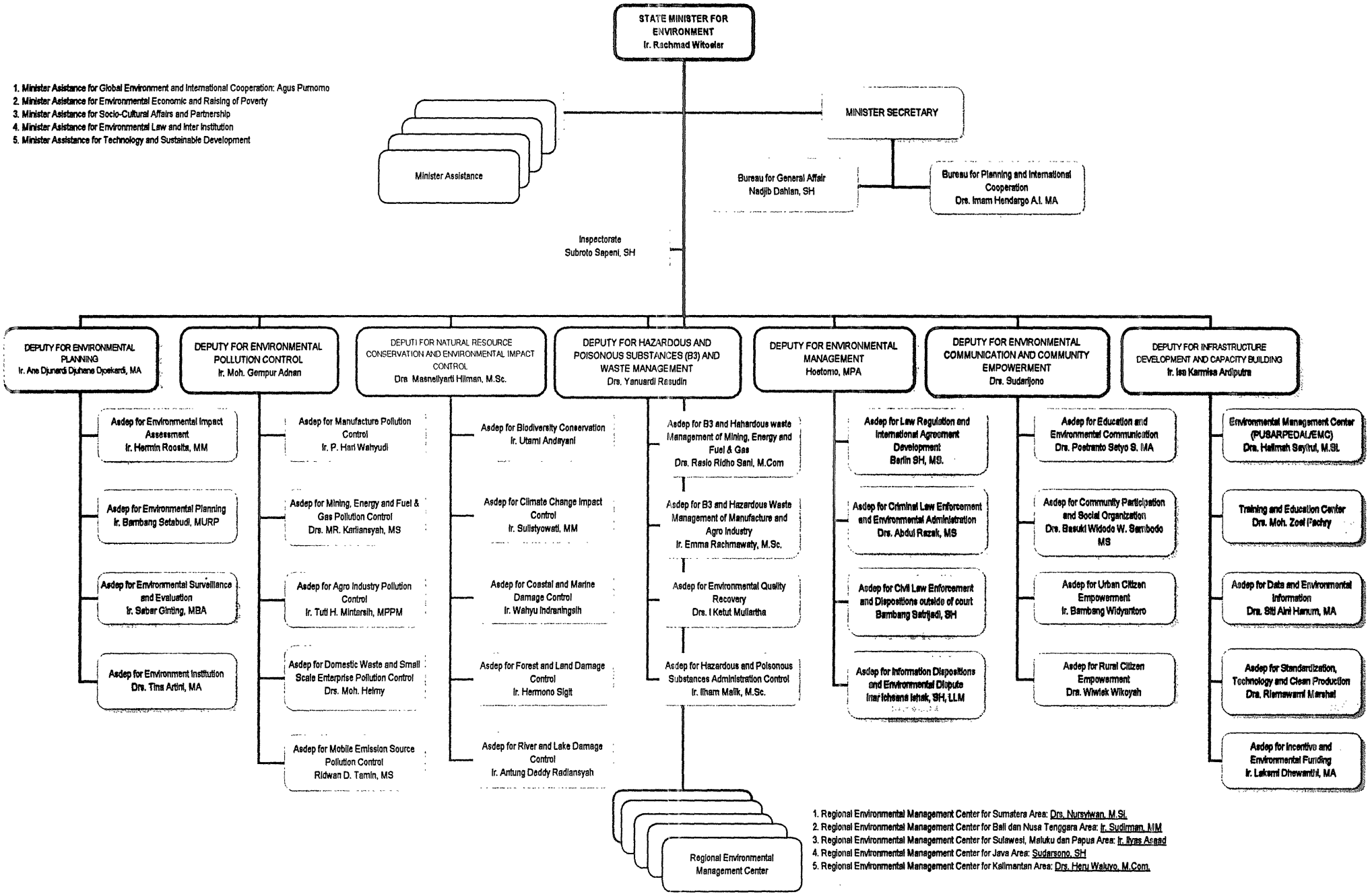
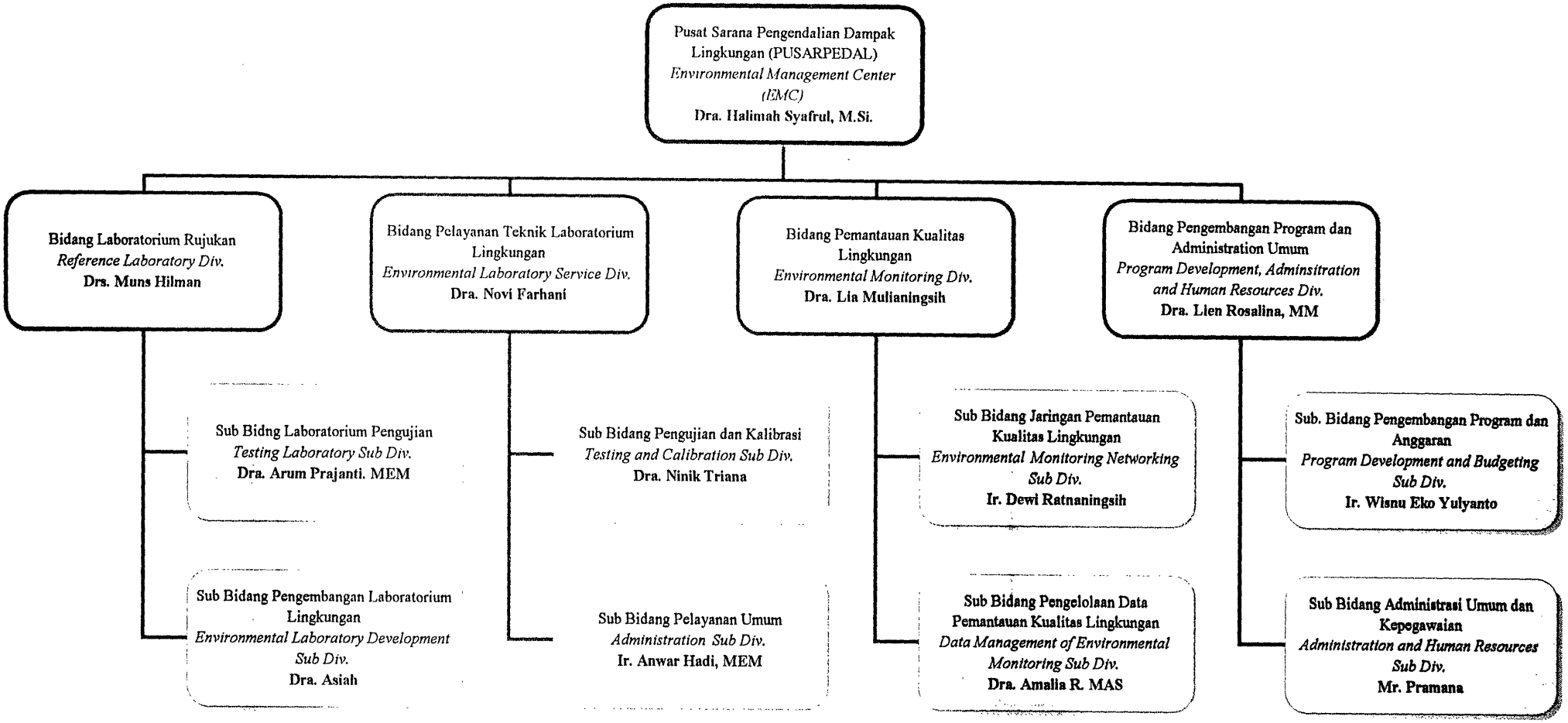
添付資料 4 環境省組織図 (ORGANIZATION STRUCTURE MINISTRY OF ENVIRONMENT)

As of 10 June 2005



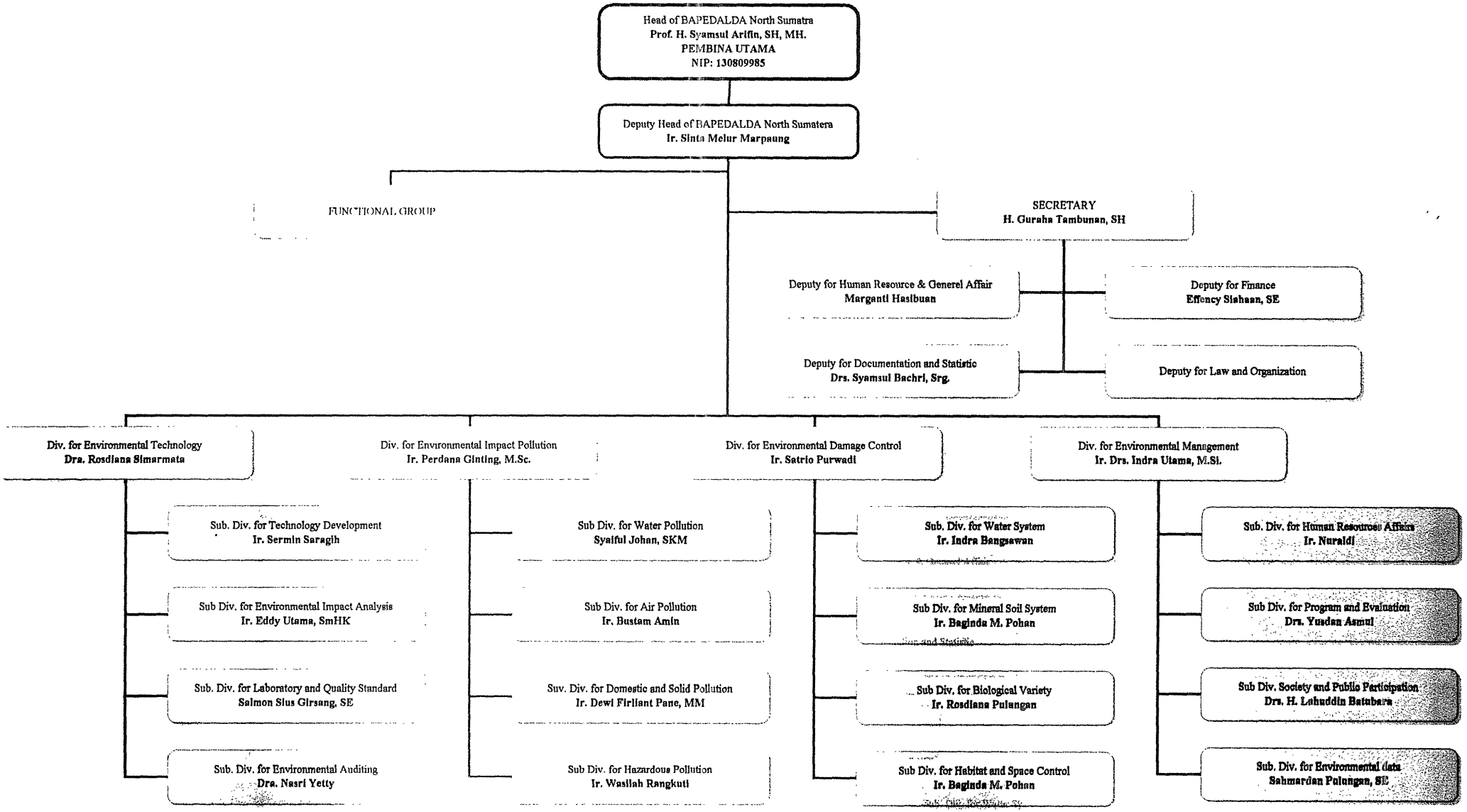
添付資料 5 環境管理センター組織図 (ORGANIZATION STRUCTURE OF PUSARPEDAL/EMC)

As of August 2005

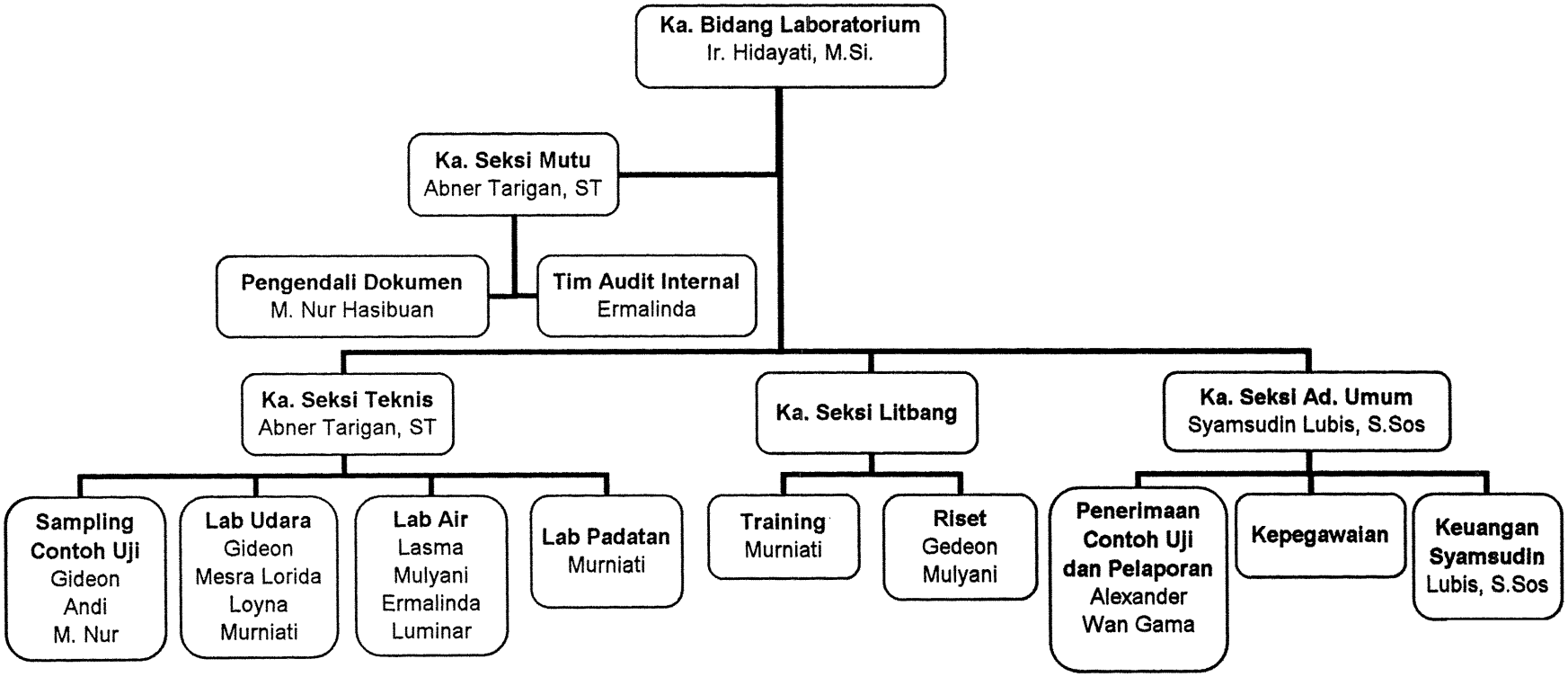


添付資料 6 北スマトラ州環境局組織図
(ORGANIZATION STRUCTURE BAPEDALDA NORTH SUMATERA PROVINCE)

As of July 2004



添付資料　7　北スマトラ州環境ラボ組織図(Organization Structure of Environmental Laboratory Bapedalda) NSP



添付資料　8　改定プロジェクト・デザイン・マトリックス (PDM)

プロジェクト名：インドネシア共和国「地方環境管理システム強化プロジェクト」　協力期間：2002年7月1日～2006年6月30日

対象地域：JABOTABEK, 北スマトラ州　ターゲットグループ：環境管理センター（SARPEDAL）及び地方政府の職員　Date: 2004年5月26日

プロジェクトの要約	指標	指標の入手手段	外部条件
【上位目標】 • 国及び地方レベルの環境管理能力が強化される。	1. 地方政府（乃至、地方政府環境管理局（BAPEDALDA））により実施される環境モニタリング・監視がラボラトリーにおいて適切に管理される。 2. 信頼性の高い環境モニタリング・監視のデータに基づく対策が実施される。	• 環境統計 • KLH 年次報告書 • BAPEDALDA の報告書	• インドネシア政府の環境管理に係る KLH 及び各 BAPEDALDA の役割に関する政策が変わらない。
【プロジェクト目標】 • 環境管理センター（SARPEDAL）の主導のもと、SARPEDAL と地方政府環境管理局（BAPEDALDA）が協働する環境管理体制が構築される。	1. 2006年までに、北スマトラ州地方政府環境管理局（BAPEDALDA-NSP）が、デリ川の水質汚染対策のいくつかのオプションを SARPEDAL の支援を受けて実施する。 2. 2006年までに、SARPEDAL と地方政府環境影響管理当局との協力合意数が増加する。 3. 毎年、水質モニタリング報告書が30州から、大気質モニタリング報告書が10都市から、それぞれ SARPEDAL に提出され、収集されたデータが環境白書用に処理される。	1-1 プロジェクト報告書 1-2 北スマトラ州地方政府環境管理局の報告書 1-3 KLH 年次報告書 2-1 プロジェクト報告書 2-2 KLH 年次報告書 3-1 プロジェクト報告書 3-2 KLH 年次報告書 3-3 環境白書	• モデルサイトにおいて実施された様々なオプションの肯定的な効果が認識される。 • パイロットプロジェクトの様々な事例や手続きは、他の地方政府に公開される。 • 工場等のようなステークホルダーが、本プロジェクトに反対しない。
【成果】 1. 信頼性の高いモニタリングデータと科学的知見をもとに、モデルサイト（北スマトラ州）において特定の環境問題に対する対策オプションが提案される。 2. インドネシア国環境省（KLH）及び BAPEDALDA に対し環境管理に関する科学的知見・技術的ガイダンスを提供する	1-1 毎年、北スマトラ州地方政府環境管理局（BAPEDALDA-NSP）及び SARPEDAL の協同で、環境モニタリング・監視に関する3つの報告書が提出される。 1-2 毎年3回、オプションを提案するための会合が、北スマトラ州地方政府環境管理局（BAPEDALDA-NSP）と SARPEDAL の協同によって企画される。 2-1 毎年、科学的知見に関する3つの報告書が、SARPEDAL から KLH の他部署に提出される	1-1 プロジェクト報告書 1-2 北スマトラ州地方政府環境管理局の報告書 1-3 KLH 年次報告書 2-1 プロジェクト報告書及び、環境白書	

SARPEDALの能力が強化される。 3. 適切な環境モニタリング・監視方法に関するノウハウが、地方政府に移転される。	る。 2-2 毎年、５つの標準操作手順書（SOPs）が、SARPEDALによって作成される。 2-3 2006年までに、60の分析項目が、SARPEDALにおけるISO17025に基づき、国家認証委員会（KAN）によって認定される。 2-4 2006年までに、SARPEDALによって20項目のレファレンス・マテリアル（RM）が製造され、国家認証委員会（KAN）の承認のため申請される。 2-5 2006までに、5つの技術ガイドラインがSARPEDALから地方政府に提供・更新される。 3-1 毎年、SARPEDALによって、3つの教材が作成される。 3-2 2006年までに、SARPEDALによって、環境ラボに対し、18項目に基づく精度管理試験（proficiency test）が実施される。 3-3 毎年2回、地方政府職員のためのワークショップがSARPEDALによって企画される。 3-4 2006年までに、360人の地方政府職員（地方環境ラボを含む）に対するトレーニングがSARPEDALによって行われる。	2-2 北スマトラ州地方政府環境管理局の報告書 2-3 KLH年次報告書 3-1 プロジェクト報告書 3-2 北スマトラ州地方政府環境管理局の報告書 3-3 KLH年次報告書	• KANがSRMを承認する体制が整う。
【活動】 (別紙参照)	【投入】 日本側投入 (1) 専門家の派遣 1) 長期専門家 - チーフアドバイザー／環境管理 48M/M - 業務調整／トレーニングプログラム 48M/M - 環境モニタリング 48M/M - 環境ラボラトリー管理 24M/M	インドネシア側投入 (1) 人員の配置 1) プロジェクトダイレクター 2) プロジェクトマネージャー 3) 各分野カウンターパート: - 環境質検査 - 環境モニタリング・監視（大気質）	• トレーニングを受けた技術スタッフがSARPEDALにおける勤務を続ける。 • トレーニングを受けた地方政府職員が、同地方政府（若しくは、その関連組織）における勤務を続ける。

	- 応用環境分析技術 24M/M 2) 短期専門家 (2) 機材供与 (3) 研修員の受け入れ 3名／年 - カウンターパート - 北スマトラ州地方政府環境管理局職員	- 環境モニタリング・監視（水質） - ラボラトリー管理 - 機器の校正（calibration）と管理 - 環境情報システム - 大気汚染 - 水質汚濁 - 有毒・有害物質 (2) 施設 土地、建物、分析ラボラトリー、分析機器、トレーニング施設	【前提条件】 • インドネシア政府の地方分権化に関する政策が変わらない。

【活動】

1. モデルサイトでのパイロットプロジェクト活動（成果１のための活動)
   1-1 地方政府環境管理局ラボラトリー（**SARPEDAL**）におけるラボ管理の改善
   1-1-1 ラボ機器のメンテナンス、校正（calibration）を行う
   1-1-2 ラボ管理システムを構築する
   1-1-3 品質管理（QA/QC）システムを構築する

   1-2 環境モニタリングの実施と特定問題点に関するアセスメントの実施
   1-2-1 環境モニタリング・監視を実施する
   1-2-2 環境汚染状況と汚染源に関する調査を実施する

   1-3 特定問題点の環境対策のオプションの検討
   1-3-1 汚染源のアセスメントを実施する
   1-3-2 環境質改善のための戦略プログラムを策定する

2. 環境管理センター（**SARPEDAL**）の政策助言に係る技術的能力の強化（成果２のための活動）
   2-1 SARPEDAL のラボラトリー管理の向上
   2-1-1 サンプリング及び分析の標準手法、標準手順書を開発する

2-1-2 レファレンス・マテリアル（RM）を製造する
2-1-3 ラボ管理システムを構築する

2-2 環境モニタリングと環境管理に関する調査の実施
2-2-1 既存の汚染対策施設の評価に係る調査を実施する
2-2-2 水質及び大気質に焦点を絞った環境モニタリングデータに基づく現行の環境基準を評価する
2-2-3 ジャカルタの大気汚染に関する調査を実施する

3. 地方政府の環境モニタリング・環境調査機能強化 **(成果3のための活動)**
3-1 地方のラボ管理能力の向上
3-1-1 基礎項目に続く項目の分析に関する地方ラボ職員のトレーニングを行う
3-1-2 精度管理試験（proficiency tests）を実施する
3-1-3 ラボラトリー品質管理システム（LQMS）に関し、地方ラボスタッフのトレーニングを実施する
3-1-4 地方ラボ間における情報交換のためワークショップを開催する

3-2 環境モニタリング・監視方法に関するトレーニングの実施
3-2-1 既存の方法・監視に関し、地方ラボに対する技術的支援を提供する
3-2-2 地方ラボに対する環境モニタリング・監視実施に関する技術的ガイダンスを実施する

3-3 影響評価に関するトレーニングの実施
3-3-1 地方政府による環境管理に必要となる教材を作成する
3-3-2 環境管理に関し、地方政府職員のトレーニングを実施する
3-3-3 環境管理に関し、地方政府に対するワークショップを開催する

添付資料 9　改定活動計画(PO)

活動	2002				2003				2004				2005				2006			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
協力期間																				
1. モデルサイト(北スマトラ州)におけるパイロット事業																				
1-1 環境管理センター(SARPEDAL)のラボラトリー管理を改善する																				
1-1-1 ラボラトリー機器のメンテナンス、校正(calibration)を実施する									◆				S							
(1) メンテナンス及び校正(calibration)の標準操作手順書(SOPs)を作成する																				
(2) SOPsをラボ管理に組み込む																				
1-1-2 ラボラトリー管理システムを構築する																				
(1) SARPEDALで開発したSOPsの検証を実施する					◆				◆				S				S			
(2) ラボラトリー管理のトレーニングを実施する																				
1-1-3 ラボラトリーにおける品質管理(QA/QC)システムを構築する						S				S										
1-2 環境モニタリング、特定問題点に関するアセスメントを実施する																				
1-2-1 環境モニタリング・監視を実施する																				
(1) 事前環境モニタリングを実施する																				
(2) 環境モニタリング・監視プログラムを策定する																				
(3) 環境モニタリングの手法を指導する																				
(4) 環境モニタリング・監視データを評価する																				
1-2-2 汚染源と汚染レベルに関する調査を実施する																				
(1) インベントリー作成のための基礎データを収集し、それをデータベース化する																				
(2) 汚染のレベルを把握し、汚染源に関するデータベースを作成する																				
(3) モニタリングデータに基づき、汚染源を把握する																				
1-3 特定の環境問題に関する対策オプションを立案する																				
1-3-1 汚染原因を検証する																				
(1) 汚染源を分類し、その影響のレベルを調査する																				
(2) 汚染負荷量予測モデルの開発																				
1-3-2 環境質改善の戦略的なプログラムを策定する																				
(1) 対策オプションを検討する																				
(2) 対策効果を算定する																				
2. 環境管理センター(SARPEDAL)の政策助言に係るキャパシティ・ディベロップメント																				
2-1 SARPEDALのラボラトリー管理機能を強化する																				
2-1-1 サンプリングと分析に関する標準方法／実施手順を作成する																				
(1) サンプリングと分析に関する標準方法／実施手順を作成する																				
(2) 有害廃棄物(3B)の特性分類、分析、生物学的検査のため、ラボラトリー検査体制を開発する													S				S			
2-1-2 レファレンス・マテリアル(RM)を製造する														S				S		
2-1-3 ラボラトリー管理システムを構築する																				
(1) 環境情報システムを構築する					S				S											
(2) ラボラトリー廃棄物管理の研究開発プログラムを実施する																				
(3) SARPEDALと同様の活動に関し、他国の環境ラボとの情報交換を行う																				
2-2 環境モニタリング・環境管理に係る調査を実施する																				
2-2-1 既存の汚染対策施設の評価に関する調査を実施する																				
(1) 汚染対策施設に関する情報を収集する																				
(2) 評価手法を検討し、施設の評価を実施する																				
2-2-2 大気質・水質に焦点を当てたモニタリングデータに基づく現行の環境基準を評価する																				
(1) 環境バックグラウンドデータの調査を実施する																				
(2) 環境基準を評価・検討する																				
2-2-3 大気汚染モデリング(ジャカルタ首都圏)に関する調査を実施する																				
(1) パッシブサンプラーによるモニタリングを実施する																				
(2) 汚染源を確認し、シミュレーションモデルを構築する										S				S						
(3) 可能性のある対策を検討する															S					
(4) 対策効果を評価し、施策を検討する																				
3. 環境モニタリング・監視に関する地方政府のキャパシティ・ディベロップメント																				
3-1 地方ラボラトリーの管理能力の向上を図る																				
3-1-1 基礎項目に続く項目の分析方法に関し、地方ラボスタッフのトレーニングを実施する																				
3-1-2 精度管理試験(proficiency tests)を実施する																				
3-1-3 ラボラトリー品質管理システム(LQMS)に関し、地方ラボスタッフのトレーニングを実施する																				
3-1-4 地方ラボ間における情報交換のためのワークショップを開催する																				
3-2 環境モニタリング・監視の方法に関するトレーニングを実施する																				
3-2-1 地方ラボラトリーに対して環境モニタリング・監視の実施方法に関する技術的な支援を行う																				
3-2-2 地方ラボに対する環境モニタリング・監視実施に関する技術的ガイダンスを実施する																				
3-3 インパクト・アセスメントに関するトレーニングを実施する																				
3-3-1 地方政府の環境管理のためのトレーニング用教材を作成する																				
3-3-2 環境管理に関し、地方政府職員のトレーニングを実施する																				
3-3-3 環境管理に関し、地方政府に対するワークショップを開催する																				

◆◆ プロジェクトリーダー／環境管理専門家
◆◆ 環境モニタリング専門家
環境ラボラトリー管理専門家
◆◆ 応用環境分析技術専門家
S 短期専門家

添付資料10. Master Sheet Capacity Development for Local Government: National Training & Workshop DEMS Project

No		FY	Title of Training	Duration		No. of Participant			No. of Modul
				Start	Finish	Training	Workshop	TOTAL	
1	1	2002/2003	Workshop (Rakernis) on Environmental Quality Monitoring and Optimalization of Environmental Laboratory	18-Dec-02	19-Dec-02		31		13
2	2	2002/2003	Training on "Laboratory Quality Management System"	10-Mar-03	21-Mar-03	24			23
3	3	2002/2003	Training on "Sampling and Analysis for Water Quality"	24-Mar-03	28-Mar-03	29			22
				TOTAL FY2002/2003		**53**	**31**	**84**	**58**
4	1	2003/2004	Training on Monitoring of Water Quality	28-Jul-03	1-Aug-03	30			14
5	2	2003/2004	Training on Monitoring Mercury in Water and Sediment	16-Feb-04	20-Feb-04	17			11
6	3	2003/2004	Workshop on Monitoring of River Water Quality	2-Mar-04	3-Mar-04		29		13
				TOTAL FY2003/2004		**47**	**29**	**76**	**38**
7	1	2004/2005	Training on Monitoring Lead (Pb) in Ambient Air	7-Jun-04	11-Jun-04	30			20
8	2	2004/2005	Training on Coliform Bacteria Analysis	14-Feb-05	18-Feb-05	34			12
9	3	2004/2005	Training on Optimal Utilization of AAS and Spectrophotometer UV-Vis	21-Feb-05	25-Feb-05	35			17
10	4	2004/2005	Workshop on Monitoring of Environmental Quality	9-Mar-05	10-Mar-05		34		16
				TOTAL FY2004/2005		**99**	**34**	**133**	**65**
11	1	2005/2006	Training on Air Quality Management at Regional Area	22-Aug-05	26-Aug-05	27			17
12	2	2005/2006	Training on River Water Quality Management	28-Nov-05	2-Dec-05	29			21
13	3	2005/2006	Training on Environmental Laboratory Waste	6-Mar-06	10-Mar-06	29			16
				TOTAL FY2005/2006		**85**	**0**	**85**	**54**
14	1	2006/2007	Workshop on Role of Environmental Monitoring for Environmental Management	13-Jun-06	14-Jun-06		**37**		14
				TOTAL FY2005/2006		**0**	**37**	**37**	**14**
					TOTAL	**284**	**131**	**415**	**229**

添付資料11 Master Sheet Capacity Development for Local Government: In house Training & Seminar
DEMS Project

I. IN-HOUSE TRAINING

No		FY	Title of Training	Duration		No. of Participant	Venue	Module/Topic	Instructor
				Start	Finish				
1	1	2002	In-house Training on Sampling and Analysis for Water Quality Parameters (for Laboratory staff Bapedalda NSP)	4-Feb-03	20-Mar-00	2	EMC Serpong	Theory and Practice: 1) Sampling and analysis for the parameters 2) BOD and COD 3) Total Nitrogen and Ammonia 4) Nitrate and Nitrite 5) Mercury, Arsenic and Selenium 6) TOC by TOC Anatoc and TOC Shimadzu 7) Oil & Grease and TSS 8) Heavy Metals in water by the use of AAS 9) Heavy Metals in the sea water by SPR-IDA method using AAS - GF	SARPEDAL Staff
2	2	2002	In house training on Water Quality Analysis (for laboratory staff of Bapedalda NSP)	4-Feb-03	17-Feb-03	2	EMC Serpong	Theory and practice: sampling and analysis for the water quality parameter i.e.: BOD, COD, Total Nitrogen, Ammonia, Nitrate, Nitrite, Mercury, Arsenic, Selenium, TOC, Oil & Grease and TSS, Heavy Metals in water by use AAS. Heavy Metals in the sea	Instructor: EMC staff
3	3	2002	In house training on Water Quality Analysis (for laboratory staff of Bapedalda NSP)	11-Mar-03	13-Mar-03	11	Medan	Theory and practice: sampling and analysis for the water quality parameter: Oil, Grease, TSS, COD, Sampling Technique	(EMC staff) : Ms. Siti Rohmah, Rita, Eti Sumiati, Erna Wita DEMS: Dr. Kamiya, Mr. Ishihara
				TOTAL-FY2002/2003		15			
4	1	2003	In house training on Water Quality Analysis (for the laboratory staff of Bapedalda NSP)	22-Apr-03	23-Apr-03	11	Medan	Theory and practice 1. TOC and Ammonia Analysis 2. Laboratory Waste Management	Instructor (EMC staff): Ms. Siti Rohmah & Ms. Erna Wita Nasir (Supported by Mr. Ishihara Taketoshi from JICA DEMS)
5	2	2003	In house training on Water Quality Analysis (for the laboratory of staff Bapedalda NSP)	22-May-03	23-May-03	11	Medan	Topic (theory and practice): sampling and analysis for the parameter: 1. Determining of Heavy Metal in Water and Waste Water 2. Determining of Ortho-Phosphate in Water and Waste Water 3. Determining of Sulfide in Water and Waste Water	Instructor (EMC staff): Mr. Asrul & Ms. Dyah (Supported by Mr. Ishihara Taketoshi from JICA DEMS)
6	3	2003	In-house Training on Measuring Technique of Station Emission Source (for Bapedalda South Sulawesi & North Sumatera Province)	16-Jun-03	20-Jun-03	2	EMC Serpong	Theory and practice 1) Monitoring of station emission source 2) Characteristic of station emission source 3) Sampling technique of station dust emission source (Sox, HCl, Nox) 4) Sampling and Analysis dust, Sox, Nox (theory and practice)	Instructor (EMC staff): Mr. Hari, Dr. Esrom, Mr. Djurit, Mr. Pramono, Ms. Emalya Rachmawati, Mr. Bambang, Mr. Isa, Mr. Fernando, Ms. Retno, Ms. Puji
7	4	2003	In house training on Water Quality Analysis (for laboratory staff of Bapedalda NSP)	14-Aug-03	15-Aug-03	11	Medan	Theory and practice: Nitrite, Nitrate, Sulfate, Chloride Trial operation on Environmental Information System	Ms. Ernawita and Ms. Dyah Apriyanti Ms. Natalia Sinto

No		FY	Title of Training	Duration		No. of Participant	Venue	Module/Topic	Instructor
				Start	Finish				
				TOTAL-FY2003/2004		35			
8	1	2004	Training on Air Pollution Simulation Model For the BPLHD DKI Jakarta staff	4,5,11 Aug. & 14, 15 Sep. 200		10	BPLHD DKI Jakarta	1. Air Quality Simulation Model (MSKU); 2. Air Pollution Sources Inventory; 3. Meteorology; 4. Verification the result data of Simulation Model; 5. Using the Program to simulate Air Pollutant Distribution	Dr. Esrom Hamonangan
9	2	2004	Training on Laboratory Waste Treatment (for laboratory staff of Bapedalda NSP)	25-Oct-04	25-Oct-04	11	Medan	Determination of Chloride (Cl) in water by Argentometric Mohr method	Ms. Ernawita Nazir Ms. Henny Puspita Mr. Arai Yuji (JICA)
				TOTAL-FY2004/2005		21			
11	1	2005	Basin Runoff Model (for BAPEDALDA NSP staff)	25-May-05	30-May-05	3	EMC Serpong	1. Objective of Inventory Study 2. Process of River Water Quality Management 3. Necessary Data and Information 4. Pollution Load Generation 5. Classification of Point/Non-point Pollution Sources 6. Formulation of Basin Runoff Model	Mr. Ishikawa Kunio Supported by EMC team
				TOTAL-FY 2005/2006		3			
12	1	2006	Training on Key Points BOD Analysis (for BAPEDALDA NSP staff)	19-May-06	20-May-06	14	Medan (Environmental Laboratory)	1. Necessity of BOD Monitoring Data 2. Basic Information concerning Correlation among Analytical of Key Parameters 3. Definition of BOD Value 4. Deviation Factors of BOD Analysis 5. Necessity of Pre-treatment of BOD Analysis 6. Penyiapan Larutan Pengencer (Preparation of Dilution Water 7. Key points for BOD Analysis 8. Oxidation Level from many kind of Organic Substances	Mr. Ishikawa & Mr. Asrul
				TOTAL-FY2006/2007		14			
				GRAND TOTAL		88			

II. SEMINAR

No	FY	Title of Training	Duration		No. of Participant	Venue	Module/Topic	Presenetr
			Start	Finish				

No	FY	Title of Training	Duration		No. of Participant	Venue	Module/Topic	Instructor
			Start	Finish				
1	2004	Seminar (Panel Discussion) on Air Pollution and its Impact toward Human Health	16-Dec-04		127	Hotel Hilton Jakarta	1. Air Pollution Condition in Tokyo Metropolitan Area "Historical Aspect and Now" 2. Air Quality Monitoring System in Indonesia 3. Ambient Air Monitoring (TSP) and Trace Metal Elements Analysis 4. Monitoring of Lead (Pb) in Ambient Air 5. Impact of Pb and Gas Pollution (Sox & NOx) to the Human Health 6. Acid Deposition Monitoring and its Impact to the Environment 7. Simulation Model of Air Quality Management 8. Air Pollution Control in the DKI Jakarta 9. Euro-2 / Standard 10. Community Perception Concerning Air Pollution	Mrs. Masnellyarti Hilman - KLH Mr. Komeiji Tetsuhito (JICA) Mrs. Halimah Syafrul – KLH Mr. Hari Wahyudi – KLH Mrs. Rina Aprishanty – KLH Mr. Budi Haryanto – UI RTM. Sutamihardja – IPB Mr. Esrom Hamonangan – KLH BPLHD DKI Jakarta Deputy V – KLH
2	2006	Water and Air Quality Crisis at the Urban Area	8-Jun-06		116	Santika Hotel Jakarta	Pleanary: 1. JICA DEMS Contribution to Environmental Management System in Indonesia 2. Integrated Environmental Pollution Control and clear direction of Supporting Programs to obtain Optimal Result Deputy II KLH 3. Healthy Water and Air Quality necessity for Green Indonesia in the framework of Living Environment Management Deputy VII KLH 4. Opinion of DPR members (House of Representative) concerning Environmental Quality Crisis in the Jakarta Metropolitan Area and the Programs/Countermeasures that has being conducted by DPR RI. 5. Concept of Air Quality Management in Urban Area (JICA DEMS Project) 6. Concept of River Water Quality Management at Deli River (JICA DEMS Project) 7. Case Study on Formulation of Pollution Runoff Model Targeting Deli River (DEMS Projet) Group (Air) 1. Technical Policy of Air Pollution Control (Asdep for Mobile Emission Pollution Control-Deputy II KLH) 2. Simulation Model to Manage Air Quality in Jakarta City (Osaka University) 3. Study result of Air Quality in Jakarta Metropolitan area (PUSARPEDAL-KLH) 4. Study result of KPBB concerning high concentration of Lead in blood of the children living 5. The Programs that has being conducted by Regional Government of DKI Jakarta in order fo 6. Impact of Bus Way Program toward air quality in the Jakarta Metropolitan area (Communic Group (Water) 1. River Management Policy of Ciliwung, Cisadane and Deli (Asdep for River and Lake Dam 2. Deli River Quality and management effort that has being conducted (BAPEDALDA NSP) 3. Condition of Ciliwung and Cisadane River Basin and management effort that has been cond 4. Quality condition of Ciliwung River and management effort that has being to be conducted 5. Quality condition of Cisadane River in 2003-2005 (PUSARPEDAL) 6. Management effort of Cisadane River and cooperation with other party that has been condu	KLH PUSAREDAL/EMC DPR RI JICA Expert
		TOTAL			243			

添付資料12. Breakdown of Developed Training Module and Workshop Materials
DEMS Project

FY*	No. of Training & Workshop	No. of Module & Material
2002/2003	3	58
2003/2004	3	38
2004/2005	4	65
2005/2006	3	54
2006/2007	1	14
TOTAL		**229**

*Japanes Fiscal Year start in 1 April and ends in 31 March

FY	No	Title of Training Course	Duration of Training Start	Duration of Training Finish		Title of Modules	Author	Year of Production
2002/2003	1	**Workshop on Environmental Quality Monitoring and Optimalization of Environmental Laboratory**	**18-Dec-02**	**19-Dec-02**	1	Concept of National Environmental Monitoring Program	Sarpedal/EMC	2002
					2	Monitoring and Reporting System of Target Rivers of PROKASIH and "Territorial Development " Program	Asdep Java & Kalimantan MoE	2002
					3	State of Environment Report (SOER)	Asdep Information MoE	2002
					4	River Quality Monitoring in Japan by DEMS Project	JICA Expert	2002
					5	Water Quality Monitoring and Information of GTZ experience	GTZ Expert	2002
					6	Handover-takeover mechanism of environmental laboratory equipment	Finance Department RI	2002
					7	Environmental quality monitoring result in Sarpedal	Sarpedal/EMC	2002
					8	Technical Guideline of Water Quality Monitoring	Sarpedal/EMC	2002
					9	Role of Environmental Laboratory for Environmental Monitoring	Sarpedal/EMC	2002
					10	Water quality monitoring implementation in North Sumatera	Bapedalda NSP	2002
					11	Water quality monitoring implementation in West Kalimantan	Bapedalda West Kalimantan	2002
					12	Agreement to implement integrated river water quality monitoring.	Sarpedal/EMC	2002
					13	Commitment to implement Laboratory Quality Management System according to Kepka Bapedal No. 113 of 2000 and SNI 19-17025: 2000 as Environmental laboratory.	Sarpedal/EMC	2002
2002/2003	2	**Training on "Laboratory Quality Management System"**	**10-Mar-03**	**21-Mar-03**	1	Story of ISO/IEC 17025: 1999 in the Free Trade Standardization;	Sarpedal/EMC	2003
					2	Laboratory Accreditation System;	Sarpedal/EMC	2003
					3	Guidelines of Technique Evaluation Implementation of Environmental Laboratory;	Sarpedal/EMC	2003

FY	No	Title of Training Course	Duration of Training Start	Duration of Training Finish		Title of Modules	Author	Year of Production
					4	Laboratory Quality Concept;	Sarpedal/EMC	2003
					5	Organization and Quality System;	Sarpedal/EMC	2003
					6	Documentation Control and Review, Inquiry and Contract;	Sarpedal/EMC	2003
					7	Subcontract of Analysis, Service Request and Provisions;	Sarpedal/EMC	2003
					8	Services and Information;	Sarpedal/EMC	2003
					9	Control of unsatisfied analysis result and revision	Sarpedal/EMC	2003
					10	Revision and Record Control;	Sarpedal/EMC	2003
					11	Audit Internal and Management Review;	Sarpedal/EMC	2003
					12	Personnel, Accommodation Condition and its Environment;	Sarpedal/EMC	2003
					13	Analysis method and validation of the method;	Sarpedal/EMC	2003
					14	Analysis Instrument/Equipment and traceable testing;	Sarpedal/EMC	2003
					15	Sampling and sample treatment;	Sarpedal/EMC	2003
					16	Quality Assurance of analysis result and result reporting;	Sarpedal/EMC	2003
					17	Proficiency Test;	Sarpedal/EMC	2003
					18	Management of Quality System Documentation;	Sarpedal/EMC	2003
					19	Laboratory Internal Audit (Audit Approach);	Sarpedal/EMC	2003
					20	Laboratory Internal Audit (Auditing process);	Sarpedal/EMC	2003
					21	Laboratory Internal Audit (Auditing Report);	Sarpedal/EMC	2003
					22	SNI 19-17025: 2000 in Fish Bone Diagram;	Sarpedal/EMC	2003
					23	Water Quality Monitoring Program.	Sarpedal/EMC	2003
2002/2003	3	**Training on "Sampling and Analysis for Water Quality"**	24-Mar-03	28-Mar-03	1	Sampling Technique for Water Quality	Sarpedal/EMC	2003
					2	Preparation for Sampling	Sarpedal/EMC	2003
					3	Determination of Oil and Grease in Water	Sarpedal/EMC	2003
					4	Work Instruction Determination of Oil and Grease in Water	Sarpedal/EMC	2003
					5	Determination of Phenol in Water	Sarpedal/EMC	2003
					6	Work Instruction Determination of Phenol in Water	Sarpedal/EMC	2003
					7	Determination of Detergent in Water	Sarpedal/EMC	2003
					8	Work Instruction Determination of Detergent in Water	Sarpedal/EMC	2003
					9	Determination E.Coli in Water	Sarpedal/EMC	2003
					10	Work Instruction Determination of E.Coli in Water	Sarpedal/EMC	2003
					11	Determination Ammonia in Water	Sarpedal/EMC	2003
					12	Work Instruction Determination of Ammonia in Water	Sarpedal/EMC	2003
					13	Determination Manganese in Water	Sarpedal/EMC	2003
					14	Work Instruction Determination Manganese in Water	Sarpedal/EMC	2003
					15	Determination of Phosphate in Water	Sarpedal/EMC	2003
					16	Work Instruction determination of Phosphate in Water	Sarpedal/EMC	2003
					17	General Guidelines of Water Quality Monitoring	Sarpedal/EMC	2003
					18	Measuring Physic Parameter in Water	Sarpedal/EMC	2003

FY	No	Title of Training Course	Duration of Training			Title of Modules	Author	Year of Production
			Start	Finish				
					19	Quality Control of Analysis in Laboratory	Sarpedal/EMC	2003
					20	Quality Control of Water Sampling	Sarpedal/EMC	2003
					21	Sampling Procedure	Sarpedal/EMC	2003
					22	Performance Test of Spektofotometri UV-Vis and Spectrophotometer Atomic Absorption	Sarpedal/EMC	2003
2003/2004	4	Training on Water Quality Monitoring	28-Jul-03	1-Aug-03	1	Development of Environmental Monitoring Program	Sarpedal/EMC	2003
					2	Water Quality Monitoring System in Japan	Sarpedal/EMC	2003
					3	Using of Biological Materials for river water quality monitoring	Sarpedal/EMC	2003
					4	Principle of Water Quality Monitoring	Sarpedal/EMC	2003
					5	Profile and characteristic of river	Sarpedal/EMC	2003
					6	Design Program of Water Quality Monitoring	Sarpedal/EMC	2003
					7	Determination location and sampling point for water quality monitoring	Sarpedal/EMC	2003
					8	Determination of water quality parameter	Sarpedal/EMC	2003
					9	Technique of sampling and analysis of water quality parameter	Sarpedal/EMC	2003
					10	Quality Assurance and quality control of sampling and analysis of water quality parameter	Sarpedal/EMC	2003
					11	Verification and validation data of water quality monitoring	Sarpedal/EMC	2003
					12	Reporting of water quality monitoring	Sarpedal/EMC	2003
					13	Take a sample at the site (practice ; Cisadane River)	Sarpedal/EMC	2003
					14	Exercise - determination of sampling point of water quality	Sarpedal/EMC	2003
2003/2004	5	Training on Monitoring Mercury in Water and Sediment	16-Feb-04	20-Feb-04	1	Pollution of Mercury and handling effort of illegal gold mining (PETI)	Sarpedal/EMC	2004
					2	Existence of Mercury and the impact to the human heath and environment.	Sarpedal/EMC	2004
					3	Quality Control of Analysis in the Laboratory	Sarpedal/EMC	2004
					4	Take a sample of Mercury	Sarpedal/EMC	2004
					5	Analysis preparation of water, sediment, fish and hair	Sarpedal/EMC	2004
					6	Atomic Absorption Spectrophotometer (AAS)	Sarpedal/EMC	2004
					7	Practicum on Introduction of Atomic Absorption Spectrophotometer (AAS)	Sarpedal/EMC	2004
					8	Theory concerning analysis mercury in water	Sarpedal/EMC	2004
					9	Practicum determination of component of Total Mercury (Hg) in water by using Atomic Absorption Spectrophotometer (AAS)	Sarpedal/EMC	2004
					10	Determination of Total Mercury (Hg) in sediment, fish and hair	Sarpedal/EMC	2004
					11	Practicum concerning the technique of mercury testing in sediment, fish and hairs by Cold Vapor using Mercury Analyzer	Sarpedal/EMC	2004
2003/2004	6	Workshop on Monitoring of River Water Quality	2-Mar-04	3-Mar-04	1	Report on Water Quality Monitoring in 30 Provinces	Sarpedal/EMC	2004
					2	Environmental Monitoring Result in Japan	Sarpedal/EMC	2004
					3	River water quality monitoring of Mahakam and Karang Mumus in East Kalimantan	Bapedalda East Kalimantan	2004

FY	No	Title of Training Course	Duration of Training Start	Finish		Title of Modules	Author	Year of Production
					4	River water quality monitoring of Krueng Tamiang in NAD Province	Bapedalda NAD	2004
					5	River water quality monitoring in the East Java Province	Bapedalda East Java	2004
					6	Evaluation the Implementation of Water Quality Monitoring in 2003	Sarpedal/EMC	2004
					7	Development of River Water Quality Monitoring Network	Sarpedal/EMC	2004
					8	Socialization of General Guidelines of Water Quality Monitoring	Sarpedal/EMC	2004
					9	Introduction on River Water Quality Monitoring Database	Sarpedal/EMC	2004
					10	Technique display/presentation of monitoring result data	Sarpedal/EMC	2004
					11	Implementation of Water Quality Monitoring in 2004	Sarpedal/EMC	2004
					12	Optimization of Air Quality Monitoring	Sarpedal/EMC	2004
					13	Commitment to implement Quality Management System of Environmental Laboratory	Sarpedal/EMC	2004
2004/2005	7	Training on Monitoring Lead (Pb) in Ambient Air	7-Jun-04	11-Jun-04	1	State Policy on nullification of lead gasoline	Asdep Motor Vehicle Emission	2004
					2	Quality of fuel and monitoring of fuel in the framework for air pollution control in Indonesia;	Ir. Edy Purwanto, M.Sc.	2004
					3	Lead (Pb) pollution and its effluent to human health;	Sarpedal/EMC	2004
					4	Distribution of Lead (Pb) pollution materials in ambient air;	Sarpedal/EMC	2004
					5	Atmospheric Particulates and Lead (Pb) in Japanese Cities;	Kazuhiro KUWATA, P.hD.	2004
					6	Lead (Pb) in environment and its concentration after Phase Out Leaded Program;	Sarpedal/EMC	2004
					7	Lead (Pb) Monitoring in blood;	UI, Budi Haryanto, MPH, M.Sc.	2004
					8	Study on Pb accumulation level in the solid and leaf in some city in Indonesia;	Sarpedal/EMC	2004
					9	Lead (Pb) monitoring program in Ambient Air by Asdep Sarpedal;	Sarpedal/EMC	2004
					10	Determining sampling point of Ambient Air Quality Monitoring;	Sarpedal/EMC	2004
					11	Simulation and Lead (Pb) Monitoring in Ambient Air;	Sarpedal/EMC	2004
					12	TSP measuring technique in the Ambient Air by using High Volume Air Sampler (HVAS);	Sarpedal/EMC	2004
					13	Instrument preparation for Sampling and calibration of High Volume Sampler (HVAS);	Sarpedal/EMC	2004
					14	Sample Analysis of Lead (Pb) and Total Suspended Particulate (TSP) in Ambient Air;	Sarpedal/EMC	2004
					15	Determination of Total Suspended Particulate (TSP) in Ambient Air by using High Volume Air Sampler (HVAS) by Gravimetric;	Sarpedal/EMC	2004
					16	Taking Sample of Pb in Ambient Air Station of Sarpedal-KLH;	Sarpedal/EMC	2004
					17	Instrument preparation, preparation in the Ambient Air and Sample Destruction;	Sarpedal/EMC	2004

FY	No	Title of Training Course	Duration of Training			Title of Modules	Author	Year of Production
			Start	Finish				
					18	AAS preparation: maintenance, trouble shooting and its solving;	Sarpedal/EMC	2004
					19	Sample Analysis of Lead (Pb) by Atomic Absorption Spectrophotometer (AAS);	Sarpedal/EMC	2004
					20	Data Processing and Quality Control.	Sarpedal/EMC	2004
2004/2005	8	**Training on Testing of Coliform Bacteria**	14-Feb-05	18-Feb-05	1	Methodology of taking the sample for coli form bacteria testing	Sarpedal/EMC	2005
					2	Principle of taking the sample, failure source and how to overcome	Sarpedal/EMC	2005
					3	Taking the sample from Surface Water Source	Sarpedal/EMC	2005
					4	Taking the sample from the drinking water tube	Sarpedal/EMC	2005
					5	Preservation method of water sample for coli form bacteria testing	Sarpedal/EMC	2005
					6	Analysis of E.coli Bacteria by using Fermentation Tube Method (MPN)	Sarpedal/EMC	2005
					7	Analysis of Total Coli form Bacteria by using Fermentation Tube Method (MPN)	Sarpedal/EMC	2005
					8	Practicum of E.coli Bacterial Analysis by using Fermentation Tube Method (MPN)	Sarpedal/EMC	2005
					9	Calculation the result data of Total Coli Form Analysis and E.coli in the MPN Method	Sarpedal/EMC	2005
					10	Analysis of E.coli and Total Coli Bacteria by using Membrane Filter Method (conventional)	Sarpedal/EMC	2005
					11	Analysis of E.coli and Total Coli Bacteria by using Membrane Filter Method (Modification)	Sarpedal/EMC	2005
					12	River Water Pollution by Bacterial Contamination	Mr. Ishikawa Kunio	2005
2004/2005	10	**Training on Optimal Utilization of AAS and Spectrophotometer UV-Vis**	21-Feb-05	25-Feb-05	1	Atomic Absorption Spectroscopy	Sarpedal/EMC	2005
					2	Spectrophotometer UV-Vis	Sarpedal/EMC	2005
					3	Fundamental of Atomic Absorption Spectroscopy	Sarpedal/EMC	2005
					4	Spectroscopy Ultraviolet & Visible	Sarpedal/EMC	2005
					5	Maintenance & Troubleshooting AAS Shimadzu and Spectrophotometer UV-Vis	Sarpedal/EMC	2005
					6	Maintenance & Troubleshooting UV-Vis Spectrophotometer GBC Cintra 10 and AAS	Sarpedal/EMC	2005
					7	Direct Proficiency Test of Atomic Absorption Spectrophotometer	Sarpedal/EMC	2005
					8	Proficiency Test Spectrophotometer UV-Vis	Sarpedal/EMC	2005
					9	Operation Procedure of AAS GBC Type 932 AA	Sarpedal/EMC	2005
					10	Operational Procedure of Spectrophotometer UV-Vis GBC Cintra 10	Sarpedal/EMC	2005
					11	Operational of Spectrophotometer UV-Vis Shimadzu 1601 SA	Sarpedal/EMC	2005
					12	Operational Procedure of AAS Shimadzu AA 6200	Sarpedal/EMC	2005

FY	No	Title of Training Course	Duration of Training Start	Finish	Title of Modules	Author	Year of Production
					13 Determination of Nitrite (NO2-N) in water and waste water by Sulfanilamide Method by Spectrophotometer	Sarpedal/EMC	2005
					14 Determination of Ammoniac (NH3) in water and waste water by Fenat Spectrophotometer	Sarpedal/EMC	2005
					15 Metal analysis in waste water by using AAS	Sarpedal/EMC	2005
					16 Determination of Total Mercury in water by using AAS (MVU/HVG)	Sarpedal/EMC	2005
					17 Soil Pollution by Hazardous Substances.	Mr. Ishikawa Kunio	2005
2004/2005	11	Workshop on Environmental Quality Monitoring	9-Mar-05	10-Mar-05	1 Water Quality Management Framework	Sarpedal/EMC	2005
					2 Data Processing of Water Quality Management;	Furuta Masaji, P.hD. (JICA Expert)	2005
					3 River Water Quality Management;	Mr. Ishikawa (JICA Expert)	2005
					4 Improvement of Water Quality through Superkasih Program	Asdep IV KLH	2005
					5 Data evaluation of the result of water quality monitoring at 30 provinces	Sarpedal/EMC	2005
					6 Administrative evaluation implementation of water quality monitoring at 30 provinces	Sarpedal/EMC	2005
					7 Monitoring and Plan of Deli River Water Quality Management by Bapedada North Sumatera Province	Bapedalda NSP	2005
					8 Implementation of Simulation Model of Water Quality Management by Bapedalda East Kalimantan Province	Bapedalda East Kalimantan	2005
					9 Continual River Water Quality Monitoring by Bapedalda East Java Province	Bapedalda East Java	2005
					10 Ambient Air Quality Standard (wide spread pollutants)	Komeiji Tetsuhito, P.hD. (JICA Expert)	2005
					11 Development of Air Quality Monitoring Network	Sarpedal/EMC	2005
					12 Ambient Air Quality Monitoring System (AQMS)	Sarpedal/EMC	2005
					13 Socialization and Application the result of Ambient Air Quality Monitoring by Passive Sampler Method	Sarpedal/EMC	2005
					14 Implementation technique of Air Quality Monitoring in 2005	Sarpedal/EMC	2005
					15 Demonstration of Air Quality Monitoring by using Passive Sampler Method in the DKI Jakarta (Sampling & Analysis)	Sarpedal/EMC	2005
					16 Evaluation implementation of Quality Management System at the Regional Environmental Laboratory	Sarpedal/EMC	2005
2005/2006	12	Training on Air Quality Management at Regional Area			1 Vehicle Emission Control Policy	Pusarpedal/EMC	2005

FY	No	Title of Training Course	Duration of Training Start	Duration of Training Finish		Title of Modules	Author	Year of Production
					2	Impact of Air Pollution toward human health and living environment	Pusarpedal/EMC	2005
					3	Ambient Air Quality Measurement Method	Pusarpedal/EMC	2005
					4	Applying of Passive Sampler Method for Air Quality Management	Pusarpedal/EMC	2005
					5	Determination of Sampling Point of Ambient Air Quality Monitoring	Pusarpedal/EMC	2005
					6	Passive Analysis Methode of NO2 Parameter (practice)	Pusarpedal/EMC	2005
					7	Passive Analysis Method of SO2 Parameter (Practice)	Pusarpedal/EMC	2005
					8	Implementation of Ambient Air Quality at 20 Cities in Indonesia by Passive Sampler	Pusarpedal/EMC	2005
					9	Monitoring of Air Quality at Jakarta Metropolitan Area by Passive Sampler	Pusarpedal/EMC	2005
					10	Polutant Dispersion at Atmosphere	Pusarpedal/EMC	2005
					11	Emission Source Inventory	Pusarpedal/EMC	2005
					12	Air Pollutant Loading	Pusarpedal/EMC	2005
					13	Emission Inventory and Emission Factor of Air Pollution	Pusarpedal/EMC	2005
					14	Using of Emission Factor for Emission Load Source Calcullation	Pusarpedal/EMC	2005
					15	Meteorology and Air Pollution (Definition, Wind Direction, Relative Humadity, Solar Radiation)	Pusarpedal/EMC	2005
					16	Data Verification of Simulation Model Result	Pusarpedal/EMC	2005
					17	Utilization of Simulation Model for Air Pollution Control	Pusarpedal/EMC	2005
	13	**Training on River Water Quality Management**	28-Nov-05	2-Dec-05	1	Water Quality Management Policy	Pusarpedal/EMC	2005
					2	Water Quality Management Framework	Pusarpedal/EMC	2005
					3	Living Environmental Education	Pusarpedal/EMC	2005
					4	Monitoring and Water Quality Evaluation	Pusarpedal/EMC	2005
					5	Profile and characteristic of river	Pusarpedal/EMC	2005
					6	Procedure of Water Quality Level	Pusarpedal/EMC	2005
					7	Determination of Water Quality Status (Minister Decree No. 115/2003)	Pusarpedal/EMC	2005
					8	Water Pollution Load capacity determination (Minister Decree No. 110/2003)	Pusarpedal/EMC	2005
					9	GIS participant for water quality management	KLH	2005
					10	Database System for Data Collection	Pusarpedal/EMC	2005
					11	Basin Runoff Model (Model Framework)	Pusarpedal/EMC	2005
					12	Basin Runoff Model	Pusarpedal/EMC	2005
					13	Manual for Development of Basin Runoff Model for River Water Quality Management	Mr. Ishikawa, DEMS Expert	2005
					14	Existing Pollution Load Runoff	Mr. Ishikawa, DEMS Expert	2005
					15	Estimation of rainfall-runoff from River Basin Tank Model	Mr. Furuta, DEMS Expert	2005
					16	Database System of Water Quality Monitoring	Pusarpedal/EMC	2005
					17	Evaluation of Water Quality Monitoring Database System	Pusarpedal/EMC	2005

FY	No	Title of Training Course	Duration of Training Start	Duration of Training Finish		Title of Modules	Author	Year of Production
					18	Role of Environmental Laboratory BAPEDALDA NSP in the DEMS Project for Deli Environment Management	Bapedalda NSP	2005
					19	DSS Program for Deli River Enviornment Management in NSP	Bapedalda NSP	2005
					20	Deli River Water Quality Management (DEMS Pilot Project)	Bapedalda NSP	2005
					21	Superkasih Program	KLH	2005
	14	Training on Environmental Laboratory Waste Management	6-Mar-06	10-Mar-06	1	Regulation that support Laboratory Waste Management	Pusarpedal/EMC	2006
					2	Basic Waste Management	Pusarpedal/EMC	2006
					3	Basic Management for Chemical Used in the Laboratory	Mr. Ishikawa, DEMS Expert	2006
					4	Physical Treatment of Laboratory Waste	Pusarpedal/EMC	2006
					5	Chemical Treatment of Laboratory Waste	Pusarpedal/EMC	2006
					6	Biological Treatment of Laboratory Waste	Pusarpedal/EMC	2006
					7	Characteristic of Laboraotry Waste	Pusarpedal/EMC	2006
					8	Environmental Laboratory Waste Treatment	Pusarpedal/EMC	2006
					9	Minimalization of Laboratory Waste	Pusarpedal/EMC	2006
					10	Silver Recovery from COD Waste	Pusarpedal/EMC	2006
					11	Environmental Laboratory Waste Treatment by Oxidation Reduction	Pusarpedal/EMC	2006
					12	Waste Treatment of Cianide (CN) and Mercury (Hg)	Pusarpedal/EMC	2006
					13	Organic Waste Treatment	Pusarpedal/EMC	2006
					14	Solid Waste Treatment	Pusarpedal/EMC	2006
					15	Prototype of Environmental Laboratory Waste	Pusarpedal/EMC	2006
					16	Visit to Laboratory Waste Management of PUSARPEDAL	Pusarpedal/EMC	2006
2006/2007	1	Workshop on Role of Environmental Monitoring for Environmental Management	13-Jun-06	14-Jun-06	1	Environmental Quality Monitoring Policy	Pusarpedal/EMC	2006
					2	Role of Monitoring data and assesment for arrangment and enforcement of living environment law	KLH Asdep V/III)	2006
					3	Utilizing of Monitoring Data in Industrial Sector in connection with Proper	Ir. Anton Sarjanto (Asep I/III)	2006
					4	Role of monitoring data for planning arrangement and enforcement of environmental policy	Drs. Bambang Pramudyanto (Asdep IV/V)	2006
					5	River Management in North Sumatera Province	BAPEDALDA NSP	2006
					6	Evaluation of River Water Quality Monitoring at 30 Provinces in Indonesia conduct in 2005	Pusarpedal/EMC	2006
					7	Monitoring of Ambient Air Quality at 20 Cities by using Passive Sampler	Pusarpedal/EMC	2006
					8	Role of Sampling Staff (PPC) and QC/QA at the site	Pusarpedal/EMC	2006

FY	No	Title of Training Course	Duration of Training			Title of Modules	Author	Year of Production
			Start	Finish				
					9	Development of Standardizationa nd Certification of Personnel an Service Agency in Indonesia	KLH Asdep IV/VII	2006
					10	Role of Environmental Laboratory for Environmental Quality Monitoring	Pusarpedal/EMC	2006
					11	Recommendation of Environmental Laboratory	Pusarpedal/EMC	2006
					12	Agreement to implement monitorong of environmental quality	Pusarpedal/EMC	2006
					13	Summary of Case Study on River Water Quality Management at Deli River	JICA Expert	2006
					14	Introduction of DEMS Project and Summary of Activity: Capacity Development of PUSARPEDAL and Local Government	JICA Expert	2006