

可していない。地方自治体の強力な関与を得るため、いずれは地方自治体の地方条例としてアクションプランが承認される必要がある。

EMB 地域事務所は現在のところ、水質管理委員会に関わる会議あるいは事業遂行上の準備や関係業務を維持することができると考えられる。しかし地域事務所は人員不足の状態にあり、水質管理地域の活動が拡大した場合、業務超過になる恐れがある。

#### 4.3.3 非パイロット地域への支援

##### a) 水質管理地域指定のための支援

オリエンテーション&ワークショップの際に行われた質問調査によって、将来の水質管理地域指定のための優先水域が明らかになり、EMB中央事務所は12の次期指定水域を提案している。また、適切な規模を有した水質管理地域を選定し優先付けをするために、現地調査を開始する前段階として、デスクレビューを行うことが必要であろう。これは、提案された水域の中には管理面での観点から、水質管理地域としては規模が大きすぎると判断される水域が含まれていたからである。

例えば提案された水質管理地域のひとつであるカガヤンデオロ水系では、Oponan川、Alae川、Bitan-ag小河川、Umalag川、Bigaan川、Cugman川を含む複数の支川を有しており、カガヤンデオロ川を通じてマカハラール湾に流入している。この水質管理地域は規模が大きすぎるため、多様な意見を持った多くの利害関係者が計画段階に関与し、アクションプラン策定において種々の困難が予測される。

表 4.3 水質管理地域指定のために提案された水域

島	地域	水域と水質管理地域
ルソン	CAR	Balili River
ルソン	R1	Dagupan-Sinucalan River
ルソン	R2	Pinacanauan de Tuguegurao
ルソン	R4-A	Ylang-Ylang River
ルソン (ミト <sup>ロ</sup> )	R4-B	Calapan River System WQMA
ルソン	R5	Lake Bato Water Quality Management Area, Bato, Camarines Sur
ビサヤ	R6	Jaluar River System Water Quality Management Area
ビサヤ	R7	Butuanon River WQMA
ミンダナオ	R9	Tumaga River
ミンダナオ	R10	Cagayan de Oro River System WQMA (Cagayan de Oro River, Oponan River, Alae River, Bitan-ag Creek, Umalag River, Bigaan River, Cugman River, Macalajar Bay から構成)
ミンダナオ	R11	Davao River WQMA
ミンダナオ	R13	Taguibo River Water Quality Management Area (TRWQMA)

水質管理地域の規模の問題に加えて、効果的かつ効率的な介入が適切な時期に設計され実施されるよう、指定の時期に関しても慎重に扱う必要がある。水質管理地域の追加指定は、アクションプランの実施のための予算があるか、またEMB中央事務所が、下図に示した6ヶ所の既指定地域に加えて、追加の事務処理をこなすことができるかなどを十分に考慮する必要がある。

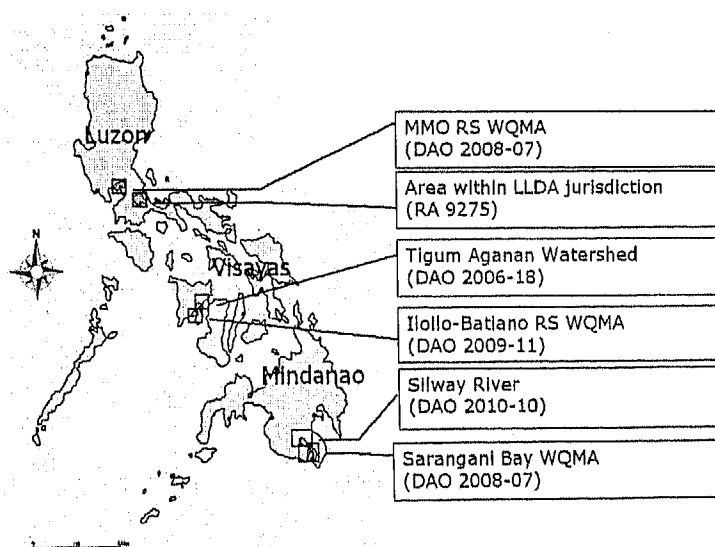


図 4.3 水質管理地域の指定

b) 水域の水質類型のための支援

質問調査では水質類型のための7ヶ所の優先水域が特定され、この中からEMB中央事務所は1)地域5のアルバイ湾と2)地域7のトレドーバランバン沿岸水域の2ヶ所を選定した。更に、環境基準など種々の課題を考慮して、EMB中央事務所は地域10のマカハラール湾を2010年度に活動の一部として追加的に選定した。

下表は水質類型の優先水域であり、今後の活動の基本となるものである。本プロジェクトでの活動に加えて、Paoay Lake、Sabang bayやDavao Gulfはその経済的な価値から、できるだけ早い時期での調査の慎重な計画を行うことが非常に重要である。

表 4.4 水質類型のために提案された水域

水系	地域	水域
湖	R1	Paoay Lake; Hundred Island (沿岸/海洋)
海洋	R2	China sea along the stretch of Cagayan Economic Zone Authority (CEZA) in Sta. Ana, Cagayan
湾	R4-B	Sabang Bay, Puerto Galera, Oriental Mindoro
湾	R5	Albay Gulf, Legazpi City, Sto. Domingo, Albay and Manito, Albay Sorsogon City, Rapu-Rapu
沿岸	R7	Toledo-Balamban Coastal Waters
湾	R11	Davao Gulf - Davao del Norte Area
沿岸	R9	West Coast of Zambo. City (Brgy. Cawa-cawa to Brgy. Patalon)

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付属資料

## 付属資料

- 付属資料 A 水質浄化法における DENR に関する法令
- 付属資料 B 修正プロジェクト・デザイン・マトリックス
- 付属資料 C 中央プロジェクト管理事務所職員の職務
- 付属資料 D ローカルコンサルタントとの契約
- 付属資料 E JICA 技術支援チームの従事期間
- 付属資料 F プロジェクトの成果と状況
- 付属資料 G 提供機材一覧
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付属資料 A 水質浄化法における DENR に関する法令





表 A 水質浄化法における DENR に関する法令

Mandates	Deadline (Date of Implementation)	Implementing Agency
Preparation of National Water Quality Status Report (sec. 19a)	Within 24 months (May 6, 2006) & review/revise and publish annually	DENR
Preparation of an Integrated Water Quality Management Framework (sec. 19b)	Within 12 months after completion of status report (May 6, 2007)	DENR
Preparation of a 10-year WQMA Action Plan (sec. 19c)	Within 12 months after completion of framework (May 6, 2008)	DENR
Designation of WQMAs (sec. 5)	None	DENR in coordination with NWRB
Constitution of the Governing Board (sec. 5)	After designation of WQMA	DENR
Designation of Non-attainment areas (sec. 6)	None	DENR
Enforcement, review & revision of water quality guidelines (sec. 19e)	Within 12 months (May 6, 2006) & every 5 years thereafter	DENR
Review and setting of effluent standards (sec. 19f)	Within 5 years (May 6, 2009) & every 5 years thereafter	DENR
Establishment of internationally-accepted procedures for sampling & analysis of pollutants (sec. 19g)	Within 12 months (May 6, 2005)	DENR
Formulation of testing procedures and establishment of accreditation system for laboratories (sec. 19g)	Within 12 months (May 6, 2005)	DENR
Categorization of point & non-point sources of water pollution (sec. 19h)	Within 18 months (November 6, 2005)	DENR
Revision and publication of a list of Categories of Industry Sector (sec. 12)	Within 24 months (May 6, 2006) & every 2 years thereafter	DENR
Classification or reclassification of all water bodies (sec. 19j)	None	DENR
Formulation of wastewater charge formula (sec. 13)	Within 6 months (November 6, 2004)	DENR
Formulation of guidelines for the re-use of wastewater for irrigation & other agricultural uses & for the prevention, control & abatement of pollution from agriculture & aquaculture activities (sec. 22c)	None	DA in coordination with DENR
Preparation & publication of a national groundwater vulnerability map (sec. 19d)	Within 24 months (May 6, 2006)	DENR (MGB & NWRB with EMB)
Classification of groundwater sources (sec. 19i)	Within 12 months (May 6, 2005)	DENR
Preparation of National Sewerage and Septage Management Program (sec. 7)	Within 12 months (May 6, 2005)	DPWH, via its relevant agencies, in coordination with DENR, LGUs & other concerned agencies
Connection of existing sewage line in certain establishments to available sewerage system for highly urbanized cities (sec. 8)	Within 5 years (May 6, 2009)	Agency vested to provide water supply and sewerage facilities and/or concessionaires in MM and HUCs
Employment of septage or combined sewage-septage management system for non-highly urbanized cities (sec. 8)	None	DPWH, in coordination with DENR, DOH, and other concerned agencies
Formulation of guidelines and standards for the collection, treatment and disposal of sewage (sec. 8)	None	DOH in coordination with other government agencies

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Mandates	Deadline (Date of Implementation)	Implementing Agency
8)		
Formulation of guidelines for the establishment and operation of centralized sewage treatment system (sec. 8)	None	DOH in coordination with other government agencies
Preparation of program for evaluation, verification, development & dissemination of pollution prevention & cleaner production technologies (sec. 22e)	None	DOST
Preparation & implementation of comprehensive & continuing public education & information program (sec. 22f)	None	DepEd, CHED, DILG, PIA in coordination with DENR
Establishment of a National Research & Development Program for prevention & control of water pollution (sec. 24)	None	DENR in coordination with DOST & other concerned agencies & academic research institutions

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付属資料 B: 修正プロジェクト・デザイン・マトリックス

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**Project Development Matrix (PDM)** <sup>27</sup>  
**Capacity Development Project on Water Quality Management**  
 Project Area: Whole of the Philippines (particularly DENR EMB Central Office and EMB Regional Offices)  
 Target Group: Staff of EMB, Local area stakeholders in water quality management  
 Project Period: January 2006 to January 2011  
 Version 2  
 Prepared: October 25<sup>th</sup>, 2007

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Goal:</b> Under initiatives of the WQMA Governing Boards, industries commercial entities, LGUs, and other public organizations take necessary actions for achieving the water quality goal established in the WQMA Action Plans.</p>	<p>Water quality improvement action plans are being implemented by WQMA boards and LGUs, and industrial and commercial entities are complying with discharge permitting system and water quality / effluent standards, with resulting improvement in ambient water quality.</p> <p>DENR-EMB enforcing legal requirements of the CWA, and have adequate staff equipped with administrative and technical know-how to perform WQM functions.</p> <p>Cooperation with other agencies involved in water quality management is established</p>	<p>Records of EMB on the CWA compliance activities of WQMA boards, LGUs, and regulated industrial and commercial entities.</p> <p>Integrated national WQM framework adopted by government, and is being implemented through appropriate agency and WQMA organizational structures, operating procedures, manuals and work plans, information systems, and support facilities and equipment.</p> <p>Information from EMB on water quality conditions.</p>	<p>National government agencies maintains strong support for the objectives of CWA.</p> <p>The required budget for implementation is allocated.</p>
<p><b>Project Purpose:</b> Capabilities of EMB Central and Regional Offices to implement priority actions mandated under the CWA IRR are strengthened.</p>	<p>EMB Central Office and 3 pilot ROs assisted by the Project are efficiently and effectively implementing their mandates under the Clean Water Act IRR through;</p> <ul style="list-style-type: none"> <li>• Adequate WQM procedures in conformity with CWA requirements</li> <li>• WQMS staff trained in WQM procedures</li> <li>• Adequate equipment and information systems</li> <li>• Linkages with related WQM agencies and concerned stakeholders</li> </ul>	<p>Survey of performance using interviews and questionnaires.</p> <p>Project monitoring and interim evaluation, including activity/tasks completion reports.</p>	<p>DENR mobilizes funds to replicate the strengthening activities to the non-pilot regions, specifically in applying the guidelines developed under the Project.</p> <p>WQMA Government Boards mobilizes funds to</p>

	<p>Capacity of the staff in charge of water quality management in non-pilot ROs is strengthened through;</p> <ul style="list-style-type: none"> <li>• Participation in the learning process such as orientation/workshop to be conducted in the project</li> <li>• Adequate understanding on the procedures and guidelines on the CWA enforcement</li> <li>• Familiarization with the experiences of 3 pilot regions on the WQMA designation and action planning through various types of communication</li> </ul>		<p>implement the action plans.</p> <p>EMB Central and Regional offices have adequate number of technical staff as well as resources to support the operation,</p> <p>EMB CO and RO personnel trained under the project continue to work for implementation of the CWA mandates.</p> <p>Other agencies mandated to perform specific roles under the CWA are cooperative and mobilizes funds to implement their roles.</p>
<b>Outputs:</b>			
<p>1.0 Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff</p>	<p>Publication of the policy framework that clearly specifies:</p> <ul style="list-style-type: none"> <li>• water quality goals and targets</li> <li>• period of compliance</li> <li>• water pollution control strategies and techniques</li> <li>• water quality information and education program</li> <li>• human resource development program</li> </ul> <p>Publication and dissemination of the supporting procedural guidelines</p> <p>Completed orientation-training programs on the policy framework and supporting procedures</p>	<p>Policy documents; proceedings of policy deliberations and inter-agency coordination activities</p> <p>DENR policy documents, department administration order, memorandum circular, etc.</p> <p>Training materials and course proceedings</p> <p>Evaluation reports on completed training courses</p>	<p>DENR and other national government agencies translate the policies and guidelines into EO/DAOs/MC.</p> <p>EMB CO personnel trained under the project continue to work for the implementation of the CWA mandates during the project period.</p>
<p>2.0 Capacity of EMB Central Office to lead and support the Regional Offices is strengthened</p>	<p>Management system in place, evidenced by:</p> <ul style="list-style-type: none"> <li>• water quality model being set up and running in the pilot regions</li> <li>• operational water quality and pollution source</li> </ul>	<p>Intra-organizational documents</p> <p>Project activity and completion reports</p>	<p>EMB will facilitate access of the Project Team to existing records and databases, including base</p>

	<p>databases with geo-referencing capability (GIS)</p> <ul style="list-style-type: none"> <li>• establishment of an Internet-based information and communication network</li> <li>• publication of the first national water quality status report; and</li> <li>• project proposals developed to generate additional assistance for the non-pilot regions</li> <li>• CO WQMS staff provided with equipment and trained</li> </ul> <p>CO effectively coordinating the implementation of CWA administrative and technical procedures in the 3 pilots</p>		<p>maps and <i>shapefiles</i> for developing the GIS interface (from DENR and NAMRIA).</p> <p>EMB will facilitate coordination by the Project Team with other agencies holding important data/information needed for the modeling work (e.g., hydrologic data from NWRB).</p>
<p>3.0 Capability of EMB Regional Offices to establish and support WQMA and related institutions is strengthened in 3 pilot regions</p>	<p>At least one WQMA in each pilot region is established, with action plan prepared</p> <p>The WQMAs established have functional:</p> <ul style="list-style-type: none"> <li>• Governing Boards</li> <li>• Technical Secretariats</li> <li>• Multi-sectoral action groups</li> <li>• Area fund management system</li> <li>• Reporting system</li> </ul>	<p>Interviews or questionnaire surveys</p> <p>Process documentation of WQMA activities</p>	<p>EMB will be able to designate at least one WQMA in each of the pilot regions in a timely manner so that institution-building support activities under the Project will not be delayed or be subject to undue time pressure.</p> <p>The EMB RO in each pilot region has adequate number of staff who can be assigned to work in the Technical Secretariat, and if necessary, the EMB Regional Directors will designate staff in other units for Secretariat work.</p> <p>Relevant government agencies and LGUs in the WQMAs will be prepared</p>

	<p>Major point pollution sources in pilot regions are complying with the discharge permitting/charge system, including the SMR system, and supported by:</p> <ul style="list-style-type: none"> <li>• Database of point and non-point sources;</li> <li>• Functional system for assessment, collection and accounting of pollution charges; and</li> <li>• Reward/incentive system</li> </ul> <p>First regional water quality status report for each of the 3 pilot regions published</p> <p>Principal/priority waterbodies in pilot regions classified (or re-classified as needed).</p> <p>Calibrated WQ model and database in regions are operational, linked to central information system, and are used for WQ status reporting.</p> <p>Equipment of EMB regional laboratories in pilot regions upgraded, and linkage with partner laboratories established.</p> <p>Water sampling and monitoring equipment for regional WQMS staff procured and staff trained</p> <p>WQM training courses for EMB RO staff completed.</p>	<p>Regional Office reports to EMB CO Project monitoring and interim evaluation reports</p>	<p>Adequate and timely budget is provided for pilot EMB ROs' operations so that new WQM mandates can be performed effectively</p> <p>EMB RO personnel trained under the Project continue to work for the implementation of the CWA mandates during the project period.</p>	<p>to perform their own roles—with their own budgets—so that area management plans are properly prepared and actually implemented.</p>
<p><b>Main Activities:</b></p> <p>1.1 Set up multi-agency coordination system to formulate an integrated water quality management framework and implementation plan.</p> <p>1.2 Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA).</p> <p>1.3 Formulate a comprehensive policy on use of market-based instruments for</p>				
<p><b>Input from Japanese Side:</b> (1) <i>Long-Term Experts:</i> The following three long-term experts will be provided. The total man-hours of these long-term experts are estimated at about 150 M/M over 5 years.</p>			<p>Counterpart staff and support facilities are provided by EMB in a timely manner</p>	



<p>2.8 Procure sampling equipment for WQMS staff, and streamline operations of the EMB central lab as a reference laboratory and training center for RO laboratory personnel.</p> <p>2.9 Design and implement a training program for EMB CO staff on use of the information and communication system developed, including fund management.</p> <p>2.10 Conduct activities to generate resources for non-pilot ROs, e.g., planning workshops with other donor agencies (e.g., World Bank, ADB).</p> <p>3.1 Implement the guidelines for WQMA delineation.</p> <p>3.2 Set up the Governing Board and Technical Secretariat for the designated WQMA.</p> <p>3.3 Facilitate the formulation of WQMA GB action plans and LGU compliance plans based on guidelines developed under Activity 1.5.</p> <p>3.4 Assist WQMA GBs in establishing and managing the area water quality management fund and the activities of multi-sectoral monitoring groups.</p> <p>3.5 Assist in establishing area-based cooperation arrangements in water quality monitoring based on procedures developed under Activity 1.9.</p> <p>4.1 Identify attainment and non-attainment areas based on the procedures developed under Activity 1.2.</p> <p>4.2 Classify or re-classify water bodies as needed based on guidelines developed in Activities 1.4 and 1.12.</p> <p>4.3 Implement the discharge permitting and wastewater charge system based on procedures developed under Activity 1.6.</p> <p>4.4 Set up collection and accounting systems for permitting fees and wastewater charges.</p> <p>4.5 Conduct pollution source inventories and water quality field surveys.</p> <p>4.6 Apply the water quality model developed under Activity 2.2, for example, in allocating pollution quotas in non-attainment areas.</p> <p>4.7 Implement procedures (developed under Activities 1.8 and 1.11) for pollution source categorization, prioritization and compliance inspections.</p> <p>4.8 Manage the database of pollution sources and WQ data survey results, and link the regional database to the national database at the EMB CO.</p> <p>4.9 Procure equipment for sampling and analysis, and develop training materials to enhance capability of EMB regional laboratories; also assist ROs in initiating laboratory partnerships.</p> <p>4.10 Prepare and disseminate the first regional water quality status reports.</p> <p>4.11 Design and implement a program for RO staff in the non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions.</p>	<p>be decided in the course of the project implementation.</p> <p><b>Input from Philippine Side:</b></p> <p>(1) Counterpart Staff: Designated counterpart staff shall work as the counterparts of the Japanese side to implement the Project whenever requested.</p> <ul style="list-style-type: none"> <li>• Chairman of Joint Coordination Committee</li> <li>• Project Director</li> <li>• Project Manager</li> <li>• Assistant Project Manager</li> <li>• Focal Persons</li> <li>• Project members</li> <li>• Members of Technical Working Groups/Technical Committees</li> <li>• Members who work jointly in the pilot regional offices</li> </ul> <p>(2) Facilities for Japanese side: The Philippine side will provide office space under the secure conditions. The facilities will be equipped with desks, meeting tables, air conditioners, communication equipment, etc.</p> <p>(3) Equipment and Materials: The Philippine side will provide other necessary equipment and materials necessary for project implementation.</p> <p>(4) Budget for Project Operation: The Philippine side will provide salary and allowance for the staff of the Philippine side, including budget for travel expenses and operation expenses required under the project.</p>
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<p>water quality management, including procedural guidelines for implementation.</p> <p>1.4 Prepare procedural guidelines for classifying inland and marine water bodies as well as groundwater, including guidelines for conducting groundwater vulnerability mapping.</p> <p>1.5 Prepare procedural guidelines for facilitating WQMA action planning (by the Area Governing Board) and follow-on compliance planning (by LGUs).</p> <p>1.6 Prepare procedural guidelines, including system and procedures, for pollution load and charge computation in support of the discharge permitting system.</p> <p>1.7 Prepare procedural guidelines for managing the National Water Quality Management Fund.</p> <p>1.8 Prepare procedural guidelines for categorization of industries, including point and non-point sources of water pollution.</p> <p>1.9 Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring.</p> <p>1.10 Prepare guidelines and initiate coordination arrangements for allowing flexibility in enforcing discharge standards for specific types of industry sources.</p> <p>1.11 Prioritize pollution sources and in prepare an operations manual on conducting compliance inspections for various types of polluting facilities.</p> <p>1.12 Review water quality guidelines to provide basis for water re-classification and revision of effluent standards.</p> <p>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.</p> <p>1.14 Integrate Policies on WQM</p> <p>2.1 Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1.</p> <p>2.2 Select or develop appropriate water quality modeling techniques, including calibration, testing and demonstration in selected regions.</p> <p>2.3 Design, develop, trial implement a national information campaign for raising public awareness of water quality management issues.</p> <p>2.4 Design and develop a water quality and pollution source database management and reporting system for use by ROs, with capability for mapping pollution sources using GIS.</p> <p>2.5 Design and develop an Internet-based WQM information and communication system to link the EMB CO with the ROs.</p> <p>2.6 Integrate regional reports and publish the first national status report on water quality.</p> <p>2.7 Implement procedures for managing the national water quality management fund (based on procedural guidelines developed under Activity 1.7).</p>	<ul style="list-style-type: none"> <li>• Team Leader (specialist in environmental policy development and implementation)</li> <li>• Team Member (specialist in water quality management, industrial pollution control, and plant inspections)</li> <li>• Team Member (specialist in organizational and institutional areas)</li> </ul> <p>(2) <i>Short-Term Experts</i>: JICA will provide 4 short-term experts to assist and advise in special technical fields. The total man-hours of the short-term expert are estimated at about 30 M/M over 5 years.</p> <ul style="list-style-type: none"> <li>• Specialist in water quality monitoring</li> <li>• Specialist in pollution source control</li> <li>• Specialist in environmental information systems</li> <li>• Specialist in water quality modeling</li> </ul> <p>(3) <i>Local Consultants and Local Sub-Contractors</i>: Will assist EMB in formulating plans and guidelines and providing the training through workshops and OJT training in pilot regional offices</p> <p>(4) <i>Local Assistant and Secretaries</i>: to provide general assistance in implementing the Project.</p> <p>(5) <i>Equipment and Materials</i>: The categories of equipment and materials to be provided are shown in the following table. The actual items will be decided after a precise survey on needs.</p> <ul style="list-style-type: none"> <li>• Equipment for field sampling, monitoring, and measurement, and vehicle</li> <li>• Equipment and materials for water laboratory</li> <li>• Equipment for water quality information system</li> </ul> <p>(6) <i>Technical Training in Japan or Third Countries</i>: This is intended for EMB staff engaged in water quality management. The fields of training, periods, training places and trainees will</p>	<p>(Identify specifically how many staff and the counterpart support facilities required)</p> <p><b>Preconditions:</b></p> <p>Additional staff from other DENR units will be detailed to the PMO and TWGs as needed in both CO and ROs, thru formal orders.</p>
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付属資料 C: 中央プロジェクト管理事務所職員の職務



表C 中央プロジェクト管理事務所職員の職務

Officers	Duties
Project Manager (Chief of EQD)	Execute an overall supervision of project activities and review prior to endorsing all guidelines, manuals and other policy instruments prepared to DENR for approval through EMB Director; and Report to the EMB Director for the accomplishments and problems encountered in the course of the Project to assure smooth implementation of the Project.
Asst. Project Manager (Chief of WQMS)	Assist the Project Manager in supervising and monitoring all the activities in close collaboration with the project coordinator; coordinating with the Regional Offices for project activities undertaken in the regions; and collaborating closely with the JICA TAT in ensuring the timely completion of various project activities.
EMB CO Counterparts	Lead and support the pilot and non-pilot ROs in implementing the project; Be primarily responsible for orienting/training the appropriate staff in the no-pilot EMB regional offices; and Disseminate the various policies, procedures, and guidelines to the EMB regional offices.
Project Coordinator	Coordinate with related agencies such as FASPO, JICA Philippine Office and others in convening JCC and other meetings under the supervision of the Assistance Project Manager ; and Coordinate among the focal persons in managing and monitoring the Project.
Focal Persons for WQMA Action Planning	Overall Focal Person Coordinate with the three Focal Persons in preparing WQMA Action Plans; Consolidate information and report to the Assistant Project Manager on the progress, issues and challenges in preparing WQMA Action Plans; and Coordinate among the concerned officers within the EMB for replication of the project experiences to the non-pilot regions.

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	Focal Person for Luzon	Lead and support the Region III in preparing the WQMA Action Plan; Coordinate with all the regional offices in Luzon for providing orientation-workshop to appropriate staff with regards to Action Planning; and Support the ROs in Luzon for replication of the project experiences to non-pilot regions.
	Focal Person for Visayas	Lead and support the Region VI in preparing the WQMA Action Plan; Coordinate with all the regional offices in Visayas for providing orientation-workshop to appropriate staff with regards to Action Planning; and Support the ROs in Visayas for replication of the project experiences to non-pilot regions.
	Focal Person for Mindanao	Lead and support the Region XII in preparing the WQMA Action Plan; Coordinate with all the regional offices in Mindanao for providing orientation-workshop to appropriate staff with regards to Action Planning; and Support the ROs in Mindanao for replication of the project experiences to non-pilot regions.
Focal Persons for WQM Implementation	Focal Persons for National and Area WQM Fund	Follow up the activity for finalizing the relevant guidelines and promoting approval as DAO; Undertake relevant actions for operationalizing National and Area Water Quality Management Funds; and Wastewater Charge System; and Coordinate with pertinent agencies for Operationalization of the fund and wastewater charge system.
	Focal Person for Database	Follow up the activity for finalizing the database; and Coordinate with all the regional offices to operationalize the database.
Focal Persons for Command and Control	Focal Person for the Industry-Specific Effluent Standards under the JICA Project	Supervise and manage the activity for Industry-Specific Effluent Standards under the JICA Project; and Coordinate with all the regional offices to provide Orientation-Workshop on the Industry-Specific Standards

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	Focal Person for the Industry-Specific Effluent Standards under EMB Resources <sup>28</sup>	Develop Industry-Specific Effluent Standards under EMB Resources by leveraging the experiences in the JICA Project; and Coordinate with all the regional offices to provide Orientation-Workshop on the Industry-Specific Standards.
Focal Persons for Market-Based Instruments	Focal person for Incentive and Rewards	Follow up the activity for finalizing the relevant guidelines and promoting approval as DAO; and Coordinate all the relevant agencies to operationalize the Incentive and Rewards system.
Focal Persons for Information Dissemination		Design and launch information dissemination campaign.
Focal Persons at 3 Pilot Regional Offices		For preparing the Action Plans, Collaborate closely with the consultants in ensuring the timely completion of the different project activities; Collaborate closely with the JICA TAT in designing appropriate interventions for capacity development; and Disseminate the various policies, procedures, guidelines to other EMB regional offices in each region.
Focal Persons at Non-Pilot Regions		Closely liaise with the CO Focal Persons throughout the project period; Participate in the Orientation-Workshop; Disseminate the lessons and findings of the Orientation-Workshop at each RO.

<sup>28</sup> The EMB under the strong leadership of the Director will develop Industry-Specific Standards for other sectors that are not prioritized under CDPWQM by mobilizing EMB's own man-power and disbursing its own budget to leverage the experience of the JICA's Project. It would be strategically important to gradually lessen reliance on the local consultants so as to consolidate the track beyond the Project's time framework rather than abruptly transferring all the tasks to the EMB CO.





付属資料 D: ローカルコンサルタントとの契約

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表 D: ローカルコンサルタントとの契約

Contracts	Consultants	Period	Total M/M
Formulation of Integrated Water Quality Management Framework	DARUMA Technologies	2006.8-2007.3	9.0
Development of Procedural Guidelines for Designation Water Quality Management Area, Attainment and Non-Attainment Areas and WQMA Action Planning	CEST	2006.6-2007.3	16.0
Designation of Water Quality Management Areas, Identification of Non-Attainment and Attainment Areas	CEST	2006.5-2007.12	33.0
Market-based Instruments and Wastewater Charge System (Public Consultation for Waste Water Charge System)	Aquatreat Environmental System	2006.11-2006.12	1.5
Development of the Policy and Guidelines on Market-Based Instruments for Water Quality Management	Tetra Tech	2007.6-2008.1	18.0
Managing Ambient Water Quality, Development of Procedural Guidelines for Categorization, Effluent Standards and Regulatory Compliance Enforcement	Woodfields Consultants	2006.8-2007.3	33.5
Revising Water Quality Monitoring Manual (Surface water)	Woodfields Consultants	2007.6-2008.1	12.0
Finalization of revised water quality guidelines and development of effluent standards	Innogy Solutions	2007.6-2007.12	25.5
Development of the Database for Water Quality Management (Phase 1)	Woodfields Consultants	2006.10-2007.2	23.0
Development of the Database for Water Quality Management (Phase 2)	Woodfields Consultants	2007.6-2007.12	18.5
Regional and National Water Quality Status Report for Public Information and Advocacy	Innogy Solutions	2006.8-2007.3	19.5
Integration of Guidelines on Water Quality Management	Tetra Tech	2007.9-2007.12	3.0
Preparation of WQMA Action Plan for Three Pilot Regions (Year 1)	CEST	2008.06-2009.02	78.5
Supplemental Consulting Services 1 for Preparation of WQMA Action Plan for Three Pilot Regions	CEST	2009.01-2009.02	3.0
Supplemental Consulting Services 2 for Preparation of WQMA Action Plan for Three Pilot Regions	CEST	2009.1-2009.2	2.6
Development of Industry- Specific Effluent Standards (Year 1)	Innogy Solutions	2008.06-2009.02	23.0
Water Quality Management Implementation (Water Quality Management Fund)	Innogy Solutions	2009.01-2009.02	3.5
Preparation of WQMA Action Plan for three Pilot Regions (Year 2)	CEST	2009.06-2010.02	54.0
Development of Industry- Specific Effluent Standards (Year 2)	Innogy Solutions	2009.06-2010.02	16.0

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Revision of Guidelines for PCO accreditation and Compliance Inspection Manual	Innogy Solutions	2009.09-2010.02	3.5
Finalization of Wastewater Charge System and Harmonization	Innogy Solutions	2009.09-2010.02	4.5
Development and Validation of Methods for Animal Fats and Vegetable Oil (AVFO) and Petroleum Oil in Water/Wastewater	Dr. Evangeline C. Santiago	2009.08-2010.02	2.5
Area Cooperation Arrangement, Pollution Source Prioritization and Inspection and Public Information in the three Water Quality Management Areas	CEST	2010.05-2010.12	19.0
Classification of Waterbody	Woodfields Consultants	2010.06-2010.12	15.5
Enhanced Use of Database/Information System	Woodfields Consultants	2010.06-2010.12	9.0
Enhancement of Proposed Water Quality Management Fund Guidelines	Innogy Solutions	2010.07-2010.12	6.0
Philippines Effluent Management Strategy Policy Review	Innogy Solutions	2010.06-2010.12	6.0

付属資料 E: JICA 技術支援チームの従事期間



水質管理能力強化プロジェクト (第2フェーズ)  
完了報告書

表 E: JICA 技術支援チームの従事期間

Name	Position	Period	
Group A (Long-Term)			
Hitoshi KIN	Team Leader/ Policy and Planning Specialist	FY2005	02/19/2006-04/21/2006
		FY2006	06/01/2006-09/26/2006 10/30/2006-03/28/2007
		FY2007	05/15/2007-08/27/2007 10/03/2007-02/29/2008
		FY2008	05/02/2008-09/09/2008 11/02/2008-03/19/2009
		FY2009	05/11/2009-06/30/2009 08/02/2009-08/30/2009 12/01/2009-12/15/2009 01/09/2010-03/19/2010
		FY2010	05/06/2010-07/09/2010 08/24/2010-12/14/2010 01/03/2011-01/31/2011
Yasuhiko MURAMATSU	Water Quality Management Specialist	FY2005	02/19/2006-04/21/2006
		FY2006	06/01/2006-11/30/2006 01/03/2007-03/28/2007
		FY2007	05/15/2007-12/25/2007
		FY2008	05/07/2008-08/02/2008 08/31/2008-12/06/2008 01/13/2009-02/14/2009
		FY2009	05/11/2009-07/17/2009 08/16/2009-12/12/2009 01/11/2010-03/19/2010
		FY2010	06/27/2010-12/22/2010 01/06/2011-01/31/2011
Yusuke GOTO	Organizational and Institutional Specialist	FY2006	07/02/2006-02/28/2007
		FY2007	05/15/2007-06/28/2007 08/21/2007-02/29/2008
		FY2008	05/07/2008-08/02/2008 08/31/2008-11/14/2008 01/13/2009-03/19/2009
		FY2009	07/01/2009-12/12/2009 01/04/2010-03/19/2009
		FY2010	05/25/2010-08/09/2010 08/31/2010-12/15/2010 01/06/2011-01/31/2011
Group B (Short-Term)			
Takashi ONUMA	Water Quality Monitoring	FY2005	03/15/2006-04/21/2006
		FY2006	09/02/2006-12/07/2006
Kenichi KURAMOTO	Pollution Source Control	FY2006	09/07/2006-11/30/2006 02/01/2007-03/17/2007
Yuichiro HAMADA	WQ Information System	FY2006	06/02/2007-09/14/2007
Makoto MITSUKURA	Water Quality Modelling/ Project Coordinator	FY2005	03/05/2006-04/05/2006
		FY2006	08/06/2006-10/04/2006 11/01/2006-11/30/2006
		FY2007	01/31/2008-02/29/2008
Miho NAKANO	Wastewater Management	FY2009	09/07/2009-12/15/2009
Yukiko ITAMI	Coordinator	FY2010	11/01/2010-12/15/2011





付属資料 F: プロジェクトの成果と状況



表 F: プロジェクトの成果と状況

ID	Activity in the Project Document	Deliverables and Accomplishments	Status
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	Pending approval
Activity 1.2	Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA)	Procedural Guidelines for Designation of Water Quality Management Area	Approved MC 2009-15
		Procedural Guidelines for Designation of Non-Attainment Areas	Pending approval
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>	Pending approval Period of implementation should be carefully considered.
Activity 1.4	Prepare procedural guidelines for classifying inland and marine water bodies as well as groundwater, including guidelines for groundwater vulnerability mapping	Procedural guidelines on Classification/Reclassification of Surface Fresh Waters, Coastal and Marine Waters	Pending approval
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>	Pending approval
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	Pending approval
Activity 1.7	Prepare procedural guidelines for managing the National Water Quality Management Fund	Implementing Guidelines on the Operationalization of the National Water Quality Management Fund under Republic Act 9275	Pending approval
		1. Implementing Guidelines on the Operationalization of the Area Water Quality Management Fund under Republic Act 9275	Pending approval

ID	Activity in the Project Document	Deliverables and Accomplishments	Status
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	Pending approval The document was integrated into the water quality guidelines.
Activity 1.9	Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring	1. Water Quality Monitoring Manual Volume I - Manual on Ambient Water Quality Monitoring	Approved EMB MC 2008-08
		2. Water Quality Monitoring Manual Volume II - Manual on Effluent Quality Monitoring	
		3. Guidelines for Area Cooperation Arrangement for, Water Quality Monitoring	Pending approval
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.	Completed
Activity 1.11	Prioritize pollution sources and prepare an operations manual on conducting compliance inspections for various types of polluting facilities	1. Procedural Guidelines for Establishing Effluent Standards including General and Industry-Specific Standards	Completed as an internal document of EMB
		2. Procedural Guidelines for prioritization of polluters for compliance inspection	Pending approval
		3. Operation Manual of Compliance Inspection	Pending approval
		4. Revised Guidelines in the Accreditation of Pollution Control Officers	Pending approval
Activity 1.12	Review water quality guidelines to provide basis for water re-classification and revision of effluent standards	1. Water Quality Guidelines	Pending approval
		2. General Effluent Standards	Pending approval
		3. Industry Specific Effluent Standards for 1) Alcohol Distillery	Pending approval
		4. Industry Specific Effluent Standards for Manufacturer of Pulp (Abaca),	
		5. Industry Specific Effluent Standards for Manufacturer of paper and paper products,	
		6. Industry Specific Effluent Standards for Sugar milling, and	
		7. Industry Specific Effluent Standards for Hotel and Restaurant sector.	
		8. Philippines Effluent Management Strategy	Completed as an internal document of EMB

ID	Activity in the Project Document	Deliverables and Accomplishments	Status
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.	Completed
Activity 1.14	Integrate Policies on Water Quality Management	Ten guidelines were integrated and harmonized from legal viewpoints.	Completed
Activity 2.1	Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1.	The EMB' s management conferences were regularly assisted through updating information on the Project.	Completed
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.	Completed
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 WQMA</li> <li>2. WQMA Water Quality Status Reports for IBRS WQMA</li> <li>3. WQMA Water Quality Status Reports for Sarangani Bay WQMA</li> <li>4. Materials for National Awareness Campaign</li> </ol>	Completed.
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	Completed
Activity 2.5	Design and develop an Internet-based WQM information and communication system to link the EMB CO with the ROs	<p>Internet-based WQM information and communication system to link the EMB CO with the ROs</p> <p>A water quality and pollution source database with reporting system for use by ROs linking between CO and ROs</p>	Completed
Activity 2.6	Integrate regional reports and publish the first national status report on water quality	<p>Guidelines for the Preparing of the Regional and National Water Quality Status Reports for Public Information and Advocacy</p> <ol style="list-style-type: none"> <li>1. National Water Quality Status Report 2001-2005</li> </ol>	Published

ID	Activity in the Project Document	Deliverables and Accomplishments	Status
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	Pending approval
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 delivered	Completed
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	Completed
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)	Completed
Activity 3.1	Implement guidelines for WQMA delineation	1. Marilao-Meycauayan-Obando River system (MMO) WQMA in Region III	DAO 2008-07
		2. Iloilo Batiano River System WQMA in Region VI	DAO 2009-11
		3. Sarangani Bay WQMA in Region XII	DAO 2009-12
Activity 3.2	Set up the Governing Board, Technical Secretariat and multi-sectoral working groups for the designated WQMA	1. Creation of the Governing Boards of MMO RS WQMA, 2. Creation of the Governing Boards of IBRS WQMA and 3. Creation of the Governing Boards of Sarangani Bay WQMA	Completed Officially created upon the signing of ht DAOs on WQMA

ID	Activity in the Project Document	Deliverables and Accomplishments	Status
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 Iloilo-Batiano River System Water Quality Management Area</li> <li>2. Initial Ten Year Action Plan for Marilao-Meycauayan-Obando River System Water Quality Management Area</li> <li>3. Initial Ten Year Action Plan for Saranagani Bay Water Quality Management Area</li> </ol>	Pending approval
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	Pending approval
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 WQMA</li> <li>2. Multi-sectoral Monitoring Groups created for IBRS WQMA</li> <li>3. Multi-sectoral Monitoring Groups created for Saranagani Bay WQMA</li> </ol>	Completed
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 Saranagani Bay WQMA.</li> </ol>	Pending approval
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</li> <li>3. Draft Classification for Macajalar Bay</li> </ol>	Completed They require update when dry season monitoring is complete.
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	Completed
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>	Pending approval
Activity 4.5	Conduct pollution source inventories and water quality field surveys.	List of industries within the three WQMAs with categorization	Completed

ID	Activity in the Project Document	Deliverables and Accomplishments	Status
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, 2) Preparing 10 year WQMA Action Plans, 3) Classification of Water bodies	Completed
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	Completed
Activity 4.8	Manage the database of pollution sources and WQ data survey results, and link the regional database to the national database at the EMB CO.	Enhanced database developed under the Project operational	Completed
Activity 4.9	Procure equipment for sampling, monitoring and analysis, and develop training materials to enhance capability of EMB regional laboratories; also assist ROs in initiating laboratory partnerships.	1. A set of laboratory instrument and equipment for Region 3 delivered 2. A set of laboratory instrument and equipment for Region 6 delivered 3. A set of laboratory instrument and equipment for Region 12 delivered	Completed
Activity 4.10	Prepare and disseminate the first regional water quality status reports.	1. Region 3 Water Quality Status Report 2001-2005 2. Region 6 Water Quality Status Report 2001-2005 3. Region 12 Water Quality Status Report 2001-2005	Pending approval
Activity 4.11	Design and implement a program for RO staff in the non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions.	Regional cross visit was conducted taking advantage of Orientation and Workshop convened in Metro Manila to visit some locations in MMO RS WQMA and wastewater treatment facilities operating in Metro Manila.	Completed



付属資料 G: 提供機材一覧



Equipment Procurement to EMB Central Office

NO.	EQUIPMENT	Unit	Require Number		
			EMB CLAB	EMB CWQMS	Total
<b>S : FOR FIELD SAMPLING/MONITORING</b>					
S-1	Water Sampling Equipment	set		1	1
S-2	Sediment Sampler	set		1	1
S-3	Current Meter	set		1	1
S-4	Water Quality Checker	set		2	2
S-5	GPS Apparatus	pc		1	1
S-6	Digital Camera	set		1	1
S-7	Laptop Computer	pc		1	1
S-8	Water Quality Sampling Car	set		1	1
<b>T : FOR TRAINING/ WORKSHOP/CONSULTATION MEETINGS</b>					
T-1	LCD Projector	set		1	1
T-2	Laptop Computer	pc		1	1
T-3	Mini Screen	pc		1	1
T-4	IC Recorder	pc		1	1
<b>L : FOR LABORATORY ANALYSIS</b>					
L-1	Low-temperature Refrigerator for Standards, Reagents Storage	pc	1		1
L-2	Low temperature refrigerator for sample storage	pc	1		1
L-3	Water bath	pc	1		1
L-4	Hot plate with thermostat	pc	1		1
<b>Total</b>		<b>set</b>	<b>4</b>	<b>13</b>	<b>17</b>

## Equipment Procurement to EMB Regional Office

For EMB Region III

	Equipment	Remarks
1	Current meter	The current meter will be used for ambient water quality monitoring. -
2	Sediment Sampler	Sediment sampler will be used for collection of sediment sample from riverbed and ocean. -
3	Water Sampler	- Type: Van Dorn type water Sampler -
4	Water Quality Checker	- Type: Portable type, applicable field measurement -
5	Secchi Disc	- Type: Secchi Disc for Transparency -
6	Transparency Meter	- 50cm height
7	Incubator	The incubator will be used for BOD, Coliform count. -
8	Autoclave	-
9	Water Bath	-
10	Hot Plate	-
11	Pure Water Supply Unit	-
12	Ultrasonic Cleaner	-
13	Distillation Unit	
14	Multiple Analyzer	
15	Laboratory Test Meter	-
16	Atomic Absorption Spectrophotometer	
17	Set of Support Apparatus for Analysis	- 1) Micro Pipette (5mL): 2 set each - 2) Dispenser: 2 sets - 3) Burette: 2 sets - 4) BOD Bottle: 96 pcs

For EMB Region VI

	Equipment	Remarks
1	Current meter	The current meter will be used for ambient water quality monitoring.
2	GPS	GPS will be used for identifying geological position of pollution sources and sampling sites of WQ monitoring. -
3	Sediment Sampler	Sediment sampler will be used for collection of sediment sample from riverbed and ocean. -
4	Water Sampler	- Type: Van Dorn type water Sampler -
5	Water Quality Checker	- Type: Portable type, applicable field measurement -
6	Secchi Disc	- Type: Secchi Disc for Transparency -
7	Transparency Meter	- 50cm height
8	Incubator	The incubator will be used for BOD, Coliform count. -
9	Autoclave	-
10	Water Bath	-
11	Hot Plate	-
12	Desiccating Cabinet	-
13	Pure Water Supply Unit	-
14	Ultrasonic Cleaner	-
15	Filtration Unit w/ pump (3 units)	-
16	Distillation Unit	
17	Multiple Analyzer	
18	Laboratory Test Meter	-
19	Set of Support Apparatus for Analysis	- 1) Micro Pipette (5mL): 2 set each - 2) Dispenser: 2 sets - 3) Burette: 2 sets - 4) BOD Bottle: 96 pcs

For EMB Region XII

	Equipment	Remarks
1	Current meter	The current meter will be used for ambient water quality monitoring.
2	GPS	GPS will be used for identifying geological position of pollution sources and sampling sites of WQ monitoring.
3	Sediment Sampler	Sediment sampler will be used for collection of sediment sample from riverbed and ocean.
4	Water Sampler	- Type: Van Dorn type water Sampler
5	Water Quality Checker	- Type: Portable type, applicable field measurement
6	Secchi Disc	- Type: Secchi Disc for Transparency
7	Transparency Meter	- 50cm height
8	Fume Hood with wash and exhaust Unit	- Dimension: 75(W) x 50(D) x 120(H) cm or more
9	Incubator	The incubator will be used for BOD, Coliform count.
10	Autoclave	-
11	Water Bath	-
12	Hot Plate	-
13	Desiccating Cabinet	-
14	Refrigerator	-
15	Pure Water Supply Unit	-
16	Ultrasonic Cleaner	-
17	Filtration Unit w/ pump (3 units)	-
18	Distillation Unit	
19	UV-Vis Spectrophotometer	-
20	Multiple Analyzer	
21	Laboratory Test Meter	-
22	Atomic Absorption Spectrophotometer	
23	Mercury Analyzer	-
24	Arsenic Generator and absorber assembly	-
25	Ion Chromatograph	-
26	Set of Support Apparatus for Analysis	- 1) Micro Pipette (5mL): 2 set each - 2) Dispenser: 2 sets - 3) Burette: 2 sets - 4) BOD Bottle: 96 pcs

**Additional Equipment Procurement to EMB CO**

Item	Specifications
<b>Server (1 Unit)</b>	<p>Rack-Mount Server</p> <ul style="list-style-type: none"> <li>(a) Processor: 2.66Ghz or more, 2x2MB cache, 800MHz FSB, Chipset: Intel 5000X</li> <li>(b) Integrated Dual Gigabit Network Card</li> <li>(c) Integrated Dual Channel Ultra 320 SCSI Controller</li> <li>(d) Raid 5 (PERC4e/DC with 256MB cache)</li> <li>(e) Bezel for Expansion Riser: 3x PCI-X slots</li> <li>(f) 4GB, DDR-2 533/667MHz (FBD)</li> <li>(g) 1.44MB 3.5" slim Floppy Drive, Cable for Floppy Drive</li> <li>(h) 17 inch TFT Monitor or bigger</li> <li>(i) (5x) 300GB Ultra320 (15K RPM, 80-pin) SCSI Hard Drive</li> <li>(j) 24x IDE slim CD-ROM Drive, Cable for Optical Device</li> <li>(k) 1000MT Single Port Copper Gigabit NIC (V7.1)</li> <li>(l) 2x Power Cable (IEC C13-C14 Pass through for UPS/PDU Connection), 1x Power Card, 6 feet 110/220V USA (Thailand, Guam, Philippines)</li> <li>(m) OS: Win 2003 Server</li> <li>(n) Software: (1) Server Management Software Kit, (2) MS SQL Server 2005 Standard 5 CALs Retail Box + MS SQL Server 2005 (5 CAL License only), (3) MS Visual Studio 2005 Professional Full Version</li> </ul> <p>[Component]: Keyboard, Optical Mouse, Server Rails, Redundant Power Supply (700W)  [Server Rack]: Enclosure with slide UPS, Rack-mounted 3000VA USB &amp; Serial 230RM (2U), Rack PDU, Basic Zero U, 10A, 230V(15)C13, Network Management Card with Environmental Monitoring</p>
<b>Firewall (1 Unit)</b>	<p>Firewall Appliances with IPsec, Anti-Virus/Spyware, Buffer Overflow Prevention and Control In/Outbound Network Traffic</p> <ul style="list-style-type: none"> <li>(o) Mini 1U format 19" Rack Mountable,</li> <li>(p) CPU: Pentium 2.0GHz or more, HDD:40GB or more, RAM: 512MB or more,</li> <li>(q) 3x10/100/1000- Network Interface, Certified to CC EAL4+, US Manufactured</li> </ul>
<b>PC Work station (1 Unit)</b>	<p>Desktop CD-R/RW/DVD:24x or more type</p> <ul style="list-style-type: none"> <li>(r) CPU: Pentium 2GHz or more, HDD: 150GB or more, RAM: 2GB or more</li> <li>(s) Display: 15 inch TFT monitor or bigger,</li> <li>(t) OS: Windows XP professional or more new version,</li> <li>(u) Software: (1) MS Office Professional 2003 or more new version, (2) Anti Virus Soft (one year or more license)</li> </ul> <p>[Component]: Keyboard, Optical Mouse, Internal Modem (56k or more)</p>
<b>Color Printer (1 Unit)</b>	<p>Inkjet Color Printer</p> <ul style="list-style-type: none"> <li>(v) Paper Size: A4, A3, B5</li> <li>(w) Print speed: Black 14ppm or more, Color 11ppm or more</li> <li>(x) Resolution: 4800X1200 dpi (color), 600x600 dpi (black) or more</li> <li>(y) Networkable, USB interface and parallel (IEEE 1284 compliant)</li> <li>(z) Memory: 8MB built-in RAM, Processor: 33MHz</li> </ul> <p>[Consumables]: Black ink (2 sets), Tri-color ink (2 sets)</p>





付属資料 H 能力評価質問表の形式

水質管理能力強化プロジェクト（第2フェーズ）  
完了報告書

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## 1. Institutional Aspect

### 1-1. Coordination with other agencies on WQM

1. There is quite few coordination with other agencies.
2. Coordination is undertaken only upon request of other agencies.
3. Coordination with relevant agencies is usually considered in the policy-making process. But, very few coordination is actually considered in the implementation.
4. Policy-making is always conducted in close coordination with relevant agencies, but only partially during the implementation stage.
5. Close coordination with other relevant agencies is ensured in all stages from policy-making to the implementation on WQM.

### 1-2. Integrated Water Quality Management Framework (IWQMF)

1. Policies or programs that are in effect are not in line with the Clean Water Act.
2. IWQMF is drafted ensuring the consistency with CWA and other policies and programs in effect.
3. IWQMF is approved as an Executive Order and the implementation plan becomes effective.
4. On-going program is in line with the IWQMF. Coordination of its enforcement with other agencies is limited.
5. Water Quality Management Policy is sufficiently recognized by and enforced in close cooperation with other agencies.

### 1-3. Guidelines relevant to WQMA

1. EMB does not have any draft guidelines on WQMA designation.
2. Guidelines on WQMA are drafted. Any WQMAs have yet to be delineated in line with the guidelines.
3. Guidelines on WQMA are finalized and approved. WQMA are duly designated and the GB is set up in certain Regions.
4. WQMA designation is put in place nationwide in line with the guideline. GB is organized in each WQMA.
5. Most of the Regions have WQMAs designated and the GBs develop the Action Plan.

### 1-4. Policy on Market based Instruments (MBIs)

1. EMB does not have any policy on MBI or some MBIs are partially put in place without guidelines.
2. Guidelines on MBI-related tools are drafted but yet to be implemented.
3. Some of the guidelines on MBIs are approved and put in place in many regions.
4. Most of the guideline on MBIs are approved and applied to the activities in the WQMA Action Plan.
5. All of the guidelines on MBIs are properly applied nationwide or to the WQMAs designated.

### 1-5. Water Quality Management Fund (WQM Fund)

1. EMB does not have any draft guideline on WQM Fund.
2. Guidelines on National and Area WQM Fund are drafted.
3. Guideline on either National or Area WQM Fund is approved, and thereby the special account is duly opened to credit and withdraw the sources of fund.
4. Both guidelines on National and Area WQM Fund are approved and all the accounts needed for the fund management are opened.
5. WQM Funds are appropriately operationalized for WQM activities.

### 1-6. WQ Guideline and Effluent Standard

1. DAO 34 and 35 remain in effect. The revision has yet to be made.
2. The revised DAO 34, 35 and the guidelines for development of ISES are drafted.
3. Revised DAO 34 and 35 (WQG and GES) are duly approved. ISES for some sectors are developed.
4. The revised DAO 34 and 35 are recognized nationwide. ISES for some sectors are approved.
5. All the standards on WQ including WQG, GES and ISES are in effect. A system for renewal of standards is established.

### 1-7. Interaction between EMB CO and ROs, Coordination with other agencies

1. There is poor interaction between EMB CO and ROs and poor coordination with other agencies.
2. There are occasional opportunities for interaction between CO and ROs. Irregular meetings with other agencies are convened.
3. Regular meeting or conferences are held between CO and ROs, but occasionally with other agencies. Some activities are conducted under such coordination.
4. Meetings with other agencies are convened regularly. Only limited comments of those raised during the meetings are incorporated into the WQM policy.
5. Under the leadership of CO, activities are rendered in close coordination with other agencies, and their comments are properly incorporated into the WQM policy.

#### 1-8. Classification of Water body

1. The existing guidelines of classification remain applied.
2. The guidelines of classification are revised.
3. The revised guidelines are approved. Classification of water body is initiated according to the revised guidelines.
4. All the water bodies classified in the past are reclassified. Some of the non-classified water bodies are newly classified.
5. Classification of all the water bodies is completed. A system for reclassification is established.

#### 1-9. Water Quality Management Action Planning through participatory approach

1. There are no action plans for Water Quality Management Areas (WQMA).
2. The procedural guidelines for WQM action planning through participatory approach are developed.
3. Under the initiative of EMB RO, Action Plan is prepared through participatory approach in particular WQMA.
4. Action Plan is initiated in particular WQMA.
5. Under the initiative of EMB RO, Action Plan is developed and implemented in all designated WQMA.

#### 1-10. Area cooperation on Water Quality Monitoring

1. EMB conducts regular monitoring of water quality. There is no guideline on area cooperation arrangement for WQMA.
2. The guidelines on area cooperation arrangement are drafted for WQ monitoring in WQMA.
3. The guidelines are approved. Area cooperation is arranged for WQ monitoring in a particular WQMA.
4. WQ monitoring is continuously conducted based on the arrangement in a particular WQMA.
5. Continued WQ monitoring is made based on the sound arrangement in all WQMA.

## 2. Organizational Aspect

#### 2-1. Budget Allocation for EMB CO

1. Due to scarcity of budget, it is quite hard to design, establish, revise, operationalize and disseminate the WQM system.
2. Substantial budget is irregularly and limitedly allocated to revise prioritized guidelines or systems and manage the WQ data of regular monitoring.
3. Substantial budget is regularly but limitedly allocated to revise prioritized guidelines or systems and manage the WQ data of regular monitoring.
4. Substantial budget is allocated to newly develop, revise, disseminate prioritized guidelines or systems and manage the database and analyze the WQ data of regular monitoring.
5. Based on the local needs and the sufficient data of monitoring, substantial budget is properly and regularly allocated to review, revise and operationalize the WQM system.

#### 2-2. Personnel Allocation

1. There is no staff in charge of Water Quality Management in the Office.
2. Limited number of personnel is allocated for the volume of mandates. Their individual capability to enforce them is also limited.
3. Limited number of personnel is allocated for the volume of mandates. They, however, have enough capability to enforce them.
4. The proper number of personnel is allocated for the volume of mandates. Most of them have enough capability to enforce them.
5. Enough number of personnel is allocated for the volume of mandates and all of them are sufficiently capacitated.

#### 2-3. Procedural guidelines and operation manuals

1. Procedural guidelines and Operation manuals on WQ management have yet to be prepared.
2. Some of the guidelines and manuals are prepared. EMB CO's understanding is still limited. Dissemination of guidelines and manuals to RO is arranged.
3. Some of the guidelines or manuals are approved. CO has a correct understanding of those documents. The guidelines and manuals are steadily disseminated to ROs.
4. All of the guidelines and manuals needed for WQM are approved. Many activities are implemented according to those guidelines and manuals in particular regions.
5. Many activities are implemented in all regions according to guidelines and manuals needed for WQM. A system for revision of the guidelines and manuals is established.

#### 2-4. Scientific Analysis and Water Quality Model to address policy and planning needs

1. The methodology and model to scientifically analyze WQ data collected in regions have yet to be developed.
2. The methodology for scientific analysis and WQ simulation model are developed. Dissemination to EMB ROs is limited.

3. The methodology for scientific analysis and WQ simulation model that have been developed are disseminated to most of the ROs.
4. According to the methodology, all of the ROs provide WQ data to CO, which has a validation system to ensure the reliability of WQ data.
5. Scientific analysis is applied to all of the water bodies and the WQ model is applied as the needs arise. WQ data of EMB ROs are always in conjunction with CO's.

#### **2-5. Laboratory equipments and materials for WQ analysis**

1. There is a severe shortage of the equipments and materials in EMB CO.
2. Minimal kinds of facilities and materials for conventional WQ parameters are provided in CO. But, understanding of their use is not enough.
3. Minimal kinds of facilities and materials for conventional WQ parameters are provided in CO. The staff has good understanding of how to use them.
4. Reasonable scale of facilities and materials for all the WQ parameter are provided. Their operation is good but their maintenance is limited.
5. Optimum scale of facility and materials for all the WQ parameter required to CO are provided. Their operation and maintenance are very good.

#### **2-6. WQM Database/Information System**

1. Information related to WQM is partially collected, but remains scattered.
2. A part of the information is assembled and analyzed. The information is irregularly updated.
3. With compiled database of various kinds of information, information management system is put in place. 1st National WQ Status Report is published.
4. All kinds of necessary information are compiled. The information is limitedly updated. National WQ Status Report is irregularly published.
5. All kinds of necessary information are compiled and linked with GIS system. The information is properly updated. NWQSR is regularly published.

#### **2-7. Ownership of WQ management**

1. EMB CO is less aware that it should play a central part in national WQ management.
2. Some staff of the CO is aware that EMB CO should play a central part in WQ management.
3. Most of the staff of the CO is well aware that EMB CO should play a central part in WQ management.
4. All the staff of the CO is aware that EMB CO should play a central part in WQ management.
5. The entire EMB CO is fully aware that it should play a central part in WQ management.

#### **2-8. Leadership of EMB CO on WQ management**

1. EMB CO does not play the role as the lead agency taking initiative of national WQ management.
2. EMB CO takes initiative in preparing particular WQ management policy, but has limited leadership in coordinating meetings with other agencies.
3. EMB CO takes initiative in preparing particular WQ management policy as well as in coordinating meetings with other agencies.
4. EMB CO takes strong initiative in implementing and going ahead with particular WQ management policy.
5. EMB CO plays a leading role in implementing and promoting all WQ management policies.

### **3. Individual Aspect**

#### **3-1. Perception of mandates tasked to personnel**

1. Mandates tasked to each staff are unclear. Or, you do not have a solid understanding of the mandates.
2. Due to limited perception of fundamental assignments, your performance of duties is quite insufficient.
3. You have a correct understanding of your fundamental assignments and are performing your basic duties.
4. You have a correct understanding of most of your assignments and are performing your duties.
5. You have a correct understanding of all your assignments and are performing all your duties properly.

#### **3-2. Knowledge for WQ management**

1. There is a lack of knowledge and experience on WQ management needed for performing your duties.
2. You have fundamental knowledge in a fragmentary fashion regarding WQ management. Based on the knowledge, you can perform a part of your duties.
3. You have a correct understanding of the fundamental knowledge for WQ management but limited experience in implementation.
4. You have an expertise in WQ management but need more experience in implementation.

5. You have a wide range of expertise in WQ management and discernment based on a great deal of experience.

**3-3. Awareness for WQ management**

1. You are less aware that it is critical to promote WQ management.
2. You are aware of the importance of WQ management, but have difficulty to keep such awareness due to a lot of issues on its implementation
3. You have some awareness to perform some of your duties on WQ management.
4. You have good awareness to perform most of your duties on WQ management.
5. You have high awareness to properly perform all of your duties on WQ management.





