Inception Report on Benchmark Study of the Status of Environmental Laboratories in the Visayas-Mindanao Area, Philippines

Technical Report No. 99/9

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Submitted by:

Chemonics International, Inc.

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PN-ACQ-602

November 1999

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Subject : **Inception Report on Benchmark Study of the Status of Environmental Laboratories in the Visayas-Mindanao Area, Philippines**

Project : **Industrial Initiatives for a Sustainable Environment (IISE)**
Contract No. 492-C-00-98-00029-00

Dear Ms. Rubio:

In accordance with the requirements of the subject contract, we are pleased to submit a study entitled, "Inception Report on Benchmark Study of the Status of Environmental Laboratories in the Visayas-Mindanao Area, Philippines".

This study is being conducted as part of IISE's overall program designed to strengthen GOP and private sector capacity to monitor and minimize pollution. The final report is expected shortly.

If you have questions regarding this report, please do not hesitate to contact me.

Sincerely,

John A. Dorr, Ph.D.
Chief of Party

Enclosures

Cc: see report distribution list

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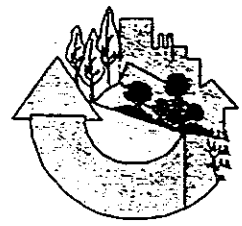
TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE



INCEPTION REPORT

INTRODUCTION

The MADECOR Environmental Management Systems, Inc. (MEMSI) would like to present this Inception Report for the project entitled "Benchmark Study of the Status of Environmental Laboratories in the Visayas and Mindanao". This project endeavors to determine the present conditions of such laboratories and their capability to analyze for environmental monitoring. Specifically, the project aims to:

- determine the status of environmental laboratories in the Visayas-Mindanao area;
- recommend a Corrective Action Program;
- evaluate the status of the private sector market for laboratory services;
- evaluate the training given to/taken by environmental laboratory personnel;
- evaluate the web-based info-system for laboratory services, if any.

WHAT HAS BEEN DONE

The team was organized to formulate and design several questionnaires/survey forms as instruments to evaluate the status of environmental laboratories under the leadership of the Project Leader. A team of nine consultants and four research assistants were divided into four sub-teams (Figure 1).

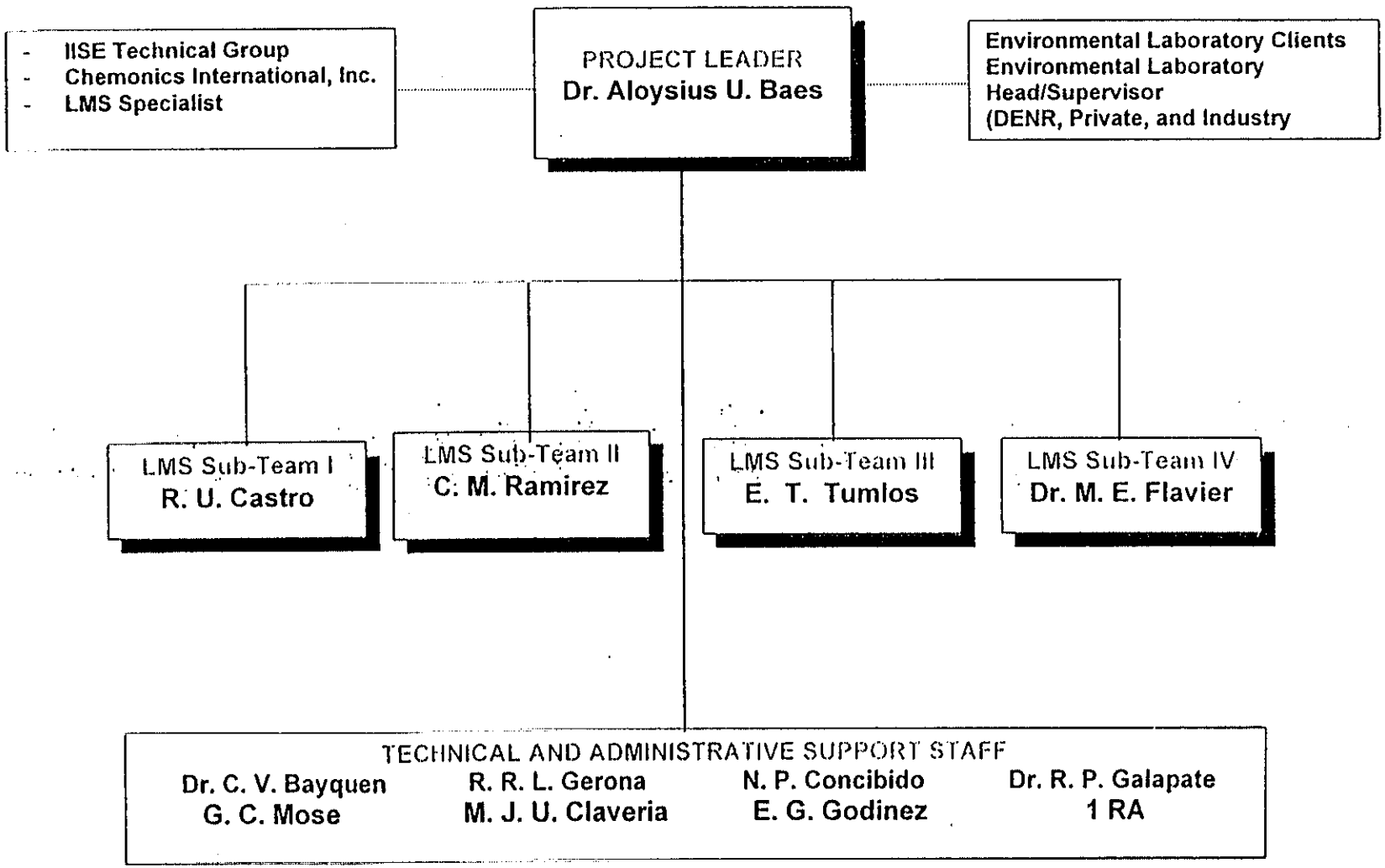
Workshop to Formulate and Design the Required Survey Instruments

Preparatory to the tasks ahead, a technical workshop was organized to discuss and develop the questionnaires and survey forms needed for the assessment. The workshop for the consultants and the technical staff was led by two American (Chemonics-IISE) Laboratory Management Systems (LMS) consultants/specialists, Dr Raymond G. Merrill and Dr. Joan T. Bursey. Dr. Merrill and Dr. Bursey worked closely with the team in the development of the instrumentalities needed in the project as the output of the workshop. The following attended the workshop:

Dr. Aloysius U. Baes	Project Team Leader
Ms. Corazon M. Ramirez	Project Coordinator and Sub-Team Leader/LMS Specialist
Ms. Ruby U. Castro	Sub-Team Leader/LMS Specialist
Dr. Maxima E. Flavier	Sub-Team Leader/LMS Specialist
Prof. Elvira T. Tumlos	Sub-Team Leader/LMS Specialist
Dr. Cecilia V. Bayquen	LMS Specialist
Ms. Nerlissa P. Concibido	LMS Specialist
Mr. Roy Roberto L. Gerona	LMS Specialist
Dr. Ritchelita P. Galapate	LMS Specialst
Dr. Norma N. Fajardo	LMS Specialist
Ms. Gemma C. Mose	Project Research Assistant
Ms. Mary Jane U. Claveria	Project Research Assistant

All materials/documents relevant to the study project have been provided to all team members. These included the DENR Administrative Orders (DAO) 98-63 Guidelines for the Designation of DENR Recognized Environmental Laboratories or the Philippine Laboratory Recognition Program; the US Environmental Protection Agency - Contract Laboratory Program (USEPACLP), ISO Guide 25 (1990)/ISO 17025 (1999) General Requirements for the Competence of Calibration and Testing Laboratories, ISO 14010/14011 Guidelines for Environmental Auditing, and other relevant references.

Figure 1. PROJECT ORGANIZATION



Formulation and Design of the Environmental Laboratory Capability Questionnaire (ELCQ), Laboratory Market Survey Form (LMSF), and Laboratory Survey/Audit (LSA) Checklist

With the guidance of the IISE LMS experts, the team formulated and designed an environmental laboratory capability questionnaire (ELCQ) which focused on the general information and data on the overall capability of the laboratory such as information on the quality management system, organization, services offered and types of samples analyzed, parameters tested and methods used, facilities, laboratory instruments and equipment, staff qualification training and certification. The final ELCQ is given as Annex A.

The Laboratory Survey/Audit (LSA) checklist for the on-site audit/assessment was also prepared. This checklist was based primarily on DENR DAO 98-31 and the ISO Guide 25/ISO 17025. The audit checklist contained the following general items: function and role of the laboratory; laboratory organization; quality system with emphasis on the quality assurance manual and quality control/assurance; health and safety systems; general laboratory supplies and equipments and includes procurement; sampling, sample handling and tracking; test procedures/methods to include manual and procedure selection; and data handling, reporting and records keeping. Additional items related to the laboratories' perception of the Philippine Laboratory Recognition Program of DENR was included in the LSA. The Laboratory Survey/Audit checklist is given as Annex B.

A Laboratory Market Survey Form (LMSF) was prepared for the purpose of gathering data from clients and/or possible clients. This survey form focused on the general information about the company to give a background as to the nature of the industry, laboratory service requirement, sampling and analysis requirements. This is given as Annex C.

Evaluation of the Environmental Laboratory Capability Questionnaire (ELCQ), Laboratory Survey/Audit (LSA) and Laboratory Market Survey Form (LMSF): Pre-test of Questionnaires/Survey Instruments

The ELCQ was pre-tested at the following laboratories:

1. Central Analytical Service Laboratory (CASL) of the National Institutes of Biotechnology and Molecular Biology (BIOTECH), UP Los Baños, College, Laguna
2. SGS Philippines, Inc.-Cebu Branch, Cebu City, Cebu
3. DENR-EMPAS Region 7 Laboratory, Banilad, Mandaue City, Cebu
4. EMB Laboratory (Laboratory Service Section), DENR Compound, Quezon City

The LSA was pre-tested only in three laboratories. The DENR-EMB was not pre-tested for the LSA.

The pre-test audit also served as a check on the competence of the LMS audit team specifically on their implementation of the instrumentalities developed.

The final ELCQ evolved from the dynamic process of pre-test, evaluation then refinement for further improvements, and corrections. This corrected final form presented in Annex A will be sent to all identified laboratories before the site visits. The LSA also underwent the same process of revisions and changes deemed necessary and shown in Annex B. The same is true for LMSF (Annex C).

The IISE LMS consultants were also with the team during the actual audits of several laboratories as the pre-test activity. The designated sub-team leaders led the audits-visits.

Pre-test at BIOTECH Central Analytical Service Laboratory

The first questionnaire developed was the Environmental Laboratory Capability Questionnaire (ELCQ) and the first checklist formulated was the Laboratory Survey Audit (LSA). These prototypes were pre-tested at the Central Analytical Service Laboratory (CASL) of the National Institutes of Biotechnology and Molecular Biology (or BIOTECH, for short) of UP Los Baños located in the UPLB campus, College, Laguna. A copy of the ELCQ was first sent to the laboratory. The completed ELCQ form was returned prior to the scheduled laboratory visit. The Head Chemist of the laboratory, Dr. Veronica Migo, hosted the BIOTECH CASL visit. The assessment team of MEMSI was headed by Prof. Elvira T. Tumlos and Dr. Cecille V. Bayquen using the LSA prototype form. The other workshop participants also went with this first pre-test as part of the hands-on demonstration of how to conduct a laboratory assessment. After the pre-test, the

ELCQ and LSA prototypes were immediately assessed by the team for further changes and correction as necessary.

The results of the pre-test of the ELCQ and LSA of BIOTECH CASL are shown in Annex D together with the summary prepared by the audit team.

Pre-test at Cebu

The corrected ELCQ and LSA forms were brought to Cebu for a second pre-test. The subsequent pre-tests were held by auditing a private service laboratory and a government laboratory. The laboratories visited and dates of visit were:

25 October 1999 - SGS Philippines, Inc.-Cebu Branch, Cebu City, Cebu
26 October 1999 - DENR-EMPAS Region 7 Laboratory, Banilad, Mandaue City, Cebu

The SGS Philippines, Inc.-Cebu branch is a small laboratory doing only the most basic tests for the physico-chemical parameters. The audit team was led by Ms. Corazon M. Ramirez with Ms. Nerlissa P. Concibido and Ms. Gemma C. Mose to assist in the audit. As was done in Los Banos, the ELCQ was sent earlier for the interviewee's reference. The members of the audit team were warmly accommodated by Ms. Madelyn Plaza, the coordinator-analyst. The laboratory assessment based on the LSA was conducted during the lab visit. At the time of visit, the laboratory had only one coordinator-analyst because of the mother organization's decision to cut down on expenses. Also part of the cost-cutting measure instituted was the decision to move to a smaller space soon. A direct consequence of the streamlining was the inability to accommodate samples for bacteriological samples. No sampling was done and samples taken by client were submitted for analysis. Samples for bacteriological analysis are sent to the mother laboratory located in Makati City in Metro Manila.

The following visit to the DENR-EMPAS Region 7 Laboratory was led by Dr. Aloysius U. Baes with assistance by Ms. Concibido and Ms. Mose. As was done earlier, the ELCQ was sent and response was received prior to the visit. The laboratory was assessed according to the LSA form. The DENR-EMPAS Region 7 is part of the laboratories housed in the DENR compound at Mandaue City. Adjacent to the EMPAS laboratory was the Mining and Geosciences Laboratory for mineral analysis. The laboratory does not do sampling. Instead, sampling was made by another section of DENR, primarily for environmental monitoring. The laboratory also accepts samples submitted by non-DENR entities. Analyses made are for physico-chemical parameter, trace element analysis by atomic absorption spectrophotometer (AAS) and bacteriological analysis. In addition to these, the laboratory also participates in other governmental projects such as the propagation of *Trichoderma* for waste decomposition.

The ELCQ and LSA, with summary, of the SGS Philippines, Inc. (Cebu) are in Annex E. The results of the pre-test of the ELCQ and LSA and the summary for DENR-EMPAS 7 are in Annex F.

Pre-test at DENR-EMB

The EMB Laboratory located at the DENR Compound in Diliman, Quezon City was not pre-audited but they gave their response to the ELCQ. This can be found in Annex G.

For the visit to EMB, the project was represented by Dr. Baes, as the lead auditor, with Ms. Ruby U. Castro and Mr. Roy Roberto L. Gerona assisting. Other consultants in the meeting were Ms. Ramirez, also the Project Coordinator, together with the IISE consultants, Dr. Merrill and Dr. Bursey.

Upon arrival, a discussion meeting with Ms Ella Deocadiz (Chief, Regional Development Division (RDD) and Science Research Specialist, EMB) and Ms Leonita Baetiong (Head, Physical Chemistry Laboratory Unit and Supervising Environmental Management Specialist) was held. The MEMSI team clarified the purpose of the IISE project and the on-going pre-test/activity. The EMB group asked to be clarified on the focus of the project *vis a vis* the on-going Philippine Laboratory Recognition Program (PLRP). Dr. Baes explained that the IISE project is a benchmarking study of environmental laboratories that focuses on laboratory capabilities and performance based on quality management systems. Ms. Deocadiz agreed that there was no duplication with the PRIME-PLRP project.

For this project, MEMSI prepared two types of questionnaires, one for the laboratory capabilities and another for details of the laboratory management system. As such, the IISE project scopes the present status of environmental laboratories and the Philippine Laboratory Recognition Program as a third party. Ms. Deocadiz suggested for the project to also look into the capability of laboratories to analyze toxic and hazardous substances, in line with the focus of the IISE project. Dr. Baes indicated that her suggestions are already an integral part of the benchmarking study.

The discussion with Ms Deocadiz and Ms Leonita Baetiong indicated that, instead of a Detailed Technical Audit (DTA) as proposed earlier, it would be more appropriate to conduct proficiency tests on and among the different laboratories, as a means of verifying the laboratory's capability. The development of protocols for water and wastewater analysis and the reduction of pollution by toxic and hazardous substances must be addressed.

Instead of a LSA audit, a walk through of the EMB laboratory was made.

PROJECT ACTIVITIES AND PLANS

From the above activities, the final ELCQ and LSA will be printed for distribution to the selected laboratories while the LMSF will be for actual and prospective laboratory clients.

Dissemination of ELCQ, LSA and LMSF

The ELCQ will be distributed to respondent environmental laboratories shown in Table 1. A letter from IISE/MEMSI explaining the nature and purpose of the activity and the planned on-site audits will be included. Similarly, the LMSF will be distributed to several industrial firms in the study areas.

The ELCQ and letter of introduction to the project and request for laboratory visit will be send via the fastest means (fax or fast mail). Ten days will be given to the respondents to answer the ELCQ. The completed ELCQ will be collected by the project team for evaluation. A visit to the corresponding laboratory will be arranged for the laboratory assessment. Another evaluation will be made after the laboratory visit. The actual site visit will take about two and one-half weeks to accomplish.

At the same time, the LMSF will be sent to prospective clients interested to acquire the service of environmental laboratories.

On-Site Laboratory Audits

The sub-teams will be fielded to several towns and cities in the Visayas-Mindanao area in order to assess the existing laboratories there (Table 1). Each sub-team will be assigned to a study sub-area. The sub-areas with the corresponding number of laboratories present are:

Sub-area 1:	11 laboratories	Cebu (7), Dumaguete City (1) Bohol (1) and Tacloban (2)
Sub-area 2:	6 laboratories	Iloilo (3) and Bacolod City (3)
Sub-area 3:	4 laboratories	Iligan City (1) Cagayan de Oro City (2) and Butuan City (1)
Sub-area 4:	7 laboratories	Davao City (6) and Gen. Santos City (1)

Table 1. Environmental laboratories in the Visayas and Mindanao area for laboratory assessment.

PROVINCE	CITY/TOWN	INSTITUTION/ ORGANIZATION	CONTACT PERSON	CAPABILITY (as of 1995)	TELEPHONE NUMBER
REGION 6					
Iloilo	Iloilo City 5000	DENR Region VI, Parola	Manuel Polido Regional Technical Director		(033) 337-2460; 336-1013
		Central Philippine University, Jaro, Iloilo City	Dr. Agustin Pulido President	WQ (physico-chem, trace/ heavy metals, bactenological)	73-34-71 to 79; 20-36-85
	Miag-ao	UP College of Fisheries, Institute of Fish Processing	Prof. Letty Serra-Ami Head pf Project	WQ (physico-chem, bactenology), soil sediment analysis	(033)-315-8289
Negros Occidental	Bacolod City	Colegio de San Agustin Sen. Benigno S. Aquino	Rev. Fr. Rey Sorgon, OSA President	WQ (physico-chem), for student prepn for work in industry	25587; 433-1243; (0912)-5030
		NPPMC, Inc. Aquaculture		WQ (physico-chem, trace/ heavy	
		University of Negros Occidental, Recoletos, Lizares Ave.	Fr. Gimenegeldo Ceniza, OAR President	WQ (physico-chem, trace/ heavy metals, bactenological)	433-2449;433-3989; 433-1849; 433-1709
REGION 7					
Cebu	Mandaue City	DENR Region VII, Greenplains Subdivision, Banilad	Florencio Barangan Regional Technical Director		(032)-346-2209; 346-2271
	Cebu City	University of San Carlos Water Laboratory, P. del Rosario St.	Fr. Ernesto M. Lagura, SV President	Res. Service for WQ (ground water, surface and marine waters)	253-1000; 54341
		International Pharmaceuticals, Inc.		QC laboratory each for pharmaceuticals and detergents	
		Shemberg Marketing, Inc		Testing laboratory for food and beverages	
	Lapu-lapu City	Mactan Rock International, Inc.		Testing laboratory for their products	
	Toledo City	Atlas Consolidated Mining Devt. Corp, Toledo City	Mr. Hilario Parcon, Res. Manager Mr. Arturo Manto, Sr. Supt.-Eng.		
	Balamban	Cebu Industrial Park Developers Inc. (CIPDI)	Mr. Glenn Tava Gen. Manager		
Bohol	Bohol	Philippine Sinter Corporation Garcia Hernandez, Bohol	Mr. Victor Bantoc Group Manager, Prodn. Division		
Negros Oriental	Dumaguete City	Silliman University Pibbard Avenue	Dr. Melvyn J. Misajon President	Info and training on laboratory/chemistry aspect	225-4532; 225-2373
REGION 8					
Leyte	Tacloban City 6500	DENR Region 8 Sto. Nino	Zenaida Muñoz OIC		(053)-321-3319; 325-6340
		Eastern Visayas Regional Medical Center	Dr. Flora dela Peña Laboratory Head, Pathologist	WQ (physico-chem, bactenology), accepts environmental samples for analysis	
REGION 10					
Misamis Oriental	Cagayan de Oro City 9000	DENR Region X, Macabalan	Mr. Eduardo Principe Regional Technical Director		(C8822)726243
		Pilipinas Kao QA Laboratory			
		Xavier University, Corrales Ave	Fr. Antonio S. Samson SJ President	WQ (physico-chem, trace/ heavy metals, bactenological)	72-27-25; 72-63-66
REGION 11					
Davao del Sur	Davao City 8000	DENR Region XI ERDS, Bangoy St.	Mr. Bonifacio Apura Regional Technical Director		(082)-234-1867
		University of Mindanao Bolton Street	Dolores P. Torres President	WQ (physico-chem, trace elements), soil sediment analysis, to commercialize services	7-35-97; 7-54-56; 6-35-25
		San Pedro College No. 12 C. de Guzman St.	Sis. Lydia V. Arcader OP President	WQ (physico-chem), to commercialize services	221-0257; 221-0634; 64118; 64461
		University of Immaculate Conceocion, Fr. Selga St.	Sr. Maria Consuelo B. Alvino RVM, President		221-8090; 221-8144
		Regional Health Laboratory, DOH		WQ (physico-chem, trace elements, bactenological); already accept samples for analysis	
		Davao City Water district, (GCCC)		WQ (physico-chem, trace elements, bactenological); already accept samples for analysis	
South Cotabato	Gen. Santos City	MSU-Gen. Santos Campus Fatima Campus	Dr. Macapado A. Muslim Chancellor	WQ (few physico-chem parameters, bactenological) for commercialization of service	(0912)-703-2367; 703-2215
REGION 12					
Lanao del Norte	Iligan City	MSU-IIT, Iligan City Campus Andres Bonifacio Drive	Camar A. Umpa, Ph. D. Chancellor	Research and analysis on environment and pollution research studies	881-4050 to 5; 516-161l; 063-881-4
REGION 13					
Agusan del Norte	Butuan City 8600	DENR Region 13	Mr. Eustaquio T. Tandug Regional Technical Director		(085) 341-9812

A total of 27 laboratories will be visited (the DENR EMPAS Region 7 Laboratory has already been audited during the pre-test). Each sub-team will spend at least one-half to one full day per laboratory to cover the data/information gathering based on the audit (ELCQ and LSA) checklists. The audit sub-teams will also observe the operations of the laboratory and examine documents related to the quality systems. Special attention will be given to identifying technical deficiencies and problems (e.g. validation of test procedures other than those recommended by DAO) that will be done with the help of the laboratory head/supervisors.

Review of Results and Formulation of Corrective Action

Each sub-team will evaluate the LSA results of each laboratory initially after each site visit and review the results. Results will be summarized. A corrective action program on what the laboratories need to do will be formulated/recommended by the sub-team. The whole team will make a final review. The results of all the audits conducted and returned/answered questionnaires will be summarized.

The LMSF will also be evaluated and its results summarized. The potential market for laboratory services will be reviewed and summarized separately. An anticipated issue to be included and discussed is the commercialization of laboratory services of DENR laboratories. The report will highlight the extent of such practice, possible conflict of interest and other questions of propriety, and its effect on the overall laboratory services market.

The status of web-based information systems of environmental laboratories will be reviewed and summarized separately also. The requirements for incorporating the laboratories' information systems to IISE's homepage will be studied and recommended.

A Recommended Corrective Action Program will be submitted based on the results of the survey and the audit of the PLRP. A list of laboratories recommended as candidates for certification in ISO 14000 will be included in the report.

Finally, the auditors will perform an Initial Environmental Review (IER) based on the checklist developed by IISE of each of the several large laboratories with the intention of incorporating these laboratories into the IISE project sector database.

Other Recommendations

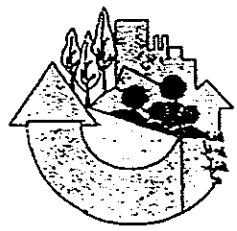
Because of the limited time and resources allotted for the study, only 28 laboratories can be accommodated. There is a perceived necessity to include other laboratories that perform effluent, soil/sediment and water quality analyses. The laboratories that may need assessment are those that belong to the mining sector, the Philippine Coast Guard laboratories, the regional health laboratories of the Department of Health and the laboratory of the Local Water Authorities. A partial list is presented in Table 2.

Table 2. Some laboratories in the Visayas and Mindanao area that may need assessment.

PROVINCE	CITY/TOWN	INSTITUTION/ ORGANIZATION	CONTACT PERSON	CAPABILITY (as of 1995)	TELEPHONE NUMBER
REGION 6					
Negros Occidental	Sipalay	Mancawan Mining Corporation, San Jose, Sipalay	Mr. Francisco Esguerra		
REGION 7					
Cebu	Naga	APO Cement Corporation (CEMEX), Tria-an,Naga, Cebu	Mr. Roberto Lozada Operations Director		
	Toledo City	Atlas Fertilizer Corporation, Toledo City, Cebu	Mr. Jesse Sy, Res. Manager		
	San Fernando	Grand Cement Corporation	Mr. Winnie Saniel		
REGION 8					
Leyte	Isabel	PASAR Copper Smelter	Ms. Georgia Conde Lab. Manager		
		PHILPHOS	Ms. Rachel Maceda		
REGION 9					
Zamboanga del Sur	Zamboanga City 7000	DENR Region IX, ERDS, Lantawan	Laureano Lingan OIC		(062)-991-1076
		Western Mindanao State University, Normal Rd, Baliwasan	Dr. Eldigario O. Gonzales President	WQ (physico-chem, trace/ heavy metals, bacteriological)	((062)-991-3065
REGION 10					
Misamis Oriental	El Salvador	Asia Brewery, Inc., Wastewater Treatment Laboratory			
REGION 11					
Davao del Sur	Davao City 8000	Mindanao Mineral Laboratory Services		sediment analysis, gold and silver analysis	
REGION 13					
Surigao del Norte	Dinagat Island	KROMINKO Inc. Loreto, Dinagat Island	Mr. Tovenal Relarvo Res. Manager		
	Placer	Manila Mining Corporation	Mr. G. J. Acosta	Placer, Surigao del Norte	
	Nonoc Island	Phil Mining Corporation (PHILMICO)	Mr. Larry Paje Res. Manager	Nonoc Island, Surigao	

Another area for future study is the assessment of environmental laboratories located in Luzon, particularly those servicing the needs of the industries located in the areas under the jurisdiction of the Economic Processing Zone Authority (EPZA).

In addition, we would like to recommend that a closer coordination with IISE Technical Team be established with regards to the communications and letters to be made, sent, and collected. A member of the IISE Technical Team may be assigned to coordinate with the MEMSI team during the conduct of the laboratory assessment/audit. The MEMSI team, for most times, will be Cebu-based during the conduct of the main project activity.



ANNEX A

Environmental Laboratory Capability Questionnaire

Project No. _____ File No. _____

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

ENVIRONMENTAL LABORATORY CAPABILITY QUESTIONAIRE

I. GENERAL INFORMATION

A. Name of Laboratory _____
B. Address of Laboratory _____
C. Name of Establishment _____
D. Address of Establishment _____
E. Year of Establishment _____
F. Telephone Number: _____ Fax Number: _____
G. E-mail _____
H. Contact Person _____
I. Mission/Function of the Laboratory (Please attach one copy

II. QUALITY MANAGEMENT SYSTEMS INFORMATION (FOR THE LABORATORY)

A. Is the laboratory certified to any of the following standards by a recognized third party provider?

[ ] ISO 9000 Series [ ] SA 8000
[ ] ISO 14000 Series [ ] Others Specify
[ ] OSHMS 18000 [ ] Don't Know

B. Do you have a written Quality Management Plan ? [ ] Yes [ ] No
C. Do you have a written Quality Assurance Plan ? [ ] Yes [ ] No
D. Do you have a written Quality Control Plan ? [ ] Yes [ ] No
E. Do you have a written Standard Operating Procedures? [ ] Yes [ ] No
F. Do you have other written management plans ? [ ] Yes [ ] No
Specify:_____
G. Do you have a health and safety system in place ? [ ] Yes [ ] No
H. If yes, is this documented? [ ] Yes [ ] No

III. ORGANIZATION

A. Does your company have an organizational chart? [ ] Yes [ ] No
If yes, please attach a copy
B. Does your laboratory have an organizational chart? [ ] Yes [ ] No
If yes, please attach a copy
C. Staff Information* (or you may attach a typewritten copy)

Name	Position	Nature of Employment P = Permanent T = Temporary C = Casual	Years with Laboratory	Years of Relevant Experience	Highest Degree Attained

*(Add more sheets as necessary for additional staff.)

Project No. _____ File No. _____

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

V. PARAMETERS/METHODS (cont'd)

Air and Stack Emissions Analysis	Method of Analysis	DENR Prescribed Method Yes or No ?	Instrument Used
[ ] Ammonia			
[ ] Carbon dioxide			
[ ] Nitrogen dioxide, total			
[ ] Nitrogen oxides, total			
[ ] Phosphorus Pentoxide			
[ ] Sulfur dioxide (ambient)			
[ ] Sulfur dioxide (stack)			
[ ] Suspended particulate matter – TSP			
[ ] Suspended particulate Matter – PM-10			
[ ] Carbon disulfide			
[ ] Chlorine and chlorine compounds (as Cl_2)			
[ ] Fluorine and fluorine compounds			
[ ] Hydrogen sulfide			
[ ] Ozone (ambient)			
[ ] Hydrogen chloride			
[ ] Phenol			
[ ] Heavy metals [ ] Cadmium [ ] Copper [ ] Chromium [ ] Lead [ ] Mercury [ ] Others			

Sediments and Biota Analysis	Method of Analysis	DENR Prescribed Method Yes or No ?	Instrument Used
[ ] Arsenic			
[ ] Coliform (fecal and total)			
[ ] Organochlorine Pesticides			
[ ] Polychlorinated Biphenyls (PCBs)			
[ ] Organophosphate Pesticides			
[ ] Heavy metals [ ] Cadmium [ ] Copper [ ] Lead [ ] Mercury (total) [ ] Iron [ ] Nickel [ ] Silver [ ] Zinc [ ] Others			

Project No. _____ File No. _____

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

VI. FACILITIES AND PHYSICAL LAY-OUT

A. Facilities/Building Material

[ ] Concrete [ ] Wood and concrete [ ] Wood

[ ] Other Specify _____ Floor space/area: _____ m^2

B. Physical Layout	Yes	No	No. of Units
Emergency Exit(s)			
Fire Extinguisher(s)			
Fume Hood(s)			
Exhaust Fan(s)			
Emergency Shower(s)			
Eye Wash(s)			
First Aid Kit			
Work Benches			
Emergency Power Supply			
Sink(s)			
Separate water faucet(s)			
Electrical Outlets			
Gas Lines			
Cold Storage Facilities: Refrigerator(s) Freezer(s) Cold Storage/Walk in cooler(s)			
Chemical Storage Area: Separate Room Cabinets			
Chemical Storage: Fume Hood Base Cabinet Acid Room Solvent room Toxic & Hazardous Substances			
Sample Storage: Incoming Samples In Process Samples Archive			
Waste Disposal: Separate storage area Sink disposal			(kg or mL)

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

VII. LABORATORY INSTRUMENTS AND EQUIPMENT

Instruments/Equipment	Yes	No	No. of Units
Balance(s) Triple Beam Balance(s) Top – loading Analytical			
Spectrometer(s) Visible Ultraviolet-Visible (UV-Vis) Atomic Absorption Spectrometer (AA)			
Chromatography Equipment Liquid Chromatograph(s) UV Detector? Other Detectors, specify: Gas Chromatograph(s) Flame Ionization Detector? Electron Capture Detector? Flame Photometric Detector Other, specify:			
Thermal Treatment Units Oven Furnace Incubator Autoclave			
Electronic Meters pH Dissolved Oxygen Conductivity Turbidity Specific Ion			
Sample Preparation Equipment Shaker Liquid/Liquid Extractor(s) Liquid/Solid Extractor(s)(Soxhlet)			
Computer(s)			
Computer(s) with Internet Access			
Other Laboratory Equipment Specify:			
Sampling Equipments	**Yes**	**No**	**No. of Units**
Water Sampling Equipment Specify:			
Air Sampling Equipment Specify:			
Soil Sampling Equipment Specify:			
Other Sampling Equipment Specify:			

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

VII. Staff Qualifications

Name	Position	Degree	License #	Three (3) Latest Relevant Training	Job Description

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

IX. TRAINING AND CERTIFICATION

A. Are you interested in having your laboratory certified by an independent certification group? [ ] Yes [ ] No

B. Would you be interested in training for:

1. Environmental Management System [ ] Yes [ ] No
2. Laboratory Quality Program Plan Preparation [ ] Yes [ ] No
3. Standard Operating Procedure Preparation [ ] Yes [ ] No
4. Quality Control Training for Laboratory Analysts [ ] Yes [ ] No

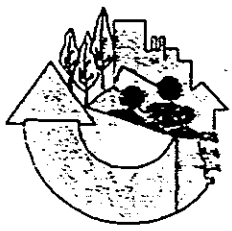
X. COMPANY REPRESENTATION

Name of Person completing this form: _____

Title of Person completing this form: _____

Date form was completed: _____

Signature of Person completing form: _____



ANNEX B

Laboratory Survey Audit

Project No: _____ File No: _____

Note: This questionnaire is confidential and the responses will not be released to any party outside IISE.

LABORATORY SURVEY/AUDIT

GENERAL INFORMATION

Name of Laboratory _____

Address of Laboratory _____

_____

Telephone Number _____

Fax Number _____

E-mail _____

Name of Establishment _____

Address of Establishment _____

_____

Year of Establishment _____

Laboratory Contact Person _____

Date(s) of inspection _____

Names of auditors/inspectors:

_____

_____

_____

_____

_____

PERCEPTION OF DENR-EMB PHILIPPINES LABORATORY RECOGNITION PROGRAM

Has the laboratory participated in the Philippines Laboratory Recognition Program? _____

If no, are you interested in participation? _____

Do you have comments about the DENR-EMB PRLP program? Explain all negative responses.

_____

SECTION I. FUNCTION AND ROLE OF THE LABORATORY

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does the laboratory have a written mission statement?				
Do you think the laboratory is performing its documented functions?				
Who are the clients of the laboratory? Industry Small Business Government Agencies University Research Institutions Other(s)				

Project No: _____ File No: _____

Note: This questionnaire is confidential and the responses will not be released to any party outside IISE.

SECTION II. LABORATORY ORGANIZATION

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does your laboratory have written job descriptions for staff?				
Has a person been assigned to be responsible for quality assurance?				
Does the quality assurance manager routinely perform the following actions:				
•Ensures adherence to quality assurance requirements for sampling?				
•Ensures that all test and measuring equipment are properly calibrated?				
•Monitors logging in of samples?				
•Approves Quality Assurance Project Plans, specific analyses, and final reports?				
• Maintains a copy of the master schedule sheet?				
•Maintains written and signed records of periodic inspections?				
•Maintains all original quality assurance documents (QA manual, methods, project plans, final reports) in one location?				
Do qualified individuals perform the required analyses? (Please provide the information required for Table 1.)				
Does the laboratory have a documented program of personnel training? Describe:				
Does the laboratory routinely verify proficiency of personnel in the various methods? Describe the procedure.				
Does the laboratory have sufficient staff to perform the services required by the clients?				
Are qualified individuals authorized to approve data and results?				
Does the laboratory subcontract analysis?				
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory was used?				

Project No: _____ File No: _____

Note: This questionnaire is confidential and the responses will not be released to any party outside IISE.

SECTION III. QUALITY SYSTEM

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Quality Assurance Manual				
Does the laboratory have a written quality assurance manual?				
Does the laboratory quality assurance manual –				
•Include a current summary of training, experience, and job description required for each member of the laboratory staff?				
•Describe quality control paperwork flow and identify those who are authorized to approve data and results?				
•Describe the laboratory's system for developing or revising technical procedures and identifies those who have authorization to do so?				
•Include and require the use of written calibration procedures, analytical procedures, computational procedures, quality control procedures, and operating procedures?				
ecify the use of logs to record all instrument and equipment checks?				
•Describe chain-of-custody procedures that the laboratory will use?				
•Specify the use of a master schedule sheet or logbook of all samples being analyzed, indexed by laboratory numbers, client, date of arrival, and analysis to be performed?				
•Require a procedure to examine and validate raw data from the laboratory independent of the original analyst?				
•Describe the use, proper handling and storage of chemicals and solutions?				
•Contains a procedure to control all documents: Policy statement Procedures Calibration Tables Charts Notices/Memoranda Test Reports				
•Describe policy and procedure for resolution of complaints from clients or other parties?				

Project No: _____ File No: _____

Note: This questionnaire is confidential and the responses will not be released to any party outside IISE.

SECTION III. QUALITY SYSTEM

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Describe procedures for maintaining records of all omplaints, investigations and corrective actions taken ›y the laboratory?				
3.Quality Control/Assurance				
Does the laboratory have written SOPs to describe all laboratory procedures?				
Does the laboratory appear to have sufficient capacity to prepare and analyze all samples within holding times?				
Are matrix/spiked samples performed as specified when :he procedure calls for it?				
Are precision results of sample replicates measured for each method to indicate reproducibility among individual measurements of the same property under similar conditions?				
Are precision and accuracy results used to determine control limits for all operating parameters?				
Is the laboratory use control charts to monitor precision and accuracy and document validity of data?				
Does the laboratory perform appropriate check (standard) samples, method blanks, and laboratory duplicates as required by the methods?				
Does the laboratory participate in any proficiency testing programs?				
Does the laboratory subcontract analysis?				
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory is used?				

SECTION IV. HEALTH AND SAFETY SYSTEMS

Laboratory Name: _____
Auditor : _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Has the laboratory identified the Health Safety hazards to personnel associated with its activities and services?				
Has the laboratory assessed the risk to human health from physical, chemical and biological hazards and natural phenomena?				
Has legislation relevant to your laboratory's health and safety risks been identified?				
What methods does the laboratory use to control the management of its occupational health and safety risks? Elimination Substitution Administrative Controls Personal Protective Equipment Occupational Health and Safety Management Systems (OHSMS) Training				
Does the laboratory have a personnel health-monitoring program in place appropriate to the risks to human health?				
Does your laboratory set any objectives and targets aimed at reducing the risk to human health from laboratory activities?				
Do you monitor and measure your occupational health and safety performance?				
Do you maintain records to demonstrate your occupational health and safety performance?				
Does the laboratory monitor its effluents?				
Does the laboratory have adequate procedure for the collection, storage, treatment and disposal of domestic and laboratory wastes?				
Do laboratory effluent and emissions conform to relevant environmental quality standards?				
Does the laboratory have proper management practices for expired chemicals, toxic chemicals, and laboratory wastes?				

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Procurement				
Are sources/vendors of supplies and equipment evaluated for quality?				
Are procurements done competitively?				
Does someone check whether what was ordered was actually received?				
Does the laboratory check for contamination in new chemicals and solvents?				
B. Supplies				
Are chemicals dated upon receipt and used on a first-in, first-out basis?				
Are all reagents and solutions labeled to indicate identity, concentration, storage requirements, preparer's name, preparation date, and expiration date?				
Are chemicals used in analyses tested to ensure that they contain no contaminants that may interfere with the analyses?				
source of (glass) distilled or demineralized water available all times?				
Is the conductivity of distilled or demineralized water routinely checked and recorded?				
Is reagent-grade water used for organic methods?				
Is distilled water used for inorganic methods?				
Are reagent-grade or high-purity chemicals used to prepare standards?				
Is the solvent storage area properly vented and appropriate for the prevention of possible laboratory contamination?				
To avoid contamination, are samples and standards containing the analytes stored or used in areas other than those where trace analysis is performed?				
Are standards stored separately from sample extracts?				
Is an adequate supply of routinely needed in-house replacement parts available to ensure that analytical equipment is not inoperable during a critical period?				
C. Equipment				
Is there an inventory of the equipment and instruments?				

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Is a service record logbook maintained for each analytical instrument with entries in ink, dated, and signed?				
Is the analytical balance located away from drafty areas and areas subject to rapid temperature changes?				
Are calibration and/or preventive maintenance program in place?				
Is the calibration and/or preventive maintenance program implemented regularly?				
Does an outside party perform calibration?				
Are calibration test results reported on a standard report form?				

Use Figure V-1 to demonstrate the traceability of samples from collection to reporting. Trace at least one sample through the laboratory systems.

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: _____
Auditor: _____
Date Completed: _____

FIGURE V-1
Sample Tracing Form

Sample ID Information	Sample A	Sample B	Sample C	Comments (Explain all negative responses)
Field Sample Number				
Laboratory Name				
Laboratory Address				
Sample Collection Location				
Sampler Name or Initials				
Date Sampled				
Time Sampled				
Date Received at Laboratory				
Laboratory Sample Number				
Analyses Requested				
Storage Procedures				
Date of Sample Preparation				
Date of Sample Analysis				
Analysts' Initials				
Methods Used				
Date Results Reported				

Project No: _____ File No: _____

Note: This questionnaire is confidential and the responses will not be released to any party outside IISE.

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Sampling				
Does the laboratory do their own sampling?				
Is a written SOP available that describes sampling requirements (such as, type of sampling container, preservation technique, and storage container) for each analysis?				
Does the laboratory assign a custodian to log in samples?				
If no custodian is appointed, are the individuals logging in samples aware of the sampling requirements for each analysis?				
Are samples collected in the type of container specified for each analysis?				
If sample containers are reused, are they cleaned properly?				
Are trip blanks, field blanks, and field duplicates used as required?				
If so, are they identified as such?				
If used, are spiked samples identified?				
B. Sample Handling				
Is the custodian know the process for storing incoming samples?				
During delivery to the laboratory, are samples preserved as required?				
Do samples shipped to the laboratory arrive at the correct temperature to ensure that the sample has remained in a preserved state?				
Are adequate facilities provided for storage of incoming samples, including cold storage?				
Are samples maintained at the correct temperature until the time of analysis?				
Is the temperature of the cold storage recorded daily in a logbook?				
Are temperatures outside of control limits noted, and are appropriate actions taken when required?				
Are volatile samples stored separately from nonvolatile or semivolatile samples?				
Are all samples analyzed within required holding times?				
C. Sample Tracking				
Is a sample label affixed to each container?				
Do sample labels contain information sufficient to identify the sample and ensure that it has been sampled in the correct manner (including facility name, station number, date sampled, time sampled, type of analysis requested, preservation used, and signature of sampler)?				

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does the laboratory have a written form for tracking samples (chain-of custody form)?				
Is a chain-of-custody form filled out and kept on file?				
Is the information on the sample label and chain-of-custody form verified and matched?				
Are unique laboratory numbers assigned to all incoming samples (including quality control samples)?				
Does the laboratory maintain a master list or logbook of all samples being analyzed, indexed by laboratory number, client, and date of arrival, and analysis to be performed?				
Is the laboratory number written on the sample label, the master list, and any documents related to that sample?				
Does each sample have a separate work order for each analysis or group of analyses (that is, organic and inorganic) to be performed (to ensure that each analyst who must perform an analysis on that sample will have a work order)?				
After all analyses have been completed, are all work orders attached to all appropriate summary sheets for each analyses?				
Are completed sample analysis work orders kept on file after completion of analysis?				
Is the possession and handling of samples traceable from the time and date of collection to the time and date of analysis and reporting?				
Demonstrate by tracing at least one sample in the laboratory. Summarize by completing Form V-1 .				

ECTION VII. TEST METHODS

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Test Method Manual				
Does the laboratory have a test method manual? If yes, does it contain the following: • List of samples where method is applicable? • A basic principle of the test method? • Specification of test reagents, equipment & instrument? • Instruction for reagent preparation? • An analytical procedure including standard and sample preparation? • Instruction for operation and calibration of test equipment/instrument? • Details for test calculation (e.g. formulas for Calculations)?				
If there is none, what references is used for the test methods? APHA AWWA US EPA Others				
B. Selection of Methods				
Are all methods used DENR prescribed methods?				
Has any of the methods used been modified or updated? If modified or updated has it been validated?				
Are the test methods readily available for use?				
Are validation guidelines being followed (e.g., AOAC)?				
Is there documentation of validation? Records of validation studies: Person responsible for validation:				

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Data Acquisition and Laboratory Test Reports				
Is computerized or manual verification of calculations performed?				
Are the data validation criteria documented (including limits on operational parameters, calibration data, special checks, statistical tests, and manual checks)?				
Does the laboratory have procedures for data handling and reporting, including the recording of data on standard forms and in laboratory notebooks?				
If so, is this reporting format described with example forms provided?				
Are sample calculations available for inspection?				
Are bound notebooks used for all laboratory activities?				
Are notebooks kept correctly?				
Do you have instruments directly interfaced to computers? If yes, specify:				
If you have directly interfaced data capture, describe your system for data storage?				
Do notebooks, logbooks, and runlogs have the following pertinent data: Title – describing the activity being recorded Instrumentation - type and ID number (ex. GC #3) Date of preparation or analysis Initials of preparer or analyst For preparation notebooks or logbooks - details of activity, such as sample measurements, reagents and quantities, and procedure times, if applicable For instruments runlogs - run sequences, identity of each Sample and analyte Units of measurements Calculations, if applicable Peer or supervisory review signature and date				

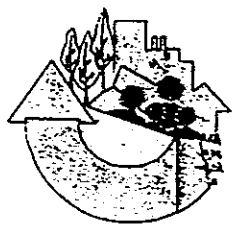
Project No: _____ File No: _____

Note: This questionnaire is confidential and the responses will not be released to any party outside IISE.

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

Laboratory Name: _____
Auditor: _____
Date Completed: _____

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Do test/analysis reports given to customers include Name and address of laboratory Name and address of client Analysis report No. Sample ID. No(s). Description, identification and source of samples Date of sampling Date sample received Date sample was analyzed Test method used Specific modifications to method (if any) Other observation Name and signature of staff performing analysis Name and signature of staff responsible for report				
B. Records				
Are raw data archived and documented properly? If yes, describe:				
Are records maintained for at least 3 years?				
Has the laboratory ever needed to make changes after a report has been released to the client? If yes, what was done, and how was it documented?				
C. Computer Software and Hardware				
Do you have a computer exclusively used for data recording? If yes, Specify Model: Number of units:				
Are actual raw data directly input into computers by the analyst? If yes, are you using commercially available software? Specify:				
Are data entries verified? If yes, specify the procedure used for verification.				
If raw data is not directly input into computers, are bound notebooks used for keeping original or raw data?				



ANNEX C

Laboratory Market Survey Form

Project No. _____ File No: _____

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

LABORATORY MARKET SURVEY

I. GENERAL INFORMATION

1. CONTACT INFORMATION:
   Name: _____
   Title/Position: _____
   Name of Organization: _____
   Address: _____
   Telephone: _____ Fax: _____ E-mail: _____

2. GENERAL ORGANIZATION INFORMATION
   Owner of the Company: _____
   Parent Organization: _____
   [ ] Multi-national Corporation (MNC)
   [ ] Domestically Owned Company
   [ ] Joint Venture Corporation (JVC) Specify Partners: _____
   Year established: _____
   Sector: [ ] Private [ ] Government [ ] Other:
   Enterprise Size: [ ] Small (less than 50 employees) [ ] Medium (50 – 300 employees)
   [ ] Large (more than 300 employees)
   Customers served: [ ] Local Specify: _____
   [ ] International Specify: _____

3. TYPE OF INDUSTRY:
   [ ] Food [ ] Pharmaceuticals [ ] Furniture [ ] Textiles [ ] Handicraft
   [ ] Others: _____

4. PROCESSES PRODUCING WASTE
   Please enter in the table below the processes that generate waste streams or emissions.

Type of Waste	Process Producing Waste	Quantity Per Year	Waste Management Practice				
			Treatment		Waste Minimization		If yes, please specify
			Yes	No	Yes	No	
SOLID							
Sludge							
Residue							
Ash							
Solid Byproducts							
LIQUID							
Halogenated waste							
Non-Halogenated waste							
Inorganic waste							
Acid waste							
Alkali waste							
Wastewater							
Distillate							
Oils							
GAS							
Particulate matter							
Stack emissions							
Fugitive/Uncontrolled emissions							
Others							

Project No. _____ File No: _____

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

II. LABORATORY SERVICE REQUIREMENT

1. What type of samples/wastes (from Table above) do you analyze? Are these analyzed in your laboratory (internal) or done by another laboratory (external)? Complete the table below describing the parameters you monitor and how analysis is done.

Type of Sample	Parameter	Method	Internal	External	How often?

2. How could your environmental laboratory services be improved?

_____

_____

3. Do you purchase laboratory services on a competitive basis? [ ] Yes [ ] No

4. How important is cost in your choice of analysis laboratory?

[ ] Very high [ ] High [ ] Medium [ ] Low [ ] Very low

4. Do you require a laboratory quality plan before awarding business? [ ] Yes [ ] No

5. Do you require a laboratory quality certification? [ ] Yes [ ] No

6. Do you inspect the laboratory before awarding business? [ ] Yes [ ] No

7. Do you send performance evaluation samples to the laboratory? [ ] Yes [ ] No

8. How many trials (replicates) do you usually require per analysis?

[ ] One [ ] Two [ ] Other, Specify _____

10. What factors do you consider in selecting an external laboratory to perform your environmental analysis?

[ ] Cost of analysis
[ ] Proximity of laboratory to the company
[ ] DENR Recognition
[ ] ISO certification
[ ] Previous experience
[ ] Other:
[ ] Recommendation
[ ] Advertisement
[ ] Sample turnaround time
[ ] Reputation for quality

11. Who is your present laboratory service provider? _____

12. Are you satisfied with their service? [ ]Yes [ ] No Explain: _____

13. How could their service be improved? _____

14. Will you continue to use this laboratory as your laboratory service provider in the future?

[ ]Yes [ ] No Explain: _____

Project No. _____ File No: _____

NOTE: This questionnaire is confidential and the responses will not be released to any party outside IISE

III. SAMPLING

1. Who performs environmental sampling for your company?
   [ ] Company staff [ ] Laboratory service provider
   [ ] Contractors [ ] Other:

2. What sampling equipment is used? _____

3. What sample containers are used? [ ] Glass [ ] Plastic [ ] Other:_____

4. How are sample containers sealed? _____

IV. ANALYSIS REQUIREMENTS

1. What is your projection about your analytical requirements in the year 2000?
   [ ] Increase [ ] Decrease [ ] Remain the same

2. If you project an increase, please fill out the table below.

Sample Type	Approximate Number of Samples Required	Parameters

5. What is your typical annual budget for analysis? _____

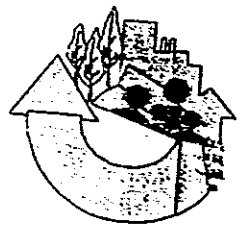
Prepared by:

Signature: _____

Name: _____

Position: _____

Date: _____



ANNEX D

BIOTECH Pre-test Results

* No: 536-5536
m: Vicky

ENVIRONMENTAL LABORATORY CAPABILITY QUESTIONAIRE

General Information

A. Name of Laboratory: Central Analytical Services Laboratory
B. Address of Laboratory: BIOTECH, UPLos Baños, College, Laguna
C. Name of Establishment: —
D. Address of Establishment: —
E. Year of Establishment: 1979
F. Telephone Number: 049-536-0587
G. Fax Number: 049-536-2721
H. E-mail: vpm@mudspring.uplb.edu.ph
I. Contact Person: VERONICA P. MIGO
J. Mission/Function of the Laboratory: Analytical Services

Quality Management Systems Information (for the laboratory)

A. Is the laboratory certified to any of the following standards by a recognized third party provider? NO

- [ ] ISO 9000 Series
- [ ] ISO 14000 Series
- [ ] OSHMS 18000
- [ ] SA 8000
- [ ] Others Specify
- [ ] Don't Know

B. Do you have a written Quality Management Plan? [✓] Yes [ ] No
C. Do you have a written Quality Assurance Plan? [✓] Yes [ ] No
D. Do you have a written Quality Control Plan? [✓] Yes [ ] No
E. Do you have a written Standard Operating Procedures? [✓] Yes [ ] No
F. Do you have other written management plans? [ ] Yes [ ] No

Specify: —

G. Do you have health and safety system in place [✓] Yes [ ] No

ORGANIZATION

A Does your company have an organizational chart? [✓] Yes [ ] No
If yes please attach a copy

B Does your laboratory have an organizational chart? [✓] Yes [ ] No
If yes please attach a copy

C. Staff Information* (see attached sheet)

Name	Position	Nature of Employment P = Permanent T = Temporary C = Casual	Years with Laboratory	Years of Relevant Experience	Highest Degree Attained
VERONICA P. MIGO	Res Asst Prof/Head Chemist	P	18 yrs	18 yrs	PhD Ag Chem.
ROSARIO S. SO	Univ Res.	P	19 yrs	19 yrs	BS. Chem.
RESIE L. VALDERRAMA	Lab Tech.	P	17 yrs	17 yrs	A.B. Economics
HERMOGENES CAPITAN	Lab Tech.	P	19 yrs	19 yrs	3 yrs college education
MYRNA A. DESEO	Univ. Res.	P	15 yrs	15 yrs	PhD Nat'l Products (on-going)
ELIZABETH C. BUGANTE	Univ. Res.	P	18 yrs	18 yrs	MS Agric. (Horticulture)
CAIALINO G. ALEAFARA	Univ Res.	P	15 yrs	15 yrs	PhD Biochem Eng/ MS Env. Eng.
RODERICK B. MANUZON	Univ Res Assoc	T	2.5 yrs	2.5 yrs	BS Chem Eng.

*(Add more sheets as necessary for additional staff.)

SERVICES OFFERED

Types of Sample Analysis Performed

[✓] Water
[✓] Wastewater
[✓] Sediment/Soil
[ ] Air
[ ] Biota
[ ] Other (specify) below

PARAMETERS/METHODS (see attached sheet)

PARAMETER	METHOD OF ANALYSIS
pH	Glass Electrode
Temperature	Hg-filled Thermometer
Color	Visual Comparison Method (Pt-Co Scale)
Turbidity	
D.O	DO probe
COD	Open Reflux, Dichromate
BOD (5 day test)	~~5 day test~~ DO probe/ NaN_3 modif.
Total Solids	Gravimetric
Total Sus. Solids	Gravimetric
Total Dissolved Solids	Gravimetric
Total Settleable Solids	Imhoff Cone

PARAMETERS/METHODS

Parameters	Methods
pH	Glass Electrode
Temperature	Mercury-filled Thermometer
Color	Visual Comparison Method (Pt-Co Scale)
Turbidity	Turbidity Probe
DO	DO probe
COD	Open Reflux, Dichromate
BOD (5-day test)	DO probe NaN3 modification
Total Solids	Gravimetric
Total Suspended Solids	Gravimetric
Total Dissolved Solids	Gravimetric
Total Settleable Solids	Imhoff Cone
Ammonium-N	Colorimetric (Sodium Salicylate)
Nitrite-N	Spectrophotomertric
Nitrate-N	Brucine
Orthophosphate	Ascorbic Acid Method
Hydrolyzable Phosphate	Ascorbic Acid Method
Total Phosphate	Ascorbic Acid Method
Total Hardness	EDTA Titrimetric
Acidity	Titrimetric
Chlorides	Argentometric
Sulfates	Turbidimetric Method
Minerals	Wet digestion, AAS

FACILITIES AND PHYSICAL LAY-OUT

A Facilities/Building Material
- [✓] Concrete
- [ ] Wood and concrete
- [ ] Wood
- [ ] Other Specify _____

Floor space/area: 300 m^2

B Physical Layout

Emergency Exit(s)	[✓] Yes [ ] No	
Fire Extinguisher(s)	[✓] Yes [ ] No	
Fume Hood(s):	[✓] Yes [ ] No	If yes, number? 6
Exhaust Fan(s)	[✓] Yes [ ] No	
Emergency Shower(s)	[✓] Yes [ ] No	
Eye Wash(s)	[✓] Yes [ ] No	
First Aid Kit	[✓] Yes [ ] No	
Work Benches	[✓] Yes [ ] No	
Emergency Power Supply	[✓] Yes [ ] No	
No. of sinks(s)	6	
No. of separate water faucet(s)	6	
No. electrical Outlet(s)	110V - 52	220V - 77
No. of Gas Lines	7	
Cold Storage Facilities	[✓] Refrigerators	
	[✓] Freezer(s)	
	[✓] Cold Storage Walk in cooler(s)	
Chemical Storage Area:	[✓] Separate Room	
	[✓] Cabinets	
Fume Hood Chemical Storage	[✓] Base Cabinet	
	[✓] Acid Room	
	[✓] Solvent room	
	[✓] Toxic & Hazardous Substances	
Sample Storage	[ ] Separate incoming storage	
	[ ] Ongoing	
	[ ] Archive	
Waste Disposal	[✓] Separate storage area	

... – Infrared

...ning Infrared

[✓] Atomic Absorption Spectrometer (AA)

C. Chromatography Equipment

[✓] Liquid Chromatograph(s) How Many? 2

UV Detector? [✓] Yes [ ] No

Fluorescence? [✓] Yes [ ] No

Other, specify: RI

[ ] Gas Chromatograph(s) How Many? 3

Flame Ionization Detector? [✓] Yes [ ] No

Electron Capture Detector? [✓] Yes [ ] No

Flame Photometric Detector [✓] Yes [ ] No

Mass Spectrometer Detector [ ] Yes [ ] No

Other, specify: TCD

D. Thermal Treatment Units

[✓] Oven

[✓] Furnace

[✓] Incubator

[✓] Autoclave

E. Electronic Meters

[✓] pH

[✓] Dissolved Oxygen

[ ] Conductivity

[ ] Turbidity

[✓] Specific Ion

F. Sample Preparation Equipment

[✓] Digestion Apparatus

[✓] Shaker

[✓] Extractor(s)

Liquid/Liquid [✓] Yes [ ] No If Yes, how many

Liquid/Solid [✓] Yes [ ] No If Yes, how many 3

G. Sampling Equipment
[ ] Water Sampling Equipment
List examples: _____
[ ] Air Sampling Equipment
List examples: _____
[ ] Soil Sampling Equipment
List examples: _____

H. Computer(s) [✓] Yes [ ] No If yes, how many? 2
Internet Access [✓] Yes [ ] No

I. Other Equipment? (List)
List examples: Auto Analyzer II, UV-VIS Spectrophotometer, Fibertec, Soxtec, COD Reflux Set up Balances, Centrifuge, Hot plate, hot platestirrer, Distilling Apparatus

I. TRAINING AND CERTIFICATION

A. Are you interested in having your laboratory certified by an independent certification group? [✓] Yes [ ] No
B Would you be interested in training [✓] Yes [ ] No

1. EMS training [✓] Yes [ ] No
2. Quality Management Plan Preparation [✓] Yes [ ] No
3 Laboratory Quality Program Plan Preparation [✓] Yes [ ] No
4 Standard Operating Procedure Preparation [✓] Yes [ ] No
5. Quality Training for Laboratory Analysts [✓] Yes [ ] No

II. Company Representation

Name of Person completing this form: VERONICA P. MIGO
Title of Person completing this form: Research Assistant Professor / Head Chemist
Date form was completed: 21 Oct. 1999
Signature of Person completing form: Veronica P. Migo

VII. Mission Statement of CASL

Quality service and assistance is our commitment to our clientele. As a government laboratory, and as public servants, we, the Central Analytical Services Laboratory staff of BIOTECH, intend to uphold our professional and ethical practice by:

- Continuous delivery of accurate and precise results of analysis,
- Being accommodative in customer consultation services,
- Conducting in-depth research and development work,
- Use of appropriate and innovative processes and systems,
- Employing highly trained and responsible personnel and regular staff training for continuous development,
- Ensuring equipment and facilities are in good working condition.

We are a Team. We work and have fun together.

We value the opportunity to serve the government, the environment and the Filipino people towards reaching new heights of excellence and relevance for a better Philippines in the next millenium.

Laboratory Name: CENTRAL ANALYTICAL SERVICES LABORATORY
BIOTECH, UPLB

Reviewer: _____

Date Completed: _____

Table 1. Staff Qualifications

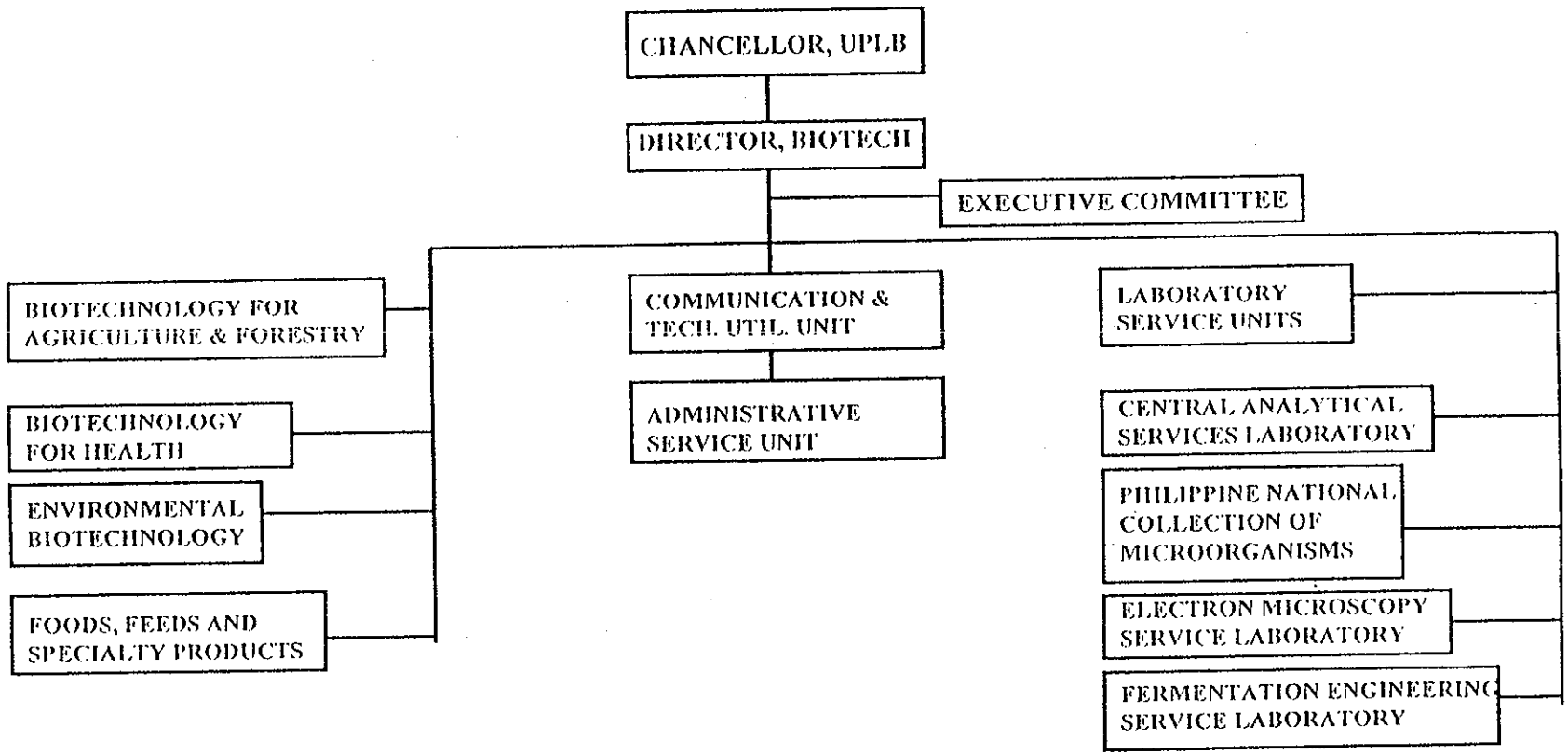
Name	Position	Highest Degree Obtained	License Number	Years of Rel. Exp.	Nature of Emp.	Three (3) Latest Relevant Training	Job Description/ Research Experience
Veronica P. Migo	Research Assistant Professor	PhD Ag. Chem.	5543 (Chemist)	18	Permanent	Electroanalytical Chemistry, Basic LC, Industrial Biotechnology, Marine Biotechnology	Head Chemist and QA Manager/ ind. wastewater treatment (flocculation and ozonation); water and sediment quality for aquaculture
Rosario S. So	University Researcher	BS Chem.		19	Permanent	Mass Metrology, Basic LC and GC, Trace Element Analysis, Soil, Fertilizer and Plant Analyses	Lab Chemist/ validation and modification of analytical methodologies for food and feeds, water and soil analysis; all GC analyses
Myrna A. Deseo	University Researcher	PhD Organic Chem. (on-going)	5544 (Chemist)	15	Permanent	Water Analysis, HPLC Amino Acid System, Soil, Fertilizer and Plant Analyses	Lab Chemist/validation and modification of Analytical methodologies for soil and fertilizer analysis, sugars; all HPLC analyses
Resie L. Valderrama	Laboratory Technician	AB Economics		17	Permanent	In-house Training on Sample Preparation for Water Analysis,	Laboratory Tech./routine N analysis, proximate analysis, sample preparation for water and soil analyses
Hermogenes A. Lapitan	Laboratory Technician	3 years college experience		19	Permanent	In-house Training on Sample Preparation for Water Analysis	Laboratory Tech./ crude fiber analysis, sample preparation for water and soil, handles laboratory safety and housekeeping
Catalino G. Alfafara *	University Researcher	MS Env. Eng. PhD Biochem. Engineering	10571 (Chemical Engineer)	15	Permanent	Microbial-based technologies for pollution abatement of Laguna Lake, Industrial Biotechnology	Environmental Engineer/ fermentation, industrial wastewater treatment, biogas production, improvement of water and sediment quality
Elizabeth C. Bugante *	Research Assistant Professor	MS Horti., Minor-Chem.		18	Permanent	Basic Scanning Force Microscopy and Applications, Radioisotope Techniques, Recombinant DNA technology	Laboratory Chemist/ biogas production, deodorization of piggery wastes, biosurfactants, handles COD analysis
Roderick B. Manuzon *	University Research Associate	BS Chemical Engineering		3	Temp.	In-house Training on Phosphate and Water Analysis, Internal Quality Audit Seminar	Chemical Engineer/ industrial wastewater treatment, handles phosphates and nitrates analyses

50

NATIONAL INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY (BIOTECH)

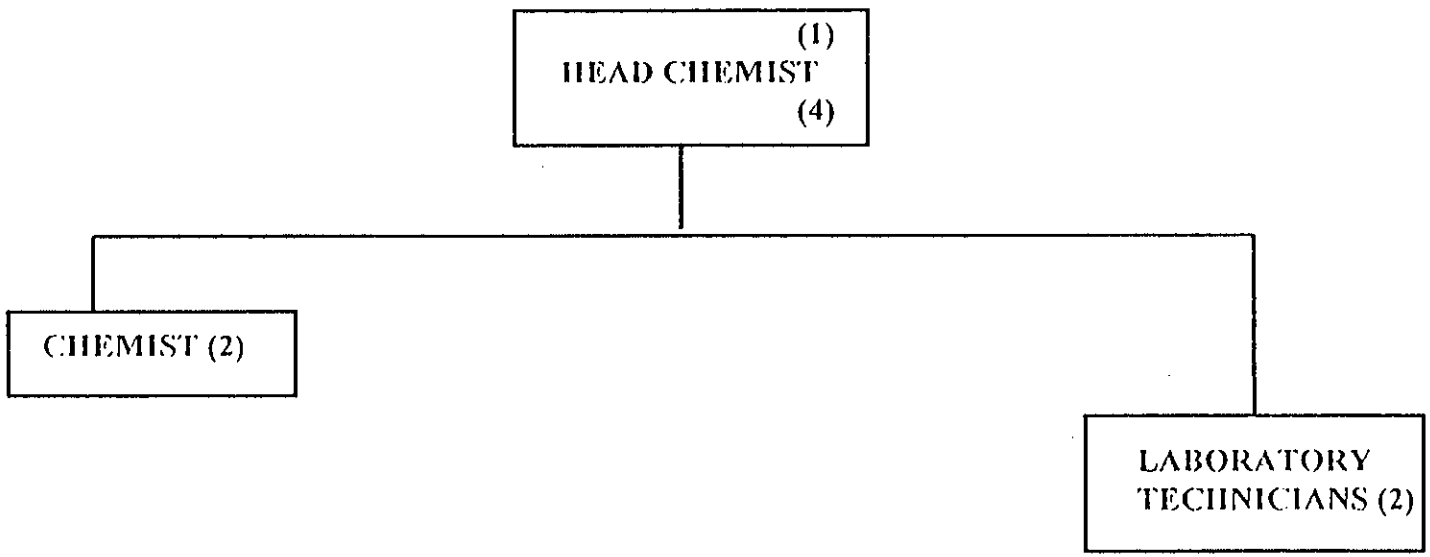
University of the Philippines Los Baños, College, Laguna

ORGANIZATIONAL CHART



NATIONAL INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY (BIOTECH)
University of the Philippines Los Baños, College, Laguna

CENTRAL ANALYTICAL SERVICES LABORATORY
ORGANIZATIONAL CHART



Report on the Laboratory Visit at
Central Analytical Services Laboratory
BIOTECH, UPLB, College, Laguna
October 22, 1999

The Team visited the Central Analytical Services Laboratory of the National Institute of Molecular Biology and Biotechnology (BIOTECH) as part of the implementation of the benchmark study on the status of environmental laboratories in the Visayas and Mindanao areas. Generally, the team was very impressed with the laboratory especially the Good Housekeeping.

During the visit, major and minor findings as well as recommendations were made and as follows:

A. Major Findings

- The document was not very clear that the Head Chemist is also doing the functions of a QA Manager.
- Some of the equipment logbooks, including those with calibration data were in spiral notebooks.
- The use of personnel protective equipment was not strictly enforced. Two analysts using chromic solution had gown but no goggles and gloves.
- There were no conductivity measurements for the distilled water in the laboratory. The conductivity meter was not in good condition.
- There was no standard report form for the internal calibration reports of the different instruments in the lab.
- The organic and inorganic chemical wastes were placed temporarily in two separate drums near the pilot laboratory.
- Reagents were not used on a first in first out basis.
- Reagent labels were not completely filled-up.
- The system of arrangement of storing chemicals was by alphabetical order, thus, organic mixes with inorganic and poisonous with non-poisonous.
- No chain of custody of sample form was seen.

B. Minor Findings

- Food was found inside the refrigerator intended for laboratory chemicals.
- The data were not all in ink.
- Drinking water was beside the chromic acid.
- Boxes were found on top of the cabinets.
- The basic principle of some methods were not written in the test method manual.

C. Recommendations

- Conductivity of distilled water must be regularly determined to ensure the quality of results generated.
- Bound notebooks should always be used and all entries must be in ink and contain all necessary information like date, analyst's name, calculations and others.
- Laboratory safety practices must be strictly enforced (i.e. use of gloves, goggles and other safety gadgets; storage of food in refrigerator with chemicals must not be practiced).
- Arrangement of chemicals must not be alphabetically done but rather on the manner of separating toxic with non-toxic and organic with non-organic.
- Reagents must be used on first in, first out basis and reagent bottle labels must be completely filled up with the complete information.

Prepared by:

Cecille V. Bayqden	Elvira T. Tumlos	Mary Jane U. Claveria
Team Leader	Team Leader	Team Member

Laboratory Survey Form

GENERAL INFORMATION

Name of Laboratory	Central Analytical Services Laboratory	Names of inspectors:
Address of Laboratory	BIOTECH, UPLos Baños, College, Laguna	Ray Merrill
Telephone Number	049-536-0587	Joan Bursey
Fax Number	049-536-2721	Aloysius Baes
E-mail	vpm@mudspring.uplb.edu.ph	Ruby Castro
Name of Establishment	BIOTECH	Maxima Flavier
Address of Establishment	UPLos Baños, Laguna	Norma Fajardo
Year of Establishment	1979	Roy Gerona
Laboratory Contact Person	Veronica P. Migo	Nerlissa Concibido
Date(s) of inspection	October 22, 1999	Gemma Mose
		Mary Jane Claveria

SECTION I. FUNCTION AND ROLE OF THE LABORATORY

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does the laboratory have a written mission statement?	X			
Do you think the laboratory is performing its documented functions?	X			
Who are the clients of the laboratory?				
University	X			
Industry	X			
Government Agencies	X			
Research Institutions	X			
Small Business	X			
Other(s) Individual clients, thesis students, NGO's, within BIOTECH	X			

SECTION II. LABORATORY ORGANIZATION

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does your laboratory have written job descriptions for staff?	X			
Has a person been assigned to be responsible for quality assurance?	X			The chief chemist, Dr. Veronica Migo
Does the quality assurance manager routinely perform the following actions:				
• Ensures adherence to quality assurance requirements for sampling?	X			
• Ensures that all test and measuring equipment are properly calibrated?	X			Depends on the equipments
• Monitors logging in of samples?	X			
• Approves Quality Assurance Project Plans, specific analyses, and final reports?	X			
• Maintains a copy of the master schedule sheet?	X			
• Maintains written and signed records of periodic inspections?	X			Every other month
• Maintains all original quality assurance documents (QA manual, methods, project plans, final reports) in one location?	X			
Do qualified individuals perform the required analyses? (Please provide the information required for Table 1.)	X			
Does the laboratory have a documented program of personnel training? Describe:	X			Training here and abroad not in the questionnaire used (1st draft)
Does the laboratory routinely verify proficiency of personnel in the various methods? Describe the Procedure:	X			(not in the 1st draft questionnaire)
Does the laboratory have sufficient staff to perform the services required by the clients?	X			5 full time staff part time staff from other programs
Are qualified individuals authorized to approve data and results?	X			

SECTION II. LABORATORY ORGANIZATION

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does the laboratory subcontract analysis?		X		
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory was used?			X	

SECTION III. QUALITY SYSTEM

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Quality Assurance Manual (cont'd)				
• Describe policy and procedure for resolution of complaints from clients or other parties?	X			But no complaints so far.
• Describe procedures for maintaining records of all complaints, investigations and corrective actions taken by the laboratory?			X	
B. Quality Control/Assurance				
Does the laboratory have written SOPs to describe all laboratory procedures?	X			
Does the laboratory appear to have sufficient capacity to prepare and analyze all samples within holding times?	X			1 week holding time for proximate analysis 1 week for water analysis; 2 weeks for metal anal.
Are matrix/spiked samples performed as specified when the procedure calls for it?	X			
Are precision results of sample replicates measured for each method to indicate reproducibility among individual measurements of the same property under similar conditions?	X			Std. deviation for replicates and linear regression Analysis for calibration curves
Are precision and accuracy results used to determine control limits for all operating parameters?	X			
Does the laboratory use control charts to monitor precision and accuracy and document validity of data?	X			
Does the laboratory perform appropriate check (standard) samples, method blanks, and laboratory duplicates as required by the methods?	X			
Does the laboratory participate in any proficiency testing programs?	X			
Does the laboratory subcontract analysis?		X		
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory is used?			X	

SECTION III. QUALITY SYSTEM

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Quality Assurance Manual (cont'd)				
• Describe policy and procedure for resolution of complaints from clients or other parties?	X			But no complaints so far.
• Describe procedures for maintaining records of all complaints, investigations and corrective actions taken by the laboratory?			X	
B. Quality Control/Assurance				
Does the laboratory have written SOPs to describe all laboratory procedures?	X			
Does the laboratory appear to have sufficient capacity to prepare and analyze all samples within holding times?	X			1 week holding time for proximate analysis 1 week for water analysis; 2 weeks for metal anal.
Are matrix/spiked samples performed as specified when the procedure calls for it?	X			
Are precision results of sample replicates measured for each method to indicate reproducibility among individual measurements of the same property under similar conditions?	X			Std. deviation for replicates and linear regression Analysis for calibration curves
Are precision and accuracy results used to determine control limits for all operating parameters?	X			
Does the laboratory use control charts to monitor precision and accuracy and document validity of data?	X			
Does the laboratory perform appropriate check (standard) samples, method blanks, and laboratory duplicates as required by the methods?	X			
Does the laboratory participate in any proficiency testing programs?	X			
Does the laboratory subcontract analysis?		X		
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory is used?			X	

SECTION IV. HEALTH AND SAFETY SYSTEMS

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Has the laboratory identified the Health Safety hazards to personnel associated with its activities and services?	X			
Has the laboratory assessed the risk to human health from physical, chemical and biological hazards and natural phenomena?	X			
Has legislation relevant to your laboratory's health and safety risks been identified?	X			Documents were borrowed by Univ. Committee since they are studying the changes; the Univ. health and Safety Committee OSH guidelines are more stringent than OSH.
What methods does the laboratory use to control the management of its occupational health and safety risks? Elimination Substitution Administrative Controls Personal Protective Equipment Occupational Health and Safety Management Systems (OHSMS) Training	 X X X X X X			Hazardous projects are chosen (no aflatoxin anal) For BOD anal,DO probe is used (no Na azide) Advise those not following rules;performance rating is affected for not wearing correct PPEs (every 6 months) OHS & Biosafety Committee Fire drills, earthquake drills
Does the laboratory have a personnel health-monitoring program in place appropriate to the risks to human health?	X			Yearly physical check-up c/o the Univ. Clinic/Health Services
Does your laboratory set any objectives and targets aimed at reducing the risk to human health from laboratory activities?	X			
Do you monitor and measure your occupational health and safety performance?	X			C/o Univ. health Services for whole Institute
Do you maintain records to demonstrate your occupational health and safety performance?		X		C/o Univ. health Services annual check-up during birthdays
Does the laboratory monitor its effluents?	X			

SECTION IV. HEALTH AND SAFETY SYSTEMS

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does the laboratory have adequate procedure for the collection, storage, treatment and disposal of domestic and laboratory wastes?	X			
Do laboratory effluent and emissions conform to relevant environmental quality standards?			X	Not known
Does the laboratory have proper management practices for expired chemicals, toxic chemicals, and laboratory wastes?	X			When chemicals are about to expire, there are listings published within the area. Acid+base water – nuetralize one another-dispose into the sink Organic and inorganic wastes- separate drum-away from the bldgs., no treatment yet

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Procurement				
Are sources/vendors of supplies and equipment evaluated for quality?	X			
Are procurements done competitively?	X			
Does someone check whether what was ordered was actually received?	X			
Does the laboratory check for contamination in new chemicals and solvents?	X			
B. Supplies				
Are chemicals dated upon receipt and used on a first-in, first-out basis?		X		Chemicals are dates but first-in- first-out is not applied
Are all reagents and solutions labeled to indicate identity, concentration, storage requirements, preparer's name, preparation date, and expiration date?	X			
Are chemicals used in analyses tested to ensure that they contain no contaminants that may interfere with the analyses?	X			
Is a source of (glass) distilled or demineralized water available at all times?	X			
Is the conductivity of distilled or demineralized water routinely checked and recorded?		X		Conductivity meter is out of order
Is reagent-grade water used for organic methods?	X			HPLC grade water for HPLC
Is distilled water used for inorganic methods?	X			
Are reagent-grade or high-purity chemicals used to prepare standards?	X			
Is the solvent storage area properly vented and appropriate for the prevention of possible laboratory contamination?	X			
To avoid contamination, are samples and standards containing the analytes stored or used in areas other than those where trace analysis is performed?	X			
Are standards stored separately from sample extracts?	X			

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Is an adequate supply of routinely needed in-house replacement parts available to ensure that analytical equipment is not inoperable during a critical period?		X		Budget constraint University policy does not allow this system Just request supplier to stock replacement parts
C. Equipment				
Is there an inventory of the equipment and instruments?	X			
Is a service record logbook maintained for each analytical instrument with entries in ink, dated, and signed?	X			Not included in the original questionnaire
Is the analytical balance located away from drafty areas and areas subject to rapid temperature changes?	X			
Is calibration and/or preventive maintenance program in place?	X			
Is the calibration and/or preventive maintenance program implemented regularly?	X			
Is calibration performed by an outside party?	X			ITDI and suppliers
Are calibration test results reported on a standard report form?		X		To be done
Use Figure V-1 to demonstrate the traceability of samples from collection to reporting. Trace at least one sample through the laboratory systems.				

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Sampling				
Does the laboratory do their own sampling?		X		All sampling are conducted by the clients
Is a written SOP available that describes sampling requirements (such as, type of sampling container, preservation technique, and storage container) for each analysis?	X			
Does the laboratory assign a custodian to log in samples?	X			
If no custodian is appointed, are the individuals logging in samples aware of the sampling requirements for each analysis?	X			
Are samples collected in the type of container specified for each analysis?	X			
If sample containers are reused, are they cleaned properly?	X			
Are trip blanks, field blanks, and field duplicates used as required?			X	
If so, are they identified as such?			X	
If used, are spiked samples identified?	X			
B. Sample Handling				
Does the custodian know the process for storing incoming samples?	X			
During delivery to the laboratory, are samples preserved as required?	X			
Do samples shipped to the laboratory arrive at the correct temperature to ensure that the sample has remained in a preserved state?	X			
Are adequate facilities provided for storage of incoming samples, including cold storage?	X			
Are samples maintained at the correct temperature until the time of analysis?	X			Clients are advised to follow procedures for sampling and transfer of samples
Is the temperature of the cold storage recorded daily in a logbook?	X			
Are temperatures outside of control limits noted, and are appropriate actions taken when required?	X			
Are volatile samples stored separately from nonvolatile or semi-volatile samples?	X			

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Are all samples analyzed within required holding times?	X			
C. Sample Tracking				
Is a sample label affixed to each container?	X			
Do sample labels contain information sufficient to identify the sample and ensure that it has been sampled in the correct manner (including facility name, station number, date sampled, time sampled, type of analysis requested, preservation used, and signature of sampler)?	X			Except facility name, date and time sampled and preservation used
Does the laboratory have a written form for tracking samples (chain-of-custody form)?	X			
Is a chain-of-custody form filled out and kept on file?	X			
Is the information on the sample label and chain-of-custody form verified and matched?	X			
Are unique laboratory numbers assigned to all incoming samples (including quality control samples)?	X			
Does the laboratory maintain a master list or logbook of all samples being analyzed, indexed by laboratory number, client, and date of arrival, and analysis to be performed?		X		To be done
Is the laboratory number written on the sample label, the master list, and any documents related to that sample?	X			
Does each sample have a separate work order for each analysis or group of analyses (that is, organic and inorganic) to be performed (to ensure that each analyst who must perform an analysis on that sample will have a work order)?	X			
After all analyses have been completed, are all work orders attached to all appropriate summary sheets for each analyses?	X			
Are completed sample analysis work orders kept on file after completion of analysis?	X			
Are the possession and handling of samples traceable from the time and date of collection to the time and date of analysis and reporting?	X			

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Demonstrate by tracing at least one sample in the laboratory. Summarize by completing Form V-1 (see page V-3).				Not conducted

SECTION VII. TEST METHODS

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Test Method Manual				
Does the laboratory have a test method manual?	X			
If yes, does it contain the following:				
• List of samples where method is applicable?	X			
• A basic principle of the test method?		X		Not all methods have included the basic principle
• Specification of test reagents, equipment & instrument?	X			
• Instruction for reagent preparation?	X			
• An analytical procedure including standard and sample preparation?	X			
• Instruction for operation and calibration of test equipment/instrument?	X			
• Details for test calculation (e.g. formulas for calculations)?	X			
If there is none, what references are used for the test methods?				
APHA				
AWWA				
US EPA				
Others				
B. Selection of Methods				
Are all methods used DENR prescribed methods?		X		Plus APHA, AWWA, USEPA
Has any of the methods used been modified or updated?	X			
If modified or updated has it been validated?				
Are the test methods readily available for use?	X			
Are validation guidelines being followed (e.g., AOAC)?	X			
Is there documentation of validation?	X			
Records of validation studies:	X			
Person responsible for validation:	X			

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Data Acquisition and Laboratory Test Reports				
Is computerized or manual verification of calculations performed?	X			
Are the data validation criteria documented (including limits on operational parameters, calibration data, special checks, statistical tests, and manual checks)?	X			
Does the laboratory have procedures for data handling and reporting, including the recording of data on standard forms and in laboratory notebooks?	X			
If so, is this reporting format described with example forms provided?	X			
Are sample calculations available for inspection?	X			
Are bound notebooks used for all laboratory activities?	X			
Are notebooks kept correctly?	X			
Do you have instruments directly interfaced to computers? If yes, specify:	X			HPLC-GC
If you have directly interfaced data capture, describe your system for data storage?	X			
Do notebooks, logbooks, and runlogs have the following pertinent data: Title – describing the activity being recorded Instrumentation - type and ID number (for example GC #3) Date of preparation or analysis Initials of preparer or analyst For preparation notebooks or logbooks - details of activity, such as sample measurements, reagents and quantities, and procedure times, if applicable.		X X		Each analyte has its own notebook; each parameter, a test results summarize

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
For instruments runlogs - run sequences, identity of each Sample and analyte Units of measurements Calculations, if applicable Peer or supervisory review signature and date		X		
Do test/analysis reports given to customers include Name and address of laboratory Name and address of client Analysis report No. Sample ID. No(s). Description, identification and source of samples Date of sampling Date sample received Date sample was analyzed Test method used Specific modifications to method (if any) Other observation Name and signature of staff performing analysis Name and signature of staff responsible for report	X X X X X X X X X	 X X X 		Per request Include date checked and the person checking the test report
B. Records				
Are raw data archived and documented properly? If yes, describe:	X			
Are records maintained for at least 3 years?	X			
Has the laboratory ever needed to make changes after a report has been released to the client? If yes, what was done, and how was it documented?		X		Not experienced yet
C. Computer Software and Hardware				
Do you have a computer exclusively used for data recording? If yes, Specify Model(DATA MINI) Number of units:	X 2			

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

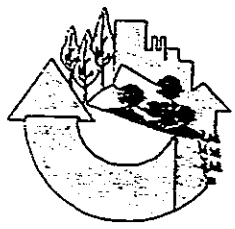
Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Are actual raw data directly input into computers by the analyst? If yes, are you using commercially available software? Specify:	X X			EXCEL
Are data entries verified? If yes, specify the procedure used for verification.				
If raw data is not directly input into computers, are bound notebooks used for keeping original or raw data?				

SECTION IX PERCEPTION OF DENR-EMB Philippines Laboratory Recognition Program

Laboratory Name: BIOTECH
Reviewer: ETTumlos/CVBayquen
Date Completed: October 22, 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Has the laboratory participated in the Philippines Laboratory Recognition Program?	X			
If no, are you interested in participation?				
Do you have comments about the DENR-EMB PRLP program?	X			Test Methods The choice of the test methods should not be restricted to DENR prescribed methods Track Methods The minimum number per parameter should not reached 300 to be recognized. The number of analysis is not important



ANNEX E

SGS Philippines, Inc
(Cebu branch)
Pre-test
Results

ENVIRONMENTAL LABORATORY CAPABILITY QUESTIONAIRE

I. General Information

A. Name of Laboratory: SGS Phils Inc.

B. Address of Laboratory: 3rd flr Baeline Complex, J. Osmeña St., Cebu City

C. Name of Establishment: SGS Phils. Inc.

D. Address of Establishment: 4th Flr. Don Tim Bldg., South Super highway Makati City

E. Year of Establishment

F. Telephone Number: Cebu: 253 3433 Makati: 817 6619 817 6231-35
253 5564 817 5656

G. Fax Number: Cebu: 25 35107 Makati: 816 3471

H. E-mail: sgs_philippines@sgsgroup.com

I. Contact Person: Cebu: Madilyn Plaza Makati: Jocelyn Babaan

J. Mission/Function of the Laboratory (Mission statement)

SGS philippines, Inc. aims to foster and develop its position through profitable growth as the leading inspection, testing and certification company in the Philippines.

We shall differentiate ourselves by the scope and quality of our services and our total commitment to our customers.

Our success will continue to be built on established independance, integrity and as an integral partner in the world wide network of professional staff in the SGS group.

II. Quality Management Systems Information (for the laboratory)

A. Is the laboratory certified to any of the following standards by a recognized third party provider?

[ ] ISO 9000 Series
[ ] ISO 14000 Series
[ ] OSHMS 18000
[ ] SA 8000
[✓] Others Specify ISO Guide 25 - Central Lab
[ ] Don't Know

B. Do you have a written Quality Management Plan ? [✓] Yes [ ] No
C. Do you have a written Quality Assurance Plan ? [✓] Yes [ ] No
D. Do you have a written Quality Control Plan ? [✓] Yes [ ] No
E. Do you have a written Standard Operating Procedures? [✓] Yes [ ] No
F. Do you have other written management plans ? [ ] Yes [ ] No

Specify: _____

G. Do you have health and safety system in place ? [✓] Yes [ ] No

III. ORGANIZATION

A. Does your company have an organizational chart? [✓] Yes [ ] No Central Lab
If yes please attach a copy

B. Does your laboratory have an organizational chart? [✓] Yes [ ] No Central
If yes please attach a copy

C. Staff Information*

Name	Position	Nature of Employment P = Permanent T = Temporary C = Casual	Years with Laboratory	Years of Relevant Experience	Highest Degree Attained
Madi Lin Plaza	Section coordinator				

*(Add more sheets as necessary for additional staff.)

III. SERVICES OFFERED

Types of Sample Analysis Performed

- [✓] Water Lion & Central Lab
- [✓] Wastewater Lion & Central Lab
- [✓] Sediment Central Lab
- [✓] Air Central Lab
- [✓] Biota Central Lab
- [ ] Other (specify) below

IV. PARAMETERS/METHODS

Please check the box for the parameters performed in your laboratory. and supply the method of analysis.

Water and Wastewater Analysis:		Method of Analysis
[✓]	pH (ww)	Electrode method
[✓]	Temperature	
[✓]	Color	
[✓]	Settleable Solids (ww)	Gravimetric
[✓]	Total Suspended Solids (ww)	"
[✓]	Dissolved Oxygen (ww)	Modified Azide
[✓]	Biological Oxygen Demand (BOD_5) (ww)	"
[✓]	Chemical Oxygen Demand (COD)	
[✓]	Oil and Grease (ww)	Petroleum Ether Extraction
[✓]	Nitrate as nitrogen	
[✓]	Phosphate as phosphorous	
[✓]	Cyanide, free	
[✓]	Boron	
[✓]	Arsenic	
[✓]	Heavy Metals	
	[ ] Cadmium (total)	
	[✓] Copper (total and dissolved)	
	[✓] Chromium (hexavalent)	
	[✓] Lead	
	[✓] Mercury (total)	
	[✓] Others	
[✓]	Phenols	
[✓]	Surfactant (methylene blue active substances)	
[✓]	Organophosphate pesticides	
[✓]	Organochlorine pesticides	
[✓]	Polychlorinated biphenyls (PCB)	
[✓]	Coliform, fecal and total (ww)	Multiple Tube fermentation
[ ]	Others	

Air and Stack Emissions Analysis Makati	Method of Analysis
[✓] Ammonia	
[ ] Carbon dioxide	
[ ] Nitrogen dioxide, total	
[ ] Nitrogen oxides, total	
[ ] Phosphorous Pentoxide	
[ ] Sulfur dioxide (ambient)	
[ ] Sulfur dioxide (stack)	
[ ] Suspended particulate matter – TSP	
[ ] Suspended particulate Matter – PM-10	
[ ] Carbon disulfide	
[ ] Chlorine and chlorine compounds (as Cl_2)	
[ ] Fluorine and fluorine compounds	
[ ] Hydrogen sulfide	
[ ] Ozone (ambient)	
[ ] Hydrogen chloride	
[ ] Phenol	
[ ] Heavy metals	
[ ] Cadmium	
[ ] Copper	
[ ] Chromium	
[ ] Lead	
[ ] Mercury	
[ ] Others	

Sediments and Biota Analysis Makati	Method of Analysis
[✓] Arsenic	
[✓] Coliform (fecal and total)	
[✓] Organochlorine Pesticides	
[✓] Polychlorinated Biphenyls (PCBs)	
[✓] Organophosphate Pesticides	
[✓] Heavy metals	
[✓] Cadmium	
[✓] Copper	
[✓] Lead	
[✓] Mercury (total)	
[✓] Iron	
[✓] Nickel	
[✓] Silver	
[✓] Zinc	
[ ] Others	

IV. FACILITIES AND PHYSICAL LAY-OUT

A. Facilities/Building Material

[✓] Concrete
[ ] Wood and concrete
[ ] Wood
[ ] Other Specify ______

Floor space/area: 20 sq. m m²

B. Physical Layout

Emergency Exit(s)	[✓] Yes [ ] No	
Fire Extinguisher(s)	[✓] Yes [ ] No	
Fume Hood(s):	[ ] Yes [✓] No	If yes, number ? ______
Exhaust Fan(s)	[✓] Yes [ ] No	
Emergency Shower(s)	[ ] Yes [✓] No	
Eye Wash(s)	[✓] Yes [ ] No	
First Aid Kit	[✓] Yes [ ] No	
Work Benches	[✓] Yes [ ] No	
Emergency Power Supply	[✓] Yes [ ] No	

No. of sinks(s) 1
No. of separate water faucet(s) 1
No. electrical Outlet(s) ______
No. of Gas Lines ✗

Cold Storage Facilities	[✓]	Refrigerators ______
	[ ]	Freezer(s) ______
	[ ]	Cold Storage/Walk in cooler(s) ______
Chemical Storage Area:	[ ]	Separate Room
	[✓]	Cabinets
Fume Hood Chemical Storage	[ ]	Base Cabinet
	[ ]	Acid Room
	[ ]	Solvent room
	[ ]	Toxic & Hazardous Substances
Sample Storage:	[ ]	Separate incoming storage
	[ ]	Ongoing
	[ ]	Archive
Waste Disposal	[ ]	Separate storage area

samples sent directly to clients
[illegible] that are not toxic are drained directly
[illegible] media

VI. LABORATORY INSTRUMENTS AND EQUIPMENT

A. Balance(s)
- [✓] Top – loading Ubon
- [✓] Analytical Ubon

B. Spectrometer(s) Makati
- [ ] Ultraviolet-Visible (UV-Vis)
- [✓] Atomic Absorption Spectrometer (AA)

C. Chromatography Equipment Makati
- [✓] ~~Liquid Chromatograph(s) How Many?~~ ______
  - UV Detector? [ ] Yes [ ] No
  - Other, specify: ______
- [✓] Gas Chromatograph(s) Makati How Many? ______
  - Flame Ionization Detector? [ ] Yes [ ] No
  - Electron Capture Detector? [ ] Yes [ ] No
  - Flame Photometric Detector [ ] Yes [ ] No
  - Other, specify: ______

D. Thermal Treatment Units
- [✓] Oven Ubon
- [✓] Furnace Makati
- [✓] Incubator Ubon
- [✓] Autoclave Ubon

E. Electronic Meters
- [✓] pH Ubon
- [x] Dissolved Oxygen
- [✓] Conductivity Ubon
- [✓] Turbidity Makati
- [ ] Specific Ion Makati

F. Sample Preparation Equipment Makati
- [ ] Shaker
- [ ] Extractor(s)
  - Liquid/Liquid [ ] Yes [x] No If Yes, how many ______
  - Liquid/Solid [ ] Yes [✓] No If Yes, how many ______

G. Sampling Equipment Malah
[ ] Water Sampling Equipment
List examples: _____
[ ] Air Sampling Equipment Malah
List examples: _____
[ ] Soil Sampling Equipment
List examples: _____

H. Computer(s) [ ] Yes [ ] No If yes, how many? _____
Internet Access [ ] Yes [ ] No

I. Other Equipment? (List)
List examples: _____

_____

VII. TRAINING AND CERTIFICATION

A. Are you interested in having your laboratory certified by an independent certification group? [ ] Yes [ ] No

B. Would you be interested in training for:

1. EMS [ ] Yes [ ] No
2. Quality Management Plan Preparation [ ] Yes [ ] No
3. Laboratory Quality Program Plan Preparation [ ] Yes [ ] No
4. Standard Operating Procedure Preparation [ ] Yes [ ] No
5. Quality Control Training for Laboratory Analysts [ ] Yes [ ] No

SGS provides training

VIII. Company Representation

Name of Person completing this form: Madilyn Plaza
Title of Person completing this form: Section Coordinator
Date form was completed: 10/15/99
Signature of Person completing form: [signature]

REPORT ON THE LAB VISIT AT
SGS Philippines, Inc. – Cebu
25 October 1999

The SGS Philippines Cebu – Cebu Laboratory is in a unique situation at the moment. This is because of a staff reduction where the two analysts being supervised were retrenched, leaving behind only one person to act as analyst and supervisor-in-one. Additionally, the present laboratory will be moved to a new and smaller area. Thus the laboratory visit was made at an unusual time. The findings are as follows:

A. Major findings:

- The Quality Assurance Manual was not in the laboratory but in Makati Laboratory for revision.
- There were no bound notebooks but loose pages/report forms.
- The filing of the job information and bench sheets is classified by client and are placed in clients folder; which works for the present because the analyst can easily retrieve whatever record there is whenever the client needs information.
- The chemical reagent bottles were not all properly labeled (no date of preparation, who prepared the samples and other pertinent information).
- There is no notebook or logbook to write what was done to a sample from the time the samples were received to the time the analyses were finished and reported.
- The laboratory only receives samples. They do not do sampling and gives sampling instructions only when requested.

All the above are indicative of a lack of/no quality control and no/minimal quality system set in place. Because of this, there is no way to know how well the performance of analysis was made. Even if the analyst's work was well done, there is no way to check for mistakes in the analyses performed.

B. Minor findings

- Food in the refrigerator (will be corrected in the new laboratory as there will be two separate refrigerators for laboratory and personnel needs).
- Figures were written over. This must be initialed and minimized as much as possible.
- Minimal personnel protective equipment (safety goggles) was not evident (kept inside drawer).

Though it was evident from the start that this is a small laboratory handling only a few analysis (pH, settleable solids, TDS, DO, microbial BOD, coliform test) there is a need to set up a control system and this will be easier to do in such a small set up.

RECOMMENDATIONS:

1. There is a need to set a control system in place
2. The control system need not be full blown. Perhaps, the mother laboratory at Makati can send someone or hire a certified auditor based in Cebu to do the checking once a week or as needed.

Report prepared by:

Corazon M. Ramirez
Team Leader

Nerlissa P. Concibido
Team Member

Gemma C. Mose
Team Member

80

Laboratory Survey Form

GENERAL INFORMATION

Name of Laboratory	SGS Philippines, Inc	Names of inspectors:
Address of Laboratory	3rd floor, Baseline Complex, J. Osmena St.,Cebu City	Raymond Merrill
		Joan Bursey
Telephone Number	(032) 253-5564 / 253-3433	Aloysius Baes
Fax Number	(032)253-5107	Corazon Ramirez
E-mail	sgs.philippine@sgsgroup.com	Nerlissa Concibido
Name of Establishment	SGS Philippines, Inc.	Gemma Mose
Address of Establishment	3rd floor, Baseline Complex, J. Osmena St.,Cebu City	
Year of Establishment	May 1993	
Laboratory Contact Person	Madilyn Plaza	
Date(s) of inspection	25 October 1999	

SECTION I. FUNCTION AND ROLE OF THE LABORATORY

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRAmirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does the laboratory have a written mission statement?	X			From SGS Makati(also quality statement/policy)
Do you think the laboratory is performing its documented functions?	X			
Who are the clients of the laboratory?				
University	X			
Industry	X			
Government Agencies	X			Waste disposal from Incinerator
Research Institutions				
Small Business	X			
Other(s)	X			Environmental consultants

SECTION II. LABORATORY ORGANIZATION

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does your laboratory have written job descriptions for staff?	X			She is both the section coordinator and the analyst.
Has a person been assigned to be responsible for quality assurance?	X			The quality assurance manager is in Makati laboratory.
Does the quality assurance manager routinely perform the following actions:				
• Ensures adherence to quality assurance requirements for sampling?			X	The laboratory does not perform sampling; the clients or their consultants do the sampling.
• Ensures that all test and measuring equipment are properly calibrated?	X			Balance is calibrated by DOST-Cebu.
• Monitors logging in of samples?	X			
• Approves Quality Assurance Project Plans, specific analyses, and final reports?	X			Approves final reports only.
• Maintains a copy of the master schedule sheet?	X			
• Maintains written and signed records of periodic inspections?	X			
• Maintains all original quality assurance documents (QA manual, methods, project plans, final reports) in one location?	X			The SGS QA manual is presently not in the Cebu laboratory; the manual has been taken from the Cebu laboratory and sent to Makati for revision.
Do qualified individuals perform the required analyses? (Please provide the information required for Table 1.)	X			Registered chemist.
Does the laboratory have a documented program of personnel training? Describe:	X			c/o Human Resources Division in Makati.
Does the laboratory routinely verify proficiency of personnel in the various methods? Describe the Procedure	X			There is an annual appraisal by internal Human Resources.
Does the laboratory have sufficient staff to perform the services required by the clients?	X			The laboratory sends samples to the central laboratory in Makati using couriers (Aboitiz).
Are qualified individuals authorized to approve data and results?	X			
Does the laboratory subcontract analysis?		X		
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory was used?			X	

SECTION III. QUALITY SYSTEM

Laboratory Name: SGS Phils, Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Quality Assurance Manual				
Does the laboratory have a written quality assurance manual?	X			The QA manual is not present in the laboratory at this time. The QA manual was taken from the laboratory and sent to Makati for revision.
Does the laboratory quality assurance manual –				
• Include a current summary of training, experience, and job description required for each member of the laboratory staff?				
• Describe quality control paperwork flow and identify those who are authorized to approve data and results?	X			
• Describe the laboratory's system for developing or revising technical procedures and identifies those who have authorization to do so?			X	The analyst was not aware of these procedures.
• Include and require the use of written calibration procedures, analytical procedures, computational procedures, quality control procedures, and operating procedures?	X			
• Specify the use of logs to record all instrument and equipment checks?	X			
• Describe chain-of-custody procedures that the laboratory will use?	X			
• Specify the use of a master schedule sheet or logbook of all samples being analyzed, indexed by laboratory numbers, client, date of arrival, and analysis to beperformed?	X			
• Require a procedure to examine and validate raw data from the laboratory independent of the original analyst?	X			The analyst was not sure.
• Describe the use, proper handling and storage of chemicals and solutions?				
• Contains a procedure to control all documents: Policy statement Procedures Calibration Tables Charts Notices/Memoranda Test Reports	X			
• Describe policy and procedure for resolution of complaints from clients or other parties?	X			
• Describe procedures for maintaining records of all complaints, investigations and corrective actions taken by the laboratory?	X			

SECTION III. QUALITY SYSTEM

Laboratory Name: SGS Phils, Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
B. Quality Control/Assurance				
Does the laboratory have written SOPs to describe all laboratory procedures?	X			Manual for Standard Methods for Wastewater analysis. No separate written SOPs.
Does the laboratory appear to have sufficient capacity to prepare and analyze all samples within holding times?	X			If there are too many samples, they send them to the central laboratory in Makati and tell the clients that the samples will be sent to Manila.
Are matrix/spiked samples performed as specified when the procedure calls for it?			X	Yes for the Makati laboratory.
Are precision results of sample replicates measured for each method to indicate reproducibility among individual measurements of the same property under similar conditions?	X			Two replicates per sample.
Are precision and accuracy results used to determine control limits for all operating parameters?	X			When replicate results do not agree, she repeats the analysis on the basis of the values obtained from the standards.
Does the laboratory use control charts to monitor precision and accuracy and document validity of data?		X		
Does the laboratory perform appropriate check (standard) samples, method blanks, and laboratory duplicates as required by the methods?	X			
Does the laboratory participate in any proficiency testing programs?		X		
Does the laboratory subcontract analysis?		X		Samples are sent to the central laboratory in Makati.
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory is used?			X	

SECTION IV. HEALTH AND SAFETY SYSTEMS

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed : 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Has the laboratory identified the Health Safety hazards to personnel associated with its activities and services?	X			During the laboratory walk-through, open food containers were found in the refrigerator, together with utensils and samples.
Has the laboratory assessed the risk to human health from physical, chemical and biological hazards and natural phenomena?		X		
Has legislation relevant to your laboratory's health and safety risks been identified?		X		
What methods does the laboratory use to control the management of its occupational health and safety risks? Elimination Substitution Administrative Controls Personal Protective Equipment Occupational Health and Safety Management Systems (OHSMS) Training	X			
Does the laboratory have a personnel health monitoring program in place appropriate to the risks to human health?	X			Yearly medical checkup – routine checkup.
Does your laboratory set any objectives and targets aimed at reducing the risk to human health from laboratory activities?			X	Not aware of any.
Do you monitor and measure your occupational health and safety performance?		X		
Do you maintain records to demonstrate your occupational health and safety performance?		X		
Does the laboratory monitor its effluents?		X		
Does the laboratory have adequate procedure for the collection, storage, treatment and disposal of domestic and laboratory wastes?	X			
Do laboratory effluent and emissions conform with relevant environmental quality standards?			X	Don't know.
Does the laboratory have proper management practices for expired chemicals, toxic chemicals, and laboratory wastes?	X			Only for expired chemicals. Samples are returned to customers. Coliform tubes are disinfected before disposal.

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Procurement				
Are sources/vendors of supplies and equipment evaluated for quality?	X			
Are procurements done competitively?	X			
Does someone check whether what was ordered was actually received?	X			
Does the laboratory check for contamination in new chemicals and solvents?		X		Only the central SGS laboratory in Makati checks new chemicals
B. Supplies				
Are chemicals dated upon receipt and used on a first-in, first-out basis?	X			
Are all reagents and solutions labeled to indicate identity, concentration, storage requirements, preparer's name, preparation date, and expiration date?	X			Only the identity, concentration, and preparation date are seen on labels.
Are chemicals used in analyses tested to ensure that they contain no contaminants that may interfere with the analyses?	X			
Is a source of (glass) distilled or demineralized water available at all times?	X			Tap water is distilled
Is the conductivity of distilled or demineralized water routinely checked and recorded?	X			
Is reagent-grade water used for organic methods?			X	
Is distilled water used for inorganic methods?	X			
Are reagent-grade or high-purity chemicals used to prepare standards?	X			
Is the solvent storage area properly vented and appropriate for the prevention of possible laboratory contamination?	X			
To avoid contamination, are samples and standards containing the analytes stored or used in areas other than those where trace analysis is performed?	X			
Are standards stored separately from sample extracts?	X			
Is an adequate supply of routinely needed in-house replacement parts available to ensure that analytical equipment is not inoperable during a critical period?			X	

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
C. Equipment				
Is there an inventory of the equipment and instruments?	X			By the in-house accounting department.
Is a service record logbook maintained for each analytical instrument with entries in ink, dated, and signed?		X		For the balance, a collection of loose sheets on a clipboard was used. There were dated entries made, some in pencil, all unsigned. These sheets were called Job Information sheets, by customer.
Is the analytical balance located away from drafty areas and areas subject to rapid temperature changes?		X		The balance was located near the window where it was in direct sun at least part of the day.
Is calibration and/or preventive maintenance program in place?	X			For the balance only.
Is the calibration and/or preventive maintenance program implemented regularly?	X			Annually
Is calibration performed by an outside party?	X			Dept. of Science & Technology, Cebu
Are calibration test results reported on a standard report form?	X			Forms are from the parent company in Makati.
Use Figure V-1 to demonstrate the traceability of samples from collection to reporting. Trace at least one sample through the laboratory systems.				

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamiez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Sampling				
Does the laboratory do their own sampling?		X		
Is a written SOP available that describes sampling requirements (such as, type of sampling container, preservation technique, and storage container) for each analysis?		X		
Does the laboratory assign a custodian to log in samples?	X			
If no custodian is appointed, are the individuals logging in samples aware of the sampling requirements for each analysis?			X	
Are samples collected in the type of container specified for each analysis?		X		The laboratory receives the samples in whatever container the samplers use.
If sample containers are reused, are they cleaned properly?	X			When sample containers are re-used, they are cleaned using detergent solution.
Are trip blanks, field blanks, and field duplicates used as required?		X		
If so, are they identified as such?			X	
If used, are spiked samples identified?		X		Only in Makati.
B. Sample Handling				
Does the custodian know the process for storing incoming samples?	X			
During delivery to the laboratory, are samples preserved as required?			X	Analyst does not know what she will receive from samplers.
Do samples shipped to the laboratory arrive at the correct temperature to ensure that the sample has remained in a preserved state?		X		
Are adequate facilities provided for storage of incoming samples, including cold storage?	X			
Are samples maintained at the correct temperature until the time of analysis?	X			
Is the temperature of the cold storage recorded daily in a logbook?		X		
Are temperatures outside of control limits noted, and are appropriate actions taken when required?			X	
Are volatile samples stored separately from nonvolatile or semivolatile samples?			X	
Are all samples analyzed within required holding times?	X			Analyst tells the clients that she will be late when she cannot make hold times.

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamiez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
C. Sample Tracking				
Is a sample label affixed to each container?	X			
Do sample labels contain information sufficient to identify the sample and ensure that it has been sampled in the correct manner (including facility name, station number, date sampled, time sampled, type of analysis requested, preservation used, and signature of sampler)?		X		Widely variable: some samples contain specific information on the label, some contain minimum information.
Does the laboratory have a written form for tracking samples (chain-of-custody form)?	X			
Is a chain-of-custody form filled out and kept on file?	X			
Is the information on the sample label and chain-of-custody form verified and matched?	X			
Are unique laboratory numbers assigned to all incoming samples (including quality control samples)?	X			
Does the laboratory maintain a master list or logbook of all samples being analyzed, indexed by laboratory number, client, and date of arrival, and analysis to be performed?		X		Not a bound notebook, but there is a filing system on a per client basis.
Is the laboratory number written on the sample label, the master list, and any documents related to that sample?	X			
Does each sample have a separate work order for each analysis or group of analyses (that is, organic and inorganic) to be performed (to ensure that each analyst who must perform an analysis on that sample will have a work order)?	X			
After all analyses have been completed, are all work orders attached to all appropriate summary sheets for each analyses?	X			
Are completed sample analysis work orders kept on file after completion of analysis?	X			
Are the possession and handling of samples traceable from the time and date of collection to the time and date of analysis and reporting?	X			Samples are traceable from the date and time of receipt in the laboratory.
Demonstrate by tracing at least one sample in the laboratory. Summarize by completing Form V-1 (see page V-3).				

SECTION VII. TEST METHODS

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Test Method Manual				
Does the laboratory have a test method manual? If yes, does it contain the following: • List of samples where method is applicable? • A basic principle of the test method? • Specification of test reagents, equipment & instrument? • Instruction for reagent preparation? • An analytical procedure including Standard and sample preparation? • Instruction for operation and calibration of test equipment/instrument? • Details for test calculation (e.g. formulas for calculations)?	X X X X X X			
If there is none, what references are used for the test methods? APHA AWWA US EPA Others	 X			
B. Selection of Methods				
Are all methods used DENR prescribed methods?	X			
Has any of the methods used been modified or updated? If modified or updated has it been validated?		X		
Are the test methods readily available for use?	X			
Are validation guidelines being followed (e.g., AOAC)?		X		
Is there documentation of validation? Records of validation studies: Person responsible for validation:			X	

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Data Acquisition and Laboratory Test Reports				
Is computerized or manual verification of calculations performed?		X		Manual calculations are performed by the analyst; there is no one else to verify calculatins.
Are the data validation criteria documented (including limits on operational parameters, calibration data, special checks. statistical tests, and manual checks)?		X		Analyst is the only staff member in the laboratory.
Does the laboratory have procedures for data handling and reporting, including the recording of data on standard forms and in laboratory notebooks?	X			
If so, is this reporting format described with example forms provided?	X			
Are sample calculations available for inspection?	X			
Are bound notebooks used for all laboratory activities?		X		No bound notebooks in the laboratory; all loose worksheets are used.
Are notebooks kept correctly?			X	
Do you have instruments directly interfaced to computers? If yes, specify:		X		The only computers in the laboratory were for accounting purposes and for generating the final report of analysis.
If you have directly interfaced data capture, describe your system for data storage?			X	
Do notebooks, logbooks, and runlogs have the following pertinent data: Title – describing the activity being recorded Instrumentation - type and ID number (for example GC #3) Date of preparation or analysis Initials of preparer or analyst For preparation notebooks or logbooks - details of activity, such as sample measurements reagents and quantities, and procedure times, if applicable For instruments runlogs - run sequences, identity of each Sample and analyte Units of measurements Calculations, if applicable Peer or supervisory review signature and date		X		No notebooks. Log books were kept on loose sheets of paper with a minimum of information. The only bound notebook in the laboratory was the notebook for preparation of standard reagents. Most of this information is on the worksheets rather than in bound notebooks.

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

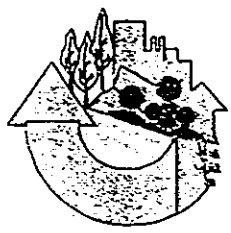
Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Do test/analysis reports given to customers include	X			The test method is not usually included unless requested by the client.
Name and address of laboratory	X			
Name and address of client	X			
Analysis report No.	X			
Sample ID. No(s).	X			
Description, Identification	X			
Source of samples	X			
Date of sampling				
Date sample received				
Date sample was analyzed				
Test method used	X			
Specific modifications to method (ifany)	X			
Other observation				
Name and signature of staff performing Analysis	X			The analyst and the signer of the report are the same person.
Name and signature of staff responsible for report	X			
B. Records				
Are raw data archived and documented properly? If yes, describe:	X			
Are records maintained for at least 3 years?		X		Data are kept for 6 months to one year.
Has the laboratory ever needed to make changes after a report has been released to the client? If yes, what was done, and how was it documented?		X		
C. Computer Software and Hardware				
Do you have a computer exclusively used for data recording? If yes, Specify Model: Number of units:		X		
Are actual raw data directly input into computers by the analyst? If yes, are you using commercially available software? Specify:		X		
Are data entries verified? If yes, specify the procedure used for verification.			X	
If raw data is not directly input into computers, are bound notebooks used for keeping original or raw data?		X		

SECTION IX PERCEPTION OF DENR-EMB Philippines Laboratory Recognition Program

Laboratory Name: SGS Phils. Cebu
Reviewer: CMRamirez/NPConcibido
Date Completed: 25 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Has the laboratory participated in the Philippines Laboratory Recognition Program?		X		
If no, are you interested in participation?	X			Analyst had participated in a consultatory meeting for the area.
Do you have comments about the DENR-EMB PRLP program?				This meeting was trial only and the Cebu group is just starting and was not yet organized at that time



ANNEX F

DENR EMPAS 7
Pre-test
Results

ENVIRONMENTAL LABORATORY CAPABILITY QUESTIONNAIRE

General Information

A. Name of Laboratory: DENR - EMPAS - Reg. 7 Laboratory

B. Address of Laboratory: DENR Bldg. Banilad, Mandaue

C. Name of Establishment: DENR - 7

D. Address of Establishment: ____________

E. Year of Establishment: ____________

F. Telephone Number: 3469426

G. Fax Number: 3461647

H. E-mail: ____________

I. Contact Person: Peter G. Dongcoy

J. Mission/Function of the Laboratory

To analyze Environmental Samples on waste and wastewater samples.

II. Quality Management Systems Information (for the laboratory)

A. Is the laboratory certified to any of the following standards by a recognized body?

- [ ] ISO 9000 Series
- [ ] ISO 14000 Series
- [ ] OSHMS 18000
- [ ] SA 8000
- [ ] Others Specify
- [ ] Don't Know

None

B. Do you have a written Quality Management Plan ? [ ] Yes [X] No

C. Do you have a written Quality Assurance Plan ? [ ] Yes [X] No

D. Do you have a written Quality Control Plan ? [✓] Yes [X] No

E. Do you have a written Standard Operating Procedures? [✓] Yes [ ] No

F. Do you have other written management plans ? [ ] Yes [X] No

Specify: ____________

G. Do you have health and safety system in place ? [ ] Yes [X] No

BEST AVAILABLE COPY

ORGANIZATION

A. Does your company have an organizational chart? [✓] Yes [ ] No
If yes please attach a copy

B. Does your laboratory have an organizational chart? [✓] Yes [ ] No
If yes please attach a copy

C. Staff Information*

Name	Position	Nature of Employment P = Permanent T = Temporary C = Casual	Years with Laboratory	Years of Relevant Experience	Highest Degree Attained
ESTER G. Dongcoy	Head-EMPAS-Lab	P	15 yrs	15 yrs	B.S. Chem graduate.
Esmeralda A. Casiño	EMS-I	P	3 months	14 yrs	B.S. Chem graduate
Vilma Y. Bertulfo	EMS-II	C	2 yrs	16 yrs	B.S. CH E graduate
Juanito T. Llenos	Science Aid	P	12 yrs.	12 yrs.	

*(Add more sheets as necessary for additional staff.)

SERVICES OFFERED

Types of Sample Analysis Performed

[✓] Water
[✓] Wastewater
[✓] Sediment
[✓] Air
[ ] Biota
[ ] Other (specify) below

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V. PARAMETERS/METHODS

Please check the box for the parameters performed in your laboratory, and supply the method of analysis

Water and Wastewater Analysis:	Method of Analysis
[✓] pH	Glass Electrode Method
[✓] Temperature	Use of Mercury - Filled Thermometer
[✓] Color	Visual Comparison Method (Platinum Cobalt Scale)
[✓] Settleable Solids	Settleable Solids (Imhoff Cone Method)
[✓] Total Suspended Solids	Gravimetric Method
[✓] Dissolved Oxygen	Azide Modification
[✓] Biological Oxygen Demand (BOD_5)	Azide Modification (Dilution Technique)
[ ] Chemical Oxygen Demand (COD)	
[✓] Oil and Grease	Gravimetric Method (Petroleum Ether Extraction)
[ ] Nitrate as nitrogen	
[ ] Phosphate as phosphorous	
[ ] Cyanide, free	
[ ] Boron	
[ ] Arsenic	
[✓] Heavy Metals	AAS - As 0/now no lamp available
[✓] Cadmium (total)	AAS - total only. Wet Ashing w/ HNO_3, HCl
[✓] Copper (total and dissolved)	Diphenyl Carbazide Colorimetric Method
[✓] Chromium (hexavalent)	AAS
[✓] Lead	
[x] Mercury (total)	
[x] Others	
[ ] Phenols	
[ ] Surfactant (methylene blue active substances)	
[ ] Organophosphate pesticides	
[ ] Organochlorine pesticides	
[ ] Polychlorinated biphenyls (PCB)	
[✓] Coliform, fecal and total	Multiple Tube Fermentation Technique Membrane
[ ] Others	

BEST AVAILABLE COPY

Air and Stack Emissions Analysis	Method of Analysis
[ ] Ammonia	
[ ] Carbon dioxide	
[ ] Nitrogen dioxide, total	
[ ] Nitrogen oxides, total	
[ ] Phosphorous Pentoxide	
[ ] Sulfur dioxide (ambient)	
[ ] Sulfur dioxide (stack)	
[✓] Suspended particulate matter – TSP	Fix-Flow – Gravimetric Method
[✓] Suspended particulate Matter – PM-10	High Volume - with 10 micron particle - size inlet and Gravimetric Method
[ ] Carbon disulfide	
[ ] Chlorine and chlorine compounds (as Cl_2)	
[ ] Fluorine and fluorine compounds	
[ ] Hydrogen sulfide	
[ ] Ozone (ambient)	
[ ] Hydrogen chloride	
[ ] Phenol	
[ ] Heavy metals	
[ ] Cadmium	
[ ] Copper	
[ ] Chromium	
[ ] Lead	
[ ] Mercury	
[ ] Others	

Sediments and Biota Analysis	Method of Analysis
[ ] Arsenic	
[ ] Coliform (fecal and total)	
[ ] Organochlorine Pesticides	
[ ] Polychlorinated Biphenyls (PCBs)	
[ ] Organophosphate Pesticides	AAS – Wet Ashing
[✓] Heavy metals	
[✓] Cadmium	
[✓] Copper	
[✓] Lead	
[ ] Mercury (total)	
[✓] Iron	
[✓] Nickel	
[ ] Silver	
[✓] Zinc	
[ ] Others	

FACILITIES AND PHYSICAL LAY-OUT

A. Facilities/Building Material

- [✓] Concrete
- [ ] Wood and concrete
- [ ] Wood
- [ ] Other Specify ____________

Floor space/area: ____________ m²

B. Physical Layout

Emergency Exit(s)	[✓] Yes [ ] No	
Fire Extinguisher(s)	[✓] Yes [ ] No	
Fume Hood(s):	[✓] Yes [ ] No	If yes, number: 1
Exhaust Fan(s)	[✓] Yes [ ] No	
Emergency Shower(s)	[ ] Yes [ ] No	
Eye Wash(s)	[✓] Yes [ ] No	
First Aid Kit	[ ] Yes [ ] No	
Work Benches	[ ] Yes [ ] No	
Emergency Power Supply	[ ] Yes [ ] No	

No. of sinks(s) ____1____

No. of separate water faucet(s) ____1____

No. electrical Outlet(s) ____2____

No. of Gas Lines ____1____

Cold Storage Facilities
- [✓] Refrigerators ____________
- [ ] Freezer(s) ____________
- [ ] Cold Storage/Walk in cooler(s) ____________

Chemical Storage Area:
- [✓] Separate Room
- [✓] Cabinets

Fume Hood Chemical Storage
- [ ] Base Cabinet
- [ ] Acid Room
- [ ] Solvent room
- [ ] Toxic & Hazardous Substances

Sample Storage:
- [ ] Separate incoming storage
- [ ] Ongoing
- [ ] Archive

Waste Disposal
- [ ] Separate storage area

G. Sampling Equipment
[ ] Water Sampling Equipment,
List examples: Sediments Sampler, Water Sampler
[ ] Air Sampling Equipment
List examples: Stack Sampling, 6 Gas Sampler
[ ] Soil Sampling Equipment
List examples: NONE

H. Computer(s) [✓] Yes [ ] No If yes, how many? One
Internet Access [ ] Yes [ ] No

I. Other Equipment? (List)
List examples: BOD Incubator, Coliform Incubator, Auto Clave ~~Lab Oven, Water Bath~~, FCCal Water Bath

VII. TRAINING AND CERTIFICATION

A. Are you interested in having your laboratory certified by an independent certification group? [✓] Yes [ ] No

B. Would you be interested in training for:
1. EMS [ ] Yes [ ] No
2. Quality Management Plan Preparation [✓] Yes [ ] No
3. Laboratory Quality Program Plan Preparation [✓] Yes [ ] No
4. Standard Operating Procedure Preparation [✓] Yes [ ] No
5. Quality Control Training for Laboratory Analysts [✓] Yes [ ] No

VIII. Company Representation

Name of Person completing this form: Peter G. Dongcoy
Title of Person completing this form: Head, EHPAS Laboratory
Date form was completed: Oct. 26, 1999
Signature of Person completing form: Peter G. Dongcoy

LABORATORY INSTRUMENTS AND EQUIPMENT

A. Balance(s)
- [✓] Top – loading
- [✓] Analytical

B. Spectrometer(s)
- [✓] Ultraviolet-Visible (UV-Vis)
- [✓] Atomic Absorption Spectrometer (AA)

C. Chromatography Equipment
- [ ] Liquid Chromatograph(s) How Many? ______
  - UV Detector? [ ] Yes [ ] No
  - Other, specify: ______
- [✓] Gas Chromatograph(s) How Many? 1
  - Flame Ionization Detector? [✓] Yes [ ] No
  - Electron Capture Detector? [✓] Yes [ ] No
  - Flame Photometric Detector [ ] Yes [ ] No
  - Other, specify: ______

Never completely unpacked; stds not available. JS

D. Thermal Treatment Units
- [✓] Oven
- [ ] Furnace
- [✓] Incubator
- [✓] Autoclave

E. Electronic Meters
- [✓] pH
- [✓] Dissolved Oxygen
- [ ] Conductivity
- [✓] Turbidity
- [ ] Specific Ion

F. Sample Preparation Equipment
- [ ] Shaker
- [ ] Extractor(s)
  - Liquid/Liquid [ ] Yes [ ] No If Yes, how many ______
  - Liquid/Solid [ ] Yes [ ] No If Yes, how many ______

Report on the Laboratory Visit at
DENR-EMPAS Region VII Lab
Banilad, Mandaue, Cebu
October 26, 1999

The Team visited the laboratory as part of the Benchmark Study of the Status of Environmental Laboratories in the Visayas and Mindanao areas. The following are the major and minor findings and recommendations of this lab visit.

A. MAJOR FINDINGS
- A quality control system is not in place and as such, there is no QA manual to guide laboraory operations.
- There is no written function and role of the laboratory staff, although a laboratory organizational chart was presented.
- There was no documented health and safety system and personnel are left on their own to decide whether they will use personal protective equipment or not.
- Laboratory effluents (especially heavy metals used in AAS analysis) are disposed directly into cemented septic tank, not treated. The levels of the pollutants in the laboratory wastewater are not monitored.
- Analysis reports and raw data notebooks are in order except that correction fluid are used to correct wrong entries and checking of data entry/calculation is not consistently signed and dated.
- Chemicals are not dated as received.
- There are no records of instrument calibration.
- The laboratory receives samples from inspection engineers and walk-in private clients. The laboratory does not require or check sampling procedures.

B. MINOR FINDINGS
- Refrigerator contains mostly food (i.e. polvoron and Coke bottles occupy freezer) together with prepared reagents and samples.
- Broken glassware (1L beaker) is still being used to prepare solutions.
- Labeling on prepared solutions are inadequate (no date of preparation, name of analyst).
- Use of volumetric flask as reagent/storage bottle.
- AAS hollow cathode lamp compartment cover was open even during analysis.

C. RECOMMENDATIONS
- A quality control system must be set in place. A written QA manual and test method manual must be made.
- Laboratory waste management must be initiated to address the heavy metals present on the laboratory effluents.

Audited by:

Aloysius U. Baes
Team Leader

Nerissa P. Concibido
Team Member

Gemma C. Mose
Team Member

Laboratory Survey Form

GENERAL INFORMATION

Name of Laboratory	DENR-EMPAS Region VII Laboratory	Names of inspectors:
Address of Laboratory	DENR Bldg., Banilad, Mandaue	Raymond G. Merrill
Telephone Number	(032) 346-9426	Joan T.Bursey
Fax Number	(032) 346-1647	Aloysius U.Baes(AUB)
E-mail	none	Corazon M.Ramirez
Name of Establishment	DENR-Region VII	Nerlissa P. Concibido
Address of Establishment	DENR Bldg., Banilad, Mandaue	Gemma C. Mose
Year of Establishment	1989	
Laboratory Contact Person	Mrs. Ester G. Dongcoy	
Date(s) of inspection	26 October 1999	

SECTION I. FUNCTION AND ROLE OF THE LABORATORY

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain All Negative Responses)
Does the laboratory have a written mission statement?	X			From SGS Makati (also quality statement/policy)
Do you think the laboratory is performing its documented functions?	X			
Who are the clients of the laboratory?				
University	X			
Industry	X			
Government Agencies	X			Waste disposal from Incinerator
Research Institutions				
Small Business	X			
Other(s)	X			Environmental consultants

SECTION II. LABORATORY ORGANIZATION

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Does your laboratory have written job descriptions for staff?				Only org. chart (job descriptions)
Has a person been assigned to be responsible for quality assurance?				Lab head is QA/ not documented
Does the quality assurance manager routinely perform the following actions:				QA Management Plan is not documented
• Ensures adherence to quality assurance requirements for sampling?	X			
• Ensures that all test and measuring equipment are properly calibrated?	X			
• Monitors logging in of samples?				Sampling engineers
Approves Quality Assurance Project Plans, specific analyses, and final reports?			X	No QA
• Maintains a copy of the master schedule sheet?	X			
• Maintains written and signed records of periodic inspections?	X			
• Maintains all original quality assurance documents (QA manual, methods, project plans, final reports) in one location?	X			Original copy of final report goes to customer; a copy is maintained for record keeping
Do qualified individuals perform the required analyses?	X			Provided the information required for in Table1
Does the laboratory have a documented program of personnel training? Describe:				In house trainings but they are not documented
Does the laboratory routinely verify proficiency of personnel in the various methods? Describe the Procedure:	X			Uses control samples like glu in BOD_5
Does the laboratory have sufficient staff to perform the services required by the clients?		X		Only 2 analyst
Are qualified individuals authorized to approve data and results?	X			Head chemist checks and signs reports, then RTB division personnel also signs
Does the laboratory subcontract analysis?			X	No sub-contract
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory was used?			X	No sub-contract

SECTION III. QUALITY SYSTEM

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Quality Assurance Manual				
Does the laboratory have a written quality assurance manual?		X		
Does the laboratory quality assurance manual –				NA
• Include a current summary of training, experience, and job description required for each member of the laboratory staff?			X	
• Describe quality control paperwork flow and identify those who are authorized to approve data and results?			X	
• Describe the laboratory's system for developing or revising technical procedures and identifies those who have authorization to do so?			X	
• Include and require the use of written calibration procedures, analytical procedures, computational procedures, quality control procedures, and operating procedures?			X	
• Specify the use of logs to record all instrument and equipment checks?			X	
• Describe chain-of-custody procedures that the laboratory will use?			X	
• Specify the use of a master schedule sheet or logbook of all samples being analyzed, indexed by laboratory numbers, client, date of arrival, and analysis to be performed?			X	
• Require a procedure to examine and validate raw data from the laboratory independent of the origin analyst?			X	
• Describe the use, proper handling and storage of chemicals and solutions?			X	
• Contains a procedure to control all documents: Policy statement Procedures Calibration Tables Charts Notices/Memoranda Test Reports			X	
• Describe policy and procedure for resolution of complaints from clients or other parties?			X	
• Describe procedures for maintaining records of all complaints, investigations and corrective actions taken by the laboratory?			X	

SECTION III. QUALITY SYSTEM

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
B. Quality Control/Assurance				
Does the laboratory have written SOPs to describe all laboratory procedures?	X			DENR procedures
Does the laboratory appear to have sufficient capacity to prepare and analyze all samples within holding times?	X			Holding time per sample is described to clients i.e. 6 hrs for BOD then they should submit another sample
Are matrix/spiked samples performed as specified when the procedure calls for it?	X			Heavy Metals.
Are precision results of sample replicates measured for each method to indicate reproducibility among individual measurements of the same property under similar conditions?	X			Two replicates per sample.
Are precision and accuracy results used to determine control limits for all operating parameters?	X			
Does the laboratory use control charts to monitor precision and accuracy and document validity of data?	X			For BOD5 only
Does the laboratory perform appropriate check (standard) samples, method blanks, and laboratory duplicates as required by the methods?	X			Glu for BOD only
Does the laboratory participate in any proficiency testing programs?	X			Once a year/for limited no. of samples
Does the laboratory subcontract analysis?			X	
Does the laboratory have a system to examine and validate raw data when a sub-contractor laboratory is used?			X	

SECTION IV. HEALTH AND SAFETY SYSTEM

Laboratory Name: DENR-EMPAS Region VII
Reviewer : AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain All Negative Responses)
Has the laboratory identified the Health Safety hazards to personnel associated with its activities and services?	X			Not documented
Has the laboratory assessed the risk to human health from physical, chemical and biological hazards and natural phenomena?	X			Not documented
Has legislation relevant to your laboratory's health and safety risks been identified?		X		
What methods does the laboratory use to control the management of its occupational health and safety risks?				
Elimination		X		
Substitution		X		
Administrative Controls	(X)	X		Did not see/the staff are left on their own to decide if they will/will not use PPE.
Personal Protective Equipment				
Occupational Health and Safety Management Systems (OHSMS) Training		X		
Does the laboratory have a personnel health-monitoring program in place appropriate to the risks to human health?		X		
Does your laboratory set any objectives and targets aimed at reducing the risk to human health from laboratory activities?		X		
Do you monitor and measure your occupational health and safety performance?		X		
Do you maintain records to demonstrate your occupational health and safety performance?		X		
Does the laboratory monitor its effluents?		X		
Does the laboratory have adequate procedure for the collection, storage, treatment and disposal of domestic and laboratory wastes?				Lab septic tank
Do laboratory effluent and emissions conform to relevant environmental quality standards?		X		Not measured
Does the laboratory have proper management practices for expired chemicals, toxic chemicals, and laboratory wastes?		X		

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NpConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Procurement				
Are sources/vendors of supplies and equipment evaluated for quality?	X			Yana and others/bidding system
Are procurements done competitively?	X			
Does someone check whether what was ordered was actually received?	X			In Gen. Services/head of lab accepts.
Does the laboratory check for contamination in new chemicals and solvents?		X		Based on assay.
B. Supplies				
Are chemicals dated upon receipt and used on a first-in, first-out basis?	X			
Are all reagents and solutions labeled to indicate identity, concentration, storage requirements, preparer's name, preparation date, and expiration date?	X			
Are chemicals used in analyses tested to ensure that they contain no contaminants that may interfere with the analyses?		X		
Is a source of (glass) distilled or demineralized water available at all times?	X			Distiller is not functional. Distlled water is purchased from YANA.
Is the conductivity of distilled or demineralized water routinely checked and recorded?		X		
Is reagent-grade water used for organic methods?	X			
Is distilled water used for inorganic methods?	X			
Are reagent-grade or high-purity chemicals used to prepare standards?	X			AAS-uses commercially available standard solutions; else AR reagents
Is the solvent storage area properly vented and appropriate for the prevention of possible laboratory contamination?		X		
To avoid contamination, are samples and standards containing the analytes stored or used in areas other than those where trace analysis is performed?	X			
Are standards stored separately from sample extracts?	X			
Is an adequate supply of routinely needed in-house replacement parts available to ensure that analytical equipment is not inoperable during a critical period?				Not asked

SECTION V. GENERAL LABORATORY SUPPLIES AND EQUIPMENT

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NpConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
C. Equipment				
Is there an inventory of the equipment and instruments?	X			With lab head
Is a service record logbook maintained for each analytical instrument with entries in ink, dated, and signed?	X			Not a service record logbook but a user record logbook (no entry for # samples, solvents, etc.)
Is the analytical balance located away from drafty areas and areas subject to rapid temperature changes?	X			
Is calibration and/or preventive maintenance program in place?		X		
Is the calibration and/or preventive maintenance program implemented regularly?		X		
Is calibration performed by an outside party?		X		
Are calibration test results reported on a standard report form?			X	

Use Figure V-1 to demonstrate the traceability of samples from collection to reporting.
Trace at least one sample through the laboratory systems.

SECTION VI. SAMPLING, SAMPLE HANDLING AND TRACKING

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Dare Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
C. Sample Tracking				
Is a sample label affixed to each container?	X			
Do sample labels contain information sufficient to identify the sample and ensure that it has been sampled in the correct manner (including facility name, station number, date sampled, time sampled, type of analysis requested, preservation used, and signature of sampler)?		X		These informations can be found on analysis/calculation logbooks calssified per parameter.
Does the laboratory have a written form for tracking samples (chain-of-custody form)?		X		
Is a chain-of-custody form filled out and kept on file?		X		
Is the information on the sample label and chain-of-custody form verified and matched?			X	
Are unique laboratory numbers assigned to all incoming samples (including quality control samples)?		X		Labels only
Does the laboratory maintain a master list or logbook of all samples being analyzed, indexed by laboratory number, client, and date of arrival, and analysis to be performed?	X			
Is the laboratory number written on the sample label, the master list, and any documents related to that sample?		X		
Does each sample have a separate work order for each analysis or group of analyses (that is, organic and inorganic) to be performed (to ensure that each analyst who must perform an analysis on that sample will have a work order)?		X		
After all analyses have been completed, are all work orders attached to all appropriate summary sheets for each analyses?		X		
Are completed sample analysis work orders kept on file after completion of analysis?		X		
Are the possession and handling of samples traceable from the time and date of collection to the time and date of analysis and reporting?	X			
Demonstrate by tracing at least one sample in the laboratory. Summarize by completing Form V-1 (see page V-3).				

SECTION VII. TEST METHODS

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBAes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain All Negative Responses)
A. Test Method Manual				
Does the laboratory have a test method manual? If yes, does it contain the following: • List of samples where method is applicable? • A basic principle of the test method? • Specification of test reagents, equipment & instrument? • Instruction for reagent preparation? • An analytical procedure including Standard and sample preparation? • Instruction for operation and calibration of test equipment/instrument? • Details for test calculation (e.g.formulas for calculations)?				
If there is none, what references are used for the test methods? APHA AWWA US EPA Others	X			
B. Selection of Methods				
Are all methods used DENR prescribed methods?	X			
Has any of the methods used been modified or updated? If modified or updated has it been validated?		X		
Are the test methods readily available for use?	X			
Are validation guidelines being followed (e.g., AOAC)?			X	No validation studies
Is there documentation of validation? Records of validation studies: Person responsible for validation:			X	

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
A. Data Acquisition and Laboratory Test Reports				
Is computerized or manual verification of calculations performed?	X			Checked by head
Are the data validation criteria documented (including limits on operational parameters, calibration data, special checks, statistical tests, and manual checks)?		X		
Does the laboratory have procedures for data handling and reporting, including the recording of data on standard forms and in laboratory notebooks?	X			
If so, is this reporting format described with example forms provided?	X			
Are sample calculations available for inspection?	X			Uses correction fluids
Are bound notebooks used for all laboratory activities?	X			
Are notebooks kept correctly?		X		Correction fluid used, no signature and dates for checking
Do you have instruments directly interfaced to computers? If yes, specify	X			AAS Varian
If you have directly interfaced data capture, describe your system for data storage? Directly printed out				Drrectly printed out
Do notebooks, logbooks, and runlogs have the following pertinent data:				Notebooks are in a corner in a room being used as balance room/computer room, micro room-accessible to other people.
Title – describing the activity being recorded	X			
Instrumentation - type and ID number (for example GC #3)	X	X		
Date of preparation or analysis	X			
Initials of preparer or analyst	X			
For preparation notebooks or logbooks - details of activity, such as				
sample measurements				
reagents and quantities, and	X			
procedure times, if applicable	X			
For instruments runlogs - run sequences, identity of each				
Sample and analyte		X		
Units of measurements		X		
Calculations, if applicable				
Peer or supervisory review signature and date				

SECTION VIII. DATA HANDLING, REPORTING, and RECORD KEEPING

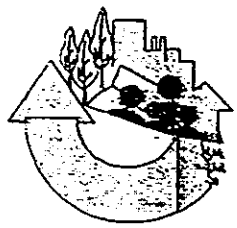
Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Do test/analysis reports given to customers include				
Name and address of laboratory	X			
Name and address of client	X			
Analysis report No.	X			
Sample ID. No(s).		X		
Description, identification and source of samples	X			
Date of sampling	X			
Date sample received	X			
Date sample was analyzed	X			DENR
Test method used		X		
Specific modifications to method (if any)		X		
Other observation	X			
Name and signature of staff performing analysis	X			Noted by OIC-RTD, EMPAS attested by OIC-chief, EQD
Name and signature of staff responsible for report	X			
B. Records				
Are raw data archived and documented properly? If yes, describe:	X			Kept for 10 years
Are records maintained for at least 3 years?	X			
Has the laboratory ever needed to make changes after a report has been released to the client? If yes, what was done, and how was it documented?		X		
C. Computer Software and Hardware				
Do you have a computer exclusively used for data recording? If yes, Specify Model: Number of units:		X		Also for word processing Used only when there is funding for printer ink
Are actual raw data directly input into computers by the analyst? If yes, are you using commercially available software? Specify:		X		Manual calculations done by analyst and reviewed by head chemist
Are data entries verified? If yes, specify the procedure used for verification.			X	
If raw data is not directly input into computers, are bound notebooks used for keeping original or raw data?	X			

SECTION IX PERCEPTION OF DENR-EMB Philippines Laboratory Recognition Program

Laboratory Name: DENR-EMPAS Region VII
Reviewer: AUBaes/NPConcibido
Date Completed: 26 Oct 1999

Requirements	Yes	No	NA	Comments (Explain all negative responses)
Has the laboratory participated in the Philippines Laboratory Recognition Program?	X			Head chemist as part of DENR auditing team, lab not audited
If no, are you interested in participation?				
Do you have comments about the DENR-EMB PRLP program?				



ANNEX G

EMB Lab ELCQ Results

IISE-LMS Form 1

ENVIRONMENTAL LABORATORY CAPABILITY QUESTIONAIRE

I. General Information

A. Name of Laboratory	EMB Laboratory (Laboratory Services Section)
B. Address of Laboratory	DENR Cpd., Visayas Ave., Diliman, Q.C.
C. Name of Establishment	Environmental Management Bureau
D. Address of Establishment	Topaz Bldg., # 99-101 Kamias Rd., Q. C.
E. Year of Establishment	1989
F. Telephone Number	426-4332 to 426-4339
G. Fax Number	426-4335
H. E-mail	
I. Contact Person	Ms. Ella S. Deocadiz
J. Mission/Function of the Laboratory	

The EMB laboratory is primarily tasked to generate technical data and information as basis for the setting of the relevant environmental quality criteria, standards, and rules and regulations. The laboratory is likewise mandated to perform the following:

- investigate alternative procedures and methods for assessing pollution;
- analyze environmental samples from environmental monitoring networks and programs/projects; and
- organize interlaboratory performance exercises and come up with accredited laboratories to be involved in environmental monitoring and research activities.

II. Quality Management System Information (for the laboratory)

A. Is the laboratory certified to any of the following standards by a recognized third party provider?

( ) ISO 9000 Series	( ) SA 8000	( ) None
( ) ISO 14000 Series	(✓) Others Specify ; DOH	( ) OSHMS 18000
( ) Don't Know		

B. Do you have a written Quality Management Plan?	(✓) Yes	( ) No
C. Do you have a written Quality Assurance Plan?	(✓) Yes	( ) No
D. Do you have a written Quality Control Plan?	(✓) Yes	( ) No
E. Do you have a written Standard Operating Procedures?	(✓) Yes	( ) No
F. Do you have other written management plans?	(✓) Yes	( ) No

Specify : EMB LABORATORY QUALITY MANUAL (Draft)

G. Do you have health and safety system in place?	( ) Yes	(✓) No

III. ORGANIZATION

A. Does your company have an organizational chart?	(✓) Yes	( ) No

If yes please attach a copy

B. Does your laboratory have an organizational chart?	(✓) Yes	( ) No

If yes please attach a copy

C. Staff Information *

Name	Designation / Position	Nature Of Employment	Years W/ Laboratory	Years Of Relevant Exp.	Highest Degree Attained
1. Ella S. Deocadiz	Chief, RDD/ Chief, Science Research Specialist	P	10	22	BS Chem Ms Envi. Eng'g
2. Leonita D. Baetiong	Head, Phy-Chem Lab Unit/supervising Environmental Management Specialist(SEMS)	P	27	27	BS Chem Dipl. Water Analysis and Quality
3. Araceli C. Cantre	Head, Bacteriological Lab. Unit	P	24	24	BS Med. Tech. MS Envi Science
4. Lerma L Dimayuga	Head, Air Lab. Unit/SEMS	P	24	24	BS Med Tech. BS Chem
5. Ma. Fatima Anneglo R.	Head, Organic Lab. Unit/ Science Research Specialist (SRS) II	P	10	10	BS Chem MS Chem (w/o Thesis)
6. Remy R. Mamon	Head, Metals Lab. Unit/ Senior Environmental Mgt. Specialist	P	15	15	BS Chem
7. Roberto L. Co	Maint. Unit Senior Science Research Specialist	P	13	13	BS E.C.E
8. Teresita A. Peralta	Laboratory Analyst Sr. Envi Mgt. Specialist	P	13	13	BS Chem Eng'g. MS Envi Science (thesis on going)
9. Nannette A. Borja	Laboratory Analyst/SRS -II	P	12	12	BS Med. Tech.
10. Arceli C. Viernes	Laboratory Analyst/SRS-II	P	10	10	BS Chem. Eng'g MS Envi Science (On-going)
11. Napoleon R. Lapuz	Laboratory Analyst/SEMS	P	10	10	BS Mining Eng'g BS Geology
12. Ma. Lourdes P. Vargas	Laboratory Analyst/SRS-I	P	10	10	BS Psycho BS Chem (3rd yr)
13. Victoria B. Malihan	Laboratory Analyst/SRS-I	P	10	10	BS Commerce
14. Iluminada A. Soria	Clerk III	P	5	5	BS Commerce
15. Rebecca P. Gutierrez	Clerk II	P	10	10	BS Educ.
16. Jose R. Cortes	Laboratory Aide/Laborer	P	10	10	High School Graduate

*(Add more sheets as necessary for additional staff.)

IV. SERVICES OFFERED

Types of Sample Analysis Performed
(✓) Water
(✓) Wastewater
(✓) Sediment
(✓) Air
(✓) Biota
(✓) Soil
( ) Other (specify) below

V. PARAMETERS/METHODS

(✓) Water and Wastewater
(✓) Air and Stack Emissions Analysis
(✓) Sediments and Biota analysis
(Pls. See Annexes A-C of DENR AO 98-63)

VI. FACILITIES AND PHYSICAL LAY-OUT

A. Facilities/Building Material
( ) Concrete
(✓) Wood and concrete
( ) Wood
( ) Other Specify

Floor space/area: approximate 900 sq.m. (Main and Annex Building)

B. Pysical Layout

Emergency Exit (s)	(✓) Yes	( ) No	
Fire Extinguisher(s)	(✓) Yes	( ) No	
Fume Hood(s)	(✓) Yes	( ) No	If yes, Number ? 8
Exhaust Fan(s)	(✓) Yes	( ) No	
Emergency Shower(s)	(✓) Yes	( ) No	
Eye Wash(s)	(✓) Yes	( ) No	
First Aid Kit	(✓) Yes	( ) No	
Work Benches	(✓) Yes	( ) No	
Emergency Power Supply	(✓) Yes	( ) No	

No. of sinks(s) : 18 sinks, 8 work bench cup sink and 8 fume hood cup sink
No. of separate water faucet(s) : 18 sinks, 8 work bench cup sink and 8 fume hood cup sink

No. of electric Outlet(s) : 84 C.O.
No. of Gas Lines : Gas Lines = 12, Vacuum Lines = 4, Air Lines = 12
Separate gas lines for AAS, GC and other instruments

Cold Storage Facilities	(✓) Refrigerators : 8
	(✓) Freezer(s) : 6
	( ) Cold Storage/Walk in Cooler(s) :
Chemical Storage Area:	(✓) Separate Room
	(✓) Cabinets
Fume Hood Chemical Storage	(✓) Base Cabinet
	(✓) Acid Room
	(✓) Solvent Room
	(✓) Toxic & Hazardous Substances
Sample Storage	(✓) Separate incoming storage
	(✓) Ongoing
	( ) Archive
Waste Disposal	(✓) Separate storage area

VI. LABORATORY INSTRUMENTS AND EQUIPMENT

A. Balance(s)
(✓) Top - loading
(✓) Analytical

B. Spectrometer(s)

(✓) Ultraviolet-Visible (UV-Vis)
(✓) Atomic Absorption Spectrometer (AA)

C. Chromatography Equipment

( ) Liquid Chromatograph(s) How Many? : 2
UV Detector? (✓) Yes ( ) No
Other, specify: _____

(✓) Gas Chromatograph(s) How Many? : 6
Flame Ionization Detector? (✓) Yes ( ) No
Electron Capture Detector? (✓) Yes ( ) No
Flame Photometric Detector? (✓) Yes ( ) No
Other, specify : MS, ELCD, PID

D. Thermal Treatment Units
(✓) Oven
(✓) Furnace
(✓) Incubator
(✓) Autoclave

E. Electronic Meter
(✓) pH
(✓) Dissolved Oxygen
(✓) Conductivity
(✓) Turbidity
(✓) Specific Ion

F. Sample Preparation Equipment
(✓) Shaker
(✓) Extractor(s)
Liquid/Liquid ( ) Yes ( ) No If Yes, how many _____
Liquid/Solid ( ) Yes ( ) No If Yes, how many _____

G. Sampling Equipment
(✓) Water Sampling Equipment
List examples: Kemmerer, Van Dom, Van Veen
(✓) Air Sampling Equipment
List examples: Gas Sampler, Orsat, Stack Sampler
(✓) Soil Sampling Equipment
List examples: Auger, Core Sampler,

H. Computer(s) (✓) Yes ( ) No If yes, how many? _____
Internet Access (✓) Yes ( ) No

H. Other Equipment? (List)
List examples: Ion Chromatograph with Conductivity, Amperometry and Voltammetry Detectors

VII. TRAINING AND CERTIFICATION

A. Are you interested in having your laboratory certified by an independent certification group/	(✓) Yes	( ) No
B. Would you be interested in training for :		
1. EMS	(✓) Yes	( ) No
2. Quality Management Plan Preparation	(✓) Yes	( ) No
3. Laboratory Quality Program Plan Preparation	(✓) Yes	( ) No
4. Standard Operating Procedure Preparation	(✓) Yes	( ) No
5. Quality Control Training for Laboratory Analysts	(✓) Yes	( ) No

V111. Company Representation

Name of Person completing this form: ELLA S. DEOCADIZ
Title of Person completing this form: Chief, Research and Development Division
Date form was completed: October 29, 1999
Signature of Person completing form: _____