and short-term experts who were dispatched relatively short and provided advice on the respective technical matters.

**Table 2.14 JICA Technical Assistant Team**

Name		Position
Group A (Long-Term)	Hitoshi KIN	Team Leader/Policy and Planning Specialist
	Yasuhiko MURAMATSU	Water Quality Management Specialist
	Yusuke GOTO	Organizational and Institutional Specialist
Group B (Short-Term)	Takashi ONUMA	Water Quality Monitoring
	Kenichi KURAMOTO	Pollution Source Control
	Yuichiro HAMADA	WQ Information System
	Makoto MITSUKURA	Water Quality Modeling/Project Coordinator
	Miho NAKANO	Wastewater Management
	Yukiko ITAMI	Coordinator

<sup>13</sup> The assignment schedule of the JICA TAT is presented in Annex E.

### CHAPTER 3. PROJECT ACCOMPLISHMENTS

All the priority activities identified in the Project Document were accomplished in the five-year period of the Project. The chapter presents the main features of the deliverables of the project activities.<sup>14</sup>

#### 3.1 INTEGRATED POLICY FRAMEWORK, GUIDELINES AND TRAINING

Output 1 of the Project is to establish an integrated policy framework for water quality management on the CWA, prepare supporting procedural guidelines and provide training for EMB staff.

- ✓ Output 1: Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff

There are basically three types of activities under this output: policy formulation, development of procedural guidelines, and training. The policy activity produces an integrated water quality management framework to guide CWA IRR implementation. Within such framework, procedural guidelines for specific provisions of the CWA IRR were prepared, covering: market-based instruments, water classification, WQMA designation and area planning, identification of non-attainment areas, industry categorization, compliance monitoring and enforcement. The training activity on procedures/systems for water quality management included local training and training/study tours in Japan. There were fourteen (14) activities in total to generate the output. One of them was to integrate policies on water quality management, which was additionally identified during the mid-term evaluation.

##### 3.1.1 Water Quality Management Framework

The table below presents the activity and the deliverables.

**Table 3.1 Accomplishments on Water Quality Management Framework**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.1	Set up multi-agency coordination system to formulate an integrated water quality management framework and implementation plan.	Integrated Water Quality Management Framework and its Implementation Activities

The Integrated Water Quality Management Framework, IWQMF, is a policy guideline integrating all the existing policy documents prepared by all government agencies on water quality involving pollution from all sources as defined in Article 2, Section 4 of RA 9275 (CWA). Specifically, the framework contained the followings: 1) Water quality goals and targets; 2) Period of compliance; 3) Water pollution control strategies and techniques; 4) Water quality information and education program; and 5) Human resources development program. DENR initiated an integrated approach

---

<sup>14</sup> The outputs and status of the project is summarized in Annex F.

toward improved water quality management in collaboration with other water-related authorities by leveraging the innate capacity of DENR in project level coordination experience. This has addressed the limited mechanism for concerted actions for water quality improvement at the departmental level due to lack of the policy framework.

Recognizing that the framework's essential features is adoption of an integrated water resources management (IWRM) perspective, the active involvement of stakeholders, and the development of innovative management schemes such as the combined use of regulatory and market based instruments, the draft Integrated Water Quality Management Framework was revised through the following meetings in the year 2009.

- 1) FGD meeting with DPWH on September 14, 2009
- 2) Follow-up TWG on September 17, 2009
- 3) FGD meeting with NWRB on September 29, 2009
- 4) FGD meeting with LWUA on November 27, 2009
- 5) FGD meeting with RBCO-DENR on December 8, 2009

The Integrated Water Quality Management Framework and its Implementation Activities is currently in its finalization stage.

### 3.1.2 Procedures for Designating WQMAs

The table below presents the activity and the deliverables.

**Table 3.2 Accomplishments on Procedures for Designating WQMAs**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.2	Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA)	<ol style="list-style-type: none"> <li>1. Procedural Manual for Designation of Water Quality Management Area</li> <li>2. Procedural Guidelines for Designation of Non-Attainment Areas</li> </ol>

**Procedural Manual for Designation of Water Quality Management Area:** The manual specified the kinds of information to be provided to support the proposed WQMA, as well as the steps to be followed in conducting relevant technical studies and consulting stakeholders. The manual clarified the roles of the parties involved throughout the process of initiating proposals, data gathering, conducting technical studies, consultations and preparing reports/recommendation to the DENR Secretary who authorizes the designation.

One of the principal approaches embodied in the procedural manual was designation of a waterbody at a lowest appropriate level to maximize the efficiency and efficacy of the intervention. The lowest appropriate level in this context indicates the level at which significant impacts are experienced. If, for example, a specific water quality issue only has a possible impact within a local community, then

the community level is the proper management level. If environmental impacts affect a neighboring community, then the appropriate management level is one level higher than the community level.

In line with the approach, a proposed integration of Sarangani Bay WQMA with Silway River WQMA was declined considering that 1) the stakeholders of Sarangani Bay and Upper Silway/Klinan River Area have different visions for their waterbodies, 2) Composition of GBs are different and will have a larger membership if integrated, 3) the waterbodies have different nature and different water pollution issues, and therefore 4) they require different management strategies.

**Procedural Guidelines for Designation of Non-Attainment Areas:** Non-Attainment Areas, NAAs, are specific water bodies or portions thereof where water quality guidelines have been exceeded. The guidelines clearly specified the technical basis of the water quality findings, and the consultation process to be followed in identifying non-attainment areas. To allow flexibility to users of the guidelines, they were designed to identify the switching point of an NAA from an AA with two alternatives 1) approximation of the point by analyzing existing water quality data and relative geographical location of benchmarks; 2) estimation of pollution load in addition to the actual water quality monitoring to minimize administration cost.

### 3.1.3 Policy on Market-Based Instruments

The table below presents the activity and the deliverables.

**Table 3.3 Accomplishments on Policy on Market-Based Instruments**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.3	Formulate a comprehensive policy on use of market-based instruments for water quality management, including procedural guidelines for implementation	<ol style="list-style-type: none"> <li>1. Policy Regulatory MBI Framework on WQM</li> <li>2. Guidelines on Incentives</li> <li>3. Guidelines on Rewards</li> <li>4. Procedural Guidelines on Effluent Quota</li> </ol>

**Policy Regulatory MBI Framework on WQM:** The framework sets forth strategic phasing of instruments and prioritization of MBIs in the country recognizing that full-fledged institutionalization of MBIs will need longer time period. It identified the preconditions that should be met including: 1) credible ambient water quality monitoring data; 2) credible geo-referenced source strength data; 3) water quality and pollution source database; and 4) transparent market mechanism for effluent trading. Recognizing that there are several preconditions, the EMB CO judged it premature to prepare Procedural Guidelines on Effluent Trading that were previously identified as a deliverable of the Project.

**Procedural Guidelines on Incentives:** The guidelines are designed to provide an incentive for the purpose of encouraging local governing units (LGUs), water districts (WDs), enterprises, or private entities, and or individuals, to develop or undertake an effective water quality management, or actively participates in any program geared towards the promotion. The preferred areas of investment in the

guidelines are: 1) industrial wastewater treatment; 2) water pollution control technology, 3) cleaner production and waste minimization, and 4) sewage collection and treatment facilities. The fiscal incentives are provided by means of: (a) tax and duty exemption on imported capital equipment, (b) tax credit on domestic capital equipment, and (c) tax and duty exemption of donations, legacies, and gifts.

**Procedural Guidelines on Rewards:** The Procedural Guidelines on Rewards are structured over the existing industry rating system allowing an incentive provision in the form of a performance bond. For industrial firms, depending on the rating or performance received, up to 25% reduction in the succeeding year's wastewater discharge fee payment is to be awarded, plus prolonging of the discharge permit life up to 5 years. For outstanding projects/activities undertaken by individuals, NGOs and LGUs, a monetary reward of not less than P50,000 will be given, plus formal recognition.

**Procedural Guidelines on Effluent Quota Allocation:** The procedural guidelines are designed to minimize pollution loading within Non-attainment areas. An NAA of a waterbody is designated where the amount of pollution load exceeds the total load that a waterbody can receive without violating water quality guidelines. To attain the water quality objective of each waterbody, reduction of total pollution loading from various sources is imperative within each WQMA. In this context, effluent quota allocation could be an effective tool to minimize total pollution load within each WQMA. Once allowable loadings have been estimated to achieve the water quality objective, limits may be incorporated into discharge permits. Planning process may need to integrate the permitting cycle, the specific effluent standards revisions within the WQMAs, and other required water quality management activities. In applying effluent quota allocation, water quality models need to be calibrated by using existing water quality monitoring data. Therefore, applicability of effluent quota allocation largely depends on availability of reliable water quality data .

### 3.1.4 Procedures for Water Classification

The table below presents the activity and the deliverables.

**Table 3.4 Accomplishments on Procedures for Water Classification**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.4	Prepare procedural guidelines for classifying inland and marine water bodies as well as groundwater, including guidelines for groundwater vulnerability mapping	Procedural Manuals on Classification/Reclassification of Surface Fresh Waters, Coastal and Marine Waters

**Procedural Manuals on Classification/Reclassification of Surface Fresh Waters, Coastal and Marine Waters:** Due to the overly broad definition of boundaries between adjacent water use classifications, the previous guidelines for classification of waterbodies was limitedly applied to effective investment planning for water quality improvement. To address the issue, the manuals for

classification developed under the Project explicitly defined the procedure for setting a boundary between adjacent water use classifications to serve as basis for planning purpose. It has further set forth the procedure to select the most appropriate sampling point to represent each section of a waterbody.

### 3.1.5 WQMA Planning Guidelines

The table below presents the activity and the deliverables.

**Table 3.5 Accomplishments on WQMA Planning Guidelines**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.5	Prepare procedural guidelines for facilitating WQMA action planning (by the Area Governing Board) and follow-on compliance planning (by LGUs)	<ol style="list-style-type: none"> <li>1. Procedural Guidelines for Water Quality Management Area Action Planning and LGU Compliance Scheme</li> <li>2. Reference Manual on Water Quality Management Area Action Planning and LGU Compliance Scheme</li> </ol>

***Procedural Guidelines for Water Quality Management Area Action Planning and LGU Compliance Scheme:*** Although EMB is conventionally capable of classifying water bodies and enforcing effluent standards, pollution control planning has been an institutional weakness. The Procedural Guidelines for WQMA Action Planning and LGU Compliance Scheme has removed such bottleneck to undertake the tasks assigned to it by the enactment of the CWA IRR by specifying the steps that may be followed in the planning stage.

***Reference Manual on Water Quality Management Area Action Planning and LGU Compliance Scheme:*** The reference manual described techniques on how to systematically prepare area-based plans—which are actually master plans for managing an area’s water quality—with emphasis on participation mechanisms, to facilitate WQMA planning (i.e., specifying how planning activities are to be initiated, the role of EMB RO technical secretariats, steps for reviewing the plans, etc). Under the CWA, it is the job of the governing boards to prepare their respective area action plans. LGUs within the jurisdiction of the WQMA are then required to develop compliance schemes to carry out the action plan.

### 3.1.6 Wastewater Charge System Procedures

The table below presents the activity and the deliverables.

**Table 3.6 Accomplishments on Wastewater Charge System Procedures**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.6	Prepare procedural guidelines, including system and procedures, for pollution load and charge computation in support of the discharge permitting system	Implementing Rules and Regulations of the Wastewater Charge System and Discharge Permits under Republic Act 9275

*Supplemental Guidelines on the Nationwide Implementation of the Wastewater Charge System:* The guidelines on wastewater charge system was initiated by the World Bank before the commencement of the Project. It was undertaken under the project entitled “Development of Criteria and Model for the Application of the Total Pollution Load Management System (TPLMS) and Effluent Trading in the Philippines” under TA-P080099-TAS-TF030634 through the Korean trust fund under the umbrella of Knowledge Partnership Projects. The Project therefore closely coordinated with WB to identify issues for follow-up. Thus, public consultation meetings at three places over the country were conducted under the Project in 2007.

The guidelines were further subjected to cautious legal and technical review to identify several issues at the latter stage of the Project including basic unit rate<sup>15</sup>, mobile source<sup>16</sup>, and commissioning discharge permit<sup>17</sup>. The issues additionally identified were reflected in the revised version, the IRR on Wastewater Charge System and Discharge Permitting, that was completed in March 2010. Due to the changes made in the revision, the EMB CO judged a need for additional consultations. In this context, the EMB CO convened public consultations in Cebu and Davao to finalize the guidelines with its own budget.

---

<sup>15</sup> The waste water discharge fee is expressed as a product of net waste load and unit rate of charge that is initially fixed at P5.00 per kilogram for priority pollutant parameter. However, the Supplemental Rules and Regulations has proposed to set the basic unit rate at P30/kg, which is further integrated with a compliance adjustment factor allowing the dischargers to gradually adapt to the proposed wastewater charge fee in 5 years. The concerns on this provision include 1) additional complexities to the regulators, 2) affordability of dischargers. This will involve potential risk of overrunning financial capacity of major dischargers. Other discourse, on the provision on the other hand, is a consideration on price escalation.

<sup>16</sup> The wastewater charge system is designed solely for discharges from pipes. However, wastewater in some large plantations is discharged using mobile containers. In view of this, all the cases given in the definition are narrowly designed as “stationary” point. Therefore, the definition needed revision to include the case of “mobile” sources.

<sup>17</sup> Wastewater discharge in excess of the nation’s effluent standards is regarded as a prohibited act and therefore subject to imposition of penalties. Regardless of either a commissioning or regular discharge permit, discharge of wastewater in excess of effluent standards shall be liable to a fine. However, the Supplemental Rules and Regulations allow exemption from fines for wastewater discharges during a commissioning period.

### 3.1.7 Guidelines for Water Quality Fund Management

The table below presents the activity and the deliverables.

**Table 3.7 Accomplishments on Guidelines for Water Quality Fund Management**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.7	Prepare procedural guidelines for managing the National Water Quality Management Fund	1. Implementing Guidelines on the Operationalization of the National Water Quality Management Fund under Republic Act 9275
		2. Implementing Guidelines on the Operationalization of the Area Water Quality Management Fund under Republic Act 9275

Taking advantage of the program under the U.S. Asia Environmental Partnership, the draft guidelines for the area and national Water Quality Management Funds were initially developed by the consultants under the program. However the finalization of the guidelines needed unexpectedly a long process mainly due to ambiguity of the CWA provisions on the Area Water Quality Management Fund.

2006	Assisted the EMB in convening consultation meetings for the IRR for the Establishment and Operationalization of Funds	IRR was drafted by the local consultants mobilized for the project under USAID.
2007	Performed legal integration of the IRR with other relevant guidelines on Water Quality Management	
2008	Assisted operationalization of Water Quality Management Fund	Joint Administrative Order for both National and Area WQM Funds was drafted.
2009	Assisted the EMB in undertaking consultation meetings for Fund operationalization with DBM	It was strongly suggested that the proposed IRR for AWQMF do not comply with the One Fund Policy.
2010	Assisted the EMB in finalizing the National and Area Water Quality Management Fund Guidelines.	

The area water quality management fund was initially expected to become locally regionally revolving fund to enable quick access to the fund by WQMA GBs for maintenance of the water quality as partly supported by the provisions in the IRR: 1) the AWQMF for each WQMA shall be administered by each WQMA Governing board in Rule 10.1, and 2) Fund for the AWQMF shall be directly deposited in a Special Account under the name of the WQMA with any government depository bank in the area in Rule 10.3. However DBM has a policy that is referred to as "One Fund Concept"<sup>18</sup> that does not allow creation of such fund independent from the national treasury. Through a series of meetings

<sup>18</sup> The "one-fund" concept is a fiscal management policy requiring that as much as possible, all revenues and other receipts of the government must enter the General Fund and their utilization and disbursement subject to the budgeting process. The one-fund concept is significant in that it serves as an avenue through which fiscal authorities may properly allocate scarce government resources in accordance with the priorities in the over-all program of economic development. It likewise provides a mechanism to control drawdown on pooled resources. Regularly, the level of funds disbursed are monitored against the level of revenues generated. This way, the DBM is able to stick to the targeted level of disbursement for a given period and avoid incurring a deficit. It also alerts us of possible revenue shortfalls.



during the project period, the guidelines were eventually designed as a Special Account of the national treasury, not as regionally revolving funds as initially intended.

The nation-wide guidelines for operating area and national WQM fund are expected to pave the way for raising funds for implementation of WQMA action plans and minimize the risk of misallocation of limited financial resources.

### 3.1.8 Procedures for Pollution Source Categorization

The table below presents the activity and the deliverables.

**Table 3.8 Accomplishments on Procedures for Pollution Source Categorization**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.8	Prepare procedural guidelines for categorization of industries, including point and non-point sources of water pollution	Significant Effluent Quality Parameters per Sector integrated into the General Effluent Standards

**Categorization of Industries:** The list of significant effluent quality parameters per Sector identifies significant parameters that may be discharged from 121 categories of industries. It was developed for streamlining compliance and enforcement of the General Effluent Standards by identifying the significant effluent quality parameters per sector to be considered for monitoring. The list of industry categories developed initially comprised 121 categories derived by using the Philippine Standard Industrial Classification. The list also serves as basis for identifying the priority industry for developing the Industry Specific Effluent Standards.

### 3.1.9 Guidelines for Cooperation in Water Quality Monitoring

The table below presents the activity and the deliverables.

**Table 3.9 Accomplishments on Guidelines for Cooperation in Water Quality Monitoring**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.9	Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring	<ol style="list-style-type: none"> <li>1. Water Quality Monitoring Manual Volume I - Manual on Ambient Water Quality Monitoring</li> <li>2. Water Quality Monitoring Manual Volume II - Manual on Effluent Quality Monitoring</li> <li>3. Guidelines for Area Cooperation Arrangement for Water Quality Monitoring</li> </ol>

**Water Quality Monitoring Manual Volume I - Manual on Ambient Water Quality Monitoring:** This includes the basic elements required for an effective sampling QA/QC program and what is required to implement a QA/QC program from preparation for sample collection through receipt of a final report in order to reduce or eliminate errors in the process. It also specified a generic format of a water quality monitoring plan, sampling procedures including its frequency and location appropriate for the sampling events required under the CWA IRR such as those for waterbody classification, reclassification and designation of NAA.

**Water Quality Monitoring Manual Volume II - Manual on Effluent Quality Monitoring:** The manual also sets forth preparation of an effluent quality monitoring plan. The plan would contain 1) Selection of Sampling Stations, 2) Strong Waste Discharges, 3) Temperature Measurements for Facilities, 4) Discharging Hot Effluents, 5) Basic Considerations in Sampling, 6) Frequency of Sampling, 7) Effluent Quality Sampling and Test Methods, 8) Effluent Quality Parameters for Analysis, 9) Coordination with the Laboratory, 10) Quality Assurance and Quality Control Procedures. It also specified QA/QC procedures and flow measurement method.

**Guidelines for Area Cooperation Arrangement for Water Quality Monitoring:** Area Cooperation Arrangement for Water Quality Monitoring is to mobilize external parties in water quality monitoring by a multi-sectoral group, MSG, created under a WQMA to cope with the limited monitoring personnel and equipment of EMB. The general steps in creating a MSG specified in the guidelines is through 1) type determination, 2) preparation of TOR with water quality monitoring plan, 3) formation of MSG, and 4) project implementation. The steps will guide the users, particularly those of WQMA, in mobilizing and supervising the monitoring. Recognizing the limited maturity and capability of the Governing Boards of WQMAs, the EMB CO decided to allow monitoring through MSG only for ambient water quality monitoring. Therefore the responsibility of point source surveillance would reside in EMB ROs.

### 3.1.10 Regulatory Flexibility Guidelines

The table below presents the activity and the deliverables.

**Table 3.10 Accomplishments on Regulatory Flexibility Guidelines**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.10	Prepare guidelines and initiate coordination arrangements for appropriate discharge standards for specific types of industry sources.	The concept of regulatory flexibility are embedded and/or reflected in various guidelines developed under the Project.

**General Effluent Standards:** Recognizing that concentration-based effluent standards are more stringent for facilities with smaller discharge volume, the general effluent standards are designed to allow flexibility to industries by calibrating the effluent standard values with the volume of effluent discharges. Further, GES is designed to allow relax effluent standards for industries with wastewater discharges not greater than 30 m<sup>3</sup>/day considering their relative impact on the quality of water bodies.

**Implementing Rules and Regulations of the Wastewater Charge System and Discharge Permits under Republic Act 9275:** The unit rate of charge and other fees pertaining to discharge permits in the IRR is designed to allow flexibility with varied schedule of fees according to the scale of industries and relative impacts of pollutants.

### 3.1.11 Compliance Inspection Procedures

The table below presents the activity and the deliverables.

**Table 3.11 Accomplishments on Compliance Inspection Procedures**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.11	Prioritize pollution sources and prepare an operations manual on conducting compliance inspections for various types of polluting facilities	<ol style="list-style-type: none"> <li>1. Procedural Guidelines for Establishing Effluent Standards including General and Industry-Specific Standards</li> <li>2. Procedural Guidelines for prioritization of polluters for compliance inspection</li> <li>3. Operation Manuals on Compliance Inspection</li> <li>4. Revised Guidelines in the Accreditation of Pollution Control Officers</li> </ol>

***Procedural Guidelines for Establishing Effluent Standards including General and Industry-Specific Standards:*** Overall structure and instruments for controlling point sources were reviewed by analyzing relevant provisions in the CWA IRR in FY 2006. The review indicated that DAO 35 would be initially superseded with General Effluent Standards. GES is a set of effluent standards applicable uniformly over the industries regardless of the industry category, characteristic of wastewater, scale of industry operation and others. Industry Specific Effluent Standards, ISES, are the standards attainable by adopting a particular technology, for a particular industry sector or sub-sector, including, but not limited to: pollution prevention technique, process change and end-of-pipe treatment system. Once the ISES is developed for and enforced to a particular sector, the ISES would prevail over the GES specifically for regulating that sector. ISES is a Technology-based Standard that may, in fact, result to meeting the water quality objectives; they are not specifically designed to ensure that the discharge from each facility meets the water quality guidelines for that particular water body. On the basis of the interpretation of the laws with full consideration on technical aspects of the water quality guidelines and effluent standards, the EMB CO pursued development of the General Effluent Standards and various Industry-Specific Effluent Standards in the subsequent years.

***Procedural Guidelines for prioritization of polluters for compliance inspection:*** A review of current issues in compliance Inspection was conducted, which identified: 1) overlapping mandates of inspection among different purposes such as ECC, water quality, air quality and hazardous material, and lack of prioritization policy among such sectors. Recognizing that the issues have resulted to inefficient resource use both in the public and private sector, prioritization guidelines were drafted in FY 2006. The guidelines were originally designed to identify all polluters that are non-compliant to relevant environmental laws and in turn listed them as priority industries for compliance inspection; and, to identify compliant industries and give them due recognition and rewards and incentives. The relevant environmental laws focused in the guidelines included 1) RA No. 9275, Clean Water Act, 2) PD No. 1586, Environmental Impact Statement System, 3) RA No. 6969, Toxic Substances,

Hazardous and Nuclear Waste Act, 4) RA No. 8749, Clean Air Act, and 5) RA No. 9003, Ecological Solid Waste Management Act.

**Operation Manual of Compliance Inspection:** The manual was drafted to assist EMB inspectors in the conduct of facility inspection to check compliance with environmental regulations particularly the Clean Water Act adopting some inputs from DENR/USAEP Procedural Manual for Multi-media Inspections (2004), INECE Environmental Compliance Monitoring Manual, NPDES Compliance Inspection Manual, EPA July 2004, and Inspector’s Field Manual/Conducting Environmental Compliance Inspection-EPA. It was originally designed to address facility inspection involving water and wastewater by standardizing wastewater inspection procedures, and enforcement officers. In FY 2009, the EMB CO further pursued the finalization of the document to integrate all media including those conditions included in the Environmental Compliance Certificate (ECC) such as air, solid waste, chemicals and hazardous materials in addition to water in FY 2009.

**Revised Guidelines in the Accreditation of Pollution Control Officers:** Before the onset of the Project, the EMB CO has revised DAO 26, 1992 on the Appointment/Designation/Accreditation of Pollution Control Officer, which was subsequently subject to review and revision under the Project in FY 2006. The issues addressed in the review included 1) qualification of Pecos separately for small and large enterprises, 2) training requirement as part of Continuing Professional Development, 3) accreditation of such training modules, 4) the legal accountability of a PCO is high but a PCO position in the company is not on the management level. The EMB CO further proceeded to finalization of the guidelines in FY 2009 to address, among others, 1) duties and responsibilities of PCOs; 2) employment status; 3) periodic reporting; 4) accreditation of pollution control officer; 5) categories of PCO; and 6) approval of training modules.

### 3.1.12 Review of Water Quality Criteria and Effluent Standards

The table below presents the activity and the deliverables.

**Table 3.12 Accomplishments on Review of Water Quality Criteria and Effluent Standards**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.12	Review water quality guidelines to provide basis for water re-classification and revision of effluent standards	<ol style="list-style-type: none"> <li>1. Water Quality Guidelines</li> <li>2. General Effluent Standards</li> <li>3. Industry Specific Effluent Standards for Alcohol Distillery</li> <li>4. Industry Specific Effluent Standards for Manufacturer of Pulp (Abaca)</li> <li>5. Industry Specific Effluent Standards for Manufacturer of paper and paper products</li> <li>6. Industry Specific Effluent Standards for Sugar Milling and Refining</li> <li>7. Industry Specific Effluent Standards for Hotel and Restaurant sub-sector</li> <li>8. Philippines Effluent Management Strategy</li> </ol>

**Water Quality Guidelines:** Unlike initial expectations, development of the ambient water quality guidelines needed two years to complete. The output in FY2006 triggered a debate over its applicability and practicability to the Philippines' water quality management since it has given limited consideration to the presence of pollution sources in the country, current capability of EMB and other aspects for implementation<sup>19</sup>. This proposal on the WQG was therefore revised and finalized in FY2007 with inputs derived from ten (10) Technical Committee meetings. It must be emphasized that the first year activity for the development of WQG provided valuable lessons that has served as basis in the subsequent year. The most notable lesson has led to the creation of a Technical Committee that functioned as a forum to build national consensus on the water quality guidelines and general effluent standards. In the course of the second year's activity for finalizing WQG, agricultural water use was upgraded from Class D to Class C considering agricultural water's limited compatibility with industrial water use under Class D. The changes made in this revised classification of water use were reflected in the procedural guidelines for classification of waterbodies as part of the integration activity.

One of the parameters in the proposed water quality guidelines is AVFO that stands for Animal and Vegetable Fats and Oil. Since an analytical method of AVFO was not officially approved by DENR, method validation of the analytical method for Animal-Vegetable Fats and Oil and Petroleum Oil in Water was subsequently pursued in FY 2009. It was confirmed that the standard methods 5520B and 5520F can be used together to determine the concentrations of vegetable and animal fat and petroleum hydrocarbons under certain conditions. But it was also confirmed that the average of residual hydrocarbons in at least 3 trials should be determined for the aliquot to prevent large uncertainties. Based on the findings of the study on its validation<sup>20</sup>, the proposed water quality guidelines were eventually brought to policy TWG meetings of DENR in FY 2010.

**General Effluent Standards:** The Water Quality Guidelines were prepared in isolation from effluent standards in FY 2006 despite the fact that the classification scheme has been used in tandem with the enforcement of the effluent standards in the Philippines. The activity in FY 2007 was designed to develop General Effluent Standards in parallel with the finalization of the Revised Water Quality Guidelines. In such context, the GES values were derived from the WQG using a factor, depending on the parameter's fate and transport and mobility in water as well as its toxicity, bioaccumulation, biomagnification, biodegradation, photo-oxidation, and volatilization properties.

**Industry Specific Effluent Standards:** Studies were conducted for the development of ISES for 1) Alcohol Distillery, 2) Manufacturer of Pulp (Abaca), 3) Manufacturer of paper and paper products, 4)

---

<sup>19</sup> Other details of the issues in developing the WQG are described in the background of Scope of Work for "Finalization of Revised Water Quality Guidelines and Development of Effluent Standards".

<sup>20</sup> The final TWG eventually adopted Oil and Grease, instead of AVFO, mainly because the detection limit of proposed analytical method does not attain the minimum value of proposed water quality guideline.

Sugar Milling and Refining and 5) Hotel and Restaurant sub-sector. The development process generally followed the Procedural Guidelines for Establishing Effluent Standards including General and Industry-Specific Standards that was prepared under Activity 1.11.

However, the process was fine-tuned when new information became available to accommodate the emerging needs differing among the sectors. The findings during the course of the development include, but are not limited to: 1) Accountability and transparency are essential elements in ISES development process, and 2) Confidentiality of data is an interrelated primary issue.

***Accountability and transparency are essential elements in ISES development process:*** QSR Management Link Association initiated development of ISES for the sector as early as March 2009 as part of its commitment to the Environmental Consent Agreement (ECONA) under Track 2 in the Philippine Environment Partnership Program (PEPP). It commissioned UPChEAF<sup>21</sup> to undertake the study for developing the ISES for member companies. However, it was recognized that the output of the study was unsatisfactory due to inadequate verification mechanisms by EMB. Verification mechanisms referred to herein are not limited to those on chemical analysis of wastewater samples, but on the entire development process. In the JICA study, extensive involvement and strong commitment of EMB staff is a built-in process. For instance, EMB staff engages in site visits and sampling, preparing industry profile and determining effluent values. Such arrangement enables EMB to verify each step on its fairness and justice. However, the initiatives of QSR Management Link Association was limited in such aspects and consequently limited in its accountability and transparency to EMB and DENR's policy makers. In future activities, particularly those after the completion of CDPWQM, it is strongly recommended that accountability and transparency should be established by 1) ensuring that EMB staff participates in every aspects of decision-making; 2) verifying appropriateness of wastewater sampling by EMB staff; and 3) securing appropriate fund by EMB to realize said two items.

***Confidentiality of data is an interrelated primary issue:*** Confidentiality of data on wastewater quality is also another but interrelated primary issue in undertaking the study. The issue was repeatedly discussed in the first year and at the early part of the second year of Phase II particularly in the first TC. A concern of the dischargers was that the sample analysis of wastewater could be used for regulation and litigation purposes. To this end, the EMB-CO released a Memorandum to all EMB Regional Directors requesting for assistance in the development of ISES, in which it was stated that data gathered from the study would not be used for regulation and litigation purposes.

***Philippines Effluent Management Strategy:*** The EMB CO further recognized that there are various and valuable lessons learned/gained through actual development of the effluent standards so that it has

---

<sup>21</sup> UP Chemical Engineering Alumni Foundation, Inc.

decided to reflect such findings and lessons learned into the Procedural Guidelines for Revising General Effluent Standards and Developing Industry-Specific Standards.

### 3.1.13 Training on Guidelines and Procedures

The table below presents the activity and the deliverables.

**Table 3.13 Accomplishments on Training on Guidelines and Procedures**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.13	Design and implement a training program for EMB CO and RO staff in all regions for each set of procedural guidelines; prepare training materials and conduct the training.	Orientation and workshop conducted for the EMB CO and all the EMB RO at the end of each year.

At the end of each year during the Project implementation, orientation and workshops were conducted for the EMB CO and all the EMB RO on their application of the guidelines usually in February of each year except in FY 2010 as the Project is schedule to be complete in January 2011. They were also used as a venue for soliciting feedback on the project activities. The participants are not limited to the pilot regions' staff but included those from non-pilot regions so that project outputs were disseminated over the country.

The overseas training for the EMB CO staff was also completed in July 2007. Three members of the EMB CO visited prefectural governments of Shiga, Mie, Kanagawa, and the Ministry of Environment to equip them with expertise on water quality management practices in Japan. The focus of the training was on the initiatives pursued by regional bodies such as Biwa Lake Management in Shiga Prefecture. The trainees sent to Japan convened a seminar on August 9<sup>th</sup> 2007 to share views and lessons leaned in the training in Japan.

Taking advantage of a workshop convened from September 5 2010 to September 18 2010 for enhancement of the governmental capacity on water environment in Asian countries, an officer of EMB RO 3 was additionally sent to Japan to enhance understanding in water environmental governance; to enhance the capacity in planning and implementation of water environmental management; and to share the information provided by Water Environmental Partnership in Asia, WEPA.

### 3.1.14 Integration of Policy Documents

The table below presents the activity and the deliverables.

**Table 3.14 Accomplishments on Integration of Policy Documents**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 1.14	Integrate Policies on Water Quality Management	Ten guidelines were integrated and harmonized from legal viewpoints.

Policy integration is an activity initiated by EMB. It was incorporated into the latest version of the PDM as it had been overlooked during the project design stage. The following are the major issues identified in the legal review.

**1. Supplemental Guidelines on the Nationwide Implementation of the Wastewater Charge system:** The output is more in the nature of a supplemental rule and regulation than a guideline considering that there are provisions that are intended for direct enforcement such as the revocation and cancellation of the permit (as penalty) in Section 23 of the output. As such, the term "guidelines" appears to be inapplicable.

**2. DENR-DBM Joint DAO for Implementing Guidelines of the Operationalization of the National Water Quality Management Fund:** The guidelines include the fines imposed by the LLDA as a source of NWQMF, while CWA only refers to the fines imposed by the PAB. Those fines imposed by the LLDA shall not be included in relation to Sec. 28 under RA No. 4850, as amended.

**3. Implementation Rules and Regulations for the Establishment and Operation of the Area Water Quality Management Fund:** (1) The authority of the EMB RO to open a special account without designation of the WQMA and creation of the Governing Board may be illegal. (2) CWA does not appear to cover the use of funds collected by EMB RO from discharge fees for purposes of delineation of WQMA.

**4. Procedural Guidelines for Designation of Water Quality Management Area<sup>22</sup>:** The publication of the proposed WQMA designation is recommended for promoting public information and encouraging the participation of an informed and active public.

**7. The Revised Guidelines in the Accreditation of Pollution Control Officers:** The guidelines was found to necessitate harmonization with other rules at the higher hierarchy including RA 9275, RA 6969, RA 9003, RA 8749, RA 1586 and Resolution 1-C to expand the coverage to air, solid waste and hazardous waste as it was solely designed to address the water pollution issues.

**8. Procedural Guidelines<sup>23</sup> on Classification/Reclassification of Fresh & Marine Waters:** The publication of the proposed manual for water classification is recommended for promoting public information and encouraging the participation of an informed and active public. Mailing becomes unnecessary with publication.

---

<sup>22</sup> Procedural Guidelines is referred to as Procedural Manual at the time of signing.

<sup>23</sup> At the time of Integration of Policies, the document was referred as guidelines. It was revised as a manual in the latter part of the Project.



**10. Draft Procedural Guidelines for Water Quality Management Area Action Planning and Local Government Units Compliance Scheme:** (1) The Governing Board appears to be mandated only to review the WQMA Action Plan every 5 years or as the need arises. The GB does not prepare the draft Action Plan. (2) The Technical Secretariat for each WQMA shall be part of the Department but based on the EMB RO.

### 3.2 CAPACITY STRENGTHENING FOR EMB CENTRAL OFFICE

The output 2 of the Project is to strengthen the capacity of EMB Central Office to lead and support the Regional Offices.

✓ Output 2: Capacity of EMB Central Office to lead and support the Regional Offices is strengthened.

There are ten (10) activities under the output for strengthening coordination between CO and ROs for CWA IRR implementation; water quality modeling; public information; development of database systems and data network; preparation of water quality status report; management of the national WQM fund; support for training programs of the EMB CO laboratory; management system training for CO staff, and initiatives for mobilizing additional resources from other donors to support non-pilot regions.

#### 3.2.1 Coordination with Regional Offices

The table below presents the activity and the deliverables.

**Table 3.15 Accomplishments on Coordination with Regional Offices**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.1	Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1.	Updates on the Project were shared to EMB ROs through EMB's management conference.

The main purpose of the activity on Coordination with Regional Offices (Activity 2.1) is to generate early feedback on the practicality of the guidelines and to keep the ROs updated on the outcome and lessons learned from testing the guidelines in the pilot regions. During Phase I and II of the project, the EMB CO kept liaison with the regional offices in implementing the guidelines developed under the project taking advantage of periodic management conferences. In such occasions, the JICA TAT assisted the EMB CO in preparing, for instance, an abstract on the Philippines Clean Water Act 2004 and various presentation materials for the management conferences.

### 3.2.2 Water Quality Modeling

The table below presents the activity and the deliverables.

**Table 3.16 Accomplishments on Water Quality Modeling**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.2	Select or develop appropriate water quality modeling techniques, including calibration, testing and demonstration in selected regions	Appropriate water quality modeling technique developed and tested.

*Appropriate Water Quality Modeling:* US-EPA's WASP (Water Quality Analysis Simulation Program) was adopted as the generalized modeling framework to simulate contaminant fate in surface waters in the Project. It was chosen considering its accessibility, no-cost, "relatively" easy-to-use and applicability in one, two, or three dimensions<sup>24</sup>. The water quality models were set up and calibrated successfully for the three designated WQMA's using available data in the Pilot Regions. Opportunities to familiarize with WASP were provided to the staff of EMB CO and ROs during the Project through formal orientation-workshops and an informal manner from the local consultants to the staff of pilot regions on a man-to-man basis. In addition, a simplified data entry format was also designed to read the model grid data on MS Excel and it was instructed to the staff of ROs in the Pilot Regions to import the data into the model.

### 3.2.3 Public Information

The table below presents the activity and the deliverables.

**Table 3.17 Accomplishments on Public Information**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.3	Design, develop, trial implement a national information campaign for raising public awareness of water quality management issues.	<ol style="list-style-type: none"> <li>1. WQMA Water Quality Status Reports for MMO RS WQMA</li> <li>2. WQMA Water Quality Status Reports for IB RS WQMA</li> <li>3. WQMA Water Quality Status Reports for Sarangani Bay WQMA</li> <li>4. Materials for National Awareness Campaign</li> </ol>

WQMAWQ Status Reports: One of the prominent accomplishments of the Project is the formal designation of WQMA's. However, designation per se is not the final goal. Instead, the proposed action plans must be brought into actions. Information campaign to a wider stakeholder within the WQMA was judged imperative with a focus on WQMA and its action plans. In addition, EMB is also mandated to assist governing boards in preparing and publishing a Water Quality Status Report

---

<sup>24</sup> Alternatives considered include use of approximate equation for modeling advection, dispersion, point and diffuse mass loading by using MS Excel because it has apparently simple and easier to use characteristics. However, the alternative was rejected because it also requires in-depth knowledge on modeling technique and can be used only when appropriate extent of water quality monitoring data is available.

for the WQMAs and submitting a copy to the Department for consolidation to the NWQSR (Rule 5.4.1). Considering that the development process of the action plans have literally mobilized people, the activity on preparing status reports on the three (3) WQMAs was given priority in FY 2010. WQMA Status reports for the three designated WQMAs were prepared in line with the framework plan for WQMA Public Information.

National Awareness Campaign: In the last four years of the CDPWQM, EMB has come up with a wide range of new instruments and approaches in managing water quality over the country. For instance, Industry-Specific Effluent Standards, designation of Non-Attainment Area, WQMA and preparation of 10 Year WQMA Action Plans are all new instruments that EMB will be able to implement. In the course of preparing guidelines for the instruments, a broad participation of stakeholders has been realized. Nonetheless, EMB recognizes that there are still a large number of unreached people. The activity therefore addressed a national information campaign for raising public awareness in water quality management with a focus on the new development relative to the implementation of the CWA.

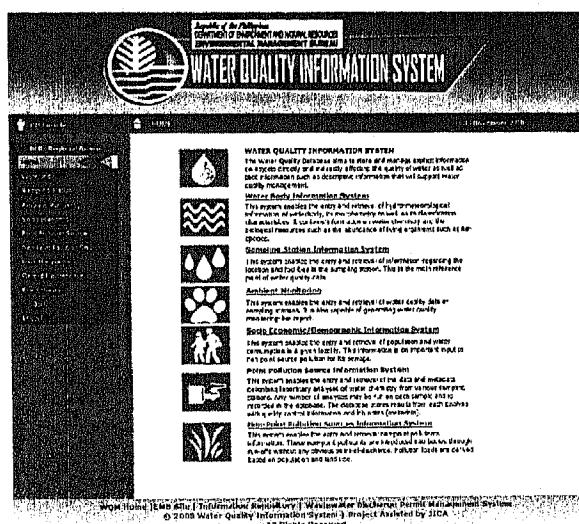
### 3.2.4 Database Development

The table below presents the activity and the deliverables.

**Table 3.18 Accomplishments on Database Development**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.4	Design and develop a water quality and pollution source database management system for use by ROs, with capability for mapping pollution sources using GIS	Initial water quality and pollution source database management system

**Initial Database Structure:** Recognizing limited availability and accessibility to relevant data for water quality model development, data availability was first assessed as it is a primary step to construct a database. Based on the assessment of data, an initial database structure was designed to include modules for ambient water quality monitoring, discharge permitting system along with compliance inspection, PCO accreditation, water quality modeling and GIS.



### 3.2.5 Data and Communication Network

The table below presents the activity and the deliverables.

**Table 3.19 Accomplishments on Data and Communication Network**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.5	Design and develop an Internet-based WQM information and communication system to link the EMB CO with the ROs	Internet-based WQM information and communication system to link the EMB CO with the ROs A water quality and pollution source database with reporting system for use by ROs linking between CO and ROs

**Internet-based WQM Information and Communication System:** The WQM Information system developed under Activity 2.4 was linked with the ROs through a communication system by using the internet installed with a new server<sup>25</sup> at the MIS Office of the EMB CO.

**Water Quality and Pollution Source Database:** The database for waterbody classifications, water quality monitoring data, and pollution source data such as discharge permit and SMR was developed and installed to the newly procured server in the MIS Office. The database could also be used for day-to-day tasks of EMB ROs and advisory activities by the EMB CO through the internet-based information/communication system

### 3.2.6 National Water Quality Status Report

The table below presents the activity and the deliverables.

**Table 3.20 Accomplishments on National Water Quality Status Report**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.6	Integrate regional reports and publish the first national status report on water quality	1. Guidelines for the Preparing of the Regional and National Water Quality Status Reports for Public Information and Advocacy 2. National Water Quality Status Report 2001-2005

**Guidelines for Preparing the Regional and National Water Quality Status Reports for Public Information and Advocacy:** The guidelines sets forth the procedure in preparing the national and regional Water Quality Status Reports and detailed the contents in line with Section 19.1 of the Implementing Rules and Regulations of the Philippine Clean Water Act of 2004. It has specified to identify (a) the location of water bodies, their water quality, taking into account seasonal, meteorological, hydrological and other variations, existing and potential uses and sources of pollution per specific pollutant and pollution load assessment; (b) water quality management areas pursuant to Section 9 of the CWA; and (c) water classification.

---

<sup>25</sup> A server and PC work station together with a colored printer were procured by JICA in response to the request of EMB to establish the database system exclusive for water quality management.

**National Water Quality Status Report:** The DENR through the EMB is required by the CWA to publish a national status report on water quality. The CWA mandates the DENR to publish the first status report within two years of the CWA's enactment (May 2004). The national status report was prepared and published in 2007. The news on the publication was released on Manila Bulletin on May 29, 2007. The content of the report was designed in line with the Guidelines for Preparing the Regional and National Water Quality Status Reports by integrating the regional water quality status reports that were prepared under Activity 4.10. The national and regional water quality status reports 1) broadened the communication channel with citizens at the national level to be more accountable in formulating policies; 2) provided information to policy makers for WQ improvement; and 3) raised the nation's awareness of on water quality issues.

### 3.2.7 Water Quality Management Fund

The table below presents the activity and the deliverables.

**Table 3.21 Accomplishments on Water Quality Management Fund**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.7	Implement procedures for managing the national water quality management fund (based on procedural guidelines developed under Activity 1.7).	Operations Manual on National Water Quality Management Fund

**Operations Manual on National Water Quality Management Fund:** The manual was prepared to provide the detailed procedures relating to the various aspects of financial management including budget preparation, monitoring and control, funds flow, and accounting and financial reporting. Specifically, it consists of the following: 1) Definition of the financial management function in handling the NWQMF and the related organizational structure; 2) Overview of the planning process, in general, to serve as an introduction to financial planning and/or budgeting; 3) Budgeting System that covers the budget process, including the timetable and the four phases of preparation, approval, execution, and accountability; 4) Set of procedures for the flow and release of funds from the NWQMF and other sources to eligible projects and activities under Republic Act (RA) 9275 or the Philippine Clean Water Act of 2004 and its implementing rules and regulations, 5) Accounting and Financial Reporting System to be adopted for the NWQMF in recording, classifying, summarizing, and reporting the financial transactions of the NWQMF and ensure compliance with the mandates and requirements of the New Government Accounting System (NGAS) prescribed by the Commission on Audit (COA). It includes, among others, the basic policies and procedures, the chart of accounts coding system, the accounting systems, the books of accounts and accounting forms and records, and the financial report.

### 3.2.8 Equipment for Water Sampling and Training on Laboratory Operations

The table below presents the activity and the deliverables.

**Table 3.22 Accomplishments on Equipment and Training**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.8	Procure equipment for sampling and field monitoring for WQMS staff, and streamline operations of the EMB central lab as a reference laboratory and training center for RO field and laboratory personnel.	A set of equipment for WQMS staff and the Central Laboratory. <sup>26</sup>

The staff of the EMB CO Water Quality Management Section needs to be equipped with water sampling, monitoring and testing kits that they can use to conduct independent verification of water quality reports from the regions, as well as to gather data for research (e.g., calibration of regional water quality models). Under the Project, the following instrument has been provided to the central laboratory and the EMB CO.

Water Sampling Equipment, Sediment Sampler, Current Meter, Water Quality Checker, GPS Apparatus, Digital Camera, Water Quality Sampling Car, LCD Projector, Laptop Computer, Mini Screen, IC Recorder, Low-temperature Refrigerator for Standards, Reagents Storage, Low temperature refrigerator for sample storage, Water bath, and Hot plate with thermostat.

### 3.2.9 Training on Information Systems and Fund Management

The table below presents the activity and the deliverables.

**Table 3.23 Accomplishments on Training on Information and Fund Management**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.9	Design and implement a training program for EMB CO staff on use of the information and communication system developed, including fund management	Training through participatory development of the systems along with the Orientation and Workshop opportunity for the staff of EMB CO

The staff of EMB were trained on modeling, information and communication, and fund management systems on the basis of the water quality management system developed under the Project. To ensure that capacity is developed efficiently and effectively, the training was not limited to the orientation and workshop convened at the end of each year, but they also participated in the development process by convening various meetings wherein their views and expectations were reflected and embodied into the design of the system, guidelines and operation manuals.

---

<sup>26</sup> A list of equipment provided under the project is presented in Annex G.

### 3.2.10 Generation of Additional Support from Other Funding Institutions

The table below presents the activity and the deliverables.

**Table 3.24 Accomplishments on Generation of Additional Support**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 2.10	Conduct activities to generate resources for non-pilot ROs, e.g., planning workshops with other donor agencies (e.g., World Bank, ADB).	Draft Project proposal along with planning workshops. One of the meetings included the Seminar on Implementation of the Philippines CWA of 2004 and Capacity Development Project on WQM (March 17, 2009)

The JICA TAT discussed the General Direction, options and project packaging of the activities that are expected to be undertaken after the completion of the Project. The following is the project summary.

- ✓ The project is designed to strengthen capacity of EMB Regional Offices (ROs) to formulate and implement water quality management plans by 1) improving capability of EMB ROs on WQ Data Management; 2) strengthening capability of EMB ROs to establish and support WQMAs and related institutions; and 3) implementing and demonstrating 10-year WQMA Action Plans prepared for three regions under the Capacity Development Project on Water Quality Management with particular focus on Point Source Management. The third component would have four (4) subcomponents: 1) formulation of sustainable pollution prevention strategy for priority industries in the three WQMAs; 2) pilot-test and demonstration of Cleaner Production Technology/BMP and other applicable technology for industrial wastewater management; 3) development of sound knowledge management system on industrial sources; and 4) partnership fostering among the regional bodies together with national level agencies. The project would develop national capacity for water quality management under the CWA IRR. The project would also support achievement of the goal of the Capacity Development Project on Water Quality Management funded by JICA.

### 3.3 SUPPORT TO WATER QUALITY MANAGEMENT AREAS

Output 3 of the Project is to establish and support WQMAs and related institutions is strengthened in 3 pilot regions.

- ✓ Output 3: Capability of EMB Regional Offices to establish and support WQMAs and related institutions is strengthened in 3 pilot regions.

The main activities are patterned after the steps specified for establishing area-based management system under the CWA. The steps cover the designation of WQMAs, setting up area management bodies, formulating area-based action plans and LGU-based compliance plans, managing area water quality funds, and initiating collaborative water quality monitoring arrangements. A prominent

accomplishments under the Output 3, among others, is the formal designation of the WQMA in the three pilot regions.

### 3.3.1 Delineation of WQMAs

The table below presents the activity and the deliverables.

**Table 3.25 Accomplishments on Delineation of WQMAs**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 3.1	Implement guidelines for WQMA delineation	<ol style="list-style-type: none"> <li>1. Marilao-Meycauayan-Obando River System (MMO) WQMA in Region III,</li> <li>2. Iloilo Batiano River System WQMA in Region VI</li> <li>3. Sarangani Bay WQMA in Region XII</li> </ol>

In the FY2007, EMB embarked on actual designation of WQMAs by using the guidelines developed under Activity 1.2: Procedural Manual for Designation of Water Quality Management Area in the three pilot regions. Without such field experiences, hands-on skills for designating WQMAs would not have been developed at regional offices as well as the central office. The WQMAs in the three pilot regions are 1) Marilao-Meycauayan-Obando River system (MMO) WQMA in Region III, 2) Iloilo-Batiano River System WQMA in Region VI and 3) Sarangani Bay WQMA in Region XII. At the end of the period, the orientation and workshop was designed specifically to the officers of the EMB CO for evaluation of proposals on WQMA designation.

**Marilao-Meycauayan-Obando River System WQMA:** It is, among the pilot regions, the most densely populated metropolitan area with limited sanitary services. Discharge from industries, which could possibly result to heavy metal contamination, pose a public health concern to fish farming operated downstream. Caloocan and Valenzuela cities, respectively, contribute 41% and 29% of the estimated total generation of organic pollutants.

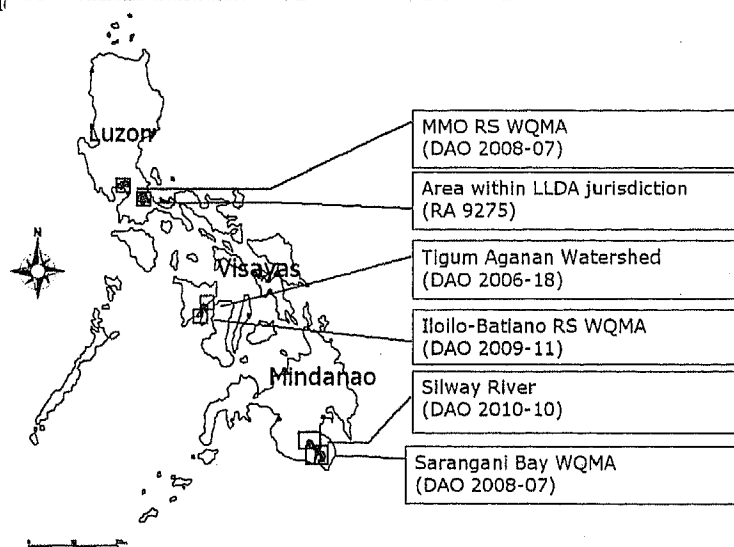
**Iloilo – Batiano River System WQMA:** The estuary discharging into Iloilo Strait has been prevalently used for fish cultivation. The tributaries to the Iloilo River are receiving organic pollutants from households as well as industries in excess of their carrying capacity resulting to lowered dissolved oxygen and consequent fish kills at the confluence with Iloilo River.

**Sarangani Bay WQMA:** The inner Sarangani Bay is the major tuna exporting port receiving organic pollutants from households residing along, among others, Silway/Klinan River. Conflicting classifications of the bay remains an issue.

As of Year 2010, there are a total of six (6) WQMAs over the country. They include 1) the area within the jurisdiction of the Laguna Lake Development Authority, LLDA, 2) Tigum-Aganan Watershed, 3) Silway River WQMA in addition to the WQMAs designated under the Project. The area within the jurisdiction of the LLDA was designated as one management area by the virtue of RA 9275 under the administration of LLDA in accordance with R.A. No. 4850, as amended.



Tigum-Aganan Watershed was designated with an assistance of a project funded by USAID before preparation of the pertinent guidelines. Silway River WQMA was designated under a project of the Department of Health funded by the World Bank generally in line with the procedural guidelines. It is a tributary discharging to the Sarangani Bay so that there was a discourse on the integration of the two WQMAs. However the proposal for integration of the two WQMAs was rejected considering that 1) the stakeholders of Sarangani Bay and Upper Silway/Klinan River Area are different; and 2) the compositions of their Governing Boards are different and the membership of the GB would become larger beyond the current capacity of the GB when integrated.



**Figure 3.1 Designated WQMA**

### 3.3.2 Establishment of Area Management Bodies

The table below presents the activity and the deliverables.

**Table 3.26 Accomplishments on Establishment of Area Management Bodies**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 3.2	Set up the Governing Board, Technical Secretariat and multi-sectoral working groups for the designated WQMAs	<ol style="list-style-type: none"> <li>1. Creation of the Governing Boards of MMO RS WQMA,</li> <li>2. Creation of the Governing Boards of IBRS WQMA and</li> <li>3. Creation of the Governing Boards of Sarangani Bay WQMA</li> </ol>

Upon the official designation of the WQMAs, the Governing Boards of the WQMAs were formalized in Year 2008. The Governing Boards of the designated WQMAs varies in its maturity having intrinsically different water quality visions and experiences. However, the JICA TAT has witnessed a departure of the Governing Boards from heavy reliance on JICA and the local consultants in FY 2010. Transition of the Governing Boards to self-reliance was accelerated by transferring most of the tasks to the staff of the regional offices in managing and administering the governing boards such as taking notes for preparing minutes, logistic arrangement for governing board meetings with a lesser

extent of interference by local consultants and the JICA TAT in the deliberation by the Governing Board members.

### 3.3.3 Water Quality Management Area Planning

The table below presents the activity and the deliverables.

**Table 3.27 Accomplishments on Water Quality Management Area Planning**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 3.3	Facilitate the formulation of WQMA GB action plans and LGU compliance plans based on guidelines developed under Activity 1.5.	<ol style="list-style-type: none"> <li>1. Initial Ten Year Action Plan for Marilao-Meycauayan-Obando River System Water Quality Management Area</li> <li>2. Initial Ten Year Action Plan for Iloilo-Batiano River System Water Quality Management Area</li> <li>3. Initial Ten Year Action Plan for Sarangani Bay Water Quality Management Area</li> </ol>

The EMB ROs in the pilot regions prepared 10-year WQMA Action Plans for 1) MMO River System WQMA, 2) Iloilo - Batiano River System WQMA, and 3) Sarangani Bay WQMA in line with the pertinent guidelines and reference manual developed under Activity 1.5. The pollution issues identified during the action planning were lack of septage and/or sewerage system which was common among the regions. For instance, in MMO RS WQMA, domestic pollution load accounts for 73% of the estimated BOD load. This has resulted from non-existence of municipal wastewater treatment facilities. The rest of the pollution is generated by the industries and the agricultural sectors. Majority of the dischargers operate their business without a discharge permit and without wastewater treatment facilities. Due to the large geographical size and complexity of the issues, the analysis found that MMO RS requires a longer timeline for achieving the Class C water quality objective in terms of BOD. Therefore, it was recognized that a step-by-step process is a prerequisite for improving its water quality. This is particularly of significant importance since the initial year of the action plan implementation will require a temporal interval for detailed engineering design, land acquisition procurement of civil works contract and construction. The timeline for such activities is estimated at four (4) years from 2010. Although there are strong demands for rapid and large investments for sewerage network even among the professionals, the study under the Project found that the average values of Willingness to Pay allows only for the septage management technical option.

The MMO RS Action Plan, for instance, lays down the following assumptions in designing the action plan: 1) Septic tank regularly maintained<sup>27</sup>, and 2) Project implemented as scheduled<sup>28</sup>.

---

<sup>27</sup> To function properly, septic tanks must be emptied every 3-5 years before they become so full of sludge that they can no longer provide primary treatment of incoming sewage (separation of solids from liquids). Local

### 3.3.4 WQMA Fund Management and Monitoring Activities

The table below presents the activity and the deliverables.

**Table 3.28 Accomplishments on WQMA Fund Management and Monitoring Activities**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 3.4	Assist WQMA GBs in establishing and managing the area water quality management fund and the activities of multi-sectoral monitoring groups.	Operations Manual on Area Water Quality Management Fund

*Operations Manual on Area Water Quality Management Fund:* The operations manual was developed for the use of the Governing Boards of the WQMAs to enable them to perform the financial management of the Area Water Quality Management Fund (AWQMF), through their respective Fund Committees in accordance with DENR-EMB approved financial procedures. It provides the detailed procedures relating to the various aspects of financial management including budget preparation, monitoring and control; funds flow; and accounting and financial reporting. Specifically, it consists of the following: 1) Definition of the financial management function of the Fund Committee of each WQMA and the related functional structure; 2) Overview of the planning process, in general, to serve as an introduction to financial planning and/or budgeting; 3) Budgeting System that covers the budget process, and the four phases of preparation, approval, execution, and accountability; 4) Set of procedures for the flow and release of funds from the AWQMF and other sources to AWQMF projects and activities; 5) Accounting and Financial Reporting System to be adopted by the WQMA GB in recording, classifying, summarizing, and reporting the financial transactions of the respective AWQMF and ensure compliance with the mandates and requirements of the New Government Accounting System (NGAS) prescribed by the Commission on Audit (COA). It includes, among others, the basic policies and procedures; the accounting systems; the books of accounts and accounting forms and records; and the financial report.

### 3.3.5 Area Cooperation Arrangements

The table below presents the activity and the deliverables.

governments or water districts need to develop septage management programs to ensure the regular collection and treatment of septage. This assumption is of primary importance in designing the plan as it is the most challenging task to operate such septage management programs. Technical assistance on this aspect is therefore an important element in implementing the action plans.

<sup>28</sup> The Action Plan is designed in a way that the municipal wastewater management system is developed in a stepwise manner over 10 years. Reduction of BOD loading in MMO is accordingly computed on the basis of the implementation schedule. Planning and construction is estimated to take three (3) years from 2010. Desludging will, therefore, only start by 2014 (after construction). Time management of the project implementation is also an important factor to ensure the project benefit.

**Table 3.29 Accomplishments on Area Cooperation Arrangements**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 3.5	Assist in establishing area-based cooperation arrangements in water quality monitoring based on procedures developed under Activity 1.9.	<ol style="list-style-type: none"> <li>1. Multi-sectoral Monitoring Groups created for MMO RS WQMA</li> <li>2. Multi-sectoral Monitoring Groups created for IB RS WQMA</li> <li>3. Multi-sectoral Monitoring Groups created for Sarangani Bay WQMA</li> </ol>

Area Cooperation Arrangement is a situation wherein two or more parties agree to collect water quality data needed to support water quality management objectives set under the WQMA Action Plans. It is expected to optimize the use of limited public monitoring resource and combining them with other resources to arrive at a decision on water quality issues. The assistance to WQMA GBs for the creation of such arrangement was rendered in FY 2010 generally in line with the Guidelines for Cooperation in Water Quality Monitoring developed under Activity 1.9 that has set forth the steps followed: Determine the type, Prepare TOR with Water Quality Monitoring Plan, Form Multi-Sectoral Group, Implement Area Cooperation Arrangement on pilot base, and Prepare a report. In identifying appropriate sampling locations and frequencies, defining appropriate QA/QC protocol and thus preparing the Water Quality Monitoring Plans, the Manual on Surface Water Quality Monitoring was used as the basis.

### **3.4 CAPACITY STRENGTHENING FOR EMB REGIONAL OFFICES**

Output 4 of the Project is to strengthen the overall capability of EMB Regional Offices in water quality management in 3 pilot regions.

- ✓ Output 4: Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions.

The eleven (11) activities for generating the output are designed to support ROs in the pilot regions to implement the procedures and support systems developed under Outputs 1 and 2. Using these guidelines and systems, regional strengthening activities supported by the JICA TAT included the identification of non-attainment areas, classification of water bodies and their monitoring, implementation of the discharge permitting and wastewater charge system, accounting of revenues from permitting and wastewater charges, conduct of pollution source inventories, use of such inventories for area planning and prioritizing regulatory operations, data surveys and database development including use of water quality models for analysis.

#### **3.4.1 Delineation of Attainment and Non-attainment Areas**

The table below presents the activity and the deliverables.

**Table 3.30 Accomplishments on Delineation of Attainment and Non-attainment Areas**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.1	Identify attainment and non-attainment areas based on the procedures developed under Activity 1.2.	<ol style="list-style-type: none"> <li>1. Delineated Non-Attainment Areas within MMO RS WQMA,</li> <li>2. Delineated Non-Attainment Areas within IBRS WQMA and</li> <li>3. Delineated Non-Attainment Areas within Sarangani Bay WQMA.</li> </ol>

***Delineated Attainment and Non-Attainment Areas:*** NAA is defined as a stretch of a water body, or portions thereof, where specific pollutants either from natural or man-made sources have already exceeded the ambient water quality guidelines set by DENR. Moreover, NAAs should always have a qualifying parameter (e.g., NAA-Copper, NAA-BOD/Coliform, NAA-Nitrate/Phosphate, etc.) considering that a single body of water may have acceptable levels of one criteria water pollutant but unacceptable levels of one or more other criteria water pollutants. The original plan was to designate the WQMA together with the NAA so that action planning can specifically identify measures to manage pollution problems in the NAA. However, it was decided that the designation of NAA be conducted in Phase II due to inadequate water quality data for NAA designation. The draft procedural guidelines for Designation of Non-Attainment Areas prepared under Activity 1.2 required water quality monitoring data with a minimum of 10 monthly sampling for one year. EMB ROs carried out the required water quality monitoring so that NAA designation can be done during Phase II of the Project. During Phase II of the Project, NAAs were identified as follows:

- ✓ For MMO RS WQMA: NAA-BOD for the whole stretch of Marilao-Meycauayan-Obando Rivers including the tributaries such as the Polo and Veinte Reales Rivers;
- ✓ For IBRS WQMA: NAA-BOD for the portion of the waterbody from the SOOC Bridge monitoring station to Parola station and along Batiano River from Batiano Bridge up to Boulevard Bridge; and
- ✓ For Sarangani WQMA: NAA-Total Coliform for the coastline from Station 5 (Fishport Complex) up to Station 13 in Bula, GSC.

### 3.4.2 Classification of Inland and Coastal/Marine Water Bodies

The table below presents the activity and the deliverables.

**Table 3.31 Accomplishments on Classification of Water Bodies**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.2	Classify or re-classify water bodies as needed based on guidelines developed in Activities 1.4 and 1.12.	<ol style="list-style-type: none"> <li>1. Draft Classification for Albay Gulf</li> <li>2. Draft Classification for Toledo-Balamban Coastal Water</li> <li>3. Draft Classification for Macajalar Bay</li> </ol>

The focus of the classification was given to coastal and marine water bodies and/or lakes. This is because EMB CO recognized that the classification of coastal and marine waterbodies and lakes has been inappropriately practiced in the regional offices.

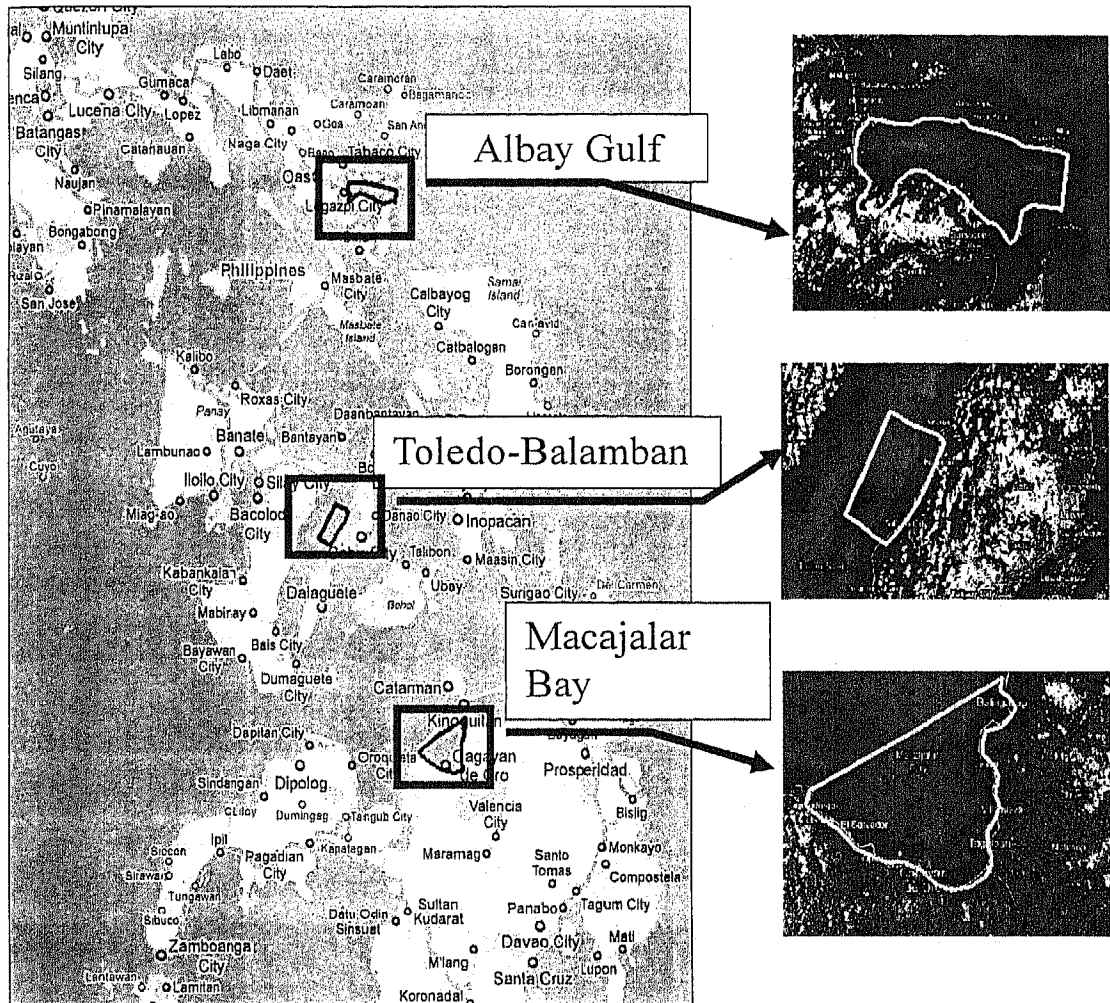


Figure 3.2 Waterbodies Classified

For instance, in Sarangani Bay, a classification was not assigned to a zone of the waterbody having a certain space according to water use. The regional office has assigned, instead, a classification to each of the sampling points over the bay that have been used for multi-purposes such as for protection of natural resources, at the same time, for fishery production, navigation and recreation. Under the CWA, zonal delineation of water use is imperative in line with the provisions of the CWA IRR. In light of the above findings in the past years, application of the procedural manuals to marine, coastal and lake waters is a significant challenge to the EMB ROs since it is seen as premature for EMB ROs to use the following procedural manuals for classification of marine, coastal and lake waters which require flexible application of a standard approach in combination with various techniques such as water quality modeling and managing conflicting interest of stakeholders.

The discussion meetings under the Project have developed the revised procedural guidelines having the following main features for marine water bodies.

- ✓ The determination of the intended use is based on the actual and projected sea use of the water body, the data pertaining to land use, and development plans of coastal LGUs.
- ✓ Classification can be done readily on the sections of the water body where the water quality is shown to be consistent with the intended use. However, at the sections where the result of water quality analysis is in conflict with the intended use, the classification will be done based on the analysis of map overlays, existing water quality, physical conditions of the water body, stakeholders input, and visual surveys.
- ✓ The delineation of the boundaries will be based on the water quality mapping. The boundaries will be delineated at the point where there is a change in water quality resulting to a different classification. Where the geographic location of the boundary may pose administrative difficulty in the implementation, the LGU political boundaries can be used as boundaries for classification.
- ✓ Provisions in laws and ordinances covering the water body will serve as inputs in the classification and boundary delineation.

### 3.4.3 Discharge Permitting and Wastewater Charge System

The table below presents the activity and the deliverables.

**Table 3.32 Accomplishments on Discharge Permitting and Wastewater Charge System**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.3	Implement the discharge permitting and wastewater charge system based on procedures developed under Activity 1.6.	The complete staff work for implementation of the discharge permitting and wastewater charge system supported by case studies and solutions for CO staff

**Case Studies and Solutions:** Based on the assessment of each region's readiness to implement the system, seven case studies were designed and developed to assist the implementation of the wastewater charge system. They include the hypothetical cases of a light power plant, paint manufacturing, a third party quality assurance provider, a bio-ethanol plant, a luxurious hotel, a nickel back mining, and an industrial park.

**Complete Staff Work:** The Complete Staff Work summarizes the issues that arose in the course of developing the policy documents and solutions that were adopted. The documents would facilitate approval of the Implementing Rules and Regulations of the Wastewater Charge System and Discharge Permits under Republic Act 9275.

### 3.4.4 Collection and Accounting System

The table below presents the activity and the deliverables.

**Table 3.33 Accomplishments on Collection and Accounting System**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.4	Set up collection and accounting systems for permitting fees and wastewater charges.	<ol style="list-style-type: none"> <li>1. Technical paper on procurement procedure for WQMA governing board operationalization of the water quality management funds</li> <li>2. General loan provision procedure for WQMA governing board</li> </ol>

**Technical paper on procurement procedure for WQMA GB operationalization of the WQMF:** The paper presented the options on establishing the procurement process for the WQMA GB: 1) to establish a formal organizational set-up for the WQMA operation, and 2) to adopt the DENR-EMB procurement process, which is governed by the DENR Customized Procurement Manual under DENR AO 2007-08 dated April 17, 2007.

**General loan provision procedure for WQMA GB:** One of the intended uses of the AWQMF is the granting of loans for acquisitions and repairs of facilities to reduce quantity and improve quality of wastewater discharge. Essentially, therefore, only a small portion of the AWQMF can be utilized for its credit utility feature. Transfer of the loan fund to the intended repository poses some problems in light of relevant provisions of the existing AWQMF Guidelines, requirements of EO 138, and existing budget rules. The credit feature of the AWQMF qualifies the scheme as a directed credit program (DCP) defined by EO 138 as referring to those programs implemented by the government which are funded out of budgetary allocation, special funds from the government, loans or grants from donor agencies, and are lent out at subsidized interest rates.

### 3.4.5 Pollution Source Inventory

The table below presents the activity and the deliverables.

**Table 3.34 Accomplishments on Pollution Source Inventory**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.5	Conduct pollution source inventories and water quality field surveys.	List of Industries within the three WQMA with categorization

In preparing the 10 Year WQMA Action Plans for the three pilot regions, field surveys of industries within the WQMAs were conducted to identify geographical location and categories of industries. The survey identified a total of 1,890 industries both small and large scale in the MMO RS WQMA spreading over the tributaries including Marilao, Meycauyan, Obando, Polo, Sta Maria and others. In contrast, there are 67 industries within IBRS WQMA including commercial establishments. Their geographical locations are identified and they are categorized according to the nature of the industries.



The study in Sarangani WQMA identified 167 industries with 25% of them falling under the aquacultural category reflecting the regional industry characteristic.

### 3.4.6 Application of Water Quality Modeling

The table below presents the activity and the deliverables.

**Table 3.35 Accomplishments on Application of Water Quality Modeling**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.6	Apply the water quality model developed under Activity 2.2, for example, in allocating pollution quotas in non-attainment areas.	Water Quality Modeling was applied in 1) Identifying NAA (4.1), 2) Preparing 10 year WQMA Action Plans (3.3), 3) Classification of Water bodies (Activity 4.2)

WASP was chosen as a standard water quality model used for assessing and planning purposes under the Project considering its capability to investigate 1, 2, and 3 dimensional systems, and a variety of pollutant types also by linking with hydrodynamic models.

In identifying NAAs under Activity 4.1, the model was used as a one-dimensional system to identify the point where water quality becomes non-attainment, particularly in the case of NAA-BOD in IB RS WQMA, by undertaking pollution load estimate and running the WQ model. In preparing the 10-year WQMA Action Plans for the three pilot regions under Activity 3.3, the model was used for prediction of pollution load changes over the planning period where eventually, the best technical options for achieving water quality objectives was chosen. Under Activity 4.2, the model was used for classification of marine water so that it was the first application for a 2-dimensional system to predict dispersion of various pollutants.

### 3.4.7 Pollution Source Prioritization and Compliance Inspections

The table below presents the activity and the deliverables.

**Table 3.36 Accomplishments on Prioritization and Compliance Inspections**

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.7	Implement procedures (developed under Activities 1.8 and 1.11) for pollution source categorization, prioritization and compliance inspections.	Recommendations on the Pollution Source Prioritization and Compliance Inspections

**Recommendations on the Pollution Source Prioritization and Compliance Inspections:** At the early part of the Project, it was expected that Pollution Source Prioritization and Compliance Inspections would be conducted by Multi –Sectoral Groups created under Activity 3.5. However, the EMB CO decided to allow MSGs to monitor only ambient water quality under the Project considering the current maturity and capability of the Governing Boards at the three regions and proposed to minimize interference with the on-going inspection activities. In this context, it was agreed that the activities