

Environmental and Social Monitoring Report

Annual Report
2009

PHI: Acquisition and Rehabilitation of the Masinloc Coal Fired Thermal Power Plant Project

Prepared by Masinloc Power Partner Co. Ltd. Environment, Health and Safety Management for the Masinloc Power Partner Co. Ltd. and the Asian Development Bank.

**Environmental and Social Performance
Annual Monitoring Report (AMR)**

**PHILIPPINES: MASINLOC POWER
IFC Project #26405
ADB Loan Number 2405/7273 – PHI (PS)**

Reporting Period: January 2009 through December 2009

AMR Completion Date: April 30, 2010

INTRODUCTION

The 660MW gross Masinloc Coal-Fired Thermal Power Plant (Masinloc CFTP or MCFTPP) in the Philippines was privatized in July 2007 and is now owned and operated by Masinloc Power Partners Co. Ltd. (MPPCL), a wholly-owned subsidiary by AES Corporation of the US. Masinloc CTPP is located about 250 km northwest of Metro Manila, in the north of Luzon, and was designed and commissioned in 1998 as a two-unit, 660MW plant.

MPPCL is implementing an Action Plan (as such item is defined in the Common Terms Agreement and the ADB Loan Agreement) to rehabilitate the Masinloc CFTPP to improve its operating performance and to address certain environmental issues. The scope of these works was determined through a Phase I environmental due diligence review and a technical condition assessment of the plant and turnaround plan.

MPPCL is putting in place new management procedures, implementing deferred maintenance, and addressing technical and other issues. The purpose of the AMR is to report on:

- Implementation of an Environment, Health and Safety (EHS) management system at Masinloc Power;
- Implementation of the Action Plan agreed with the Senior Lenders, including ADB;
- Implementation of the Environmental Management Plan;
- Compliance by MPPCL with the Government of the Philippines (GOP) and Senior Lenders' environmental and social requirements, including the Safeguards Requirements;
- Summaries of EHS testing;
- Labor and health and safety performance;
- Environmental improvement and expansion planning activities; and
- Agency coordination and community engagement activities.

This document outlines ADB's and International Finance Corporation (IFC)'s preferred format for MPPCL's AMR. Documents prepared by MPPCL for reporting (i.e., to DENR) or public relations purposes can supplement or substitute sections of this report as appropriate.

1. MPPCL'S ENVIRONMENT, HEALTH AND SAFETY (EHS) MANAGEMENT AT THE MASINLOC PLANT

Report Prepared by: ANTONIA V. LOPEZ/Environmental Manager

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E-mail: Antonia.lopez@aes.com

Signature:

Report Date: April 30, 2010

Environmental Responsibility

The individuals below hold EHS responsibility in the MPPC organization and for the Masinloc Power Project:

Plant Manager	:	KEVIN RICHARD PIERCE
Safety and Environmental Manager:		EUGENE PIELAGO
Environmental Manager	:	ANTONIA V. LOPEZ
Plant Nurse	:	CHRIS V. PARAN
Community Relations Officer	:	SHERIE MADONNA DIAZ

CURRENT MASINLOC PLANT ORGANIZATION CHART

Please refer to Appendix I

Summary of Current Operations/Stage of Project

Conducted the following Unit 2 Major Overhauling Activities:

- Turbine overhaul
- Replacement of air heater elements
- Repair/restoration of Boiler Circulation Pump
- Restoration of two (2) units of Boiler Feedwater Pump
- Replacement of Electrostatic Precipitator on April 12, 2009.

Conducted the following Unit 1 Major Overhauling Activities:

- Turbine overhaul
- Retubing of reheater/superheater panel pendant tubes
- Replacement of Boiler Coal Burner Assemblies (Coal Burner Nozzles & Bodies)
- Restored one (1) unit of Boiler Feedwater Pump (BFP 1C)
- Replacement of Electrostatic Precipitator (Started December 2009)
- Inspection/Refurbish of CW Inlet 72" Butterfly Valves
- Inspection of CW Pipe Intake
- Replacement of eight (8) units Air & Gas Metal Expansion Joints (Mill to Pulverizer)
- .Replacement of two (2) units IDF Outlet Fabric Expansion Joints
- Refurbish or metalizing of IDF Shaft Journal

Initiated Ash Pond Improvement project; preparation of design is in process.

Clearances/Permits/Licence/Approvals Received

MPPCL has secured from the different Local Government Units and agencies the permits, licenses and clearances that are required in the operation of the plant.

Please refer to Appendix 2 for the List of the Issued Clearances, Permits, License and Approvals received by MPPCL.

Environmental Management Programs and Practices

Continuous monitoring of the Masinloc plant's compliance to the Environmental Compliance Certificate issued by Philippines Regulatory agencies standards such as DENR, implementation of Multipartite Monitoring Program of the plant's compliance during operation stage to the Philippines Regulatory agencies standards such as DENR, Department of Health (DOH) and to the Department of Labor and Employment (DOLE). Monitoring is done every three months and is participated by representatives from the DENR, DOE and LGU.

Continue monitoring of the following environmental samples every three months:

- Air (ambient and, occupational)
- Water (Marine, River, Domestic, Ground, Effluent)
- Noise (ambient and, occupational)
- Sediments
- Coal
- Solid Waste (Fly Ash, Bottom Ash, Sludge)

Please refer to Appendix 3 for sample Multipartite Monitoring Report..

Masinloc Plant had the following Tests conducted and passed in compliance to Republic Act 8749 (Clean Air Act):

- | | |
|---------------------------------------|---------------------|
| • Stack Emission Testing | – June 17, 2009 |
| • Cylinder Gas Audit | – June 18-24, 2009 |
| • Opacity analyzer Audit | - June 18-24, 2009t |
| • Relative Accuracy Test Audit (RATA) | - June 18-24, 2009 |

Continuous monitoring of Plant Emissions

Reports are generated and documented in Self Monitoring Reports (SMR), Copy of the report is submitted to DENR every three (3) months. In case of an exceedance occurrence, an Environmental Nonconformance Event (ENE) is generated.

Please refer to appendix 4 for sample of ENE.

Continuous monitoring of Plant Effluents on a daily and quarterly frequency.

Reports are generated and documented in daily report and Multipartite Monitoring Reports (MMR) respectively. Copy of the report is forwarded to the plant management daily and to DENR quarterly respectively.

Please refer to appendix 5 for sample Daily Monitoring Report..

Implementation of Oil/Chemical Spill Contingency Plan

Relative trainings and information dissemination for MPPCL personnel on “Emergency Preparedness Response” is a continuing activity. This awareness is conducted either during communication meetings, Environmental, Health & Safety meetings, or scheduled trainings. Absorbent materials and spill kits for oil and chemical spills emergency response are always and readily available. Spill kits are located in areas where high probability of oil/chemical spills will occur. Lead group for the oil/chemical spill monitoring/prevention/control is the Environmental personnel.

Please refer to appendix 6 for the “Oil and Chemical Spill Kits Location”.

Implementation of Solid Waste Management Program

Continuous implementation of Solid Waste segregation in the Masinloc plant. Color coded and labeled trash bins are located to all the buildings for solid waste segregation. Bulk solid wastes like cut trees/vegetations, woods and concrete/cement chips are dumped in their respective labeled locations at the laydown area. Solid Wastes are collected daily by the Environmental Group. This program is in compliance to Republic Act No. 9003, also known as the “Ecological Solid Waste Management Act of 2000.”

Hazardous Waste Management

Continuous implementation of Hazardous Wastes Management in the Masinloc plant. All generated hazardous wastes are controlled by recording the types and quantities before their temporary storage at the Hazardous Wastes Storage Building. Removal and Treatment of Hazardous Wastes from the plant is done by DENR accredited Transporter and Treater respectively. The choice for the transporter and treater is done through bidding.

Clean and Green Program

Continuous implementation of **Plant Housekeeping** in the Masinloc plant – includes street sweeping, maintenance of landscape through trimming, grass cutting, watering, maintenance of storm drain canals, side ditches, central manhole/canal and oil/water separator pits.

Continuous **Maintenance of Buffer zones** – includes maintenance of the existing forest trees (narra, mahogany, eucalyptus, agoho) and fruit trees (mango, jackfruit, guyavano, etc)

Maintenance of nursery to sustain buffer zones maintenance and in support to one of the Masinloc plant’s community outreach program which is the seedlings dispersal to

the host communities and join the tree planting program of the government, DENR and LGUs in particular.

2. MPPCL'S PROGRESS IN IMPLEMENTING THE ACTION PLAN AGREED WITH THE SENIOR LENDERS, INCLUDING ADB

Please refer to Appendix 7 for the status of implementation and follow-up activities resulting from the Action Plan of the Phase 1 site assessment, dated October 6, 2007.

3. MPPCL'S PROGRESS IN IMPLEMENTING THE ENVIRONMENTAL MANAGEMENT PLAN

Report on the status of implementation and follow-up activities resulting from the Environmental Management Plan as defined in the ADB Loan Agreement, dated :

4. COMPLIANCE BY MPPCL WITH THE GOP AND THE SENIOR LENDERS' ENVIRONMENTAL AND SOCIAL REQUIREMENTS, INCLUDING THE SAFEGUARDS REQUIREMENTS

Compliance with Country Requirements

Except for specific ongoing improvements and corrective measures as defined in the action Plan, is MPPCL currently in compliance with applicable national and local environmental, social, health and safety laws and regulations? (if no, explain.)

Yes.

Have any government agencies inspected or reviewed MPPC's environmental compliance? If so, please describe.

Yes. DENR Region 3 Environmental Management Bureau review the Masinloc plant compliance to the Environmental Compliance Certificate annually when MPPCL applied application for the renewal of its Permits and quarterly during the submission of the Self Monitoring Reports.

Have any permit applications been refused? If so, please explain.

No.

Compliance with Environmental Compliance Certificate

Please refer to Appendix 8 for the status of compliance.

Compliance with the senior Lenders' Requirements

Except for specific ongoing improvements and corrective actions, is MPPCL currently in compliance with Lenders' requirements? If no, explain.

Yes.

For reference, the applicable Performance Standards are:

- **PS 1: Social and Environmental Assessment and Management Systems**

Existence of sound employee-management relationship at the plant. There is an existing open communication between the employees and the management. Policies and memoranda are disseminated/relayed through emails and during monthly communication meetings.

Compensation, benefits, working conditions and terms of employment are well communicated to the employees.

- **PS 2: Labor and Working Conditions**

- **PS 3: Pollution Prevention and abatement**

Please refer to appendix 9 for the Mitigating Measures.

- **PS 4: Community Health, Safety and Security**

- **PS 6: Biodiversity Conservation and Sustainable Natural Resource Management**

The applicable World Bank Group environment, health and safety guidelines are:

- **Thermal Power: Guidelines for New Plants, July 1998**
- **Thermal Power: Rehabilitation of Existing Plants, July 1998**

For reference, the applicable Safeguards Requirements are:

- **Any Safeguard Law (as defined in the ADB Loan Agreement)**
- **Any Environmental Approval (as defined in the ADB Loan Agreement) issued by any Government Authority or otherwise under any Safeguard Law;**
- **ADB's Environment Policy (2002);**
- **ADB's Involuntary Resettlement Policy (1995);and**

NOT Applicable.

- **ADB's Indigenous People Policy (1998)**

NOT Applicable.

5. SUMMARIES OF EHS TESTING AT MASINLOC PLANT

During this reporting period, December 2009, MPPCL has completed the conduct of the fourth Quarter for 2009 Multipartite Monitoring of the plant last December 14-18, 2009.

This monitoring is in compliance to Section 16 of the Environmental compliance Certificate issued by the Department of Environment and Natural Resources (DENR) to the plant. Monitoring of the plant operation to its impact to the environment is conducted on a quarterly basis by the Multipartite Monitoring Working Committee, a committee created based on the Memorandum of Agreement between the DENR, Zambales Local Government Units (Barangay, Municipal and Provincial) and NPC.

This Committee is composed of representatives from the DENR (CENRO-Community Environment and Natural Resource Office, PENRO- Provincial Environment and Natural Resource Office, , Regional Office), Zambales Local Government Units (Barangay Bani, towns of Palauig, Masinloc and Candelaria, and from the office of the Governor's office) and from MPPCL.

For every quarter, monitoring includes:

- Ambient Air Quality (4 stations)
- Occupational Air Quality (8 station)
- River Water Quality (3 stations)
- Marine (10 stations)
- Domestic (6 stations)
- Ground Water (10 stations)
- Plant effluent (4 stations)
- Ambient Noise level measurement (18 stations)
- Occupational Noise Level measurement (18 stations))
- Coal and Solid wastes (bottom ash, fly ash and sludge)

MPPCL conducts two types of analyses; in-situ and laboratory. Laboratory analysis includes twenty four trace metals. Analyses were conducted based on DENR recommended methods of analyses.

Results of the analyses describing the quality of the air, noise, water and plant effluent as well as of the sediment, coal and ash are defined in detail in the Multipartite Monitoring Reports (MMR). Copies of the quarterly reports (MMR) are provided to all the members of the monitoring team.

During this reporting period (January to December 2009), the Masinloc plant is in compliance to all the parameters/limits controlled by the regulatory agencies (DENR, DOH and DOLE)

Please refer to Appendix 9 for sample of monitoring results.

6. LABOR AND HEALTH SAFETY PERFORMANCE, ISSUES ARISING, AND CORRECTIVE ACTIONS TAKEN

Labor Practices:

Human Resources Policy and Procedures during the Reporting Period:

Time Keeping Policy and Leave Policy has been revised to appropriately meet the business requirements.

MPPCL Labor force is composed of regular and contractual employees. Quantitative summary of staff directly employed and number of contract workers regularly present at the plant but employed through an agent or subcontractor is as follows:

As of Dec 31, 2009

Regular Employees;	174
Contractual Employees;	56

Reasons of the employees who left MPPCL are;

- Medical reasons Health Problem,
- Want to start their own businesses.
- To avail the opportunities in abroad.
- Force Reduction.
- Personal & Family Reasons.
- Retirement.
- Non Performance.

There is no employees union or other workers' organization created at the plant (both employees and contract staff).

During the Outage period, it is the policy of MPPCL that priority employment is given to the local residents. This provision is clearly stipulated in the Purchase Order being awarded to the contractors..

7. MPPCL' Agency Coordination and Community Engagement Activities:

Describe MPPCL' support to local economic development as required by the Department of Energy Act of 1992.

Describe activities of MPPCL' other support for host community projects and support to local government initiatives.

Discuss how MPPCL consults with the community, and the mechanisms in place for the public to contact MPPCL with complains or concerns (grievance procedure). Describe any significant grievances received during the reporting period and how they were processed and resolved.

Discuss efforts made by MPPCL to provide employment to local people.

MPPCL constantly search for ways to support its host communities and hopes to focus our attention to those indigent children. MPPCL has its Corporate Social Responsibility Program for the year 2008 prioritizing the three (3) nearest barangays in Masinloc, Zambales such as:

- Feeding Program – benefited 200 students daily (June-December)
- Top 3 School Incentive Program – gave 15 students cash incentive and a certificate of recognition
- School rehabilitation Program – 3 classrooms in Relocation School and Administration building in Bani High School, to be done this year.
- Calamity Fund – allocated 1M Pesos
- College Scholarship program
- Give a Gift Program – every Christmas and as we see fit.
- Various Community Sponsorship and Donation of Furniture.
- School Supplies Program – School Supplies will be donated to more than 1000 students within 5 schools.
- Give A Shoe Program – Shoes will be given as our very own way of making Christmas more meaningful for 500 students.
- Donations of furniture to host communities.
- Various Sponsorship events and Community Meetings.

May of 2009, MPPCL provided help and relief goods to the municipality of Botolan, province of Zambales to the most affected by Typhoon Ondoy. Relief goods were distributed to more than 400 families in four relocation centers in Botolan, Zambales.

Bi – annual Medical and Dental Mission on 4 selected barangays. The said program was held on May and November in coordination with the Philippine National Police.

Project Highlights:

1. Participation of more than 10 PNP doctors and dentists.
2. Php550k worth of supplies and medicine for each set.
3. Extended Medical and Dental Treatment to more than 1500 patients.

Conduct monthly meeting with the Community and Religious Leaders to address issues and concerns along with this hired around 150 qualified local employees during the Major Outage in the plant.

There is no formal procedure for this but normally people can contact to the respective representative. During the reporting period of AMR no grievances were received and responded..

Worker Health and Occupational Safety

MPPCL is implementing a systematic process that made management accountable for managing safety. This process is the Safety Management System – the core element of an organization that effectively protects the health and safety of the employees. The system mainly composed of procedures that are effectively implemented; this includes trainings

to develop pro-active safety performance and acquisitions of pertinent safety equipment. Procedures implemented and training conducted is as follow respectively:

Implementation of the following procedures:

- Accident/Incident/Near Miss Reporting and Investigation
- Safe Work Permit Procedure – Lock Out/Tag Out (LOTO)
- Fall Protection Program
- Personal Protection Equipment
- Confined Space Procedure
- Hot Work Program
- Risk Assessment Program
- Electrical Safety Program
- Safety Committee Procedure
- Contractor Safety Management Program
- Solid Fuel Handling
- Fire Extinguisher Program
- Tale Gate Safety Meeting
- Compressed Gas Cylinder Management Program
- Eye Wash & Shower Program
- Fire Protection System Impairment Procedure
- Protection Device De-activation Procedure
- Management of change procedure
- Storage, Handling, Transfer and Process Management of Hazardous Chemical Material
- Pre-Job Briefing and Job Safety Analysis
- Emergency Response and Contingency Plan
- Housekeeping
- Hoisting and Rigging
- Diving-Underwater Safety
- Personal Protective Grounding
- Excavation
- Machine Guarding
- Fleet Maintenance Policy
- Medical Surveillance
- Hearing Conservation
- Illumination
- Crane and Hoist Program
- Ladder and Safety Program
- Earthquakes, High Winds & Typhoons, and Imminent Volcanic Eruptions

Training Conducted:

- Permit To Work (LOTO & safe Work Permit)
- Fall Protection Training
- Confined Space Specialist Training

- Hot Work Specialist Training
- Risk Assessment Training
- Basic Rigging
- Advanced Rigging and Lifting
- Overhead Crane Operation Training
- Compressed Gas Cylinder Training
- Automatic External Defibrillator Training
- Machine Guarding
- Hearing Conservation
- Hazardous Communication
- Blood Borne/Substance Abuse
- Fire Fighting/Prevention Seminar
- Personal Protective Equipment Seminar
- Contractor Safety Management System Seminar
- Scaffolding Erection/Dismantling and Material inspection Training
- Training on Establishing Integrated Management System (ISO 14001/OHSAS18001)
- Hazard Identification, Risk Assessment and Determining Control (OHSAS 18001:2007)
- Scaffolding Safety

Provide a Quantitative summary of work-related accidents by MPPCL and its contractors, including a discussion of trends, response measures taken, and other actions taken to reduce accidents. Provide a summary of on-going implementation measures relating to any accidents reported in a previous reporting year.

The number of incidences as per records shown on Table 1 (Appendix 10) indicates very minimal numbers, even with that for the contractors, considering the fact that Outages took place from January to April 2009 for Unit 2 and November 2009 up to the following year for Unit 1 where Contractors personnel numbering as high as 500 and AES at more than 200. The very low numbers of incidents, may be considered phenomenal, is attributed to the following:

- Strict compliance of the Safety Policy
- Safety training of AES, as well as the contractors
- Conduction of daily tool box meeting among the contractors
- Enthusiastic reporting of near misses and proactive rectification of such (Table 2-Appendix 10)

Accidents, Fires, and Other Emergencies:

During the reporting period of AMR no Incident was happened impacting the environment.

Other Significant Incidents:

On November 10, 2009, the second Loss Time Accident (LTI) happened; almost a year span from the first one. This time, on the side of the contractor.

The contractor was working on the local pipe B1 as a part of a 10-man crew uncovering tarpaulins in order to expose coal for reclaiming. First they have to remove 25-kilo bags of coal tied with nylon strands to eyeholes along the sides of the tarps. In the process of untying a knot in one of the eyeholes, he tied a loop on his right hand in an apparent effort to have a better control of the tarp which is constantly flapping due to exposure from wind. The bag of coal slipped down slope while the nylon strands was still tied on his hand causing the tip of his right index finger to be torn-off exposing the bone from the first joint toward the tip.

The victim was first brought to the clinic where first aid was administered. Then he was brought to a hospital for further treatment. Upon investigating the following was observed:

- Worker not familiar with job hazard
- Worker creating an unsafe condition that did not exist at the job site; tying the nylon rope around his finger
- Limited work experience in material handling environment
- Compromised nylon hold down rope due to reducing the size to ¼ inch from original ¾ inch

Long term corrective action to be undertaken:

- Only properly trained and experienced coal yard personnel to be utilized to place and remove coal pipe covers
- Investigate alternative methods of coal pile covering other than the tarps
- Develop and train on specific job safety analysis for placing and removing tie down cords and weigh bags when covering the pile.

8. MPPC'S environmental improvement and expansion planning activities

During this reporting period, MPPCL is on its way in addressing the technical issues resulting from the comprehensive Environmental Survey and Action Plan conducted by ENSR such as:

- Ash Pond Improvement/Rehabilitation Program. This is in compliance to Environmental Compliance Certificate, section 11.9.

MPPCL awarded the preparation of the design to be implemented in the Ash Pond Improvement/Rehabilitation Program.

- Repair of Small Jetty.

Integrity of the structure is not sure due to the noticeable movement when a vehicle suddenly stops or applied brakes.

9. MPPCL'S AGENCY COORDINATION AND COMMUNITY ENGAGEMENT ACTIVITIES

Describe MPPCL's support to local economic development as required by the Department of Energy Act of 1992 (ER 1-94).

LGUs are provided with copies of the Department of Energy Act of 1992, explained to them how to avail of the benefits as provided in this Act. MPPCL explained to them that a project proposal has to be prepared, endorsed by the local government through resolution, submitted to MPPCL, evaluate and approved by the Department of Energy in order for them to benefit from this ER 1-94.

Describe activities of MPPCL's other support for host community projects and support to local government initiatives.

Discuss how MPPCL consults with the community, and the mechanisms in place for the public to contact MPPCL with complains or concerns (grievance procedure). Describe any significant grievances received during the reporting period and how they were processed and resolved.

Discuss efforts made by MPPCL to provide employment to local people.

MPPCL has its Corporate Social Responsibility Program for the year 2008-2009 prioritizing the three (3) nearest barangays in Masinloc, Zambales such as :

- Feeding Program – benefited 200 students daily (January-March, June-December)
- Top 3 School Incentive Program – gave 15 students cash incentive and a certificate of recognition
- Medical and Dental Mission – done twice a year, May and November where 1500 people are being benefited in the host communities
- School rehabilitation Program – 3 classrooms in Relocation School and Administration building in Bani High School, to be done this year.
- Calamity Fund – allocated 1M Pesos
- College Scholarship program
- Give a Gift Program – every Christmas and as we see fit.
- Various Community Sponsorship and Donation of Furnitures.

Conducts monthly meeting with the Community and Religious Leaders to address issues and concerns.

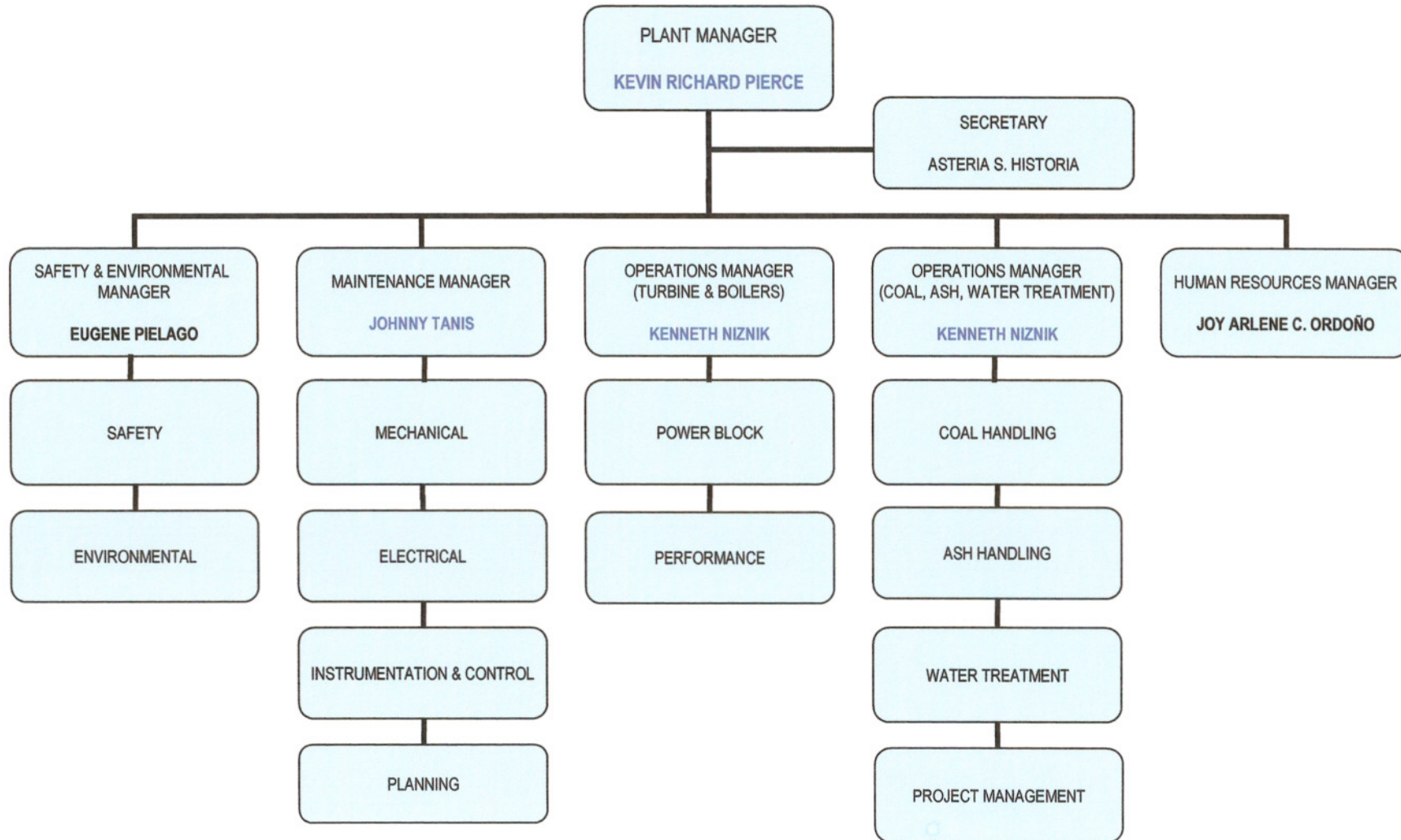
Hired around 150 qualified local employees during the Major Outage in the plant.

* Examples of significant incidents follow. Chemical and/or hydrocarbon materials spills, fire, explosion or unplanned releases, industrial injuries, fatalities including transporatation, ecological damage/destruction; local population disruption; disruption of emissions or effluent treatment;

legal/administrative notice of violation; penalties, fines, or increase in pollution charges; negative media attention; chance cultural finds; labor unrest or disputes.

APPENDIX : 1

MASINLOC POWER PARTNERS CO. LTD.



APPENDIX : 2

PERMITS/LICENSES/CLEARANCES/CERTIFICATES

MASINLOC POWER PARTNERS COMPANY LIMITED

AGENCY	LAWS	PERMIT	PERMIT NUMBER	DATE ISSUE / INSPECTION	EXPIRY DATE
LGU	BARANGAY	BARANGAY CLEARANCE (MPPCL)		JAN. 20, 2009	December 31, 2009
LGU	BARANGAY	BARANGAY CLEARANCE (Alpha Water and Realty Services Corp.)		JAN. 20, 2009	December 31, 2009
LGU	LGU	MAYOR'S PERMIT (MPPCL)	MAYOR'S PERMIT NO. 435	MAR. 5, 2009	December 31, 2009
LGU	LGU	MAYOR'S PERMIT (AES)	MAYOR'S PERMIT NO. 436	JAN. 29, 2009	December 31, 2009
DENR	RA9275	DISCHARGE PERMIT (Cooling Water)	DP-08F03ZA-814	DEC. 21, 2009	November 30, 2010
	RA9276	DISCHARGE PERMIT (Effluent Wastewater)	DP-08F03ZA-814	DEC. 19, 2009	November 30, 2010
DOLE	PD442	PERMIT TO OPERATE STEAM BOILER (Unit #1)	DL III 18-08, O.R NO. 4038278	MAR. 17, 2009	MAR. 17, 2010
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Quarters for Local Personnel)	EEDL III 01-2008, O.R. #4038279	MAR. 17, 2009	March 10, 2009*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Machine Shop)	EEDL III 02-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Boiler Building)	EEDL III 03-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Pump House)	EEDL III 04-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Fuel Oil Pump)	EEDL III 05-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Quest House)	EEDL III 06-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Water Treatment Control House)	EEDL III 07-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Ash Handling Building)	EEDL III 08-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 09-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 10-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 11-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 12-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 13-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 14-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 15-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 16-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 17-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 18-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 19-2008, O.R. #4038279	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE STEAM BOILER (Unit #2)	DL III 19-08, O.R NO. 4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heate No. 7)	PVDL III 02-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heate No. 7)	PVDL III 03-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Condenser)	PVDL III 04-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Condenser)	PVDL III 05-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 2)	PVDL III 06-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 2)	PVDL III 07-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 3)	PVDL III 08-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 3)	PVDL III 09-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Yuba Heat Transfer Division)	PVDL III 10-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 4)	PVDL III 11-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Steam Drum)	PVDL III 12-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Steam Drum)	PVDL III 13-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 1)	PVDL III 14-2008, O.R. #4038278	MAR. 17, 2009	MAR. 17, 2010*

NOTE : * - RENEWAL IN PROCESS

MASINLOC POWER PARTNERS COMPANY LIMITED

AGENCY	LAWS	PERMIT	PERMIT NUMBER	DATE ISSUE	EXPIRY DATE
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Lopw Pressure Heater No. 1)	PVDL III 15-2008, O.R. #Z3733681	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD422	PERMIT TO OPERATE PRESSURE VESSEL (Deaerator)	PVDL III 16-2008, O.R. #Z3733682	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Deaerator)	PVDL III 17-2008, O.R. #Z3733683	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No. 6)	PVDL III 18-2008, O.R. #Z3733684	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No. 6)	PVDL III 19-2008, O.R. #Z3733685	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No.8)	PVDL III 20-2008, O.R. #Z3733686	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No.8)	PVDL III 21-2008, O.R. #Z3733687	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Bearing Cooling Heat Exch.)	PVDL III 26-2008, O.R. #Z3733688	MAR. 17, 2009	MAR. 17, 2010*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Bearing Cooling Heat Exch.)	PVDL III 27-2008, O.R. #Z3733689	MAR. 17, 2009	MAR. 17, 2010*
NWRB	PD424 & 1067	WATER PERMIT (DEEPWELL)	16070	APR. 14, 1998	
NWRB	PD424 & 1067	WATER PERMIT (DEEPWELL)	16071	APR. 14, 1998	
NWRB	PD424 & 1067	WATER PERMIT (LAUIS RIVER)	16087	FEB. 10, 1998	
NWRB	PD424 & 1067	WATER PERMIT (OYON BAY)	21749	MAY. 25, 2009	
PDEA	RA9165	LICENSE TO HANDLE CONTROLLED PRECURSORS AND ESSENTIAL CHEMICALS	P3-00560001-R01500 / P6-00560001-R01800	May 6, 2009	May 13, 2010
PNRI	RA3589	RADIOACTIVE MATERIAL LICENSE	Y03.03060.09	OCT. 15, 2009	October 31, 2010

NOTE : * - RENEWAL IN PROCESS



Masinloc Power Partners Company Limited

January 14, 2010

LORMELYN E. CLAUDIO

Regional Director
Environmental Management Bureau
DENR Region III, City of San Fernando, Pampanga



Subject: **MULTIPARTITE MONITORING REPORT
THIRD QUARTER 2009
MASINLOC POWER PARTNERS COMPANY LIMITED**

Dear Director Claudio,

In compliance to the Masinloc Power Partners Company Limited (MPPCL) Environmental Compliance Certificate (ECC) Section V.31, submitted herewith is the above subject report prepared by the Multipartite Working Committee members. This report covers the air quality (ambient and occupational), noise level measurement (ambient and occupational), water quality (marine, river, domestic, groundwater and effluent), sediments (river and marine), coal, solid wastes (sludge and ash) and soil quality measurements for the Third Quarter of 2009

We hope this satisfy your requirement.

Very truly yours,


ANTONIA V. LOPEZ

Pollution Control Officer, MPPCL

cc: Masinloc Municipal Mayor
Palauig Municipal Mayor
Office of the Brgy. Capt., Brgy. Bani, Masinloc
CENRO-Masinloc
PENRO-Iba, Zambales
Office of the Governor -Zambales/ENROZ
PAMB
TDC
EnS

2 x 300 MW Masinloc Power Partners Company Limited

Brgy. Bani, Masinloc, Zambales

☎ (02) 921-3541 ☎ Fax (02) 921-3541 local 5539/5453 DTS ☎ 618-2013/2015



MASINLOC POWER PARTNERS COMPANY LIMITED

MULTIPARTITE MONITORING REPORT

Third Quarter 2009



September 22 – 25, 2009



MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

Department of Environment and Natural Resources

MRS. MARY O. HULLANA

Forester 1

Community Environment and Natural Resources Office

Protected Area Management Board

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MASINLOC POWER PARTNERS COMPANY LIMITED

THIRD QUARTER MULTI PARTITE MONITORING REPORT

September 22 - 25, 2009

EXECUTIVE BRIEF

The Third Quarter 2009 Multipartite Monitoring of the Masinloc Power Partners Company Limited was conducted on September 22 - 25, 2009 by the Multipartite Monitoring Working Committee. This committee was created based on the Memorandum of Agreement between the DENR, NPC now MPPCL and the Zambales Local Government. This committee is composed of representatives from the Department of Environment and Natural Resources (CENRO, PENRO, Regional Office), Zambales Local Government Units (Masinloc, Palauig, Candelaria) Zambales Provincial Government Unit (ENROZ) and the AES-Philippines (Masinloc Power Partners Company Limited).

For this quarter, monitoring was conducted jointly by one (1) representative from the office of the Department of Environment and Natural Resources (CENRO), one (1) representative from the office of Protected Area Management Board, one (1) representative from the office of the Barangay Government Unit (Brgy. Bani), two (2) representatives from the office of Municipal Government Unit (Masinloc), and three (3) representatives from the AES-Philippines (MPPCL-Environmental Section). Monitoring includes ambient air quality (4 stations), occupational air quality (8 stations), marine water quality (12 stations), river water quality (3 stations), domestic water quality (6 stations), ground water quality (9 stations), effluent water quality (5 stations), ambient noise level measurement (18 stations), marine sediments quality (12 stations), river sediments quality (3 stations), soil quality (10 stations), coal and solid wastes (sludge and ash).

Analysis of samples was conducted based on the DENR recommended methods of analysis. Twenty-five parameters for domestic water, twenty-six parameters for river water, twenty-three parameters for groundwater, twenty-six parameters for marine water and twenty-six parameters for plant effluent. Metals detected were Aluminum, Antimony, Arsenic, Cadmium, Calcium, Chromium⁶, Total Chromium, Copper, Gold, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Vanadium and Zinc.

Results of in-situ and laboratory analyses show the following observations:

1. Ambient Sulfur Dioxide, Nitrogen Dioxide, Suspended Particulate Matter, and Lead concentrations in air generally meet the standard set by the DENR.
2. Occupational Sulfur Dioxide concentration, Nitrogen Dioxide concentration and Suspended Particulate Matter concentration in air showed compliance with the standard prescribed by the Department of Labor and Employment and the Department of Health.
3. Ambient noise level generally meet the standard set by the DENR for Class C area (Light Industrial Area) except for some stations wherein the limits were exceeded due to noise contributors like passing vehicles, sounds from animals/insects/appliances and noisy people.
4. Occupational noise level generally showed compliance with the standard prescribed by the Department of Labor and Employment and the Department of Health except for six (6) station. This situation is the equipment's normal operational condition. Personnel working on these areas normally and are required to wear Personnel Protective Equipment.
4. Marine and river water samples generally meet the criteria set in the DENR AO No. 34, series of 1990, (*Revised Water Usage and Classification*).

6. Ground and domestic water samples are in compliance with the standards set by the Department of Health Administrative Order No. 26-A, series of 1994 (*PNSDW 1993 – Philippine National Standards for Drinking Water 1993*).
7. Plant effluent samples meet the criteria set by the DENR AO No. 35, series of 1990 (*Revised Effluent Regulations*).
8. Marine and river sediment samples generally are comparable to the marine and river sediment baseline monitoring data.
9. Coal and solid wastes samples generally meet the R. A. 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990) provisions.
10. Soil samples generally are comparable to the soil baseline monitoring data.

2.0 AIR and NOISE QUALITY MONITORING

The MPPCL Multipartite Monitoring team conducted the air and noise quality monitoring on September 22-25, 2009. Sampling activities were conducted based on the 2009 Third Quarter Multipartite Monitoring Schedule.

2.1 SAMPLING STATIONS

Air and noise quality monitoring was conducted at the following established stations within and around the MPPCL environ:

2.1.1 AMBIENT AIR (SO₂ / NO₂ / SUSPENDED PARTICULATE MATTER)

- | | |
|--------------------------|--------------------|
| 2.1.1.1 NPC Resettlement | 2.1.1.3 Candelaria |
| 2.1.1.2 Inhobol | 2.1.1.4 Palauig |

2.1.2 OCCUPATIONAL AIR (SO₂ / NO₂ / SPM)

- 2.1.2.1 Central Control Room
- 2.1.2.2 Administration Building
- 2.1.2.3 Turbine Floor
- 2.1.2.4 Chemical Laboratory
- 2.1.2.5 Mechanical Shop
- 2.1.2.6 Waste Water Treatment Control Room
- 2.1.2.7 Ash Handling Control Room
- 2.1.2.8 Coal Handling Control Room

2.1.3 AMBIENT NOISE

- 2.1.3.1 Purok Little Baguio (Junction)
- 2.1.3.2 Purok Percaloha (Junction)
- 2.1.3.3 Edillor's Residence (150m. from Gate)
- 2.1.3.4 EPDC Building
- 2.1.3.5 C-Square (Benguet loading area)
- 2.1.3.6 Resettlement Site
- 2.1.3.7 Highway, waiting shade of Resettlement
- 2.1.3.8 Puerto Asinan
- 2.1.3.9 Sitio Atob, Purok Tanguile
- 2.1.3.10 Masinloc Town Plaza
- 2.1.3.11 Bani National High School (Annex) Taltal
- 2.1.3.12 Luis Elementary School
- 2.1.3.13 Brgy. Luis (Junction to Binabalian)
- 2.1.3.14 Purok Bangal-Duhok (Junction)
- 2.1.3.15 Bani Elementary School, Bani
- 2.1.3.16 Bani National High School, Bani
- 2.1.3.17 Brgy. Bani Multi-purpose Complex
- 2.1.3.18 Plant Site (Coal Yard)

2.1.4 OCCUPATIONAL NOISE

- 2.1.4.1 Central Control Room
- 2.1.4.2 Turbine Floor
- 2.1.4.3 Laboratory Building
- 2.1.4.4 Administration Building (Lobby)
- 2.1.4.5 Coal Handling Building

- 2.1.4.6 Ash Handling Building
- 2.1.4.7 Machine Shop
- 2.1.4.8 Water Treatment Control Room
- 2.1.4.9 Boiler Feed Pump Unit # 1
- 2.1.4.10 Boiler Feed Pump Unit # 2
- 2.1.4.11 Circulating Water Pump Intake Unit # 1
- 2.1.4.12 Circulating Water Pump Intake Unit # 2
- 2.1.4.13 Smoke Stack (CEM Control Room)
- 2.1.4.14 Generator Transformer Unit # 1
- 2.1.4.15 Generator Transformer Unit # 2
- 2.1.4.16 Guard House (Main Gate)
- 2.1.4.17 230 kV GIS (Switchyard)
- 2.1.4.18 Coal Yard

2.2 SAMPLING METHODOLOGY

Ambient and occupational air quality were monitored at the different stations as indicated in items 2.1.1 & 2.1.2 respectively using Impinger or Gas Bubbler Method for SO₂ & NO₂ determination and High Volume Air Sampler with 10 micron particle-size inlet for Suspended Particulate Matter determination. Sampling time is one (1) hour per trial. Two (2) trials were conducted per station.

Sampling equipment, impingers and filter paper were pre-labeled before proceeding to the sampling station. Samples were brought to the MPPCL laboratory immediately after one-hour of sampling.

Noise level measurement was conducted using the Sound Level Meter, model 2800 Quest Technologies. Ambient noise was measured four (4) times: morning, day, evening & night periods at the 18 established stations (2.1.3). Occupational noise was measured once at 18 established stations (2.1.4) located inside the MPPCL compound.

DENR, PAMB and LGU representatives assisted in the mobilization activity and witnessed the operation of the sampling equipment, actual monitoring activities and the conduct of the SPM, SO₂ & NO₂ analysis.

2.3 ANALYSIS OF SO₂ / NO₂ / LEAD / SPM SAMPLES

Preparation of chemicals prior to the monitoring activity and analysis of samples were conducted at the MPPCL laboratory. Colorimetric Method was used to analyze SO₂ samples (Pararosaniline) and NO₂ samples (Griess Saltzman). Gravimetric Method was used to analyze Suspended Particulate Matter and Lead. Atomic Absorption Spectrophotometer was used to analyze ambient air samples for lead content.

2.4 DATA RECORDING

In-Situ parameters measurement and results of analysis were documented using the prescribed forms for SO₂ (Tables 1 & 5), NO₂ (Tables 2 & 6), Suspended Particulate Matter (Tables 3 & 7) monitoring respectively and Lead (Table 4)

2.4.1 SO₂ / NO₂ / LEAD / SAMPLING PARAMETERS

- 2.4.1.1 Time of Sampling
- 2.4.1.2 Date of Sampling
- 2.4.1.3 Volumetric Flow Rate
- 2.4.1.4 Temperature

- 2.4.1.5 Pressure
- 2.4.1.6 Volume at normal condition
- 2.4.1.7 Weight of SO₂/ NO₂
- 2.4.1.8 Concentration of SO₂/ NO₂

2.4.2 SUSPENDED PARTICULATE MATTER SAMPLING PARAMETERS

- | | |
|------------------------------|--|
| 2.4.2.1 Time of Sampling | 2.4.2.6 Volume at normal condition |
| 2.4.2.2 Date of Sampling | 2.4.2.7 Weight of filter paper |
| 2.4.2.3 Volumetric Flow Rate | 2.4.2.8 Weight of filter paper and particulate |
| 2.4.2.4 Temperature | 2.4.2.9 Weight of particulate |
| 2.4.2.5 Pressure | 2.4.2.10 Concentration of particulate |

2.4.3 NOISE LEVEL

- 2.4.3.1 Time of sampling
- 2.4.3.2 Sound Pressure Level
- 2.4.3.3 Maximum Sound Pressure Level
- 2.4.3.4 Minimum Sound Pressure Level
- 2.4.3.5 Average Sound Pressure Level
- 2.4.3.6 Remarks

3.0 WATER QUALITY MONITORING

The MPPCL Multi Partite Monitoring team conducted the water quality monitoring on September 22-25, 2009. Sampling activities were conducted based on the 2009 Third Quarter Multipartite Monitoring Schedule of Activities. Sampling and analysis of samples were conducted based on the DENR recommended methods.

3.1 SAMPLING STATIONS

Water quality monitoring was conducted at the following established stations within and around the MPPCL environ as shown in Appendix 3:

3.1.1 RIVER WATER QUALITY MONITORING STATIONS

- 3.1.1.1 LR-1 Luis River (upstream of freshwater intake)
- 3.1.1.2 LR-2 Luis River (near mouth / nursery)
- 3.1.1.3 MR-1 Masinloc River (Collat Bridge)

3.1.2 GROUND WATER QUALITY MONITORING STATION

- 3.1.2.1 MD-1 Near Main Gate, Right
- 3.1.2.2 MO-1 Bani Point (After Ash Disposal Area)
- 3.1.2.3 MO-2 Bani (NPC nursery)
- 3.1.2.4 MO-3 Bani, (Between Corafer and Duhok)
- 3.1.2.5 MO-5 Bani (PNP Patrol Base)
- 3.1.2.6 MO-6 Bani
- 3.1.2.7 MOW-1 Bani (near Sedimentation Basin)
- 3.1.2.8 MOW-2 Bani (along embankment)
- 3.1.2.9 MOW-3 Bani (near warehouse)

3.1.3 DOMESTIC WATER QUALITY MONITORING STATIONS

- | | |
|--|--|
| 3.1.3.1 MWD: Masinloc Water District | 3.1.3.4 GHS: NPC Guesthouse |
| 3.1.3.2 RES: Resettlement Area | 3.1.3.5 PWD: Palauig Water District |
| 3.1.3.3 LAB: Faucet near Laboratory Building | 3.1.3.6 CWD: Candelaria Water District |

3.1.4 PLANT EFFLUENT MONITORING STATION

- 3.1.4.1 WWT : Wastewater Treatment Facility
- 3.1.4.2 CYSB : Coal Yard Sedimentation Basin
- 3.1.4.3 CCWDC: Condenser Cooling Water Discharge Canal
- 3.1.4.4 ASB : Ash Sedimentation Basin
- 3.1.4.5 SDC : Storm Drain Canal

3.1.5 MARINE WATER QUALITY MONITORING STATIONS

- | | |
|--|---|
| 3.1.5.1 M-1 Between Luis River & Bani Point | 3.1.5.7 M-7 Benguet Wharf |
| 3.1.5.2 M-2 Outfall (100 m from discharge canal) | 3.1.5.8 M-8 Masinloc River (Near mouth) |
| 3.1.5.3 M-3 Cooling Water Intake | 3.1.5.9 M-9 Petron (harbor) |
| 3.1.5.4 M-4 Resettlement | 3.1.5.10 M-10 BFAR |
| 3.1.5.5 M-5 C-Square (Benguet Loading area) | 3.1.5.11 M-11 San Salvador |
| 3.1.5.6 M-6 Puerto Asinan | 3.1.5.12 M-12 Along Veritas |

3.2 SAMPLING METHODOLOGY

Sampling containers were pre-labeled as to stations ID. Glass containers were used for water samples intended for Oil and Grease analysis. Plastic containers were used to contain water samples intended for physico-chemical and trace metals analyses. Sterilized glass sampling bottles containers were used to contain water samples intended for bacteriological analyses. In-Situ parameters were measured immediately after the collection of water samples. HORIBA Water Quality Monitoring System Model U-10 was used in the measurement of in-situ parameters.

3.2.1 RIVER WATER SAMPLING

Grab water sampling was conducted at the three (3) monitoring stations (upstream, midstream & downstream of fresh water intake). BOD bottles were used to contain water samples for oil and grease analysis.

3.2.2 GROUND WATER SAMPLING

Water samples were collected from the nine (9)-monitoring wells using the Bailer water sampler. Water samples were placed in plastic containers for physico-chemical and trace metals analyses.

3.2.3 DOMESTIC WATER SAMPLING

Water samples were collected from the six (6)-monitoring stations. Faucet opening was sterilized using alcohol lamp, sufficient water was allowed to flow before water sample collection. Water samples intended for bacteriological analysis were collected directly from the faucet into the sterilized glass bottles.

3.2.5 PLANT EFFLUENT

Grab sampling was conducted on five (5) monitoring stations; Wastewater Treatment Facility, Coal Yard Sedimentation Basin, Ash Sedimentation Basin & Condenser Cooling Water Discharge Canal. Water samples were placed in plastic containers.

3.2.6 MARINE WATER SAMPLING

Composite marine water sampling using Alpha Van Dorm Bottle water sampler was conducted at twelve (12) monitoring stations along Oyon Bay. Water samples for bacteriological analysis were collected directly from the water sampler into the sterilized glass bottles. Surface water was collected for oil & grease analysis using glass sampling bottles.

3.3 ANALYSIS OF SAMPLES

- 3.3.1 In-Situ parameters were measured immediately after the collection of water samples. HORIBA Water Quality Monitoring System Model U-10 was used to measure In-situ parameters.
- 3.3.2 Water samples for oil & grease analysis were preserved by adding 5 ml. of 1:1 HCl. HORIBA Oil Content Analyzer Model OCMA 300 was used to analyze Oil & grease content.
- 3.3.3 Physico-Chemical parameters were analyzed at the MPPCL Environmental laboratory, Masinloc Zambales.
- 3.3.4 Trace metal analysis for water and sediment samples were conducted at the MPPCL Environmental laboratory, Masinloc, Zambales. Thermo Atomic Absorption Spectrometer was used to analyze trace metals.
- 3.3.5 HACH Spectrophotometer Model DR/2000 was used to analyze Chromium Hexavalent concentration.

3.4 DATA RECORDING

In-Situ parameters and laboratory analysis results were recorded & documented using the prescribed forms for marine, river, ground, domestic & effluent water samples respectively.

3.4.1 In-Situ parameters

- | | |
|--------------------------|---------------------|
| 3.4.1.1 pH | 3.4.1.5 Temperature |
| 3.4.1.2 Conductivity | 3.4.1.6 Salinity |
| 3.4.1.3 Turbidity | |
| 3.4.1.4 Dissolved Oxygen | |

3.4.2 Laboratory analysis

- 3.4.2.1 Total Suspended Solids
- 3.4.2.2 Oil and Grease (For river water and plant effluent only)
- 3.4.2.3 Fecal Coliform (For river and domestic water only)
- 3.4.2.4 Total Coliform (For river and domestic water only)
- 3.4.2.5 Aluminum
- 3.4.2.6 Antimony
- 3.4.2.7 Arsenic
- 3.4.2.8 Cadmium
- 3.4.2.9 Calcium
- 3.4.2.10 Chromium Hexavalent
- 3.4.2.11 Chromium Total
- 3.4.2.12 Copper
- 3.4.2.13 Gold
- 3.4.2.14 Iron
- 3.4.2.15 Lead
- 3.4.2.16 Lithium
- 3.4.2.17 Magnesium
- 3.4.2.18 Manganese
- 3.4.2.19 Mercury
- 3.4.2.20 Nickel
- 3.4.2.21 Potassium
- 3.4.2.22 Selenium
- 3.4.2.23 Silver
- 3.4.2.24 Sodium
- 3.4.2.25 Vanadium
- 3.4.2.26 Zinc

3.5 SEDIMENTS, SOIL, COAL AND SOLID WASTES QUALITY MONITORING

Quality monitoring of the river sediments, soil, coal and solid wastes (Bottom Ash, Fly Ash, sludge) were conducted for this monitoring schedule. Grab sampling was used in the collection of samples.

Samples were digested in Microwave Digester using Nitric Acid.

Test results during the pre-construction and initial operation phase of the plant were used for comparison for the river sediment and soil samples.

Solid wastes samples were monitored based on R. A. 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990). TCLP Method

Two (2)-monitoring stations were considered for the ash quality monitoring; Bottom ash silo & Fly ash silo.

Coal samples were collected from the coal yard area.

Sludge samples were collected from the WTF Sludge House.

3.5.1 RIVER SEDIMENTS QUALITY MONITORING STATIONS

3.5.1.1 LR-1 Lauis River (upstream of freshwater intake)

3.5.1.2 LR-2 Lauis River (near mouth / nursery)

3.5.1.3 MR-1 Masinloc River (Collat Bridge)

3.5.2 MARINE SEDIMENTS QUALITY MONITORING STATIONS

3.5.2.1 M-1 Between Lauis River & Bani Point

3.5.2.7 M-7 Benguet Wharf

3.5.2.2 M-2 Outfall (100 m from discharge canal)

3.5.2.8 M-8 Masinloc River (Near mouth)

3.5.2.3 M-3 Cooling Water Intake

3.5.2.9 M-9 Petron (harbor)

3.5.2.4 M-4 Resettlement

3.5.2.10 M-10 BFAR

3.5.2.5 M-5 C-Square (Benguet Loading area)

3.5.2.11 M-11 San Salvador

3.5.2.6 M-6 Puerto Asinan

3.5.2.12 M-12 Along Veritas

3.5.3 SOIL QUALITY MONITORING STATIONS

3.5.3.1 S-1 Masinloc National High School (across highway)

3.5.3.2 S-2 Candelaria (back of Elementary School)

3.5.3.3 S-3 Puerto Asinan (across highway)

3.5.3.4 S-4 NPC Resettlement (beside roadside)

3.5.3.5 S-5 Bani Elementary School (beside roadside)

3.5.3.6 S-6 Palauig (back of Town Plaza)

3.5.3.7 S-7 Bani National High School (mango area)

3.5.3.8 S-8 CENRO Office (near MPPCL Monitoring Station)

3.5.3.9 S-9 Sto. Niño, Palauig (intersection)

3.5.3.10 S-10 Masinloc Plaza (Estella Compound)

APPENDIX 1

MULTIPARTITE AIR QUALITY MONITORING RESULTS

PAGES 11-22

TABLE NO. 1

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2009

SO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI li./min	T °C	P mmHg	Wt ug	Vr Norm	CONC'N ug/Ncm	STANDARD
Resettlement	1429H-1529H	09/23/09	1.00	29.0	760	0.0000	0.0592	ND	DENR A. C. 14 s 1993 340 ug/Ncm
	1531H-1631H	09/23/09	1.00	30.0	760	0.0000	0.0590	ND	
Inhooel	1415H-1515H	09/22/09	1.00	32.0	760	0.0000	0.0586	ND	
	1520H-1620H	09/22/09	1.00	31.0	760	0.0000	0.0588	ND	
Candelaria	1500H-1600H	09/23/09	1.00	28.0	760	0.0000	0.0594	ND	
	1602H-1702H	09/23/09	1.00	28.0	760	0.0000	0.0594	ND	
Palauig	1445H-1545H	09/22/09	1.00	34.0	760	0.0000	0.0582	ND	
	1548H-1648H	09/22/09	1.00	34.0	760	0.0000	0.0582	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{VI li.} \times \frac{\text{P mmHg}}{760 \text{ mmHg}} \times \frac{273 \text{ K}}{\text{T}+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m}}{\text{lit.}}$$

NOTE:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline);
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of SO₂ ug.
4. Vr - volume at normal condition, Norm
5. VI - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - Non Detectable

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 2

AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

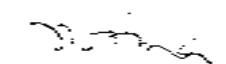
NO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	V _i li./min	T °C	P mmHg	Wt ug	V _r Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1429H-1529H	09/23/09	1.00	29.0	760	0.0000	0.0592	ND	DENR A. O. 14 s. 1993 260 ug/Ncm
	1531H-1631H	09/23/09	1.00	30.0	760	0.0000	0.0590	ND	
Inhobol	1415H-1515H	09/22/09	1.00	32.0	760	0.0000	0.0586	ND	
	1520H-1620H	09/22/09	1.00	31.0	760	0.0000	0.0588	ND	
Candelaria	1500H-1600H	09/23/09	1.00	26.0	760	0.0000	0.0594	ND	
	1602H-1702H	09/23/09	1.00	26.0	760	0.0000	0.0594	ND	
Paraulig	1446H-1546H	09/22/09	1.00	34.0	760	0.0526	0.0582	0.90	
	1548H-1648H	09/22/09	1.00	34.0	760	0.0526	0.0582	0.90	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{V_r}$$

$$V_r = \frac{V_i \times P}{760 \text{ mm Hg}} \times \frac{273 \text{ K}}{T+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m. / lit}$$

DENR Representative(s) 

PAMB Representative(s) 

Note

1. NO₂ samples were analyzed using Colorimetric Method (Gress Saltzman)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. V_r - volume at normal condition, Ncm
5. V_i - volumetric flow rate, lit/min
6. P - pressure, mmHg
7. T - temperature, °C

MCU Representative(s) 

BGU Representative(s) 

AES Representative(s) 

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TABLE NO. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resortement	1429H-1529H	09/23/09	410.5	409.6	0.71	29.0	760	0.90	41.93	21.48	DENR A. O. 14 s. 1993 300ug/Ncm
	1531H-1631H	09/23/09	413.6	412.8	0.71	30.0	760	0.80	41.79	19.14	
Infopac	1415H-1515H	09/22/09	552.8	552.4	0.80	32.0	760	0.40	46.90	8.53	
	1520H-1620H	09/22/09	551.4	551.0	0.70	31.0	760	0.40	41.17	9.72	
Candelaria	1500H-1600H	09/23/09	413.0	412.5	0.65	28.0	760	0.50	38.61	12.95	
	1602H-1702H	09/23/09	415.3	415.0	0.50	28.0	760	0.30	29.70	10.10	
Palauig	1448H-1548H	09/22/09	550.3	549.9	0.50	34.0	760	0.40	29.12	13.74	
	1548H-1648H	09/22/09	550.8	550.4	0.60	34.0	760	0.40	34.24	11.45	

FORMULA

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times 1,000 \text{ ug/mg}$$

$$Vr = \frac{Vi \text{ (L/min)} \times P \text{ (mmHg)} \times 298 \text{ K} \times 60 \text{ min.}}{\text{min.} \times 760 \text{ mmHg} \times T-273}$$

$$Wt = Wfp - Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.
10. ND - Non Detectable


DENR Representative(s): PAMB Representative(s): MGU Representative(s): BGU Representative(s): AES Representative(s): 

TABLE NO. 4

NATIONAL POWER CORPORATION
MASINLOC COAL-FIRED THERMAL POWER PLANT
Multipartite Monitoring Committee
Third Quarter, 2008

LEAD ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N µg/Ncm	STANDARD
Resettlement	1429H-1529H	09/23/09	0.71	29.0	760	0.0000	41.93	ND	10 µg/Ncm DENR A. O. 14 s. 1993
	1531H-1631H	09/23/09	0.71	30.0	760	0.0000	41.79	ND	
Inhobol	1415H-1515H	09/22/09	0.80	32.0	760	0.0000	46.90	ND	
	1520H-1620H	09/22/09	0.70	31.0	760	0.0000	41.17	ND	
Candelaria	1500H-1600H	09/23/09	0.65	28.0	760	0.0000	38.61	ND	
	1602H-1702H	09/23/09	0.50	28.0	760	0.0000	29.70	ND	
Palauig	1446H-1546H	09/22/09	0.50	34.0	760	0.0000	29.12	ND	
	1548H-1648H	09/22/09	0.60	34.0	760	0.0000	34.94	ND	

FORMULA:

$$\mu\text{g/Ncm} = \frac{\text{Wt}}{\text{Vr}} \times 1,000 \mu\text{g/mg}$$

$$\text{Vr} = \frac{\text{Vi (a.m.)} \times \text{P (mmHg)} \times \frac{298 \text{ K}}{\text{T}+273} \times 60 \text{ min.}}{\text{min.} \times 760 \text{ mmHg}}$$

Notes:

1. LEAD samples were analyzed using Atomic Absorption Spectrophotometer
2. µg/Ncm- microgram per normal cubic meter
3. Wt - weight of lead, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C

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TABLE NO. 5

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

SO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vf lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Centre Control Room	2027H-2127H	09/22/09	1.00	29.00	760	0.0000	0.0582	ND	DOH 500ug/Ncm
	2130H-2230H	09/22/09	1.00	28.50	760	0.0000	0.0593	ND	
Admin. Building	1422H-1522H	09/22/09	1.00	19.50	760	0.0758	0.0611	1.24	
	1524H-1624H	09/22/09	1.00	19.00	760	0.0758	0.0612	1.24	
WWT Control Room	0930H-1030H	09/22/09	1.00	26.00	760	0.0000	0.0598	ND	
	1034H-1134H	09/22/09	1.00	27.00	760	0.0000	0.0596	ND	
Coal Handling Control Room	0920H-1020H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
	1023H-1123H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
Chemical Laboratory	1137H-1237H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
	1239H-1339H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
Mechanical Shop	1650H-1750H	09/22/09	1.00	29.50	760	0.1104	0.0591	1.87	
	1753H-1853H	09/22/09	1.00	30.00	760	0.1035	0.0590	1.75	
Ash Handling Control Room	0920H-1020H	09/22/09	1.00	27.00	760	0.0000	0.0596	ND	
	1025H-1125H	09/22/09	1.00	27.00	760	0.0000	0.0596	ND	
Turbine Floor	2030H-2130H	09/22/09	1.00	33.00	760	0.0000	0.0584	ND	
	2132H-2232H	09/22/09	1.00	34.00	760	0.0000	0.0582	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{V_f \times P}{760 \text{ mm Hg}} \times \frac{296 \text{ K}}{T+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}$$

Notes:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of SO₂ - ug
4. Vr - volume at normal condition, Ncm
5. Vf - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s):

PAMB Representative(s):

MGU Representative(s):

SGU Representative(s):

AES Representative(s):

TABLE NO. 6

AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009
NO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	V _i l./min	T °C	P mm Hg	Wt ug	V _r Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2027H-2127H	09/22/09	1.00	29.00	760	0.0030	0.0562	ND	DOH 6300ug/Ncm
	2130H-2230H	09/22/09	1.00	28.50	760	0.0030	0.0563	ND	
Admin. Building	1422H-1522H	09/22/09	1.00	19.50	760	0.0029	0.0511	1.52	
	1524H-1624H	09/22/09	1.00	19.00	760	0.0064	0.0512	1.74	
WWT Control Room	0930H-1030H	09/22/09	1.00	26.00	760	0.0030	0.0598	ND	
	1034H-1134H	09/22/09	1.00	27.00	760	0.0030	0.0596	ND	DOLE 8300ug/Ncm
Coal Handling Control Room	0920H-1020H	09/22/09	1.00	24.00	760	0.0199	0.0522	1.99	
	1023H-1123H	09/22/09	1.00	24.00	760	0.0064	0.0532	1.77	
Chemical Laboratory	1137H-1237H	09/22/09	1.00	24.00	760	0.0060	0.0532	1.10	
	1239H-1339H	09/22/09	1.00	24.00	760	0.0526	0.0532	0.87	
Mechanical Shop	1650H-1750H	09/22/09	1.00	29.50	760	0.0060	0.0591	1.12	
	1753H-1853H	09/22/09	1.00	30.00	760	0.0060	0.0590	1.12	
Ash Handling Control Room	0920H-1020H	09/22/09	1.00	27.00	760	0.0060	0.0536	1.11	
	1025H-1125H	09/22/09	1.00	27.00	760	0.0060	0.0536	1.11	
Turbine Floor	2030H-2130H	09/22/09	1.00	33.00	760	0.0060	0.0584	1.13	
	2132H-2232H	09/22/09	1.00	34.00	760	0.0391	0.0582	0.67	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{V_r}$$

$$V_r = \frac{V_i \times P \text{ mm Hg} \times 296 \text{ K} \times 60 \text{ mins} \times 0.001 \text{ cum.}}{\text{min} \times 760 \text{ mm Hg} \times T+273}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzman)
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of NO₂ ug.
4. V_r - volume at normal condition, Ncm
5. V_i - volumetric flow rate, m³/min
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - non-detectable

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DENR Representative(s)

PAMS Representative(s)

MGU Representative(s)

SGU Representative(s)

AES Representative(s)

TABLE NO. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2027H-2127H	09/22/09	409.5	408.9	0.78	29.00	763	0.60	46.12	13.01	DOH 2000ug/Ncm
	2130H-2230H	09/22/09	414.1	413.6	0.57	28.50	763	0.50	33.60	14.88	
Admin. Building	1422H-1522H	09/22/09	411.2	411.0	0.40	19.50	760	0.20	24.45	8.18	
	1524H-1624H	09/22/09	523.8	523.4	0.65	19.00	763	0.40	39.80	10.05	
WWT Control Room	0930H-1030H	09/22/09	554.6	554.2	0.60	26.00	760	0.40	35.88	11.15	
	1034H-1134H	09/22/09	413.2	412.8	0.60	27.00	760	0.40	35.75	11.13	
Coal Handling Control Room	0920H-1020H	09/22/09	522.7	522.4	0.60	24.00	760	0.30	36.12	8.31	DOLE 1000ug/Ncm
	1023H-1123H	09/22/09	417.1	416.8	0.45	24.00	760	0.50	27.09	18.46	
Chemical Laboratory	1137H-1237H	09/22/09	552.9	552.8	0.71	24.00	760	0.30	42.64	7.04	
	1239H-1339H	09/22/09	551.8	551.2	0.71	24.00	760	0.60	42.64	14.07	
Mechanical Shop	1650H-1750H	09/22/09	557.8	557.2	0.57	29.50	760	0.60	33.49	17.82	
	1753H-1853H	09/22/09	412.5	412.1	0.60	30.30	760	0.40	29.25	13.57	
Ash Handling Control Room	0920H-1020H	09/22/09	416.3	416.0	0.70	27.00	760	0.30	41.72	7.19	
	1025H-1125H	09/22/09	417.4	416.7	0.70	27.00	760	0.70	41.72	16.78	
Turbine Floor	2030H-2130H	09/22/09	411.2	411.1	0.63	33.00	760	0.10	36.81	2.72	
	2132H-2232H	09/22/09	410.3	409.9	0.50	34.00	760	0.40	29.12	13.74	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt} \times 1000 \text{ ug/mg}}{\text{Vr}}$$

$$\text{Vr} = \text{Vi} \times \frac{273 \text{ K}}{\text{T} + 273} \times \frac{\text{P} \text{ mmHg}}{760 \text{ mmHg}} \times 60 \text{ min.}$$

$$\text{Wt} = \text{Wfp} - \text{Wf}$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.

DENR Representative(s) PAMB Representative(s) MGU Representative(s) BGL Representative(s) AES Representative(s) 

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TABLE NO. 8
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

AMBIENT NOISE MONITORING
MORNING TIME
September 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0810H	67.2	69.1	65.7	66.1	TRICYCLE
2	Purok Peraloha (Junction)	0756H	71.3	85.6	66.1	72.8	MOTORCYCLE
3	Editor's Residence (150m. From Gate)	0809H	67.2	72.1	66.8	69.7	TRICYCLE
4	EPDC Building	0808H	66.5	66.8	65.7	66.0	BIRDS
5	C-Square (Benguet Loading Area)	0807H	66.1	66.1	65.7	65.8	BIRDS
6	Resettlement Site	0805H	68.0	68.3	67.2	67.6	TRICYCLE
7	Highway, waiting shed of Resettlement	0833H	70.2	70.2	68.0	69.0	MOTORCYCLE
8	Puerto Asinan	0835H	66.1	66.1	68.7	65.9	SOUND SYSTEM
9	Sitio Atob, Purok Tanguile	0837H	77.0	78.1	71.3	73.8	TRICYCLE
10	Masinloc Town Plaza	0844H	74.7	80.1	70.6	76.3	VEHICLE
11	Bani National High School, (Annex), Taftal	0821H	67.2	71.3	66.5	68.1	SOUND SYSTEM
12	Brgy. Luis (Junction to Binabalian)	0826H	69.7	71.7	67.6	69.4	TRICYCLE
13	Luis Elementary School	0824H	66.1	70.6	65.7	66.8	TRICYCLE
14	Purok Bangal-Duhok (Junction)	0817H	66.5	69.8	66.1	66.8	TRICYCLE
15	Bani Elementary School, Bani	0813H	67.2	67.2	66.1	66.6	SOUND SYSTEM
16	Bani National High School, Bani	0812H	66.1	66.8	65.7	66.0	RADIO
17	Brgy. Bani Multi-purpose Complex	0811H	66.1	66.1	65.7	65.8	RADIO
18	Plant Site (Coal Yard)	0754H	73.6	90.6	66.5	76.3	CAR

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 (at 10m. distance from source)
Ambient Noise	Morning Time Noise Level
Category	(0600H to 0900H)
Class AA - area which requires quietness (within 100m. from school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 9
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

AMBIENT NOISE MONITORING
DAYTIME
September 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1340H	76.6	86.0	66.1	75.0	PUMP
2	Purok Percaloha (Junction)	1338H	66.8	72.8	61.7	67.1	INSECTS
3	Ediller's Residence (150m. From Gate)	1439H	66.8	66.8	65.7	70.5	RINGING BELL
4	EPDC Building	1437H	75.5	75.8	68.0	65.9	CHICKEN
5	C-Square (Benguet Landing Area)	1435H	69.5	69.5	67.6	71.9	BIRDS
6	Resettlement Site	1430H	68.2	68.3	66.3	66.9	
7	Highway, waiting shed of Resettlement	1355H	68.3	70.2	65.3	66.1	DUCK
8	Puerto Asinan	1404H	66.8	68.0	65.7	66.1	TV
9	Sitio Atob, Purok Tanguile	1405H	72.5	79.6	71.3	74.8	VEHICLES
10	Masinloc Town Plaza	1415H	67.2	69.5	66.5	67.5	TRICYCLE
11	Bani National High School, (Annex), Tahal	1340H	66.5	66.5	65.7	66.0	NOISY STUDENTS
12	Brgy. Luis (Junction to Binabalian)	1352H	66.5	66.8	65.7	66.1	NOISY PUPILS
13	Luis Elementary School	1353H	66.5	66.5	65.7	66.0	NOISY PEOPLE
14	Purok Bangal-Duhok (Junction)	1344H	66.1	66.5	65.7	65.9	NOISY PEOPLE
15	Bani Elementary School, Bani	1343H	87.3	87.8	69.5	81.3	TV
16	Bani National High School, Bani	1342H	66.5	70.6	65.7	66.7	RADIO
17	Brgy. Bani Multi-purpose Complex	1341H	68.7	67.5	66.1	67.5	CARPENTRY WORKS
18	Plant Site (Coal Yard)	1327H	68.7	69.8	65.7	66.5	

Noise Quality Standards (NPS) Rules and Regulations and MC No. 2, 1980

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 db 10m distance from source
Ambient Noise Category	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	50
Class A - Residential	55
Class B - Commercial	65
Class C - Light Industrial Area	70
Class D - Heavy Industrial Area	75

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

MASINLOC POWER PARTNERS COMPANY LIMITED

Third Quarter, 2009

AMBIENT NOISE MONITORING

NIGHT TIME

September 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2231H	68.3	67.6	65.7	66.1	TRICYCLE PASSING
2	Purok Peraloha (Junction)	2228H	70.2	69.8	67.6	67.9	MOTORCYCLE PASSING
3	Edillor's Residence (150m. From Gate)	2347H	66.5	72.5	65.7	67.8	INSECTS CHIRPING
4	EPDC Building	2345H	70.6	71.0	68.7	69.3	DOG BARKING
5	C-Square (Banguet Loading Area)	2344H	66.1	66.1	65.7	65.8	INSECTS CHIRPING
6	Resettlement Site	2340H	61.6	75.8	66.1	70.7	INSECTS CHIRPING
7	Highway, waiting shed off Resettlement	2307H	66.8	68.0	66.1	66.5	DOG BARKING
8	Puerto Asinan	2310H	68.0	67.2	66.1	66.4	DOG BARKING
9	Sitio Atob, Purok Tanguile	2315H	66.6	67.2	66.5	66.7	DOG BARKING
10	Masinloc Town Plaza	2324H	67.2	67.6	66.5	66.7	TRICYCLE PASSING
11	Bani National High School, (Annex), Taltal	2247H	66.1	66.1	65.7	65.8	INSECTS CHIRPING
12	Brgy. Lais (Junction to Binabalian)	2255H	66.1	66.1	65.7	65.7	PEOPLE TALKING
13	Lais Elementary School	2253H	66.8	67.2	66.5	66.5	TRICYCLE PASSING
14	Purok Bangal-Duhok (Junction)	2236H	71.2	76.2	66.5	70.0	MOTORCYCLE PASSING
15	Bani Elementary School, Bani	2235H	66.1	71.0	65.7	66.7	PEOPLE TALKING
16	Bani National High School, Bani	2234H	66.5	66.8	65.7	66.2	INSECTS CHIRPING
17	Brgy. Bani Multi-purpose Complex	2233H	67.2	67.2	66.5	66.8	INSECTS CHIRPING
18	Plant Site (Coal Yard)	2226H	72.1	73.2	71.3	71.7	SEA WAVES SPLASH

Noise Quality Standards (NPS) Rules and Regulations and MC No. 2, 1980

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 <i>at</i> 10m distance from source
Ambient Noise	Night Time Noise Level
Category	(2200H to 0500H)
Class AA-area which requires quietness (within 100m from school sites, nursery schools, hospitals and special home for the aged)	40
Class A - Residential	45
Class B - Commercial	55
Class C - Light Industrial Area	60
Class D - Heavy Industrial Area	65

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 11

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2009

AMBIENT NOISE MONITORING

EVENING TIME

September 22, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2044H	56.9	58.1	53.9	56.0	INSECTS
2	Purok Peraloba (Junction)	2041H	61.4	61.8	55.8	58.1	RADIO
3	Editor's Residence (150m. From Gate)	2154H	66.5	77.0	66.1	68.1	INSECTS
4	EMDC Building	2153H	69.1	69.1	66.1	66.8	INSECTS
5	C-Square (Benguet Loading Area)	2152H	66.8	66.8	66.5	66.5	INSECTS
6	Resettlement Site	2144H	66.1	75.8	65.7	66.6	INSECTS
7	Highway, waiting shed of Resettlement	2116H	65.9	66.2	66.1	66.3	PEOPLE TALKING
8	Puerto Asiban	2120H	66.1	68.0	65.7	66.4	TRICYCLE
9	Sitio Atob, Purok Tanguile	2121H	68.0	69.0	66.5	72.6	TRICYCLE
10	Masinloc Town Plaza	2128H	67.6	69.1	66.8	67.2	TRICYCLE
11	Bani National High School, (Annex), Taltal	2058H	76.5	78.5	65.7	71.4	DOG BARKING
12	Brgy. Luis (Junction to Binabalian)	2105H	68.0	68.0	66.1	66.5	DOG BARKING
13	Luis Elementary School	2108H	66.5	68.5	65.7	66.5	DOG BARKING
14	Purok Bangal-Duhok (Junction)	2050H	66.1	77.0	66.1	69.0	MOTORCYCLE
15	Bani Elementary School, Bani	2049H	50.6	53.2	49.1	50.3	PEOPLE TALKING
16	Bani National High School, Bani	2048H	52.4	54.3	50.6	52.0	INSECTS
17	Brgy. Bani Multi-purpose Complex	2047H	58.6	60.7	55.1	56.6	MOTORCYCLE
18	Plant Site (Coal Yard)	2039H	71.5	72.7	60.3	66.9	

Noise Quality Standards (NPPC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m distance from source
Ambient Noise Category	Evening Time Noise Level (1800H to 2200H)
Class AA - area which requires quietness (within 100m. from school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE 12
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter 2009

OCCUPATIONAL NOISE MONITORING
September 23, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	2028H	68.7	70.2	67.2	68.5	
2	Turbine Floor	2030H	92.0	92.3	90.8	91.3	
3	Laboratory Building	2111H	69.1	71.7	68.5	68.9	
4	Administration Building (Lobby)	2033H	66.8	67.6	66.5	66.7	
5	Coal Handling	2056H	66.8	69.1	66.1	66.8	
6	Ash Handling	2046H	75.8	76.2	70.7	75.5	
7	Machine Shop	2048H	71.7	70.6	69.5	69.8	
8	Water Treatment Control Room	2051H	69.5	72.5	68.3	69.5	
9	Boiler Feed Pump Unit #1	2020H	94.2	96.1	92.7	94.4	
10	Boiler Feed Pump Unit #2	2024H	96.8	97.6	95.3	96.6	
11	Circulating Water Pump Intake #1	2042H	93.5	96.1	91.2	92.8	
12	Circulating Water Pump Intake #2	2040H	90.8	94.6	89.7	91.5	
13	Smoke Stack (CEM Control Room)	2053H	71.0	72.8	69.8	70.7	
14	Generator Transformer Unit #1	2035H	78.1	81.5	77.0	78.4	
15	Generator Transformer Unit #2	2037H	77.0	77.3	75.8	76.6	
16	Guard House (Main Gate)	2100H	66.8	67.2	66.5	66.7	
17	230kV GJS (Switchyard)	2034H	73.2	74.0	72.8	73.3	
18	Coal Yard	2104H	67.6	70.6	66.5	77.9	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH Threshold Limit Values	DOLE Permissible Noise Exposure
16	80	-
8	85	90
6	-	92
4	90	95
3	-	97
2	95	100
1 1/2	-	102
1	100	105
1/2	105	110
1/4	110	115
1/8	115	-

*No exposure to continuous or intermittent in excess of 115 dBA

DENR Representative(s)

[Signature]

PAMB Representative(s)

[Signature]

MGU Representative(s)

[Signature]

BGU Representative(s)

[Signature]

AES Representative(s)

[Signature]

APPENDIX 2

MULTIPARTITE WATER QUALITY MONITORING RESULTS

PAGES 24-33

TABLE NO. 13

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	09/24/09	09/23/09	09/23/09	09/23/09	09/23/09	09/22/09	-
Time of Sampling	0847H	1714H	0820H	0857H	1505H	1530H	-
pH	7.90	7.06	7.58	7.35	7.84	7.38	6.5 - 8.5
Conductivity, mSiemens / meter	0.157	1.010	0.279	0.321	0.568	1	-
Turbidity, NTU	1	0	1	1	4	0	5
Dissolved Oxygen, ppm	5.81	1.55	5.57	8.56	1.27	5.26	-
Temperature, °C	25.4	28.8	26.6	28.6	30.1	24.2	-
Salinity, ‰	0.00	0.04	0.01	0.01	0.02	0.06	-

NOTES:

1. MWD - Masinloc Water District
2. RES - Resettlement Area
3. LAB - Faucet near Environmental Laboratory
4. GH - Guesthouse
5. CWD - Candelaria Water District
6. PWD - Palauig Water District
7. DOH AO No. - Department of Health Administrative Order Number
8. PNSDW - Philippine National Standard for Drinking Water
9. NTU - Nephelometric Turbidity Unit
10. °C - degrees Celsius
11. ‰ - percent
12. Equipment used: Horiba Checker Model: U-10
13. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

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TABLE NO. 14
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multiparte Monitoring Committee
 Third Quarter, 2009

DOMESTIC WATER QUALITY MONITORING (LABORATORY ANALYSIS)

Parameters	Masinloc Water District	Candelaria Water District	Palauig Water District	Resettlement	Laboratory	Guesthouse	PNSDW 2007
Fecal Coliform,MPN/100ml	12	0	3	0	0	0	0
Total Coliform,MPN/100ml	188	0	0	0	0	0	0
Total Suspended Solids	0.1	0.4	ND	ND	0.1	ND	-
Aluminum	ND	ND	ND	ND	ND	ND	0.2
Antimony	ND	ND	ND	ND	ND	ND	3.02
Arsenic	ND	ND	ND	ND	ND	ND	3.05
Cadmium	ND	ND	ND	ND	ND	ND	0.003
Calcium	1.25	12.08	60.21	4.89	2.29	2.25	-
Chromium ⁶⁺	ND	ND	ND	ND	ND	ND	-
Chromium, Total	ND	ND	ND	ND	ND	ND	0.05
Copper	ND	ND	ND	ND	ND	ND	1
Gold	ND	ND	ND	ND	ND	ND	-
Iron	ND	ND	ND	ND	ND	ND	1
Lead	ND	ND	ND	ND	ND	ND	0.01
Lithium	ND	ND	ND	ND	ND	ND	-
Magnesium	28.49	36.32	84.22	60.25	22.15	22.68	-
Manganese	ND	ND	ND	ND	ND	ND	0.4
Mercury	ND	ND	ND	ND	ND	ND	0.001
Nickel	ND	ND	ND	ND	ND	ND	0.02
Potassium	3.487	3.487	9.254	5.087	0.866	0.874	-
Selenium	ND	ND	ND	ND	ND	ND	0.01
Silver	ND	ND	ND	ND	ND	ND	-
Sodium	26.87	29.46	274.36	82.35	8.47	8.75	200
Vanadium	ND	ND	ND	ND	ND	ND	-
Zinc	ND	ND	ND	ND	ND	ND	5

NOTES

1. PNSDW 2007 - Philippine National Standards for Drinking Water 2007 (Department of Health Administrative Order No. 2007-0012)
2. Units are in milligrams per liter unless indicated
3. Samples were digested in Microwave Digester using nitric acid.
4. Digested samples were analyzed using Atomic Absorption Spectrometer

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5. Chromium hexavalent was analyzed using colorimetric method.
6. ND - Non Detectable
7. Monitoring conducted by the MPPCL Multiparte Monitoring Team
8. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zamboales

TABLE NO. 15
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

RIVER WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	LR-1: Luis River upstream of fresh- water intake	LR-2: Luis River near mouth nursery	MR-1: Masinloc River Collat Bridge	DENR AO No. 1990 Class B Fresh Surface Water
Date of Sampling	9/23/2009	9/23/2009	9/23/2009	-
Time of Sampling	1015H	1053H	1000H	-
pH	7.86	7.90	7.77	6.5 - 8.5
Conductivity, mSiemens / cm.	0.42	3.86	7.05	-
Turbidity, NTU	2	9	4	-
Dissolved Oxygen, ppm	7.60	6.00	8.84	5 minimum
Temperature, °C	27.0	28.9	26.4	-
Salinity, %	0.00	0.25	0.80	-

NOTES:

1. DENR AO No. 34 S. 1990: Revised Water Usage and Classification
2. Masinloc River is assumed Class B for purposes of comparison with the DENR criteria.
3. DENR MC 07 S. 1993 classified Luis River as Class B Fresh Surface Water
4. ppm - parts per million
5. NTU - Nephelometric Turbidity Unit
6. °C - degrees Celsius
7. % - percent
8. mSiemens/cm - milliSiemens/centimeter
9. Equipment used: Horiba Checker Model: U-10
10. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative(s)

[Signature]

PAMB Representative (s)

[Signature]

MGU Representative (s)

[Signature]

BGU Representative (s)

[Signature]

AES Representative (s)

[Signature]

TABLE NO. 16

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee

Third Quarter, 2009

RIVER WATER QUALITY MONITORING (LABORATORY ANALYSIS)

Parameters	LR-1: Luis River upstream of fresh- water intake	LR-2: Luis River near mouth nursery	MR-1 Masinloc River Collat Bridge	DENR AO No.34 s.1990 (Class B)
Oil & Grease	ND	ND	ND	1
Fecal Coliform	23	42	28	200
Total Coliform	28	112	120	1,000
Total Suspended Solids	0.1	0.40	5.4	<30 mg/l increase
Aluminum	ND	ND	ND	
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	0.05
Cadmium	ND	ND	ND	0.01
Calcium	2.02	158.11	419.31	-
Chromium ^{*6}	ND	ND	ND	0.05
Chromium, Total	0.0041	0.0067	0.0131	
Copper	0.013	0.014	0.013	-
Gold	ND	ND	ND	-
Iron	ND	ND	ND	-
Lead	ND	ND	ND	0.05*
Lithium	ND	ND	ND	-
Magnesium	31	273	903	-
Manganese	ND	ND	ND	-
Mercury	ND	ND	ND	0.002
Nickel	ND	ND	ND	-
Potassium	0.25	84.32	306.78	-
Selenium	ND	ND	ND	
Silver	ND	ND	ND	-
Sodium	4	3,048	9,125	-
Vanadium	ND	ND	ND	
Zinc	0.0128	0.0187	0.0231	-

NOTES:

- Units are in milligrams per liter (mg/l) except Fecal & Total Coliform (MPN/100ml.)
- DENR AO No. 34s. 1990-River Water Usage and Classification
- DENR MC. 7s 1993 classified Luis River as Class B Fresh Surface Water
- Masinloc River is assumed Class B for purpose of comparison with DENR criteria (Masinloc River is not yet classified)
- ND - Non Detectable
- Samples were digested in Microwave Digester using nitric acid.
- Digested samples were analyzed using Atomic Absorption Spectrometer
- Chromium hexavalent was analyzed using colorimetric method
- *Natural Background concentration for Lead is 0.22 ppm
- Monitoring conducted by the MPPCL Multipartite Monitoring Team
- Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zambales

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TABLE NO. 17
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

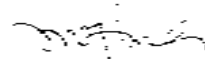
GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
September 24, 2009

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O ₂ ppm	Temp. °C	Salinity ‰
MD-1: Near Main Gate Right	1138H	6.79	1.030	6	2.67	25.2	0.04
MO-1: Bani Point (After Ash Disposal Area)	1048H	6.52	0.502	9	3.80	25.5	0.02
MO-2: Bani (NPC Nursery)	1123H	7.25	0.718	3	3.23	25.3	0.03
MO-3: Between Corafer And Duhok	1045H	7.02	0.079	3	5.11	25.1	0.00
MO-5: Bani (PNP Patrol Base)	1150H	6.45	0.661	47	2.70	25.8	0.02
MO-6: Bani	1101H	6.32	0.904	9	3.64	25.8	0.04
MOW-1: Bani (near Sedimentation Basin)	1127H	7.42	1.770	2	5.52	25.7	0.08
MOW-2: Bani (along embankment)	1030H	6.50	2.220	29	5.10	25.5	0.10
MOW-3: Bani (near warehouse)	1130H	6.32	1.250	57	2.90	25.60	0.05

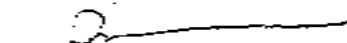
NOTES:

- | | | |
|--|-------------------------|--|
| 1. No DENR limits for groundwater | 5. °C - degrees Celsius | 7. Equipment used: Horiba Water Checker |
| 2. mSiemens/cm - milliSiemens per centimeter | 6. ‰ - percent | Model U-10 |
| 3. NTU - Nephelometric Turbidity Unit | | 8. Monitoring conducted by the MPPCL |
| 4. O ₂ - Oxygen | | Multipartite Water Quality Monitoring Team |

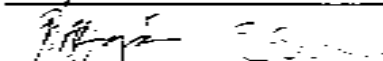
DENR Representative(s)




PAMB Representative(s)



MGU Representative(s)



BGU Representative(s)



AES Representative(s)

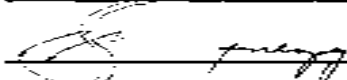


TABLE NO. 18

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee**

Third Quarter, 2009

GROUNDWATER MONITORING (LABORATORY ANALYSIS)

Parameters	MD-1	MO-1	MO-2	MO-3	MO-4	MO-6	MCW-1	MCW-2	MCW-3	PNSDW	NBC
Total Suspended Solids	0.1	0.2	ND	0.1	0.5	0.3	0.4	7.8	2.1	2.5	≤3.847
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	-
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.0174
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003	≤0.01
Calcium	0.47	2.01	25.71	25.14	1.28	255.91	82.43	32.51	124.69	-	-
Chromium ^{VI}	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	-
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Iron	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	-
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.12
Lithium	0.0102	0.0087	0.0154	0.0114	0.0038	0.0174	0.0057	0.0089	0.0069	-	-
Magnesium	58.21	40.09	15.98	101.87	55.13	301.06	58.26	32.47	81.09	-	-
Manganese	0.0015	0.0018	0.0064	0.0024	0.0017	0.0069	0.0024	0.0011	0.0008	0.4	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	-
Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Potassium	2.48	2.14	25.25	2.87	0.87	24.98	3.57	3.97	5.2700	-	-
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	-
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Sodium	49.21	14.35	75.55	52.64	28.74	95.24	64.35	18.83	48.3500	-	-
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Zinc	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	-

NOTES:**1. Monitoring Stations**

- MD-1: Near Main Gate, Right
- MD-2: Tatal (Near Luis River)
- MO-1: Bani Point (After Ash Disposal Area)
- MO-2: MCFTPP Nursery
- MO-3: Between Corafer and Duhok
- MO-4: Duhok
- MO-5: Bani (PNP Patrol Base)
- MO-6: Bani
- MCW-1: Bar (near Sedimentation Basin)
- MCW-2: Bar (along embankment)

2. All units are in parts per million**3. No DENR limits for groundwater**

PNSDW - Philippine National Standards for Drinking Water 2007
Standard used for comparison purposes only

4. NBC - Natural Background Concentration**5. ND - Non Detectable****6. Samples were digested in Microwave Digester using nitric acid.****7. Digested samples were analyzed using Atomic Absorption Spectrometer.****8. Monitoring conducted by the MPPCL Multipartite Monitoring Team****9. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zambales**

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TABLE NO.19
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
 Third Quarter, 2009

MARINE WATER MONITORING (IN-SITU ANALYSIS)

September 23, 2009

STATIONS	Sampling Time	pH	Conc. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity ‰	Remarks
M1	1110H	8.10	55.0	1	6.40	30.0	3.70	
M2	1130H	7.90	54.0	1	6.70	32.0	3.70	
M3	1138H	7.90	55.0	0	5.50	30.0	3.60	
M4	1210H	8.00	54.0	1	5.80	30.0	3.60	
M5	1215H	8.00	54.0	0	5.50	30.0	3.60	
M6	1200H	8.00	54.0	1	6.00	31.0	3.60	
M7	1150H	8.00	50.0	2	6.50	31.0	3.30	
M8	0920H	7.90	25.0	20	5.40	28.0	1.60	
M9	0945H	7.80	55.0	2	5.50	30.0	3.70	
M10	1000H	8.00	56.0	3	5.90	30.0	3.70	
M11	1025H	8.10	55.0	1	5.10	30.0	3.70	
M12	1035H	8.00	55.0	0	6.00	30.0	3.70	
DENR AO#34, s.1990(Class SC)		8.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Luis River & Bari Point

M-2: Outfall (Discharge Canal)

M-3: Cooling Water Intake

M-4: Resettlement

M-5: C-Square (Benguet Loading Area)

M-6: Puerto Asnani

M-7: Benguet Wharf

M-8: Masinloc River (Mouth)

M-9: Pecor Depor. (harbor)

M-10: BFAR

M-11: San Salvador

M-12: Along Verras

2. mS/cm - milliSiemens per centimeter

3. NTU - Nephelometric Turbidity Unit

4. °C - degrees celsius

DENR Representative (s):

PAWB Representative (s):

MGU Representative (s):

BCL Representative (s):

AES Representative (s):

TABLE NO. 20

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2009

MARINE WATER MONITORING (LABORATORY ANALYSIS)

Parameters	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8	M-9	M-10	M-11	M-12	DENR AO No.34 s.1990 (Class SC)
Oil & Grease	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3
Fecal Coliform MPN/100ml	0	0	0	5	3	2	6	24	9	2	5	0	-
Total Coliform MPN/100ml	0	12	17	35	28	47	22	32	26	18	12	16	5,000
Total Suspended Solids	6.0	6.8	7.1	6.2	7.5	7.8	9.0	3.2	0.3	9.8	10.8	7.5	<30 mg/l increase
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Arsenic	ND	ND	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	0.05
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01
Calcium	472	438	447	465	458	457	460	448	469	472	469	459	-
Chromium ^{VI}	0.0013	0.0013	0.0013	0.0019	0.0013	0.0019	0.0013	0.0013	0.0013	0.0019	0.0013	0.0019	0.1
Chromium Total	0.0367	0.0554	0.0624	0.0413	0.0582	0.0598	0.0603	0.0511	0.0522	0.0601	0.0603	0.0524	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Iron	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05*
Lithium	0.113	0.099	0.102	0.099	0.144	0.100	0.130	0.114	0.096	0.096	0.114	0.108	-
Magnesium	1.254	1.187	1.165	1.087	1.069	1.054	1.044	1.134	1.158	1.179	1.097	1.032	-
Manganese	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002
Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Potassium	368	387	376	361	378	359	361	378	378	324	378	361	-
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Sodium	9.973	10.164	10.354	9.824	10.003	9.955	10.345	10.164	10.222	9.564	10.493	10.154	-
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Zinc	0.0271	0.0364	0.0171	0.0247	0.0344	0.0078	0.0086	0.0095	0.0097	0.0164	0.0098	0.0146	-

NOTES:

1. Monitoring Stations

M-1: Between Luis River & Bani Point

M-2: Outfall (Discharge Canal)

M-3: Cooling Water Intake

M-4: Resettlement

M-5: C-Square (Benguet Loading Area)

M-6: Puerto Asinan

M-7: Benguet Wharf

M-8: Masinloc River (Mouth)

M-9: Petron Depot (harbor)

M-10: BFAR

M-11: San Salvador

M-12: Along Veritas

2. DENR AO No. 34 s.1990 – Revised Water Usage & Classification

3. Oyon & Masinloc Bays are assumed Class SC Marine Waters

4. Units are in milligrams per liter (mg/l) unless indicated

5. Monitoring conducted by the MPPCL Multipartite Monitoring Team

6. * - Do not apply if natural background is higher in concentration.

The latter will prevail and will be used as baseline.

Natural Background Concentration for Lead (Pb) ≤0.35 ppm

TABLE NO. 21
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

EFFLUENT MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	Wastewater Treatment Facility	Coal Sedimentation Basin	Ash Sedimentation Basin	Cooling Water Discharge Canal	Storm Drain Canal	DENR AO No. 35 Series 1990
Date of Sampling	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	-
Time of Sampling	1806H	1734H	1741H	1340H	1328H	-
pH	7.42	7.66	7.16	7.85	7.76	6.0 - 9.0
Conductivity, mSiemens/cm.	1.320	1.030	0.763	56.000	1.380	-
Turbidity, NTU	11	28	7	10	18	-
Dissolved Oxygen, ppm	7.73	4.79	2.26	6.71	5.31	-
Temperature, °C	32.6	30.3	29.2	37.7	29.1	-
Salinity, %	0.06	0.04	0.03	3.69	0.06	-

NOTES:

1. DENR AO No. 35 S. 1990 - Revised Effluent Regulations of 1990
2. ppm - parts per million
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees Celsius
5. % - percent
6. mSiemens/cm. - milliSiemens/centimeter
7. Equipment used : Horiba Water Checker, Model U-10
8. Monitoring Conducted by the MCFTPP Monitoring Team

DENR Representative(s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2009\water\w2009w-2q2009\effluent

TABLE NO. 22

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee**

Third Quarter, 2009

EFFLUENT MONITORING (LABORATORY ANALYSIS)

Parameters	WWT	CSB	ASB	CWDC	SDC	DENR A.O. No. 35 s. 1990 (Class SC)
Oil & Grease	ND	ND	ND	ND	ND	10
Total Suspended Solids	0.1	ND	0.5	9.9	0.40	150
Biochemical Oxygen Demand	2.0	6.0	6.0	5.0	2.00	100
Chemical Oxygen Demand	2.0	8.0	8.0	128.0	2.00	200
Aluminum	ND	ND	ND	ND	ND	
Antimony	ND	ND	ND	ND	ND	
Arsenic	ND	ND	ND	ND	ND	0.5
Cadmium	ND	ND	ND	ND	ND	0.1
Calcium	14.76	92.37	67.36	462.98	3.45	-
Chromium ⁺⁶	ND	ND	ND	0.001	ND	0.2
Chromium, Total	ND	ND	ND	0.0624	ND	
Copper	ND	ND	ND	ND	ND	-
Gold	ND	ND	ND	ND	ND	-
Iron	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	0.5
Lithium	0.002	0.020	0.018	0.090	0.007	-
Magnesium	23.79	54.68	58.36	1,038.57	49.97	-
Manganese	0.0027	0.0018	0.0017	0.0021	0.0027	-
Mercury	ND	ND	ND	ND	ND	0.005
Nickel	ND	ND	ND	ND	ND	-
Potassium	1.28	3.04	3.21	376.21	41.35	-
Selenium	ND	ND	ND	ND	ND	
Silver	ND	ND	ND	ND	ND	-
Sodium	203	87	36	9,846	20	-
Vanadium	ND	ND	ND	ND	ND	
Zinc	0.0090	ND	ND	0.0178	0.0083	-

NOTES:

1. WWT - Wastewater Treatment
2. CSB - Coal Sedimentation Basin
3. ASB - Ash Sedimentation Basin
4. CWDC - Cooling Water Discharge Canal
5. SDC - Storm Drain Canal
6. DENR A.O. No. 35 s. 1990 - Revised Effluent Regulations of 1990
7. Units are in milligrams per liter unless indicated
8. ND - Non Detectable
9. Samples were digested in Microwave Digester using nitric acid.
10. Digested samples were analyzed using Atomic Absorption Spectrometer
11. Chromium Hexavalent was analyzed using Colorimetric Method
12. Monitoring conducted by the MPPCL Multipartite Monitoring Team
13. Analysis conducted at MPPCL - Environmental Laboratory,
Masinloc, Zambales

APPENDIX 3

MULTIPARTITE SEDIMENTS, COAL AND SOLID WASTES QUALITY MONITORING RESULTS

PAGES 35-38

TABLE NO. 23

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee****MARINE SEDIMENT MONITORING (LABORATORY ANALYSIS)**

Parameters	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8	M-9	M-10	M-11	M-12	NBC
Aluminum	14.958	3.028	10.982	26.346	30.811	9.247	29.113	17.029	35.214	15.047	7.018	10.003	
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Barium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Bismuth	3.015	357.255	340.124	50.431	17.547	248.711	2.673	2.674	14.005	124.633	328.165	329.731	
Chromium	126	29	41	159	195	57	302	68	157	75	27	39	<7.077
Copper	22.6	2.6	8.6	3.2	43.9	8.3	22.7	16.7	31.4	22.2	5.8	5.9	<410
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<46.02
Iron	4.12	0.36	1.06	4.12	3.56	1.29	3.49	2.12	3.67	3.85	0.56	0.48	<5.92
Lead	ND	ND	ND	ND	ND	0.03	0.10	ND	4.28	ND	ND	ND	<97.7
Lithium	4.72	5.21	6.38	38.27	33.14	15.98	21.35	10.17	41.38	25.11	5.28	6.31	
Magnesium	108,346	38,499	29,341	38,214	36,158	29,789	48,331	60,143	38,316	51,711	42,323	39,823	
Manganese	538	95	134	328	281	95	524	218	392	235	145	127	
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.13
Nickel	1.187	40	87	195	281	75	1,065	587	223	108	35	79	<1,125
Potassium	408	382	672	2,601	3,611	751	1,501	367	3,621	3,078	521	712	
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Silver	ND	ND	ND	ND	0.04	0.06	0.18	0.08	0.06	0.03	ND	ND	<3.0
Sodium	5,216	7,289	8,391	24,311	50,196	9,247	8,316	3,297	20,489	11,347	3,711	4,016	
Vanadium	6.750	0.497	ND	0.672	9.450	4.091	18.657	8.214	27.314	18.364	1.267	6.331	
Zinc	21.08	3.11	14.69	35.54	52.47	14.36	43.17	18.69	56.04	31.98	7.88	6.32	

NOTES:

1. No DEAR limits for sediments.
2. Units are in milligrams per kilogram (mg/kg) except iron (%).
3. ND - Non Detectable
4. Samples were digested in Microwave Digester using Nitric Acid
5. Digested samples were analyzed using Atomic Absorption Spectrometer.
6. Monitoring/sampling conducted by the MPPCL Multipartite Monitoring Team.
7. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zambales.
8. NBC - Natural Background Concentration

7. Monitoring Stations

- M-1: Between Luis River & Bani Point
- M-2: Outfall (Discharge Canal)
- M-3: Cooling Water Intake
- M-6: Puerto Asinan
- M-7: Benguet Wharf
- M-8: Masinloc River (Mouth)
- M-9: Petron Depot (harbor)
- M-10: BFAR
- M-11: San Salvador
- M-12: Along Veritas

TABLE NO. 24

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee**

Third Quarter, 2009

RIVER SEDIMENT MONITORING (LABORATORY ANALYSIS)

Parameters	LR-1: Luis River upstream of fresh- water intake	LR-2: Luis River near mouth nursery	MR-1: Masinloc River Collat Bridge	NBC
Aluminum	15,392	6,199	16,811	-
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	<1.84
Cadmium	ND	ND	ND	<1.066
Calcium	1,581	1,469	803	-
Chromium	209	128	68	-
Copper	35.12	29.65	15.89	-
Gold	ND	ND	ND	-
Iron	3.87	4.68	2.91	-
Lead	ND	ND	ND	<24.0
Lithium	1.21	6.43	5.78	-
Magnesium	112,385	140,656	57,020	-
Manganese	725	628	219	<730
Mercury	ND	ND	ND	-
Nickel	15,001	1,498	524	-
Potassium	1,287	319	443	-
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-
Sodium	571	1,836	3,014	-
Vanadium	42.30	11.98	21.01	-
Zinc	30.01	25.33	25.54	-

NOTES:

1. No DENR limits for river sediments
2. Units are in milligrams per kilogram (mg/kg) except iron (%).
3. ND - Non Detectable
4. Samples were digested in Microwave Digester using nitric acid.
5. Metals were analyzed using Atomic Absorption Spectrometer
6. Monitoring/sampling conducted by the MPPCL Multipartite Water Monitoring Team
7. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zambales

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TABLE NO. 25

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee**

Third Quarter, 2009

COAL AND ASH MONITORING (LABORATORY ANALYSIS)

Parameters	COAL	BOTTOM ASH	FLY ASH	WTF SLUDGE	R.A. 6969 DAO 29
Aluminum	1,964	2,316	6,791	8,021	-
Antimony	ND	ND	ND	ND	-
Arsenic	ND	ND	ND	ND	5
Cadmium	ND	ND	ND	ND	5
Calcium	2,871	1,611	117,348	72,012	-
Chromium	ND	ND	ND	ND	5
Copper	4.31	10.87	24.97	68.21	-
Gold	ND	ND	ND	ND	-
Iron	0.587	2.087	1.813	2.014	-
Lead	ND	ND	ND	ND	5
Lithium	2.69	7.68	10.11	4.01	-
Magnesium	31,002	9,833	36,973	48,369	-
Manganese	76.49	317.55	88.31	258.21	-
Mercury	ND	ND	ND	ND	0.2
Nickel	4.31	16.83	30.78	177.88	-
Potassium	381	986	703	176	-
Selenium	ND	ND	ND	ND	-
Silver	ND	ND	ND	ND	-
Sodium	387	573	1,134	1,328	-
Vanadium	0.14	0.79	8.21	0.97	-
Zinc	8.21	22.39	78.21	25.36	-

NOTES:

1. R.A. 6969 - Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990
2. DAO 29 - Department Administrative Order No. 29 series of 1992 for the management of hazardous waste in the Philippines
3. Units are in milligrams per kilogram sample (mg/kg) except iron (%) .
4. ND - Non Detectable
5. WTF - Wastewater Treatment Facility
6. Samples for Arsenic, Cadmium, Chromium, Lead and Mercury Analysis were processed using TCLP
7. Samples were digested in Microwave Digester using nitric acid.
8. Metals were analyzed using Atomic Absorption Spectrometer.
9. Monitoring/sampling conducted by the MPPCL Multipartite Monitoring Team
10. Analysis conducted at MPPCL Environmental Laboratory, Masinloc Zambales.

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TABLE NO. 25
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009
SOIL MONITORING (LABORATORY ANALYSIS)

Parameters	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10
Aluminum	24,987	21,635	29,687	26,132	29,368	26,913	28,342	16,357	10,976	16,472
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	1,083	302	972	524	1,935	1,589	2,461	212	1,287	1,883
Chromium	179	201	135	88	92	128	107	197	97	103
Copper	69	58	74	101	32	27	33	14	37	52
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	3,721	3,511	3,671	2,981	3,777	4,013	4,001	1,771	1,782	2,762
Lead	5,687	0.178	0.012	0.007	3,781	0.841	22,334	3,017	11,971	21,980
Lithium	3.97	5.31	10.11	5.97	7.19	6.21	3.19	2.00	1.93	4.21
Magnesium	37,246	22,914	7,698	7,324	40,921	61,884	55,354	5,037	34,664	45,311
Manganese	485	401	723	543	773	783	803	706	401	463
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	532	577	209	109	529	1,498	1,271	129	354	511
Potassium	278	187	517	436	477	276	409	207	246	175
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	409	268	132	201	298	775	819	173	465	637
Vanadium	108	424	127	146	56	28	98	56	42	51
Zinc	64	89	45	34	124	58	149	73	48	337

NOTES:

*** Monitoring Stations**

- S-1: Masinloc National High School (across highway)
- S-2: Candelara (back of Elementary School)
- S-3: Puerto Asinan (across highway)
- S-4: NPC Resettlement (beside roadside)
- S-5: Bani Elementary School (beside roadside)
- S-6: Palauig (back of Town Plaza)
- S-7: Bani National High School (mango area)
- S-8: CENRO Office (near NPC Monitoring Station)
- S-9: Sto. Niño, Palauig (intersection)

S-10: Masinloc Plaza (Estrella Compound)

- 2. No DENR limits for soil.
- 3. Units are in milligrams per kilogram sample (mg/kg) except for iron, %
- 4. ND - Non Detectable
- 5. Samples were digested in Microwave Digester using nitric acid
- 6. Metals were analyzed using Atomic Absorption Spectrometer
- 7. Monitoring/sampling conducted by the MPPCL Multipartite Monitoring Team
- 8. Analysis conducted at MPPCL Environmental Laboratory, Masinloc Zambales

C:\windows\desktop\monitoring\multipartite\masinloc\2009\data\2009-2-3\2009 soil

APPENDIX 4

MULTIPARTITE MONITORING SCHEDULE

THIRD QUARTER 2009

PAGE 40

Masinloc Power Partners Company Limited
3rd QUARTER 2009 MULTI-PARTITE AIR, WATER, NOISE, SEDIMENTS,
COAL, SOLID WASTE AND ECOLOGICAL QUALITY MONITORING SCHEDULE

ACTIVITY	22-Sep	23-Sep	24-Sep	25-Sep	Stations	MPPCL Personnel
Entrance Meeting	***				Env. Lab	All
Preparation	***				Env. Lab	1,2,3,4,5,6
Air Sampling (Ambient)		***			Pal., Cand., Mas and Res.	2,3,4,5,6
Air Sampling (Occupational)	***				MCFTPP	2,3,4,5,6
Marine Water/Sediments			***		Masinloc and Oyon Bays	3,5,6
Bacteriological Test		***	***		Env. Lab	2
Groundwater & River Water/Sediments		***	***		Louis R. Mas River, MCFTPP	3,4,5,6
Domestic Water Sampling		***			Pal., Mas. Res. and MCFTPP	2,3,4,5,6
Noise Monitoring (Occupational)				***	MCFTPP	2,3,4
Noise Monitoring (Ambient)		***	***	***	Cand., Mas., Res. MCFTPP	3,4,5,6
Plant Effluent			***		ASB, OSB, CWD	3,4
Fly Ash, Bottom Ash, Sludge & Soil		***		***	Fly Ash Site - DOC, Pa. Mas. Res. Info	5,6
Preparation of Reports/Exit Meeting				***	Env. Lab	All

* morning time & day time

** evening time

***night time

Notes:

1. A.V. Lopez

2. J. A. Aquino

3. H. A. Sune

4. E. Eclarinal

5. Q. D. Loe

6. J. E. Tiburcio

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Antonia V. Lopez
ANTONIA V. LOPEZ
 Environmental Manager
 Environmental Section

APPENDIX 5

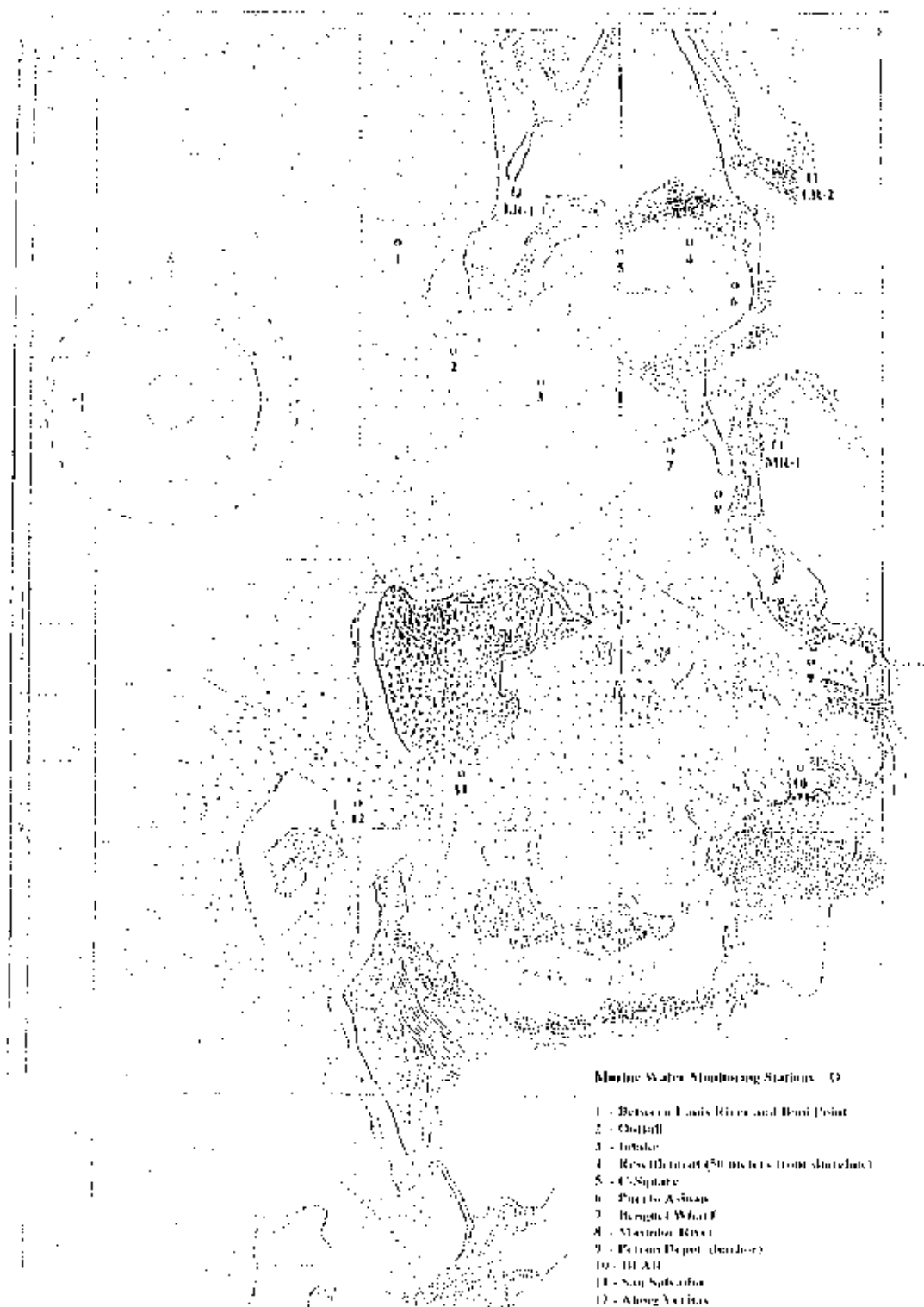
MULTIPARTITE MONITORING MAPS OF SAMPLING STATIONS

PAGES 42-44

GROUNDWATER MONITORING

- MD-1: Borehole, Bar, 1980
- MD-2: Borehole, Bar, 1980
- MD-3: Borehole, Bar, 1980
- MD-4: Borehole, Bar, 1980
- MD-5: Borehole, Bar, 1980
- MD-6: Borehole, Bar, 1980
- MD-7: Borehole, Bar, 1980
- MD-8: Borehole, Bar, 1980
- MD-9: Borehole, Bar, 1980
- MD-10: Borehole, Bar, 1980
- MD-11: Borehole, Bar, 1980
- MD-12: Borehole, Bar, 1980
- MD-13: Borehole, Bar, 1980
- MD-14: Borehole, Bar, 1980
- MD-15: Borehole, Bar, 1980
- MD-16: Borehole, Bar, 1980
- MD-17: Borehole, Bar, 1980
- MD-18: Borehole, Bar, 1980
- MD-19: Borehole, Bar, 1980
- MD-20: Borehole, Bar, 1980
- MD-21: Borehole, Bar, 1980
- MD-22: Borehole, Bar, 1980
- MD-23: Borehole, Bar, 1980
- MD-24: Borehole, Bar, 1980
- MD-25: Borehole, Bar, 1980
- MD-26: Borehole, Bar, 1980
- MD-27: Borehole, Bar, 1980
- MD-28: Borehole, Bar, 1980
- MD-29: Borehole, Bar, 1980
- MD-30: Borehole, Bar, 1980
- MD-31: Borehole, Bar, 1980
- MD-32: Borehole, Bar, 1980
- MD-33: Borehole, Bar, 1980
- MD-34: Borehole, Bar, 1980
- MD-35: Borehole, Bar, 1980
- MD-36: Borehole, Bar, 1980
- MD-37: Borehole, Bar, 1980
- MD-38: Borehole, Bar, 1980
- MD-39: Borehole, Bar, 1980
- MD-40: Borehole, Bar, 1980
- MD-41: Borehole, Bar, 1980
- MD-42: Borehole, Bar, 1980
- MD-43: Borehole, Bar, 1980
- MD-44: Borehole, Bar, 1980
- MD-45: Borehole, Bar, 1980
- MD-46: Borehole, Bar, 1980
- MD-47: Borehole, Bar, 1980
- MD-48: Borehole, Bar, 1980
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- MD-50: Borehole, Bar, 1980
- MD-51: Borehole, Bar, 1980
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- MD-61: Borehole, Bar, 1980
- MD-62: Borehole, Bar, 1980
- MD-63: Borehole, Bar, 1980
- MD-64: Borehole, Bar, 1980
- MD-65: Borehole, Bar, 1980
- MD-66: Borehole, Bar, 1980
- MD-67: Borehole, Bar, 1980
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- MD-76: Borehole, Bar, 1980
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- MD-80: Borehole, Bar, 1980
- MD-81: Borehole, Bar, 1980
- MD-82: Borehole, Bar, 1980
- MD-83: Borehole, Bar, 1980
- MD-84: Borehole, Bar, 1980
- MD-85: Borehole, Bar, 1980
- MD-86: Borehole, Bar, 1980
- MD-87: Borehole, Bar, 1980
- MD-88: Borehole, Bar, 1980
- MD-89: Borehole, Bar, 1980
- MD-90: Borehole, Bar, 1980
- MD-91: Borehole, Bar, 1980
- MD-92: Borehole, Bar, 1980
- MD-93: Borehole, Bar, 1980
- MD-94: Borehole, Bar, 1980
- MD-95: Borehole, Bar, 1980
- MD-96: Borehole, Bar, 1980
- MD-97: Borehole, Bar, 1980
- MD-98: Borehole, Bar, 1980
- MD-99: Borehole, Bar, 1980
- MD-100: Borehole, Bar, 1980





Marine Water Sampling Stations (13)

- 1 - Between Luis River and Bani Point
- 2 - Chetill
- 3 - Intake
- 4 - Reservoir of 450 meters from shoreline
- 5 - C-Square
- 6 - Puerto Ascan
- 7 - Brought Wharf
- 8 - Mayaguez River
- 9 - Petron Depot (dunbar)
- 10 - DRAR
- 11 - San Salvador
- 12 - Along Verrill

River Water Sampling Stations (3)

- MR-1 Luis River upstream of the freshwater intake
- MR-2 Luis River (near mouth & reservoir)
- MR-3 Mayaguez River (Collar Bridge)



Marine Water Monitoring Stations (1)

- 1 - Between Liao River and Band Point
- 2 - On the Earth River
- 3 - In the Earth River
- 4 - Resettlement of the Earth River
- 5 - On the Earth River
- 6 - On the Earth River
- 7 - On the Earth River
- 8 - On the Earth River
- 9 - On the Earth River
- 10 - On the Earth River
- 11 - On the Earth River
- 12 - On the Earth River

Fresh Water Monitoring Stations (2)

- 1 - On the Earth River
- 2 - On the Earth River
- 3 - On the Earth River
- 4 - On the Earth River
- 5 - On the Earth River
- 6 - On the Earth River
- 7 - On the Earth River
- 8 - On the Earth River
- 9 - On the Earth River
- 10 - On the Earth River
- 11 - On the Earth River
- 12 - On the Earth River

APPENDIX 6

MULTIPARTITE MANAGEMENT

MONITORING SET-UP

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED

MPPCL MULTIPARTITE MANAGEMENT GROUP	
CHAIRMAN	: REGIONAL TECHNICAL DIRECTOR DENR - REGION III
VICE CHAIRMAN	: VICE GOVERNOR PROVINCE OF ZAMBALES
MEMBERS	: DENR - ONE (1) REPRESENTATIVE LGU - MAYORS OF MASINLOC, CANDELARIA & PALAUIG BARANGAY CAPTAIN OF BANI NON GOVERNMENT ORGANIZATION MPPCL - PLANT MANAGER MASINLOC POWER PARTNERS COMPANY LIMITED

MPPCL MULTIPARTITE MONITORING COMMITTEE	
CHAIRMAN	: MAYOR, MASINLOC
VICE CHAIRMAN	: VICE MAYOR, MASINLOC
SECRETARY	: DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
1	- REPRESENTATIVE FROM THE OFFICE OF THE GOVERNOR, ZAMBALES
1	- REPRESENTATIVE FROM THE OFFICE OF THE PROVINCIAL BOARD, ZAMBALES
1	- REPRESENTATIVE FROM THE OFFICE OF CONGRESSMAN
1	- REPRESENTATIVE FROM THE SANGGUNIANG BAYAN, MASINLOC
1	- REPRESENTATIVE FROM THE OFFICE OF THE MAYOR, MASINLOC
1	- REPRESENTATIVE FROM THE OFFICE OF THE MAYOR, PALAUIG
1	- REPRESENTATIVE FROM THE OFFICE OF THE MAYOR, CANDELARIA
1	- REPRESENTATIVE FROM THE MASINLOC POWER PARTNERS COMPANY LIMITED
1	- REPRESENTATIVE FROM THE NON GOVERNMENT ORGANIZATION, BASED IN MASINLOC
1	- REPRESENTATIVE FROM THE BARANGAY COUNCIL, BANI
1	- DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
1	- DEPARTMENT OF AGRICULTURE (SFAR)

AIR QUALITY TEAM
DENR
LGU
NGO
MPPCL

WATER QUALITY TEAM
DENR
LGU
NGO
MPPCL

MARINE ECOLOGY TEAM
DENR
LGU
NGO
MPPCL

APPENDIX 7

MULTIPARTITE MONITORING TEAM ATTENDANCE SHEET

PAGES 48



**Masinloc Power Partners Company Limited
THIRD QUARTER 2009 MULTIPARTITE MONITORING**

ATTENDANCE SHEET

	Name	Agency	22-Sep	23-Sep	24-Sep	25-Sep
1	AV LOPEZ	MPPCL	atf	atf	atf	atf
2	JOSEPH E. Tiburcio	SFI	fat	fat	fat	fat
3	QUIRINO D. LOO	SFI	atf	atf	atf	atf
4	MARLON DELA REYES	SFI	atf	atf	atf	atf
5	NIDA E. EBIDO	Bugy Bni	atf	atf	atf	atf
6	Mary O. Fullana	DEWIR	atf	atf	atf	atf
7	Beth Ervin	Peace Corps/ LGU	Ervin	Ervin	Ervin	Ervin
8	LEONARDA T. DOMA	PAMB	atf	atf	atf	atf
9	Bert Ejanda	SFI	atf	atf	atf	atf
10	JORGE A. AQUINO	MPPCL	A	A	A	A
11	HARRIS A. SUNE	MPPCL	atf	atf	atf	atf
12	JOY BORIA	L. L. U	atf	atf	atf	atf
13						
14						
15						
16						
17						
18						

APPENDIX 8

DETECTION LIMITS

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DETECTION LIMITS

Parameters	Detection limit	Unit
Aluminum	0.0280	ppm
Antimony	0.2900	ppb
Arsenic	0.3300	ppb
Cadmium	0.0100	ppb
Calcium	0.0037	ppb
Chromium	0.0250	ppb
Copper	0.0045	ppm
Gold	0.0130	ppm
Iron	0.0043	ppm
Lead	0.0300	ppb
Lithium	0.0021	ppm
Magnesium	0.0022	ppm
Manganese	0.0016	ppm
Mercury	3.3000	ppb
Nickel	0.0080	ppm
Potassium	0.0009	ppm
Selenium	0.3200	ppb
Silver	0.0032	ppm
Sodium	0.0037	ppm
Vanadium	0.7000	ppb
Zinc	0.0033	ppm

APPENDIX 9

ENVIRONMENTAL COMPLIANCE CERTIFICATE STATUS

PAGES 52-60

ENVIRONMENTAL COMPLIANCE CERTIFICATE

Granted: December 18, 1992

(Status of MPPCL Compliance as of September 30, 2009)

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
A. GENERAL			
1. Construction and operation of 2x300 MW (600MW) Coal-Fired Thermal Power Plant. Location: Barangay Bani, Masinloc, Zambales	<ul style="list-style-type: none"> > Plant construction started on February 6, 1995. > Unit I commercial operation = June 18, 1998. > Unit II commercial operation = December 10, 1998. 		
2. The design, construction and operation strictly in conformity with the Environmental Impact Statement (EIS).	<ul style="list-style-type: none"> > The power generating plant had been designed and constructed in conformity with the EIS. > Plant operations are strictly observing the requirements set-off by the Environmental Compliance Certificate (ECC) (granted on December 18, 2002) & Memorandum of Agreement (MOA) (signed on May 2, 1993). 		
3. No construction shall commence unless accepted by the community.	<ul style="list-style-type: none"> > Provincial Endorsement: October 12, 1992 > Municipal Endorsement: January 6, 1993 > Memorandum of Agreement (MOA) DENR, LGU's, NPC: May 2, 1993 		
4. Occupational safety rules & work standards prescribed by the DOH and DOLE are observed during the construction and operation of the plant.			<ul style="list-style-type: none"> > A Safety Security Health, Environment & Emeroon Committee: Office Order # 04-119 > A Fulltime Safety Engineer regularly conduct walkdown to insure compliance to safety rules and regulations

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
5. No construction of any facility shall commence until the completion of environmental studies.	> Environmental studies have been completed, refer to Section VI.		
6. Transfer of ownership of this project carries the same conditions in this Certificate. Written notification to DENR within fifteen (15) days from such transfer.		> To be made part of contract of Sale or Transfer of Ownership	
II. CONSTRUCTION PHASE			
7. Minimum distance of two hundred fifty (250) meters between groundwater production wells.	Complied		
8. The smoke stack height must be one hundred and fifty (150) meters.	Complied		
9. Construction of ash disposal pond with embankment and with impervious lining.		Still waiting for the final report from ENSR.	
10. Establishment of groundwater monitoring wells between the water body and the ash pond. Study parameters inherent in fly ash and coal. Submit to DENR-EMB prior to construction, the location and baseline data of monitoring wells.	> Pertinent data and maps were submitted to DENR prior to construction.		> Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (MPPCL, DENR, LGU and NGO). > Copies of the Multipartite Monitoring Reports are provided to DENR, LGU & NGO.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	<ul style="list-style-type: none"> > Waste Water Treatment System – Operational > Sludge Collection and Disposal – Operational > Four units Electrostatic Precipitator – Operational. 		
12. Installation of continuous automatic recording stack monitoring system for air emissions in the plant.	<p>Continuous Emission Monitoring System (CEMS) installed and operational.</p> <ul style="list-style-type: none"> > Two (2) SO_x analyzers: operational > Two (2) NO_x: operational > Two (2) Dust Density Meters: operational > Two (2) Opacity Meters: operational 		
13. Installation of continuous fixed ambient air monitoring stations in strategic areas of potentially affected barangays.	<ul style="list-style-type: none"> > Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig > Analyzers installed at each station: <ol style="list-style-type: none"> 1. SO₂ Analyzer 2. NO_x Analyzer 3. Dust Density Meter > Meteorological Towers are installed at the Resettlement & Candelaria stations. 		
14. No dredging operations in waters around the plant and in Masinloc shall be undertaken at anytime	<ul style="list-style-type: none"> > Due to the necessity to excavate/dredge along the areas to be affected by the MCFIPP cooling water facilities, NPC requested for the amendment of ECC's condition (MCFIPP Conditionality No. 11.14) > EMB-DENR through its letter dated Jan. 30, 1996, informed NPC that amendment of the ECC is no longer necessary since it has the same interpretation of the ECC condition per NPC letter dated January 22, 1996; hence, indicating approval to proceed with the excavation/dredging activities for the cooling water facilities. > EIS Report stated that "Dredging will be done during the construction of intake & outfall pipes". 		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
<p>15. Undertake marine amelioration and rehabilitation program, in case minimal damage to corals, mangroves and other natural marine resources occurs. Program plan shall be submitted to DENR within one hundred and eighty (180) days after issuance of this Certificate for comments or approval.</p>	<ul style="list-style-type: none"> > The protection & Enhancement Program for corals & other marine resources was submitted to DENR on May 14, 1993. > Seagrass transplantation was undertaken on May 24 to July 7, 1995 > Coral transplantation was undertaken on 1997. > Giant clam stocking in collaboration w/ UP MSI staff & Masinloc LGU was undertaken in 2002. > Mangrove plantation was undertaken in February 1999. 		<ul style="list-style-type: none"> > Ecological Monitoring is a continuing activity by the Multipartite Monitoring Team on semi-annual basis. > Ecological Monitoring deals with the inspection of corals, seagrass, fish, and other marine resources. > Mangrove inspection is a daily routine activity. > Mangrove replanting is done yearly.
<p>III. OPERATIONS PHASE</p> <p>16. Management and handling of coal (airborne coal dusts and spontaneous combustion free)</p> <ul style="list-style-type: none"> a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity. b. Adoption of "first in, first out". c. Compaction of coal stockpiles: d. Installation of water spray system. e. Installation of temperature monitoring system f. Installation of an effective physical windbreak around the coal yard; g. Maintenance and/or provision of buffers around the plant's perimeter h. Sulfur content of coal shall be less than one percent (1%). Submit report of chemical analysis of new coal deliveries to DENR-EMB. 	<ul style="list-style-type: none"> d. Water Spray System (WSS) installed. e. Temperature Monitoring System installed. f. Physical wind break fence around the coal yard through planting of fourteen (14) species of trees with a total of 2,256 trees is 100% complete. g. Complied. A major reforestation around the project site was completed. <ul style="list-style-type: none"> 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283 		<ul style="list-style-type: none"> a. Complying b. Complying c. Bulldozers are used in compacting operation. g. Management and maintenance is a routine continuing activity. h. Complying all coal deliveries showed less than 1% sulfur content (Average 0.6%)

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
17. Use of continuous bucket-type and/or screw-type unloaders, fully covered coal conveyor systems.	<ul style="list-style-type: none"> ➤ Two (2) units Screw type coal unloader installed & operation ➤ Covered conveyor system in place & operational 		
18. Provision of a coal basin sedimentation, than one percent (1%).	<ul style="list-style-type: none"> ➤ Coal sedimentation was constructed & operational 		
19. Sulfur content of the fuel oil shall be less than 1 %			<ul style="list-style-type: none"> ➤ Light Fuel Oil Analysis is conducted every delivery ➤ Average Sulfur content is 0.5%
20. That the rise in temperature caused by the discharge of the cooling waters shall not exceed three degrees Celsius outside of the mixing zone in Oyon Bay (pursuant to DENR Administrative Order No. 34 Series of 1990).	Design of plant cooling system considered this requirement		<ul style="list-style-type: none"> ➤ Daily monitoring of temperature at the Intake & Discharge is a routine
21. Provision of access for the community to Oyon Bay.	<ul style="list-style-type: none"> ➤ NPC has provided access road outside the plant site towards Oyon Bay as indicated in the Plot Plan of the Masinloc Project 		
22. Undertake major reforestation of all areas adjacent to the project site.	Complied		<ul style="list-style-type: none"> ➤ Managed and maintenance watering of different plant varieties is a continuing activity being undertaken by MPPCL.
IV. SOCIO-ECONOMIC CONDITIONS			
23. Relocation of displaced families with adequate compensation.	<ul style="list-style-type: none"> ➤ All of the 198 affected families have already been paid due compensation. ➤ All of the 198 affected families have been resettled in the NPC relocation site and/or on their own. 		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
24. Established fair and reasonable compensation of orchards and other agricultural crops.	<ul style="list-style-type: none"> ➤ Affected lands and crops have been compensated based on evaluations of three (3) government financial institutions and a private appraiser, negotiated with and accepted by the affected families and approved by the NP Board. 		
25. Implement fair and reasonable compensation for legitimate claims of residents affected by the project.	<ul style="list-style-type: none"> ➤ The 198 affected households were given five (5) relocation options to choose from; were more than adequately compensated of their affected properties and some who adopted to resettle in NPC relocation site were properly allotted houses and lots according to their preference and/or occupation such as fishing. 		
26. Livelihood training program and other community support projects.	<ul style="list-style-type: none"> ➤ NPC released P1.86M for the relocatees thru SPRB. ➤ NPC released P19M to LGU MCDO as livelihood fund thru micro-lending project. 		
27. That the proponent operator shall undertake jointly with the municipal and Barangay Councils, respectively, socioeconomic amelioration projects to support directly affected communities, including a community forestation project to compensate for the emission of CO ₂ by the plant.	<ul style="list-style-type: none"> ➤ Complied. Refer to Memorandum of Agreement 		
V. MONITORING MECHANISM			
28. That the proponent operator shall establish a database for the continuous monitoring of mortality rate, morbidity rate and other health parameters in Masinloc and other potentially affected areas especially on respiratory diseases to determine the health impacts of the plant; this will be conducted in coordination with the Department of Health.	<ul style="list-style-type: none"> ➤ A Health Impact Assessment Study was conducted by the Health Safety & Environmental Management Consultancy, INC (HSEMCI) ➤ Results of the study was presented to NPC on August 14, 1994. 		<ul style="list-style-type: none"> ➤ Monitoring of mortality rate & morbidity rate of the three (3) studies barangays is a continuing activity. ➤ Annual Medical, Dental & Surgical Mission is being conducted by MPPCL in collaboration with Masinloc LGU & Military.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
29. Develop & implement environmental monitoring program; submit details for such shall be submitted to DENR-EMB within sixty (60) days from the date of issuance of this ECC.	<ul style="list-style-type: none"> > The monitoring programs for the operation of MCFIPP was submitted to DENR-EMB on 15 February 1994. > The Masinloc Sangguniang Bayan Resolution No. 05-94 created the Multipartite Monitoring Team per MOA signed on 02 May 1993. > Multipartite Water Quality monitoring was conducted on November 8-9, 1994 and November 23, 1994 and March 14 & 29, 1995 for baseline data. > Multipartite Air Quality Monitoring for baseline data was conducted in Masinloc Town Plaza (October 12-16, 1994) and Resettlement Area (November 22-25, 1994) using EMD mobile laboratory. Noise Monitoring was conducted on March 28-29, 1995. > Underwater survey video coverage of biological communities at the submerged intake site was conducted on August 18, 1994. > Phytoplankton, benthos and zooplankton sampling at the freshwater intake site in Lawis River was conducted on September 16, 1994. > Fish Stock assessment initial data gathering was conducted with LGU on January 24-26, 1995. > Seagrass, coral fish & benthos survey monitoring was conducted with LGU on March 29-31, 1995, September 17, 1994, November 9-12, 1994 and March 29-31, 1995. > Extraction and transplantation of seagrasses started on May 13, 1995 with DENR at the 0.5 ha trial transplantation site. > Mango yield survey interview started on March 28, 1995 > Soil sampling was conducted on January 26, 1995 		<ul style="list-style-type: none"> > Multipartite Monitoring Team conducts the fl activities on a quarterly basis. 1. Water quality monitoring (marine, river, ground, domestic, effluent) 2. Air quality monitoring (occupational & ambient) 3. Noise level measurement (ambient & occupational) 4. Marine & river sediment monitoring 5. Coal & solid waste monitoring 6. Soil quality monitoring > Results of sampling & analysis are provided to DENR, LGU, DOE, NGO & MPPCL

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
30. Continuous monitoring of the plant's effluents and air emissions; results displayed at the municipal hall for public information.			<ul style="list-style-type: none"> > Plant effluent & air emission monitoring is a continuing activity. > Results are provided to DENR on a quarterly basis
31. Installation & operation of water monitoring and quality testing facility. Submit details to DENR-EMB within sixty (60) days after issuance of ECC. Conduct compliance monitoring; submit report to NPC copy furnished the Mayor of Masinloc and the DENR-EMB.	<ul style="list-style-type: none"> > Environmental monitoring program plan submitted to DENR-EMB on February 15, 1993. > Environmental laboratory is operational. 		<ul style="list-style-type: none"> > Water quality monitoring is a continuing activity. > Results are provided to DENR, LGU, DOE, NGO, MPPCL.
VI. FURTHER STUDIES REQUIRED			
32. Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	<ul style="list-style-type: none"> > DENR – EMB analytical methods and procedures being followed. 		<ul style="list-style-type: none"> > DENR – EMB analytical methods and procedures being followed.
33. Marine impact study undertake within one hundred eighty (180) days by an independent team. Submit result and recommendations of the study to EMB & shall form part of the ECC provisions.	<ul style="list-style-type: none"> > Marine Impact study was undertaken by ABB; report was submitted to DENR on October 28, 1993. 		
34. Conduct hydrological study; submit result of the study to DENR-EMB within sixty (60) days after issuance of ECC and shall be incorporated in the ECC provisions.	<ul style="list-style-type: none"> > An assessment of the surface and groundwater resources of the project area has been conducted. > Report submitted to DENR – EMB. 		
35. Submit a risk assessment study and a corresponding contingency plan to DENR-EMB within one hundred and eighty (180) days after issuance of this ECC.	<ul style="list-style-type: none"> > The Risk Assessment Study has been submitted to DENR - EMB. 		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
VII. ENVIRONMENTAL GUARANTEE FUND 36. Setting up of Environmental Guarantee Fund (EGF). The amount and mechanics of the EGF shall be determined by DENR and NPC within sixty (60) days after issuance of this Certificate.	<ul style="list-style-type: none"> ➤ Initial EGF was approved on March 2, 1992 as per Resolution No. 92-57A of NP Board ➤ Accepted as complying by DENR. 		<ul style="list-style-type: none"> ➤ As of December 3, 1999, NPC P50M EGF has 2 components: <ol style="list-style-type: none"> 1. Trust Fund = P49.5 M 2. Cash Fund = P0.5M (LBP) ➤ As of March 29, 2004, NPC Env'l EGF Cash Fund Component has an existing Peso Current Deposit of P533,706.78 with the LBP.
VIII. ENVIRONMENTAL REPORTING/ PUBLIC INFORMATION 37. Set a system for public relations : information, to discuss / resolve issues that may develop / affect the community.			<ul style="list-style-type: none"> ➤ MPPCL & LGU constantly hold meeting to discuss / resolve issues concerning the plant & the community ➤ Multiparty Monitoring Team meet quarterly to conduct monitoring of plant operation & discuss / resolve issues.

APPENDIX 10

ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

PAGES 62-70

Masinloc Power Partners Company Limited
ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES
 As of September 30, 2009

IMPACTS	MITIGATING MEASURES	STATUS
1.0 GEOLOGY/SOIL 1.1 Foundation at the project site in Barangay Bani may affect the integrity of the power plant and its facilities.	1.1.1 Drilling (3 offshore and 4 inland) were conducted at the proposed site of major MCFTPP facilities to confirm the stability of rock foundation. The rock formations have N values greater than 50 which are judged to have sufficient bearing capacity.	Implemented.
1.2 The proximity of earthquake generators (Manila Trench at 100 km, Philippine Fault at 150 km, Iba Fracture Zone at 40 km, and San Antonio Graben at 110 km. From MCFTPP) may affect the power plant structures due to ground deformation and vibration during earthquakes.	1.2.1 MCFTPP will have a design seismic coefficient of 0.2g.	Implemented.
1.3 Erosion will result temporarily during site preparation for MCFTPP	1.3.1 Revetments, seawalls, embankments will be constructed. Exposed surface areas will be revegetated after construction.	Revetments, seawalls and embankments constructed. Reforestation/Revegetation of areas around the project site is on going.
2.0 METEOROLOGY AND AIR QUALITY 2.1 The climatological conditions at the proposed site may affect MCFTPP.	2.1.1 The following climatological extremes from the Iba Station (1903-1966) shall be considered in the design of MCFTPP. Max. Temp. = 38.8 °C Min. Temp. = 12.2 °C Max Daily Rainfall = 623.7 mm Max. wind = 47 mps SW Max. Sea Level Pressure = 1020 mb Min. Sea Level Pressure = 980 mb	Considered in the design of MCFTPP.

IMPACTS	MITIGATING MEASURES	STATUS
	2.1.2 Continuous meteorological observation at the site shall be undertaken during MCFTPP operation.	Installed & operational. 1 Unit Meteorological Towers installed at Plant Site.
2.2 The total equivalent heat generated by MCFTPP operating at full load is 39.36 GWH/day.		
2.3 Coal dust is dispersed during coal unloading from barges and during stacking/reclaiming operations.	<p>2.3.1 MCFTPP will utilize a screw type coal unloader to eliminate dust dispersion during coal unloading.</p> <p>2.3.2 Coal conveyor shall completely covered to avoid dust dispersion during coal transport from the pier to the coal yard to the power plant.</p> <p>2.3.3 Water sprayers will be installed at coal stockyard.</p> <p>2.3.4 The height of fall of coal from stacker shall be made as low as possible during stacking.</p> <p>2.3.5 Reclaimers/stackers shall be operated only at wind speed lower than 5 mps.</p> <p>2.3.6 Planting of trees around MCFTPP to serve as wind breakers.</p>	<p>Installed and operational.</p> <p>Installed and operational.</p> <p>Installed and operational.</p> <p>Being implemented.</p> <p>Being implemented.</p> <p>To date 44,405 trees have been planted.</p>
2.4 Spontaneous combustion may occur at the coal stockyard emitting smoke and smoldering smell.	<p>2.4.1 Use of coal with low grindability value, low pyrite content, and low percent volatile matter to prevent spontaneous combustion and coal dust dispersion at coal stockyard.</p> <p>2.4.2 Coal inventory at the plant site shall be strictly controlled to prevent too long storage of coal (45-60 days). Coal utilization shall be on "first-in-first-out" basis.</p> <p>2.4.3 Regular re-piling and water sprinkling of coal pile shall be undertaken to prevent spontaneous combustion.</p>	<p>Being implemented.</p> <p>Being implemented.</p> <p>Being implemented.</p>

IMPACTS	MITIGATING MEASURES	STATUS
<p>2.5 MCFTPP will emit SO₂, NO and air particulates in the environment.</p> <p>Emission levels of SO₂, NO_x and air particulates are within DENR standard.</p>	2.4.4 Coal pile portion where spontaneous combustion occurs shall be compacted by bulldozer.	Being implemented.
	2.5.1 MCFTPP will utilize 100% imported coal with low sulfur and ash content to reduce SO ₂ , NO ₂ and air particulate emission.	Being implemented.
	2.5.2 MCFTPP will utilize a stack of 150 m high for maximum dispersion of SO ₂ , NO ₂ and air particulate and to comply with DENR ambient standards.	Completed.
	2.5.3 MCFTPP will utilize a 99% efficient electrostatic precipitator to reduce fly ash emission to less than 200 mg/cu.m.	Two (2) units of ESP Installed and operational.
	2.5.4 MCFTPP will utilize two-stage combustion method at the boiler furnace to slow down combustion temperature in order to reduce NO _x releases by 25-30%, or to less than 400 ppm at the boiler outlet.	
	2.5.5 Regular monitoring of ambient SO ₂ , NO ₂ and air particulate at strategic locations where high pollutant concentrations are expected.	Four (4) ambient air monitoring stations are installed. They are located at Palauig, Inhobol, Resettlement Area, and Candalaria.
<p>2.6 Dust may be dispersed during ash transport, unloading and at the ash disposal area.</p>	2.6.1 Bottom ash and fly ash will be wetted before transporting to the ash disposal area by trucks.	Being implemented.
	2.6.2 Disposed ash will be leveled and compacted immediately after unloading at the ash disposal area.	Being implemented.
	2.6.3 Surface of ash disposal area will be water regularly.	Surface of ash disposal area is leveled by bulldozer regularly.
	2.6.4 A waterpool shall be provided for washing off ashes from truck tires after leaving the ash disposal Area.	A washing area was constructed right after the ash disposal area.

IMPACTS	MITIGATING MEASURES	STATUS
2.7 Noise will be generated during the operation of the power plant and its facilities.	<p>2.7.1 Use of low noise equipment; installation of soundproof washes and doors; indoor installation of fans, pumps, compressor and motors.</p> <p>2.7.2 Operation of coal stockyard and ash disposal area shall be done only during daytime.</p> <p>2.7.3 Regular monitoring of noise levels in population centers near MCFTPP during plant operation.</p>	<p>Being implemented.</p> <p>Regular ambient & occupational noise level monitoring is conducted regularly; data shows compliance to DOH & DOLE requirements.</p> <p>Multipartite monitoring is conducted quarterly.</p>
3.0 HYDROLOGY AND WATER QUALITY		
3.1 Civil work activities including land reclamation and dredging of barge route will generate spoils and cause soil erosion and siltation.	<p>3.1.1 Revetment around the reclaimed area shall be constructed prior to start of reclamation.</p> <p>3.1.2 Mechanical and biological control of soil erosion shall be undertaken to prevent soil erosion and siltation in nearby Lawis River and Oyon Bay.</p>	<p>Implemented</p> <p>Revetment and embankment already constructed. Stabilization of slopes by sodding/planting completed. Revegetation is a continuing activity.</p>
3.2 Possible contamination of Oyon Bay and groundwater due to the operation of ash disposal system.	<p>3.2.1 MCFTPP will utilize dry ash disposal scheme. Only the sprinkled water and rainwater will be with the ash at the ash disposal area.</p> <p>3.2.2 The ash disposal area will be provided with sedimentation basin and embankment.</p> <p>3.2.3 The NW embankment of ash disposal area shall be lined with impervious material such as clay to avoid groundwater contamination.</p> <p>3.2.4 Five (5) deep wells shall be constructed at the northern portion of ash disposal area for the monitoring of groundwater quality.</p>	<p>Monitoring of plant effluent is regularly conducted.</p> <p>Completed</p> <p>Completed.</p> <p>Implemented.</p>

IMPACTS	MITIGATING MEASURES	STATUS
3.3 Fresh water requirement of MCFTPP (0.03 cu.m./sec) could affect the volumetric flow of Masinloc River for downstream users.	3.3.1 Continuous flow at the downstream of fresh water intake structure (6 km from Masinloc River mouth) is maintained by the installation of fixed overflow weir.	Operational
3.4 Effluents from the operation of MCFTPP may affect the quality of the Oyon Bay.	3.4.1 Wastewater treatment facility with a capacity of 1,000 cu.m/day shall be provided for MCFTPP. It shall include coagulation and sedimentation tanks, neutralization tanks, filter oil water separators, pH controllers.	Operational
	3.4.2 The outlet of the condenser cooling system is located 650 m from shore and is a surface type open structure for better diffusion of heated effluents.	Implemented.
	3.4.3 A chlorine injection concentration of 0.6 mg/l shall be adopted to ensure a residual chlorine concentration below 0.02 mg/l.	Being implemented.
	3.4.4 Water quality monitoring of groundwater, surface and marine shall be implemented during the operation of MCFTPP.	Monitoring is conducted on a quarterly basis by the Multipartite Monitoring working group
4.0 TERRESTRIAL ECOLOGY		
4.1 The clearing of ground cover of the power plant, coal yard and ash disposal are (about 100 hectares) will destroy about 1000 fruit-bearing and 5000 non fruit-bearing mango trees and 20 hectares of ricefields.	4.1.1 Landscaping and revegetation will be implemented to restore ecological and aesthetic ambience after construction of MCFTPP.	Completed, maintenance is a continuing activity.
	4.1.2 Vegetation specially mango trees in areas inside the project site that will not be utilized for plant facilities shall be preserved.	Mango trees not affected by the project are preserved & maintained. About 195 mango and 84 coconut trees planted in greening area and buffer zone to replace mango and coconut trees displaced by project construction.
4.2 The emission of SO ₂ , NO ₂ and air particulate may cause damage to major plants (mango and rice) in the vicinity of MCFTPP.	4.2.1 A biological monitoring program including crop (mango and rice) production rate study will be implemented to determine effects of long-term exposure to various levels of emissions for MCFTPP.	On going. Rice productivity study conducted & completed in collaboration with Masinloc LGU.

IMPACTS	MITIGATING MEASURES	STATUS
<p>5.0 AQUATIC ECOLOGY</p> <p>5.1 Dredging for the cooling intake and discharge structures, unloading jetty/ other port facilities and turning basin will damage the benthic organisms at Oyon bay.</p>	<p>5.1.1 Repair of the marine habitat will be implemented after dredging and construction of port facilities. Seagrass transplantation and establishment of artificial reefs at Oyon Bay will be undertaken.</p> <p>5.1.2 The coal unloading jetty and other submerged structures of MCFTPP will enhance recolonization of marine organisms and will lead to increase of fish population.</p>	<p>Seagrass transplantation already undertaken. Report was submitted to DENR in June 1997. Establishment of artificial reef conducted by Masindoc LGU.</p> <p>Recolonization and increase of fish population observed along submerged structures of MCFTPP. Actual survey is a continuing activity conducted during ecological monitoring done semi-annually by MMT group.</p>
<p>5.2 The discharge of treated effluent may cause ecological effects to the aquatic system at Oyon Bay.</p>	<p>5.2.1 The cooling water discharge structure is designed to be an open canal, surface discharge type, and extended by 650 m. from shore to limit extent of 3 C increase within the 0.016 sq. km. only at Oyon Bay.</p>	<p>Completed.</p>
	<p>5.2.2 Biological studies at the discharge area will be undertaken during MCFTPP operation to determine possible effects of thermal effluent chlorination.</p>	<p>Permanent coral quadrat deployed near the discharge area. Biological monitoring is a continuing activity by the MM group.</p>
<p>5.3 The chlorination of cooling water may cause ecological effects to the aquatic system at Oyon Bay</p>	<p>5.3.1 The chlorine injection at the cooling water system will be maintained at 0.6 mg/l in order to retard growth of barnacles at the intake pipes and ensure a residual chlorine concentration below 0.02 mg/l at the outfall.</p>	<p>Being implemented.</p>
<p>5.4 The cooling water system will cause entrainment and impingement of marine organisms.</p>	<p>5.4.1 Velocity cap at the intake structure of the cooling water system will be installed to reduce entrapment of fishes.</p> <p>5.4.2 Entrapment of fishes at the intake structure will be monitored during MCFTPP Operation.</p>	<p>Implemented.</p>
<p>5.5 The operation of ash disposal system may cause ecological effects to the aquatic system at Oyon Bay.</p>	<p>5.5.1 The ash disposal area is provided with embankment and sedimentation basin to prevent siltation/sedimentation and any possible harm to aquatic system at Oyon Bay.</p>	<p>Operational.</p>

IMPACTS	MITIGATING MEASURES	STATUS
5.6 The drawing of fresh water from Masinloc River will reduce the fluxes of nutrients and other materials to the bay and may reduce primary productivity at the estuarine area.	5.6.1 The flow of Masinloc River to Oyon Bay will be maintained continuously by providing overflow weir at the intake structure of the fresh water supply system. 5.6.2 Fry production monitoring near MCFTPP especially near the river mouth will be undertaken during MCFTPP operation.	Operational. Monitoring is a continuing activity.
6.0 SOCIOECONOMICS AND LAND USE		
6.1 About 60 families in Barangay Bani, Masinloc will be displaced due to MCFTPP construction.	6.1.1 A relocation package is being formulated by NAPOCOR. The package shall be socially acceptable and economically viable for the displaced households. 6.1.2 A compensation package is being formulated according to existing government guidelines in order to compensate households for the loss of their properties/crops.	All of the 198 affected families have already been paid and adequately compensated. Affected lands and crops have been compensated based on evaluations of three (3) government financial institutions and a private appraiser, negotiated with and accepted by the families and approved by the NP Board.
6.2 The construction of MCFTPP (July 1991 - December 1994) will need more than 1000 skilled and unskilled workers.	6.2.1 Residents in the direct and primary impact zones shall be given priorities during hiring of workers for MCFTPP.	Residents were hired during the construction and operation of the plant
	6.2.2 NAPOCOR shall conduct manpower training's at MCFTPP from time to time in order to develop youth in DIA and PIZ for better employment opportunities in NAPOCOR / other firms.	Manpower training's were conducted in collaboration with LGU, NGO and contractor. On-the-Job-Training is a continuing program of NAPOCOR.
6.3 The influx of migrant construction workers will induce the proliferation of service establishments (food cateries, lodging houses.)		Materialized.
6.4 There will be high demand for construction materials which will intensify production and increase of employment in cement, metal, wood and chemical industry.		Materialized.
6.5 Only 50% of the residents in the area in favor of the project implementation.	6.5.1 NAPOCOR shall conduct more project acceptance campaigns in Barangay Bani, Masinloc, and other nearby municipalities. 6.5.2 A Public Information Office at	NPC regularly attends MCFTPP Multipartite Monitoring Committee and the Masinloc-Oyon Bays Protected Area Management Board meetings to update the

IMPACTS	MITIGATING MEASURES	STATUS
	MCFTPP to be spearheaded by NAPOCOR's Community Relations Department will be created to formulate and implement public information activities during plant operation.	residents about the status of the project. The Community Relations Group of NPC regularly coordinate with residents. Being implemented during the regular Multipartite and plant tours.
6.6 The operation of MCFTPP will mean an additional 600 MW to the Luzon grid.		MCFTPP operates generating & contributing 600MW of power to the Luzon Grid.
7.0 INDUSTRIAL AND PUBLIC HEALTH		
7.1 Construction of MCFTPP will expose workers to physical health hazards, noise, dust, construction related accidents, occasional problem on	7.1.1 Creation of MCFTPP Construction safety Committee to supervise/monitor the compliance of the safety regulations and practices.	Implemented.
peace and order, sanitary condition of temporary camps and others.	7.1.2 Conduct of health and safety seminar to all construction personnel.	Implemented.
	7.1.3 Provision for a construction camp at the site with safe drinking water supply, adequate sewage facilities and solid waste disposal facilities.	Implemented.
	7.1.4 Provision for medical staff at site during construction to conduct routine physical examination and to attend to medical emergencies.	Implemented.
	7.1.5 Provision for adequate security staff to ensure peace and order in the camp during construction.	Implemented.
7.2 Plant personnel and the general public near MCFTPP will be exposed to dust, noise, SO ₂ , NO ₂ and related plant accidents during the plant operation.	7.2.1 Adequate engineering control facilities (i.e. 150 m. smokestack, 99% electrostatic precipitator, low sulfur-low ash coal, sprinklers at coal yard, continuous bucket chain type coal unloader, covered conveyor, silencer) for MCFTPP to limit emission of SO ₂ , NO ₂ , dust and noise to levels within DENR ambient standards.	Operational.
	7.2.2 Provision of sampling lines at air heaters, economizers and other components of ash handling system to limit exposure to dust of plant workers.	Operational

IMPACTS	MITIGATING MEASURES	STATUS
	7.2.3 Operation of new employees and conduct of training /retraining to regular employees.	Being implemented
	7.2.4 Strict implementation of the use of personnel protection equipment.	Being implemented
	7.2.5 A work rotation program for plant personnel assign in critical areas.	Being implemented
	7.2.6 Conduct of periodic industrial health monitoring during construction and operation of MCI/TPP.	Continuing.
	7.2.7 Implementation of Industrial Health and Occupational Safety Audit Program at MCI/TPP during operation.	Being implemented.
	7.2.8 Provision for adequate fire alarms and fire fighting equipment and facilities.	Implemented.
	7.2.9 Good housekeeping.	Being implemented.

APPENDIX 4



MASINLOC POWER PARTNERS COMPANY LIMITED

ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	January 18, 2010
Date of Emission Event	January 16, 2200H to January 17, 2400H
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	January 16, 2200H to January 17, 2400H
Estimated Duration of the Emission Event	26 hours
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	24-hour average exceedance = 575 ppm (Limit = 573.06 ppm)
Physical Location of Excess Emission Event	Stack
Cause of the Event	Fuel type change over which had higher sulfur content than the Certificate of Analysis Indicated.
Immediate Action Taken to Correct Excess Emission Event	Attempted to correct the higher fuel sulfur levels by blending a lower sulfur fuel, the fuel change over process and combustion adjustments required a day of operations to complete.
Follow-up Actions to Prevent Future Events	Verify the new/fuel to be able to be combusted as a 100% fuel prior to the fuel shift to ensure that the sulfur levels do not cause excessive emissions.

APPENDIX : 5

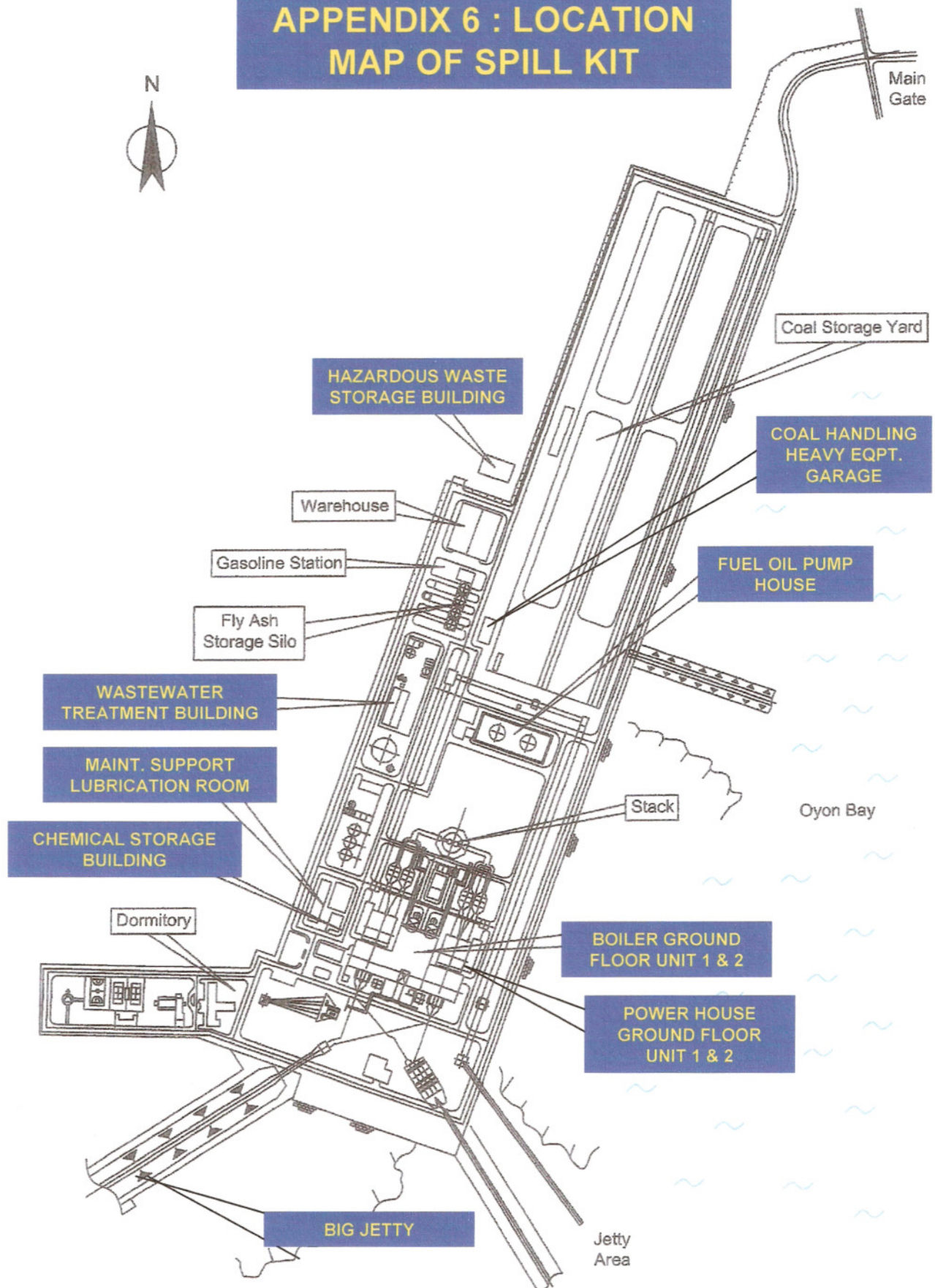
ENVIRONMENTAL MONITORING FOR TODAY (MARCH 17, 2010)

Parameters	Cooling Water Intake	Cooling Water Discharge	Storm Drain Canal	Wastewater Treatment Facility	DENR Limits DENR A.O. #35
Time	1720H	1712H	1700H	1654H	-
pH	7.88	7.81	7.63		6.0 - 9.0
Conductivity, mS/cm	57.60	57.70	0.97	NO	
Turbidity, NTU	10	13	5		
Dissolved Oxygen, ppm	7.24	8.20	4.19	DISCHARGE	
Temperature, °C	33.7	34.7	28.1		
Salinity, %	3.83	3.85	0.04		
Chlorine Residual, ppm	0.00	0.01			1.0 MAXIMUM

Wastewater Treated (March 16, 2010) = 410 m³

Data for volume of wastewater treated is from Chemical Section

APPENDIX 6 : LOCATION MAP OF SPILL KIT



MPPCL ENVIRONMENTAL ACTION PLAN

TASK	Indicator of Completion	Anticipated Completion	Status
Air Emissions			
Electrostatic Precipitators (ESPs)			Unit 2 ESP rehabilitation completed in April 08, now operating with dust density below 150mg/Ncm.
Repair ESPs	Operating ESPs	09-Dec	Unit 1 ESP rehabilitation started on December 2009, expected completion date is early part of first quarter of 2010
Continuous Emission Monitoring Systems (CEMS):			
Repair the CEMS and ensure the CEMS are operable	Operating CEMS	08-Jun	Cylinder Gas Audit, RATA, Stack Emission Testing conducted on May -June 2009.
Check and/or calibrate CEMS performance/reliability	Calibrated CEMS	Ongoing	Cylinder Gas Audit conducted on May -June 2009.
Equipment Repair and Maintenance			
Repair equipment	Working Equipment	08-Dec	Major equipment repair, rehabilitation and replacement of spare parts on-going.
Establish maintenance schedules for equipment	Maintenance Schedules	Ongoing	Maintenance program implementation such as MAXIMO is now on-going.
Wastewater Discharge			
Wastewater Treatment Plant (WWTP)			
Repair WWTP	Operating WWTP	08-Jun	Awaiting arrival of valves and rehabilitation of Clarifier.
Conduct regular maintenance of WWTP	Maintenance logs	Ongoing	WWTP Operating logs being implemented.
Stormwater Drainage System:			
Inspect, unblock and repair damaged area of the stormwater drainage system	Operating stormwater drains	08-Jun	Inspection and declogging is a routine activity prior to the onset of rainy season.
Maintenance stormwater drains	Operating stormwater drains	Ongoing	
Material Handling and Storage			
Appropriate Waste Management chemical and waste storage areas should be constructed	Appropriately designed storage areas	08-Oct	Construction of Chemical and Waste Storage Buildings completed.
Waste Management			
Ash Collection and Disposal			
Identify alternative contractor	Contract arrangement in place	08-Mar	Bidding for the improvement/rehab of Ash Disposal Area on-going.
Removal of ash piles	Site cleared	08-Oct	Design preparation for the rehab is on going.
Ash disposal area to be engineered for future disposal activities	Suitable engineered ash disposal area	Jun-09	
Solid Waste Disposal			
Identify alternative disposal route for solid wastes	Contract arrangements in place	08-Jul	Collection of non-biodegradable solid waste by LGU.
Develop and implement a solid waste management program	Solid waste management plan	08-Jun	Solid Waste segregation is on-going, Solid Waste Management Plan preparation on-going.
Waste Chemical and Chemical Containers			
Clear all waste drums and chemicals	Cleared Site	08-Jul	Hazardous Waste cleared from the site by FAR EAST CORPORATION last April 1, 2009.
			Waste chemical plastic drums are being buy back by the supplier. Used metal drums are steel cleaned and donated to the host communities.
Marine Impact			
Marine water and sediment monitoring is done quarterly.			
Daily temperature monitoring at the intake and discharge points.	MMT Report	08-Mar	Conducted on a quarterly basis by MMT. Please refer to Appendix 3 and 9 for sample report
Contaminated Groundmass			
Undertake an intrusive soil and groundwater site investigation	Site work completed	08-Jan	Site work conducted by third party (ENSR)
Prepare a soil and groundwater site investigation report	Report	08-Feb	Report submitted on January 2009.
Prepare a remediation action plan for the Site	Remediation action plan	08-Dec	
Environmental Management			
Develop and document an environmental management system (EMS)	EMS developed	08-Jun	Development on - going
Implement EMS.	Operating EMS	Ongoing	

	UNIT COST Php.	QUANTITY	TOTAL COST Php.		
6.111.2.7 Above 750 sq. meter up to one 1000 sq. meter	1200.00	2.00	2400.00		
6.111.2.8 Every 1000 sq. meter or each portion in excess of 1000 sq. meter	1200.00	38392.00	46070.40	40392	Boiler
		1.00	1200.00		
		9182.20	11018.64	10182.2	Powerhouse
6.11.2.6. Above 500 up 750	960.00	1.00	960.00		
				575	Admin
		1.00	1200.00		
		125.00	150.00	1125	AH Control
6.111.2.7 Above 750 sq. meter up to one 1000 sq. meter		1.00	1200.00		
				840	CH Control
6.11.2.6. Above 500 up 750	960.00	1.00	960.00		
				772	Dorm
		1.00	960.00		
				627	Guest H
		1.00	960.00		
				588	Garage /repair
6.11.25 Above 350 to 500	720.00	1.00	720.00		
				345	Lab
6.11.2.6. Above 500 up 750	960.00	1.00	960.00		
				660	Machine shop
		1.00	1200.00		
		1156.00	1387.20	2156	MHI camp H
6.11.23 Above 100 to 200	240.00	1.00	240.00		
				110	FO pump H
6.11.22 floor area to 100	120.00	1.00	120.00		
				90	PW Supply H
6.11.25 Above 350 to 500	720.00	1.00	720.00		
				336	Water Treatment H
6.111.2.7 Above 750 sq. meter up to one 1000 sq. meter	1200.00	1.00	1200.00		
6.111.2.8 Every 1000 sq. meter or each portion in excess of 1000 sq. meter	1200.00	2000.00	2400.00	3000	Warehouse
6.111.2.7 Above 750 sq. meter up to one 1000 sq. meter		1.00	1200.00	752	ECP
		Total	77,226.24		

APPENDIX 8
ENVIRONMENTAL COMPLIANCE CERTIFICATE

Granted: December 18, 1992

(Status of MPPCL Compliance as of December 31, 2009)

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
A. GENERAL			
1. Construction and operation of 2x300 MW (600MW) Coal-Fired Thermal Power Plant. Location: Barangay Bani, Masinloc, Zambales	<ul style="list-style-type: none"> ➤ Plant construction started on February 6, 1995. ➤ Unit I commercial operation = June 18, 1998. ➤ Unit II commercial operation = December 10, 1998. 		
2. The design, construction and operation strictly in conformity with the Environmental Impact Statement (EIS).	<ul style="list-style-type: none"> ➤ The power generating plant had been designed and constructed in conformity with the EIS. ➤ Plant operations are strictly observing the requirements set-off by the Environmental Compliance Certificate (ECC) (granted on December 18, 2002) & Memorandum of Agreement (MOA) (signed on May 2, 1993). 		
3. No construction shall commence unless accepted by the community.	<ul style="list-style-type: none"> ➤ Provincial Endorsement: October 12, 1992 ➤ Municipal Endorsement: January 6, 1993 ➤ Memorandum of Agreement (MOA) DENR, LGU's, NPC: May 2, 1993 		
4. Occupational safety rules & work standards prescribed by the DOH and DOLE are observed during the construction and operation of the plant.			<ul style="list-style-type: none"> ➤ A Safety Security Health, Environment & Enercon Committee; Office Order # 04-119 ➤ A Fulltime Safety Engineer regularly conduct walkdown to insure compliance to safety rules and regulations. and regulations
5. No construction of any facility shall commence until the completion of	➤ Environmental studies have been completed, refer to Section VI.		
6. Transfer of ownership of this project carries the same conditions in this Certificate. Written notification to DENR within fifteen (15) days from such transfer.		➤ To be made part of contract of Sale or Transfer of Ownership	
II. CONSTRUCTION PHASE			
7. Minimum distance of two hundred fifty (250) meters between groundwater production wells.	Complied		
8. The smoke stack height must be one hundred and fifty (150) meters.	Complied		
9. Construction of ash disposal pond with embankment and with impervious lining.	Complied		
10. Establishment of groundwater monitoring wells between the water body and the ash pond. Study parameters inherent in fly ash and coal. Submit to DENR-EMB prior to construction. the location and baseline data of monitoring wells.	➤ Pertinent data and maps were submitted to DENR prior to construction.		<ul style="list-style-type: none"> ➤ Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (NPC, DOE, DENR, LGU and NGO). ➤ Copies of the Multipartite Monitoring Reports are provided to DENR, LGU, DOE & NGO.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	<ul style="list-style-type: none"> ➤ Waste Water Treatment System – Operational ➤ Sludge Collection and Disposal – Operational ➤ Four units Electrostatic Precipitator – Operational. 		
12. Installation of continuous automatic recording stack monitoring system for air emissions in the plant.	<p>Continuous Emission Monitoring System (CEMS) installed and operational.</p> <ul style="list-style-type: none"> ➤ Two (2) SO_x analyzers: operational ➤ Two (2) NO_x: operational ➤ Two (2) Dust Density Meters: operational ➤ Two (2) Opacity Meters: operational 		
13. Installation of continuous fixed ambient air monitoring stations in strategic areas of potentially affected barangays.	<ul style="list-style-type: none"> ➤ Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig) ➤ Analyzers installed at each station: <ol style="list-style-type: none"> 1. SO₂ Analyzer 2. NO_x Analyzer 3. Dust Density Meter ➤ Meteorological Towers are installed at the Resettlement & Candelaria stations. 		
14. No dredging operations in waters around the plant and in Masinloc shall be undertaken at anytime	<ul style="list-style-type: none"> ➤ Due to the necessity to excavate/dredge along the areas to be affected by the MCFTPP cooling water facilities, NPC requested for the amendment of ECC's condition (MCFTPP Conditionality No. II.14) ➤ EMB-DENR through its letter dated Jan. 30, 1996, informed NPC that amendment of the ECC is no longer necessary since it has the same interpretation of the ECC condition per NPC letter dated January 22, 1996; hence, indicating approval to proceed with the excavation/dredging activities for the cooling water facilities. ➤ EIS Report stated that "Dredging will be done during the construction of intake & outfall pipes". 		
15. Undertake marine amelioration and rehabilitation program, in case minimal damage to corals, mangroves and other natural marine resources occurs. Program plan shall be submitted to DENR within one hundred and eighty (180) days after issuance of this Certificate for comments or approval.	<ul style="list-style-type: none"> ➤ The protection / Enhancement Program for corals & other marine resources was submitted to DENR on May 14, 1993. ➤ Seagrass transplantation was undertaken on May 24 to July 7, 1995 ➤ Coral transplantation was undertaken on 1997. ➤ Giant clam stocking in collaboration w/ UP MSI staff & Masinloc LGU was undertaken in 2002. ➤ Mangrove plantation was undertaken in February 1999. 		<ul style="list-style-type: none"> ➤ Mangrove inspection is a daily/routine activity. ➤ Mangrove replanting is done yearly.
III. OPERATIONS PHASE			
<p>16. Management and handling of coal (airborne coal dusts and spontaneous combustion free)</p> <p>a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity.</p> <p>b. Adoption of "first in, first out".</p> <p>c. Compaction of coal stockpiles;</p> <p>d. Installation of water spray system.</p> <p>e. Installation of temperature monitoring system</p> <p>f. Installation of an effective physical windbreak around the coal yard;</p> <p>g. Maintenance and/or provision of buffers around the plant's perimeter</p>	<p>d. Water Spray System (WSS) installed.</p> <p>e. Temperature Monitoring System installed.</p> <p>f. Physical wind break fence around the coal yard through planting of fourteen (14) species of trees with a total of 2,256 trees is 100% complete.</p> <p>g. Complied. A major reforestation around the project site was completed.</p> <ol style="list-style-type: none"> 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283 		<p>a. Complying</p> <p>b. Complying</p> <p>c. Bulldozers are used in compacting operation.</p> <p>g. Management and maintenance is a routine / continuing activity.</p>

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
h. Sulfur content of coal shall be less than one percent (1%). Submit report of chemical analysis of new coal deliveries to DENR-EMB.			h. Complying all coal deliveries showed less than 1% sulfur content (Average 0.6%)
17. Use of continuous bucket-type and/or screw-type unloaders, fully covered coal conveyor systems.	<ul style="list-style-type: none"> ➤ Two (2) units Screw type coal unloader installed & operation ➤ Covered conveyor system in placed & operational ➤ Four (4) units of EP installed & operational. 		
18. Provision of a coal basin sedimentation. than one percent (1%).	➤ Coal sedimentation was constructed & operational		
19. Sulfur content of the fuel oil shall be less			<ul style="list-style-type: none"> ➤ Light Fuel Oil Analysis is conducted every delivery ➤ Average Sulfur content is 0.5%
20. That the rise in temperature caused by the discharge of the cooling waters shall not exceed three degrees Celsius outside of the mixing zone in Oyon Bay (pursuant to DENR Administrative Order No. 34 Series of 1990).	Design of plant cooling system considered this requirement		➤ Daily monitoring of temperature at the Intake & Discharge is a routine activity.
21. Provision of access for the community to Oyon Bay.	➤ NPC has provided access road outside the plant site towards Oyon Bay as indicated in the Plot Plan of the Masinloc Project		
22. Undertake major reforestation of all areas adjacent to the project site.	Complied		➤ Managed and maintenance / watering of different plant varieties is a continuing activity being undertaken by MPPCL.
IV. SOCIO-ECONOMIC CONDITIONS			
23. Relocation of displaced families with adequate compensation.	<ul style="list-style-type: none"> ➤ All of the 198 affected families have already been paid due compensation. ➤ All of the 198 affected families have been resettled in the NPC relocation site and/or on their own. 		
24. Established fair and reasonable compensation of orchards and other agricultural crops.	➤ Affected lands and crops have been compensated based on evaluations of three (3) government financial institutions and a private appraiser, negotiated with and accepted by the affected families and approved by the NP Board.		
25. Implement fair and reasonable compensation for legitimate claims of residents affected by the project.	➤ The 198 affected households were given five (5) relocation options to choose from; were more than adequately compensated of their affected properties and some who adopted to resettle in NPC relocation site were properly allotted houses and lots according to their preference and/or occupation such as fishing.		
26. Livelihood training program and other community support projects.	<ul style="list-style-type: none"> ➤ NPC released P1.86M for the relocatees thru SPRB. ➤ NPC released P10M to LGU MCDO as livelihood fund thru micro-lending project. 		
27. That the proponent/operator shall undertake jointly with the municipal and Barangay Councils, respectively, socioeconomic amelioration projects to support directly affected communities, including a community forestation project to compensate for the emission of CO ₂ by the plant	➤ Complied. Refer to Memorandum of Agreement		
V. MONITORING MECHANISM			

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
28. That the proponent /operator shall establish a database for the continuous monitoring of mortality rate, morbidity rate and other health parameters in Masinloc and other potentially affected areas especially on respiratory diseases to determine the health impacts of the plant; this will be conducted in coordination with the Department of Health.	<ul style="list-style-type: none"> ➤ A Health Impact Assessment Study was conducted by the Health Safety & Environmental Management Consultancy, INC (HSEMC) ➤ Results of the study was presented to NPC on August 14, 1994. 		<ul style="list-style-type: none"> ➤ Monitoring of mortality rate & morbidity rate of the three (3) studies barangays is a continuing activity. ➤ Annual Medical, Dental & Surgical Mission is being conducted by MPPCL in collaboration w/ Masinloc LGU & Military.
29. Develop & implement environmental monitoring program; submit details for such shall be submitted to DENR-EMB within sixty (60) days from the date of issuance of this ECC.	<ul style="list-style-type: none"> ➤ The monitoring programs for the operation of MCFTPP was submitted to DENR-EMB on 15 February 1994. ➤ The Masinloc Sangguniang Bayan Resolution No. 05-94 created the Multipartite Monitoring Team per MOA signed on 02 May 1993. ➤ Multipartite Water Quality monitoring was conducted on November 8-9, 1994 and November 23, 1994 and March 14 & 29, 1995 for baseline data. ➤ Multipartite Air Quality Monitoring for baseline data was conducted in Masinloc Town Plaza (October 12-16, 1994) and Resettlement Area (November 22-25, 1994) using EMD mobile laboratory. Noise Monitoring was conducted on March 28-29, 1995. ➤ Underwater survey video coverage of biological communities at the submerged intake site was conducted on August 18, 1994. ➤ Phytoplankton, benthos and zooplankton sampling at the freshwater intake site in Lawis River was conducted on September 16, 1994. ➤ Fish Stock assessment initial data gathering was conducted with LGU on January 24-26, 1995. ➤ Seagrass, coral fish & benthos survey/monitoring was conducted with LGU on March 29-31, 1995, September 17, 1994, November 9-12, 1994 and March 29-31, 1995. ➤ Extraction and transplantation of seagrasses started on May 13, 1995 with DENR at the 0.5 ha trial transplantation site. ➤ Mango yield survey/interview started on March 28, 1995 ➤ Soil sampling was conducted on January 26, 1995 		<ul style="list-style-type: none"> ➤ Multipartite Monitoring Team conducts the ff. activities on a quarterly basis. 1. Water quality monitoring (marine, river, ground, domestic, effluent) 2. Air quality monitoring (occupational & ambient) 3. Noise level measurement (ambient & occupational) 4. Marine & river sediment monitoring 5. Coal & solid waste monitoring 6. Soil quality monitoring ➤ Results of sampling / analysis are provided to DENR, LGU, DOE, NGO & MPPCL
30. Continuous monitoring of the plant's effluents and air emissions; results displayed at the municipal hall for public information.			<ul style="list-style-type: none"> ➤ Plant effluent & air emission monitoring is a continuing activity. ➤ Results are provided to DENR on a quarterly basis
31. Installation & operation of water monitoring and quality testing facility. Submit details to DENR-EMB within sixty (60) days after issuance of ECC. Conduct compliance monitoring; submit report to NPC copy furnished the Mayor of Masinloc and the DENR-EMB.	<ul style="list-style-type: none"> ➤ Environmental monitoring program/plan submitted to DENR-EMB on February 15, 1993. ➤ Environmental laboratory is operational. 		<ul style="list-style-type: none"> ➤ Water quality monitoring is a continuing activity. ➤ Results are provided to DENR, LGU, DOE, NGO, MPPCL.
VI. FURTHER STUDIES REQUIRED			
32. Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	<ul style="list-style-type: none"> ➤ DENR – EMB analytical methods and procedures being followed. 		<ul style="list-style-type: none"> ➤ DENR – EMB analytical methods and procedures being followed.
33. Marine impact study undertake within one hundred eighty (180) days by an independent team. Submit result and recommendations of the study to EMB & shall form part of the ECC provisions.	<ul style="list-style-type: none"> ➤ Marine Impact study was undertaken by ABB; report was submitted to DENR on October 28, 1993. 		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
34. Conduct hydrological study; submit result of the study to DENR-EMB within sixty (60) days after issuance of ECC and shall be incorporated in the ECC provisions.	<ul style="list-style-type: none"> ➤ An assessment of the surface and groundwater resources of the project area has been conducted. ➤ Report submitted to DENR –EMB. 		
35. Submit a risk assessment study and a corresponding contingency plan to DENR-EMB within one hundred and eighty (180) days after issuance of this ECC.	<ul style="list-style-type: none"> ➤ The Risk Assessment Study has been submitted to DENR - EMD. 		
VII. ENVIRONMENTAL GUARANTEE FUND			
36. Setting up of Environmental Guarantee Fund (EGF). The amount and mechanics of the EGF shall be determined by DENR and NPC within sixty (60) days after issuance of this Certificate.	<ul style="list-style-type: none"> ➤ Initial EGF was approved on March 2, 1992 as per Resolution No. 92-57A of NP Board ➤ Accepted as complying by DENR. 		Coordination meeting with EMB DENR re EGF establishment is on going.
VIII. ENVIRONMENTAL REPORTING/ PUBLIC INFORMATION			
37. Set a system for public relations / information, to discuss / resolve issues that may develop / affect the community.			<ul style="list-style-type: none"> ➤ MPPCL & LGU constantly hold meeting to discuss / resolve issues concerning the plant & the community ➤ Multipartite Monitoring Team meet quarterly to conduct monitoring of plant operation & discuss / resolve issues.

MASINLOC POWER PARTNERS COMPANY LIMITED

2009 MULTIPARTITE MONITORING
In-Situ Analysis



AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

Department of Environment and Natural Resources


MS. VICTORIA C. APOSTOL
Forest Ranger/Community Information Officer


MS. MARY O. HULLANA
Forester I

Municipal Government Unit


MR. RAMON I. EGUITA
Draftsman I
Masinloc, Zambales


MR. ROY A. BORJA
MAO Staff
Palaug, Zambales


MR. OSCAR E. EMPEÑO
Admin Aide 4
Masinloc, Zambales


MS. ELIZABETH ERVIN
Peace Corp USA / LGU-Masinloc
Masinloc, Zambales

Barangay Government Unit


KAG. NIDA E. EBIDO
Kagawad ng Barangay

AES Philippines
Masinloc Power Partners Company Limited
Environmental Section


MS. ANTONIA V. LOPEZ
Environmental Manager


MR. JORGE A. AQUINO
Principal Chemist C


MR. JOSEPH E. TIBURCIO
Laboratory Aide


MR. QUIRINO D. LOO
Laboratory Aide

TABLE NO. 1

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee**

First Quarter, 2009

SO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1103H-1203H	03/24/09	1.00	32.5	760	0.0000	0.0585	ND	DENR A. O. 14 s. 1993 340 ug/Ncm
	1205H-1305H	03/24/09	1.00	32.5	760	0.0000	0.0585	ND	
Inhobol	1435H-1535H	03/24/09	1.00	31.0	760	0.0000	0.0588	ND	
	1536H-1636H	03/24/09	1.00	32.0	760	0.0000	0.0586	ND	
Candelaria	1030H-1130H	03/24/09	1.00	24.0	760	0.0000	0.0602	ND	
	1131H-1231H	03/24/09	1.00	25.0	760	0.0000	0.0600	ND	
Palauig	1520H-1620H	03/24/09	1.00	31.0	760	0.0000	0.0588	ND	
	1629H-1729H	03/24/09	1.00	30.0	760	0.0000	0.0590	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi (lit.)}}{\text{min}} \times \frac{\text{P mm Hg}}{760 \text{ mm Hg}} \times \frac{273 \text{ K}}{\text{T} + 273} \times 60 \text{ mins} \times 0.001 \text{ cu.m. lit.}$$

NOTE:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - Non Detectable

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 2

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2009

NO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1103H-1203H	03/24/09	1.00	32.5	760	0.0000	0.0585	ND	DENR A. O. 14 s. 1993 260 ug/Ncm
	1205H-1305H	03/24/09	1.00	32.5	760	0.0000	0.0585	ND	
Masinloc	1435H-1535H	03/24/09	1.00	31.0	760	0.0000	0.0588	ND	
	1536H-1636H	03/24/09	1.00	32.0	760	0.0000	0.0586	ND	
Candelaria	1030H-1130H	03/24/09	1.00	24.0	760	0.0000	0.0602	ND	
	1131H-1231H	03/24/09	1.00	25.0	760	0.0000	0.0600	ND	
Palauig	1520H-1620H	03/24/09	1.00	31.0	760	0.0000	0.0588	ND	
	1629H-1729H	03/24/09	1.00	30.0	760	0.0000	0.0590	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{Vi \text{ li.}}{\text{min}} \times \frac{P \text{ mm Hg}}{760 \text{ mm Hg}} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ mins} \times \frac{0.001 \text{ cu.m.}}{\text{lit}}$$

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - Non Detectable

TABLE NO. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1103H-1203H	03/24/09	546.9	544.8	0.71	32.5	760	2.10	41.45	50.66	DENR A. O. 14 s. 1993 300ug/Ncm
	1205H-1305H	03/24/09	543.8	539.7	0.71	32.5	760	4.10	41.45	98.92	
Inhobol	1435H-1535H	03/24/09	416.7	413.3	1.00	31.0	760	3.40	58.82	57.81	
	1536H-1636H	03/24/09	417.7	414.6	1.00	32.0	760	3.10	58.62	52.88	
Candelaria	1030H-1130H	03/24/09	562.8	562.4	1.00	24.0	760	0.40	60.20	6.64	
	1131H-1231H	03/24/09	415.1	414.5	1.00	25.0	760	0.60	60.00	10.00	
Palauig	1520H-1620H	03/24/09	415.6	412.5	0.80	31.0	760	3.10	47.05	65.88	
	1629H-1729H	03/24/09	416.6	412.8	0.80	30.0	760	3.80	47.21	80.49	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times 1,000 \text{ ug/mg}$$

$$Vr = Vi \frac{P}{760} \times \frac{273}{T+273} \times 60 \text{ min.}$$

$$Wt = Wfp - Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.
10. ND - Non Detectable

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 5

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2009

SO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI l./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1335H-1435H	03/23/09	1.00	25.00	760	0.0000	0.0600	ND	DOH 5000ug/Ncm
	1438H-1538H	03/23/09	1.00	25.00	760	0.0000	0.0800	ND	
Admin. Building	1621H-1721H	03/23/09	1.00	22.00	760	0.0000	0.0606	ND	
	1725H-1825H	03/23/09	1.00	21.00	760	0.0000	0.0608	ND	
WWT Control Room	1332H-1432H	03/23/09	1.00	26.00	760	0.0218	0.0598	0.36	
	1435H-1535H	03/23/09	1.00	24.00	760	0.0218	0.0602	0.36	
Coal Handling Control Room	0938H-1038H	03/23/09	1.00	25.50	760	0.0000	0.0599	ND	
	1042H-1142H	03/23/09	1.00	26.00	760	0.0000	0.0598	ND	
Chemical Laboratory	0929H-1029H	03/23/09	1.00	25.00	760	0.0571	0.0600	0.95	
	1031H-1131H	03/23/09	1.00	26.00	760	0.0571	0.0598	0.95	
Mechanical Shop	0939H-1039H	03/23/09	1.00	28.00	760	0.0924	0.0594	1.56	
	1044H-1144H	03/23/09	1.00	29.00	760	0.0924	0.0592	1.56	
Ash Handling Control Room	0930H-1030H	03/23/09	1.00	26.00	760	0.0218	0.0598	0.36	
	1030H-1130H	03/23/09	1.00	26.00	760	0.0218	0.0598	0.36	
Turbine Floor	1430H-1530H	03/23/09	1.00	30.00	760	0.0571	0.0590	0.97	
	1532H-1632H	03/23/09	1.00	31.00	760	0.0571	0.0588	0.97	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi li} \times \text{P mm Hg} \times \frac{298 \text{ K}}{\text{T}+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{760 \text{ mm Hg} \text{ lit}}$$

Notes:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 6

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009
NO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi lit/min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1335H-1435H	03/23/09	1.00	25.00	760	0.0000	0.0600	ND	DOH 6000ug/Ncm
	1438H-1538H	03/23/09	1.00	25.00	760	0.0000	0.0600	ND	
Admin. Building	1621H-1721H	03/23/09	1.00	22.00	760	0.0421	0.0606	0.69	
	1725H-1825H	03/23/09	1.00	21.00	760	0.0421	0.0608	0.69	
WWT Control Room	1332H-1432H	03/23/09	1.00	26.00	760	0.0287	0.0598	0.48	
	1435H-1535H	03/23/09	1.00	24.00	760	0.0287	0.0602	0.48	
Coal Handling Control Room	0938H-1038H	03/23/09	1.00	25.50	760	0.0421	0.0599	0.70	
	1042H-1142H	03/23/09	1.00	26.00	760	0.0421	0.0598	0.70	
Chemical Laboratory	0929H-1029H	03/23/09	1.00	25.00	760	0.0690	0.0600	1.15	
	1031H-1131H	03/23/09	1.00	26.00	760	0.0421	0.0598	0.70	
Mechanical Shop	0939H-1039H	03/23/09	1.00	28.00	760	0.0287	0.0594	0.48	DOLE 9000ug/Ncm
	1044H-1144H	03/23/09	1.00	29.00	760	0.0287	0.0592	0.48	
Ash Handling Control Room	0930H-1030H	03/23/09	1.00	26.00	760	0.0000	0.0598	ND	
	1030H-1130H	03/23/09	1.00	26.00	760	0.0000	0.0598	ND	
Turbine Floor	1430H-1530H	03/23/09	1.00	30.00	760	0.0421	0.0590	0.71	
	1532H-1632H	03/23/09	1.00	31.00	760	0.0421	0.0588	0.72	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{Vi \text{ lit} \times P \text{ mmHg} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{min} \times 760 \text{ mmHg} \times \text{lit}}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzman)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - non-detectable

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DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 7
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1335H-1435H	03/23/09	416.4	416.0	0.90	25.00	760	0.40	54.00	7.41	DOH 2000ug/Ncm
	1438H-1538H	03/23/09	414.2	413.7	0.80	25.00	760	0.50	48.00	10.42	
Admin. Building	1621H-1721H	03/23/09	541.9	541.6	0.50	22.00	760	0.30	30.31	9.90	
	1725H-1825H	03/23/09	410.5	410.1	0.50	21.00	760	0.40	30.41	13.15	
WWT Control Room	1332H-1432H	03/23/09	414.0	413.4	0.42	26.00	760	0.60	25.41	23.61	
	1435H-1535H	03/23/09	406.9	406.0	0.76	24.00	760	0.90	46.05	19.55	DOLE 1000ug/Ncm
Coal Handling Control Room	0938H-1038H	03/23/09	565.3	563.0	0.62	25.50	780	2.30	37.33	61.61	
	1042H-1142H	03/23/09	549.8	548.6	0.68	26.00	760	1.20	40.66	29.52	
Chemical Laboratory	0929H-1029H	03/23/09	548.9	546.8	0.60	25.00	760	2.10	36.00	58.33	
	1031H-1131H	03/23/09	568.0	567.0	0.70	26.00	760	1.00	41.86	23.89	
Mechanical Shop	0939H-1039H	03/23/09	559.2	549.1	1.00	28.00	760	10.10	59.40	170.03	
	1044H-1144H	03/23/09	568.9	560.6	0.60	29.00	760	8.30	35.52	233.65	
Ash Handling Control Room	0930H-1030H	03/23/09	565.6	562.3	1.00	26.00	760	3.30	59.80	65.18	
	1030H-1130H	03/23/09	568.4	566.3	1.00	26.00	760	3.10	59.80	51.84	
Turbine Floor	1430H-1530H	03/23/09	419.2	410.3	1.00	30.00	760	8.90	59.01	150.82	
	1532H-1632H	03/23/09	417.6	411.5	1.00	31.00	760	6.10	58.82	103.71	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt} \times 1000 \text{ ug/mg}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi cu.m.} \times \frac{\text{P mm Hg}}{760 \text{ mm Hg}} \times \frac{298 \text{ K}}{\text{T}+273} \times 60 \text{ min.}}$$

$$\text{Wt} = \text{Wfp} - \text{Wf}$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.

DENR Representative(s) per report

MGU Representative(s) per report

BGU Representative(s) per report

AES Representative(s) per report

TABLE NO. 8
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

AMBIENT NOISE MONITORING

MORNING TIME

March 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0752H	53.9	57.3	50.2	53.2	noisy kids
2	Purok Percaloha (Junction)	0749H	61.1	61.1	50.9	53.1	radio
3	Edillor's Residence (150m. From Gate)	0803H	70.8	72.3	53.9	60.9	sound system
4	EPDC Building	0805H	49.1	52.1	48.3	49.6	radio
5	C-Square (Benguet Loading Area)	0807H	55.4	62.9	51.3	54.6	vehicle
6	Resettlement Site	0809H	49.4	54.7	48.7	50.3	motorcycle
7	Highway, waiting shed of Resettlement	0827H	70.4	71.9	62.9	69.0	vehicle
8	Puerto Asinan	0829H	67.8	67.8	53.2	56.5	radio
9	Sitio Atob, Purok Tanguile	0830H	73.8	79.8	71.6	75.0	motorcycle
10	Masinloc Town Plaza	0835H	70.4	70.4	67.1	68.9	vehicle
11	Bani National High School, (Annex), Taltal	0813H	64.1	64.1	58.8	60.5	tricycle
12	Brgy. Luis (Junction to Binabalian)	0819H	64.1	73.4	61.1	68.7	vehicle
13	Luis Elementary School	0821H	64.1	66.3	61.4	62.8	tricycle
14	Purok Bangal-Duhok (Junction)	0759H	56.9	64.1	52.1	58.1	tricycle
15	Bani Elementary School, Bani	0758H	54.3	67.1	50.2	58.4	birds
16	Bani National High School, Bani	0756H	52.4	54.7	49.4	52.4	people talking
17	Brgy. Bani Multi-purpose Complex	0754H	54.2	61.8	51.7	56.3	motorcycle
18	Plant Site (Coal Yard)	0747H	57.9	58.4	56.4	57.5	

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Limitation Noise	90 @ 10m. distance from source
Ambient Noise Category	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

Prepared by
Enr. 2. [Signature] *PMB: Erwin*
Nurris
[Signature] *[Signature]*

TABLE NO. 9
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

AMBIENT NOISE MONITORING
DAYTIME
March 23, 2009

NO	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1624H	76.4	79.8	66.3	71.1	tricycle
2	Purok Peraloha (Junction)	1621H	53.9	58.4	52.1	53.4	birds
3	Edillor's Residence (150m. From Gate)	1733H	53.9	68.9	51.7	58.2	people talking
4	EPDC Building	1732H	53.9	58.4	50.6	52.9	noisy kids
5	C-Square (Benguet Loading Area)	1730H	53.9	87.3	47.9	79.3	birds
6	Resettlement Site	1727H	52.8	61.8	51.3	56.3	motorcycle
7	Highway, waiting shed of Resettlement	1652H	80.2	85.1	77.9	82.4	tricycle
8	Puerto Asinan	1656H	64.8	76.1	61.8	70.8	motorcycle
9	Sitio Atob, Purok Tanguile	1657H	75.7	76.4	70.4	74.8	car
10	Masinloc Town Plaza	1703H	73.8	74.6	71.2	72.8	sound system
11	Bani National High School, (Annex), Tatal	1637H	61.1	79.1	59.9	68.1	motorcycle
12	Brgy. Luis (Junction to Binabalian)	1643H	60.7	71.6	56.6	61.2	tricycle
13	Luis Elementary School	1645H	56.6	58.8	53.6	55.4	people talking
14	Purok Bangal-Duhok (Junction)	1631H	58.1	59.9	54.7	56.5	people talking
15	Bani Elementary School, Bani	1629H	51.7	52.1	48.3	50.1	people talking
16	Bani National High School, Bani	1628H	50.9	55.4	50.6	51.7	radio
17	Brgy. Bani Multi-purpose Complex	1626H	82.1	82.8	73.4	78.3	sound system
18	Plant Site (Coal Yard)	1618H	73.4	73.4	71.9	72.5	reclaimer on operation

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Daytime Noise Level
Category	(0900H to 1800H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	50
Class A - Residential	55
Class B - Commercial	65
Class C - Light Industrial Area	70
Class D - Heavy Industrial Area	75

DPNR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

supported on 3/23/09
Ervin
Ervin
Ervin

TABLE NO. 10
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
First Quarter, 2009

AMBIENT NOISE MONITORING
NIGHT TIME
March 25, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2223H	60.7	65.6	60.3	62.5	tricycle
2	Purok Percaloha (Junction)	2219H	58.1	58.1	55.1	56.7	insects
3	Edillor's Residence (150m. From Gate)	2322H	51.7	88.1	49.9	78.2	insects
4	EPDC Building	2321H	58.1	60.7	57.3	58.5	tricycle
5	C-Square (Benguet Loading Area)	2320H	48.3	50.2	47.6	48.5	insects
6	Resettlement Site	2310H	49.8	55.1	48.7	50.2	insects
7	Highway, waiting shed of Resettlement	2245H	53.6	53.9	53.2	53.3	insects
8	Puerto Asinan	2247H	73.8	77.6	54.3	71.6	dog barking
9	Sitio Atob, Purok Tanguile	2249H	60.3	75.7	59.6	66.3	tricycle
10	Masinloc Town Plaza	2255H	68.9	73.8	65.6	69.1	tricycle
11	Bani National High School, (Annex), Taltal	2233H	67.4	82.1	64.8	76.0	vehicle
12	Brgy. Luis (Junction to Binabalian)	2241H	54.3	82.8	49.1	72.9	insects
13	Luis Elementary School	2237H	51.9	66.3	51.3	59.8	insects
14	Purok Bangal-Duhok (Junction)	2228H	53.6	80.2	50.6	69.4	videoke
15	Bani Elementary School, Bani	2227H	52.3	56.6	51.7	53.3	tricycle
16	Bani National High School, Bani	2226H	70.4	74.9	68.9	71.7	tricycle
17	Brgy. Bani Multi-purpose Complex	2225H	73.1	87.7	69.7	83.9	tricycle
18	Plant Site (Coal Yard)	2217H	72.3	72.3	70.8	71.4	stacker/reclaimer

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise Category	Night Time Noise Level (2200H to 0500H)
Class AA-area which requires quietness (within 100m. from school sites, nursery schools, hospitals and special home for the aged)	40
Class A - Residential	45
Class B - Commercial	55
Class C - Light Industrial Area	60
Class D - Heavy Industrial Area	65

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

Handwritten signatures and names:
 DENR Representative(s): *Jefferson*
 MGU Representative(s): *Am 2. [Signature]*
 BGU Representative(s): *Murillo*
 AES Representative(s): *[Signature]*

TABLE NO. 11
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

AMBIENT NOISE MONITORING
EVENING TIME
March 23, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2028H	63.3	63.7	59.2	61.4	sound system
2	Purok Percaloha (Junction)	2025H	53.2	56.9	52.4	53.6	insects
3	Editor's Residence (150m. From Gate)	2137H	51.3	53.8	50.2	51.4	sound system
4	EPDC Building	2136H	57.3	62.6	47.9	52.7	insects
5	C-Square (Benguet Loading Area)	2134H	57.3	65.6	56.9	61.9	van passing by
6	Resettlement Site	2131H	50.6	57.7	48.3	50.7	insects
7	Highway, waiting shed of Resettlement	2055H	67.1	72.3	64.1	67.5	dog barking
8	Puerto Asinan	2059H	60.3	78.3	53.6	70.4	vehicle
9	Sitio Atob, Purok Tanguile	2101H	68.2	68.2	50.2	56.2	tricycle
10	Masinloc Town Plaza	2107H	61.4	71.9	57.7	61.0	tricycle
11	Bani National High School, (Annex), Taltal	2042H	69.7	70.8	67.1	68.9	tricycle
12	Brgy. Luis (Junction to Binabalian)	2048H	55.4	55.4	49.1	51.5	insects
13	Luis Elementary School	2050H	71.9	71.9	52.8	62.5	tricycle
14	Purok Bangal-Duhok (Junction)	2037H	73.8	79.1	59.9	73.2	tricycle
15	Bani Elementary School, Bani	2036H	55.1	60.7	54.3	57.5	motorcycle
16	Bani National High School, Bani	2034H	70.1	80.2	65.9	71.5	tricycle
17	Brgy. Bani Multi-purpose Complex	2032H	80.2	80.2	67.1	71.7	motorcycle
18	Plant Site (Coal Yard)	2023H	50.6	65.2	80.2	55.3	

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Evening Time Noise Level
Category	(1800H to 2200H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

Jefferson
Amel
Narciso
Jesus

TABLE 12
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter 2009

OCCUPATIONAL NOISE MONITORING
March 25, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1536H	67.8	73.1	59.2	68.1	
2	Turbine Floor	1533H	88.4	89.6	88.1	88.7	
3	Laboratory Building	1527H	52.4	62.2	55.8	58.1	
4	Administration Building (Lobby)	1456H	57.3	59.2	56.6	58.0	
5	Coal Handling	1502H	58.1	68.6	57.7	60.7	
6	Ash Handling	1449H	78.6	76.8	73.1	74.7	
7	Machine Shop	1510H	71.2	73.8	68.9	70.9	
8	Water Treatment Control Room	1459H	64.1	64.4	63.3	63.9	
9	Boiler Feed Pump Unit #1	1542H	94.1	96.7	91.8	94.1	
10	Boiler Feed Pump Unit #2	1540H	90.7	90.3	75.7	80.1	
11	Circulating Water Pump Intake #1	1445H	89.9	90.3	88.1	89.1	
12	Circulating Water Pump Intake #2	1443H	89.2	98.2	80.9	86.1	
13	Smoke Stack (CEM Control Room)	1451H	58.8	71.2	58.1	62.8	
14	Generator Transformer Unit #1	1438H	77.2	86.6	76.4	70.2	
15	Generator Transformer Unit #2	1441H	75.7	78.3	74.6	75.5	
16	Guard House (Main Gate)	1430H	51.7	55.1	50.6	51.9	
17	230kV GIS (Switchyard)	1437H	59.8	67.8	64.4	65.9	
18	Coal Yard	1433H	62.6	64.8	61.4	62.6	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH Threshold Limit Values	DOLE Permissible Noise Exposure
16	80	-
8	85	90
6	-	92
4	90	95
3	-	97
2	95	100
1 1/2	-	102
1	100	105
1/2	105	110
1/4	110	115
1/8	115	-

*No exposure to continuous or intermittent in excess of 115 dba

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Handwritten signatures and initials]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

TABLE NO. 13
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	3/24/09	3/24/09	3/24/09	3/24/09	3/24/09	3/24/09	-
Time of Sampling	1420H	0928H	1130H	1249H	1045H	1620H	-
pH	6.72	6.84	7.88	7.88	7.72	7.80	6.5 - 8.5
Conductivity, mSiemens / meter	0.552	1.910	0.252	0.242	0.519	4	-
Turbidity, NTU	0	5	2	0	5	0	5
Dissolved Oxygen, ppm	3.02	3.45	4.79	4.68	3.84	4.37	-
Temperature, °C	27.1	26.9	28.1	28.3	26.8	30.2	-
Salinity, ‰	0.02	0.09	0.00	0.00	0.02	0.20	-

NOTES:

1. MWD - Masinloc Water District
2. RES - Resettlement Area
3. LAB - Faucet near Environmental Laboratory
4. GH - Guesthouse
5. CWD - Candelaria Water District
6. PWD - Palauig Water District
7. DOH AO No. - Department of Health Administrative Order Number
8. PNSDW - Philippine National Standard for Drinking Water
9. NTU - Nephelometric Turbidity Unit
10. °C - degrees Celsius
11. ‰ - percent
12. Equipment used: Horiba Checker Model: U-10
13. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)

[Signature]

MGU Representative (s)

[Signature] *[Signature]*

BGU Representative (s)

[Signature]

AES Representative (s)

[Signature]

TABLE NO. 15
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

RIVER WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	LR-1: Luis River upstream of fresh- water intake	LR-2: Luis River near mouth nursery	MR-1: Masinloc River Collat Bridge	DENR AO No. 1990 Class B Fresh Surface Water
Date of Sampling	3/24/2009	3/24/2009	3/24/2009	-
Time of Sampling	1115H	1135H	1157H	-
pH	6.95	6.59	7.40	6.5 - 8.5
Conductivity, mSiemens / cm.	0.222	23.00	56.2	-
Turbidity, NTU	26	7.0	22.0	-
Dissolved Oxygen, ppm	5.93	5.37	5.74	5 minimum
Temperature, °C	28.5	30.5	31.6	-
Salinity, %	0	1.40	3.74	-

NOTES:

1. DENR AO No. 34 S. 1990: Revised Water Usage and Classification
2. Masinloc River is assumed Class B for purposes of comparison with the DENR criteria.
3. DENR MC 07 S. 1993 classified Luis River as Class B Fresh Surface Water
4. ppm - parts per million
5. NTU - Nephelometric Turbidity Unit
6. °C - degrees Celsius
7. % - percent
8. mSiemens/cm - milliSiemens/centimeter
9. Equipment used: Horiba Checker Model: U-10
10. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative (s)

[Handwritten signatures and initials over lines]

TABLE NO. 17
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
March 26, 2009

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O ₂ ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1245H	7.40	1.110	20	2.28	27.8	0.05
MO-1: Bani Point (After Ash Disposal Area)	1055H	6.50	0.080	120	1.42	27.6	0.02
MO-2: Bani (NPC Nursery)	1130H	7.58	0.726	4	2.89	27.5	0.09
MO-3: Between Corafer And Duhok	1203H	7.10	1.210	205	3.47	27.4	0.05
MO-4: Duhok	1217H	6.93	0.559	73	3.44	27.7	0.02
MO-5: Bani (PNP Patrol Base)	1057H	6.87	1.390	3	3.46	28.0	0.05
MO-6: Bani	1105H	6.36	6.050	177	1.75	28.7	0.26
MOW-1: Bani (near Sedimentation Basin)	1144H	7.57	2.810	4	3.90	27.8	0.08
MOW-2: Bani (along embankment)	1150H	6.99	2.870	84	6.64	27.5	0.09
MOW-3: Bani (near warehouse)	NO WATER						

NOTES:

- | | | |
|--|-------------------------|---|
| 1. No DENR limits for groundwater | 5. °C - degrees Celsius | 7. Equipment used: Horiba Water Checker Model U-10 |
| 2. mSiemens/cm - milliSiemens per centimeter | 8. % - percent | 8. Monitoring conducted by the MPPCL Multipartite Water Quality Monitoring Team |
| 3. NTU - Nephelometric Turbidity Unit | | |
| 4. O ₂ - Oxygen | | |

DENR Representative(s)

BGU Representative(s)

MGU Representative(s)

AES Representative(s)

[Handwritten signatures and initials over lines]

TABLE NO.19
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009
MARINE WATER MONITORING (IN-SITU ANALYSIS)
March 27, 2009

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1037H	7.85	58.3	1	6.14	29.1	3.88	
M2	1050H	7.79	58.3	1	5.00	31.7	3.89	
M3	1102H	7.78	58.3	1	5.09	29.4	3.88	
M4	0801H	7.84	57.8	5	5.50	28.8	3.89	
M5	0752H	7.82	57.1	2	5.68	28.5	3.80	
M6	0808H	7.73	57.6	3	5.80	22	3.85	
M7	0822H	7.75	57.9	3	5.22	28.8	3.88	
M8	0831H	7.78	57.0	4	5.91	29.3	3.79	
M9	0900H	7.83	58.5	1	5.19	30.0	3.90	
M10	0921H	7.74	58.5	4	5.42	30.2	3.70	
M11	0940H	7.82	58.2	2	5.53	29.2	3.88	
M12	1007H	7.83	58.0	3	5.85	29.3	3.88	
DENR AO#34, s.1890(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Lauls River & Banl Point

M-2: Outfall (Discharge Canal)

M-3: Cooling Water Intake

M-4: Resettlement

M-5: C-Square (Benguet Loading Area)

M-6: Puerto Asinan

M-7: Benguet Wharf

M-8: Masinloc River (Mouth)

M-9: Petron Depot (harbor)

M-10: BFAR

M-11: San Salvador

M-12: Along Veritas

2. mS/cm - milliSiemens per centimeter

3. NTU - Nephelometric Turbidity Unit

4. °C - degrees celsius

DENR Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

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TABLE NO. 21
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2009

EFFLUENT MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	Wastewater Treatment Facility	*Coal Sedimentation Basin	*Ash Sedimentation Basin	Cooling Water Discharge Canal	*Storm Drain Canal	DENR AO No. 35 Series 1990
Date of Sampling	3/24/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	-
Time of Sampling	1400H	1045H	1125H	1114H	1136H	-
pH	6.82	7.28	7.88	7.61	7.88	6.0 - 9.0
Conductivity, mSiemens/cm.	1.540	1.870	1.100	58.100	1.580	-
Turbidity, NTU	10	39	37	0	11	-
Dissolved Oxygen, ppm	5.42	7.62	2.96	5.89	4.28	-
Temperature, °C	30.1	30.0	32.5	34.9	28.5	-
Salinity, %	0.07	0.06	0.04	3.86	0.04	-

NOTES:

1. DENR AO No. 35 S. 1990 - Revised Effluent Regulations of 1990
2. ppm - parts per million
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees Celsius
5. % - percent
6. mSiemens/cm. - milliSiemens/centimeter
7. Equipment used : Horiba Water Checker, Model U-10
8. * - Not discharging during sampling
9. Monitoring Conducted by the MCFTPP Monitoring Team

DENR Representative(s)


BGU Representative(s)

MGU Representative(s)

AES Representative (s)

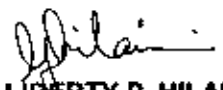
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

Department of Environment and Natural Resources


MS. MARY O. HULLANA
Forester I/Protected Area Supt.
Oyon Bay, Masinloc, Zambales



MS. VICTORIA C. APOSTOL
Forest Ranger/Community Information Officer

Provincial Government Unit

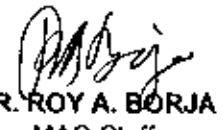

MS. LIBERTY P. HILARIO
Environmental Management Specialist 2
Environmental Natural Resources of Zambales


MS. Nerissa G. Vigilia
Community Development Assistant II
Environmental Natural Resources of Zambales

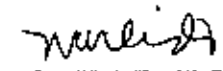
Municipal Government Unit


MS. ELIZABETH ERVIN
Peace Corp USA / LGU-Masinloc
Masinloc, Zambales


MR. RAMON I. EGUITA
Draftsman I
Masinloc, Zambales


MR. ROY A. BORJA
MAO Staff
Palauig, Zambales

Barangay Government Unit


KAG. NIDA E. EBIDO
Kagawad ng Barangay

AES
Masinloc Power Partners Company Limited
Environmental Section


MS. ANTONIA V. LOPEZ
Principal Engineer A


MR. HARRIS A. SUNE
Environmental Mgmt. Specialist


MR. JORGE A. AQUINO
Principal Chemist C

TABLE NO. 1

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2009

SO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi lt./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1408H-1508H	06/23/09	1.00	31.0	760	0.0000	0.0588	ND	DENR A. O. 14 s. 1993 340 ug/Ncm
	1508H-1609H	06/23/09	1.00	31.0	760	0.0000	0.0588	ND	
Inhobol	1531H-1631H	06/22/09	1.00	32.0	760	0.0000	0.0586	ND	
	1150H-1250H	06/22/09	1.00	32.0	760	0.0000	0.0586	ND	
Candelaria	1450H-1550H	06/22/09	1.00	31.0	760	0.0542	0.0588	0.0588	
	1552H-1652H	06/22/09	1.00	34.0	760	0.0000	0.0582	ND	
Palauig	1110H-1210H	06/23/09	1.00	32.0	760	0.0000	0.0586	ND	
	1212H-1312H	06/23/09	1.00	32.0	760	0.0000	0.0586	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{Vi \text{ li.} \times P \text{ mm Hg} \times 298 \text{ K} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{min} \times 760 \text{ mm Hg} \times T+273 \text{ lit.}}$$

NOTE:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - Non Detectable

DENR Representative(s) SuperalPGU Representative(s) JulioMGU Representative(s) EdwinBGU Representative(s) NardoAES Representative(s) Preppy

TABLE NO. 2
AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

NO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1408H-1508H	06/23/09	1.00	31.0	760	0.0000	0.0588	ND	DENR A. O. 14 s. 1993 260 ug/Ncm
	1509H-1609H	06/23/09	1.00	31.0	760	0.0000	0.0588	ND	
Inhobol	1531H-1631H	06/22/09	1.00	32.0	760	0.0000	0.0586	ND	
	1150H-1250H	06/22/09	1.00	32.0	760	0.0000	0.0586	ND	
Candelaria	1450H-1550H	06/22/09	1.00	31.0	760	0.0000	0.0588	ND	
	1552H-1652H	06/22/09	1.00	34.0	760	0.0000	0.0582	ND	
Palauig	1110H-1210H	06/23/09	1.00	32.0	760	0.0000	0.0586	ND	
	1212H-1312H	06/23/09	1.00	32.0	760	0.0000	0.0586	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{Vi \text{ li.}}{\text{min}} \times \frac{P \text{ mm Hg}}{760 \text{ mm Hg}} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ mins} \times \frac{0.001 \text{ cu.m.}}{\text{lit}}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Grless Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) *[Signature]*

PGU Representative(s) *[Signature]*

MGU Representative(s) *[Signature]*

BGU Representative(s) *[Signature]*

AES Representative(s) *[Signature]*

TABLE NO. 3

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee**

Second Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1408H-1508H	06/23/09	548.3	547.1	0.60	31.0	760	1.20	35.29	34.00	DENR A. O. 14 s. 1993 300ug/Ncm
	1509H-1609H	06/23/09	547.3	546.1	0.60	31.0	760	1.20	35.29	34.00	
Inhobol	1531H-1631H	06/22/09	548.0	546.8	0.71	32.0	760	1.20	41.52	28.90	
	1150H-1250H	06/22/09	547.6	546.1	0.71	32.0	760	1.50	41.52	36.13	
Candelaria	1450H-1550H	06/22/09	547.8	546.9	0.72	31.0	760	0.90	42.35	21.25	
	1552H-1652H	06/22/09	551.2	550.3	0.72	34.0	760	0.90	41.93	21.46	
Palauig	1110H-1210H	06/23/09	547.8	546.1	0.65	32.0	760	1.70	38.10	44.61	
	1212H-1312H	06/23/09	559.3	558.3	0.65	32.0	760	1.00	38.10	26.24	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times 1,000 \text{ ug/mg}$$

$$Vr = Vi \frac{P \text{ mm Hg}}{760 \text{ mm Hg}} \times \frac{273 \text{ K}}{T+273} \times 60 \text{ min.}$$

$$Wt = Wfp - Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.
10. ND - Non Detectable

DENR Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 5
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

SO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1940H-2040H	06/22/09	1.00	24.00	760	0.0000	0.0602	ND	DOH 5000ug/Ncm
	2041H-2141H	06/22/09	1.00	23.00	760	0.0000	0.0604	ND	
Admin. Building	1436H-1536H	06/22/09	1.00	20.00	760	0.0000	0.0610	ND	
	1540H-1640H	06/22/09	1.00	18.00	760	0.0000	0.0614	ND	
WWT Control Room	0915H-1015H	06/22/09	1.00	23.00	760	0.0000	0.0604	ND	
	1016H-1116H	06/22/09	1.00	20.00	760	0.0000	0.0610	ND	
Coal Handling Control Room	0923H-1023H	06/22/09	1.00	24.00	760	0.0000	0.0602	ND	
	1024H-1124H	06/22/09	1.00	23.00	760	0.0186	0.0604	0.31	
Chemical Laboratory	0924H-1024H	06/22/09	1.00	23.00	760	0.0186	0.0604	0.31	
	1028H-1128H	06/22/09	1.00	23.00	760	0.0186	0.0604	0.31	
Mechanical Shop	1400H-1500H	06/22/09	1.00	30.00	760	0.0541	0.0590	0.92	
	1500H-1600H	06/22/09	1.00	30.00	760	0.0541	0.0590	0.92	
Ash Handling Control Room	0935H-1035H	06/22/09	1.00	27.00	760	0.0000	0.0586	ND	
	1036H-1136H	06/22/09	1.00	25.00	760	0.0000	0.0600	ND	
Turbine Floor	1939H-2039H	06/22/09	1.00	30.00	760	0.0186	0.0590	0.32	
	2048H-2148H	06/22/09	1.00	32.00	760	0.0186	0.0586	0.32	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi lit.} \times \text{P mm Hg}}{\text{min} \times 760 \text{ mm Hg}} \times \frac{273 \text{ K}}{\text{T} + 273} \times 60 \text{ mins} \times \frac{0.001 \text{ cu.m.}}{\text{lit}}$$

Notes:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

AES Representative(s) _____

TABLE NO. 6

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2009

NO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lt./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1640H-2040H	06/22/09	1.00	24.00	780	0.0000	0.0602	ND	DOH 6000ug/Ncm
	2041H-2141H	06/22/09	1.00	23.00	780	0.0000	0.0604	ND	
Admin. Building	1436H-1536H	06/22/09	1.00	20.00	780	0.0000	0.0610	ND	
	1540H-1640H	06/22/09	1.00	18.00	780	0.0000	0.0614	ND	
WWT Control Room	0915H-1015H	06/22/09	1.00	23.00	780	0.0000	0.0604	ND	
	1016H-1116H	06/22/09	1.00	20.00	780	0.0000	0.0610	ND	
Coal Handling Control Room	0923H-1023H	06/22/09	1.00	24.00	780	0.0000	0.0602	ND	DOLE 9000ug/Ncm
	1024H-1124H	06/22/09	1.00	23.00	780	0.0000	0.0604	ND	
Chemical Laboratory	0924H-1024H	06/22/09	1.00	23.00	780	0.0363	0.0604	0.60	
	1028H-1128H	06/22/09	1.00	23.00	780	0.0000	0.0604	ND	
Mechanical Shop	1400H-1500H	06/22/09	1.00	30.00	780	0.0363	0.0590	0.62	
	1500H-1600H	06/22/09	1.00	30.00	780	0.0363	0.0590	0.62	
Ash Handling Control Room	0935H-1035H	06/22/09	1.00	27.00	780	0.0363	0.0596	0.61	
	1036H-1136H	06/22/09	1.00	25.00	780	0.0363	0.0600	0.61	
Turbine Floor	1939H-2039H	06/22/09	1.00	30.00	780	0.0000	0.0590	ND	
	2048H-2148H	06/22/09	1.00	32.00	780	0.0000	0.0586	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{VI \text{ lt.} \times P \text{ mm Hg} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{760 \text{ mm Hg} \text{ lt}}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzman)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. VI - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - non-detectable

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DENR Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

AES Representative(s)

TABLE NO. 7
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009
SUSPENDED PARTICULATE MATTER ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1940H-2040H	06/22/09	546.0	545.2	0.60	24.00	760	0.80	36.12	22.15	DOH 2000ug/Ncm
	2041H-2141H	06/22/09	569.7	568.8	0.60	23.00	760	0.90	36.24	24.83	
Admin. Building	1436H-1536H	06/22/09	543.0	542.1	0.60	20.00	760	0.90	36.61	24.58	
	1540H-1640H	06/22/09	546.1	543.2	0.65	18.00	760	2.90	39.94	72.61	
WWT Control Room	0915H-1015H	06/22/09	561.3	560.8	0.65	23.00	760	0.50	39.28	12.73	
	1016H-1116H	06/22/09	561.7	559.5	0.65	20.00	760	2.20	39.67	55.46	
Coal Handling Control Room	0923H-1023H	06/22/09	563.6	562.1	0.65	24.00	760	1.50	39.13	38.33	DOLE 1000ug/Ncm
	1024H-1124H	06/22/09	553.3	552.7	0.60	23.00	760	0.60	36.24	16.55	
Chemical Laboratory	0924H-1024H	06/22/09	563.0	562.5	0.71	23.00	760	0.50	42.78	11.69	
	1028H-1128H	06/22/09	572.1	571.9	0.71	23.00	760	0.20	42.78	4.68	
Mechanical Shop	1400H-1500H	06/22/09	566.4	563.9	0.60	30.00	760	2.50	35.41	70.61	
	1500H-1600H	06/22/09	549.0	546.2	0.70	30.00	760	2.80	41.31	67.79	
Ash Handling Control Room	0935H-1035H	06/22/09	559.5	558.9	0.80	27.00	760	0.60	47.68	12.58	
	1036H-1136H	06/22/09	546.3	545.9	0.80	25.00	760	0.40	48.00	8.33	
Turbine Floor	1939H-2039H	06/22/09	522.4	520.9	0.85	30.00	760	1.50	50.15	29.91	
	2048H-2148H	06/22/09	562.5	561.1	0.99	32.00	760	1.40	58.12	24.08	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt} \times 1000 \text{ ug/mg}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi cu.m.} \times \frac{\text{P mm Hg}}{760 \text{ mm Hg}} \times \frac{298 \text{ K}}{\text{T}+273} \times 60 \text{ min.}}{\text{min.}}$$

$$\text{Wt} = \text{Wfp} - \text{Wf}$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.

DENR Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

AES Representative(s) _____

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TABLE NO. 8
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

AMBIENT NOISE MONITORING
MORNING TIME
June 25, 2009

NO	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max	Min	LEQ	
1	Purok Little Baguio (Junction)	0929H	63.3	63.3	58.8	60.4	people talking
2	Purok Percaloha (Junction)	0727H	62.6	64.8	61.8	62.9	insects
3	Edillor's Residence (150m. From Gate)	0830H	64.1	64.1	62.6	63.0	strong wind
4	EPDC Building	0828H	57.7	64.8	56.6	59.0	strong wind
5	C-Square (Benguet Loading Area)	0827H	67.1	70.4	65.9	68.1	car passing
6	Resettlement Site	0823H	55.8	56.6	54.3	55.2	car passing
7	Highway, waiting shed of Resettlement	0759H	67.4	68.9	65.9	66.8	motorcycle passing
8	Puerto Asinan	0802H	57.1	66.7	55.8	61.2	birds
9	Sitio Atob, Purok Tanguile	0804H	68.2	72.7	61.8	66.7	vehicles passing
10	Masinloc Town Plaza	0811H	68.7	69.7	60.7	65.8	tricycle passing
11	Bani National High School, (Annex), Taltal	0741H	64.4	65.2	59.2	61.6	tricycle passing
12	Brgy. Luis (Junction to Binabalian)	0747H	56.9	70.8	55.8	60.9	motorcycle passing
13	Luis Elementary School	0751H	64.1	73.4	60.3	66.5	tricycle passing
14	Purok Bangal-Duhok (Junction)	0735H	66.3	65.2	58.4	60.1	tricycle passing
15	Bani Elementary School, Bani	0734H	58.1	60.3	57.3	58.2	people talking
16	Bani National High School, Bani	0732H	62.9	71.2	59.9	63.5	talking Mr. Paa w/ PAJERO
17	Brgy. Bani Multi-purpose Complex	0731H	64.4	66.7	62.6	64.7	tricycle passing
18	Plant Site (Coal Yard)	0832H	82.1	85.4	70.8	80.5	strong wind

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Morning Time Noise Level
Category	(0600H to 0900H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

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TABLE NO. 9
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

AMBIENT NOISE MONITORING
DAYTIME
June 26, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Bagnio (Junction)	0952H	74.6	84.7	68.9	75.5	pozzolanic
2	Purok Percaloha (Junction)	0947H	51.3	52.4	50.6	51.2	birds
3	Edillor's Residence (150m. From Gate)	1046H	53.9	54.3	50.6	51.9	
4	EPDC Building	1045H	53.9	53.9	50.2	51.3	
5	C-Square (Benguet Loading Area)	1044H	52.1	61.8	51.3	56.5	windy
6	Resettlement Site	1041H	69.3	69.3	53.9	59.5	tricycle
7	Highway, waiting shed of Resettlement	1019H	58.8	59.6	57.7	58.5	sounds
8	Puerto Asinan	1022H	73.8	83.2	71.2	77.6	tricycle
9	Sitio Atob, Purok Tanguile	1024H	65.2	67.4	62.6	64.9	tricycle
10	Masinloc Town Plaza	1030H	62.2	64.1	61.4	62.6	tricycle
11	Bani National High School, (Annex), Taltal	1002H	68.2	68.2	61.8	64.5	tricycle
12	Brgy. Luis (Junction to Binabalian)	1010H	50.9	56.2	50.9	52.3	insects
13	Luis Elementary School	1013H	56.9	66.7	51.7	59.9	carpentry works
14	Purok Bangal-Duhok (Junction)	0956H	55.4	56.2	52.4	54.3	
15	Bani Elementary School, Bani	0955H	73.5	73.8	59.9	65.8	tricycle
16	Bani National High School, Bani	0953H	70.4	73.8	60.3	66.1	motorcycle
17	Brgy. Bani Multi-purpose Complex	0952H	55.1	57.7	52.4	54.0	tricycle
18	Plant Site (Coal Yard)	0945H	67.4	67.4	58.8	62.3	bulldozer

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Daytime Noise Level
Category	(0900H to 1800H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	50
Class A - Residential	55
Class B - Commercial	65
Class C - Light Industrial Area	70
Class D - Heavy Industrial Area	75

DENR Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

supported on 6/26/09

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TABLE NO. 10
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Second Quarter, 2009

AMBIENT NOISE MONITORING
NIGHT TIME
June 23, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2218H	49.8	56.2	48.7	52.5	dog barking
2	Purok Percaloha (Junction)	2215H	56.9	56.9	55.8	56.4	insects
3	Edillor's Residence (150m. From Gate	2315H	60.7	60.3	57.3	58.8	people
4	EPDC Building	2316H	50.9	54.7	50.2	51.2	insects
5	C-Square (Benguet Loading Area)	2318H	48.7	50.9	47.6	48.5	insects
6	Resettlement Site	2321H	50.6	51.3	49.8	50.2	insects
7	Highway, waiting shed of Resettlement	2240H	51.3	62.2	49.8	54.1	insects
8	Puerto Asinan	2242H	51.7	53.9	50.9	51.9	tricycle
9	Sitio Atob, Purok Tanguile	2244H	65.2	66.3	63.3	64.3	tricycle
10	Masinloc Town Plaza	2249H	59.2	65.2	58.4	61.8	sounds
11	Bani National High School, (Annex), Taltal	2229H	54.7	87.7	53.2	69.5	radio
12	Brgy. Luis (Junction to Binabalian)	2223H	50.9	51.3	49.8	50.5	insects
13	Luis Elementary School	2234H	51.7	57.3	50.6	53.7	people
14	Purok Bangal-Dubok (Junction)	2223H	64.4	86.2	63.7	78.7	dog barking
15	Bani Elementary School, Bani	2222H	66.3	66.3	51.3	56.7	dog barking
16	Bani National High School, Bani	2221H	49.9	50.6	49.4	50.0	frogs
17	Brgy. Bani Multi-purpose Complex	2220H	49.4	51.7	48.7	49.7	insects
18	Plant Site (Coal Yard)	2212H	57.3	58.8	55.8	56.8	

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Night Time Noise Level
Category	(2200H to 0500H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	40
Class A - Residential	45
Class B - Commercial	55
Class C - Light Industrial Area	60
Class D - Heavy Industrial Area	65

DENR Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

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TABLE NO. 11
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

AMBIENT NOISE MONITORING

EVENING TIME

June 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1805H	52.1	60.7	49.8	55.3	people and radio
2	Purok Percaloha (Junction)	1803H	53.9	59.2	50.2	52.5	radio
3	Edillor's Residence (150m. From Gate)	1853H	65.2	65.6	63.7	64.5	insects
4	EPDC Building	1832H	65.9	62.8	65.2	65.9	insects
5	C-Square (Benguet Loading Area)	1851H	52.8	57.7	52.1	55.5	insects
6	Resettlement Site	1847H	64.8	67.8	66.7	66.8	insects
7	Highway, waiting shed of Resettlement	1828H	73.8	77.6	55.4	70.4	tricycle
8	Puerto Asinan	1830H	80.9	87.3	70.4	81.5	motorcycle
9	Sitio Atob, Purok Tanguile	1832H	57.3	57.3	53.9	55.5	car
10	Masinloc Town Plaza	1838H	74.2	79.8	74.6	77.5	motor
11	Bani National High School, (Annex), Taltal	1815H	50.4	52.3	49.3	50.4	jeep
12	Brgy. Luis (Junction to Binabalian)	1821H	53.2	52.8	49.1	50.2	birds
13	Luis Elementary School	1823H	61.1	64.8	59.9	62.1	tricycle
14	Purok Bangal-Duhok (Junction)	1812H	56.9	57.7	55.8	56.5	motor
15	Bani Elementary School, Bani	1811H	54.3	61.1	52.1	54.7	motorcycle
16	Bani National High School, Bani	1810H	61.4	70.8	56.6	64.0	kids
17	Brgy. Bani Multi-purpose Complex	1808H	53.2	60.9	50.9	56.8	basketball
18	Plant Site (Coal Yard)	1801H	67.4	75.3	65.9	69.6	reclaimer

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Evening Time Noise Level
Category	(1800H to 2200H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

supported original

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TABLE 12
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter 2009

OCCUPATIONAL NOISE MONITORING
June 26, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	0854H	71.6	71.6	64.8	68.0	people talking
2	Turbine Floor	0855H	92.6	92.9	91.8	92.2	operating
3	Laboratory Building	0909H	69.3	75.3	65.9	70.0	people talking
4	Administration Building (Lobby)	0918H	63.7	65.2	53.9	60.2	people talking
5	Coal Handling	0934H	62.2	65.6	55.4	59.3	
6	Ash Handling	0900H	68.4	59.6	57.7	68.1	
7	Machine Shop	0908H	68.2	70.3	67.1	68.3	
8	Water Treatment Control Room	0905H	68.6	69.3	67.8	68.6	
9	Boiler Feed Pump Unit #1	0858H	97.4	98.9	98.7	97.5	operating
10	Boiler Feed Pump Unit #2	0851H	95.3	98.6	94.8	96.5	operating
11	Circulating Water Pump Intake #1	0848H	92.2	94.4	88.8	91.8	operating
12	Circulating Water Pump Intake #2	0849H	95.9	97.1	90.7	93.2	operating
13	Smoke Stack (CEM Control Room)	0903H	62.2	72.3	60.3	63.2	
14	Generator Transformer Unit #1	0845H	77.6	77.9	76.4	77.1	operating
15	Generator Transformer Unit #2	0846H	79.1	80.6	76.8	78.4	operating
16	Guard House (Main Gate)	0948H	56.9	65.9	56.2	58.6	
17	230kV GIS (Switchyard)	0843H	70.8	73.4	70.1	71.1	operating
18	Coal Yard	0937H	51.3	52.1	50.9	51.5	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	ORNI Threshold Limit Values	DOLE Permissible Noise Exposure
16	80	-
8	85	90
6	-	92
4	90	95
3	-	97
2	95	100
1 1/2	-	102
1	100	105
1/2	105	110
1/4	110	115
1/8	115	-

*No exposure to continuous or intermittent in excess of 115 dba

DENR Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Handwritten signatures and initials over lines]

TABLE NO. 13

AES

MASINLOC POWER PARTNERS COMPANY LIMITED**Multipartite Monitoring Committee**

Second Quarter, 2009

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	6/23/09	6/23/09	6/23/09	6/23/09	6/23/09	6/23/09	-
Time of Sampling	1032H	1428H	2045H	2001H	1117H	1730H	-
pH	7.27	7.48	7.86	7.41	7.30	7.96	6.5 - 8.5
Conductivity, mSiemens / meter	0.205	1.520	0.220	0.215	0.669	3	-
Turbidity, NTU	0	1	7	2	0	0	5
Dissolved Oxygen, ppm	0.70	5.50	7.37	6.46	5.54	8.20	-
Temperature, °C	26.3	29.7	29.7	27.6	28.8	29.3	-
Salinity, %	0.00	0.06	0.00	0.00	0.02	0.12	-

NOTES:

1. MWD - Masinloc Water District
2. RES - Resettlement Area
3. LAB - Faucet near Environmental Laboratory
4. GH - Guesthouse
5. CWD - Candelaria Water District
6. PWD - Palauig Water District
7. DOH AO No. - Department of Health Administrative Order Number
8. PNSDW - Philippine National Standard for Drinking Water
9. NTU - Nephelometric Turbidity Unit
10. °C - degrees Celsius
11. % - percent
12. Equipment used: Horiba Checker Model: U-10
13. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

TABLE NO. 15
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

RIVER WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	LR-1: Luis River upstream of fresh- water intake	LR-2: Luis River near mouth nursery	MR-1: Masinloc River Collat Bridge	DENR AO No. 1990 Class B Fresh Surface Water
Date of Sampling	6/23/2009	6/23/2009	6/23/2009	-
Time of Sampling	1103H	1140H	1045H	-
pH	7.59	7.93	7.35	6.5 - 8.5
Conductivity, mSiemens / cm.	0.466	3.62	8.5	-
Turbidity, NTU	2	11	2	-
Dissolved Oxygen, ppm	6.74	6.44	8.16	5 minimum
Temperature, °C	27.28	31.16	26.7	-
Salinity, %	0.01	0.14	0.90	-

NOTES:

1. DENR AO No. 34 S. 1990: Revised Water Usage and Classification
2. Masinloc River is assumed Class B for purposes of comparison with the DENR criteria.
3. DENR MC 07 S. 1993 classified Luis River as Class B Fresh Surface Water
4. ppm - parts per million
5. NTU - Nephelometric Turbidity Unit
6. °C - degrees Celsius
7. % - percent
8. mSiemens/cm - milliSiemens/centimeter
9. Equipment used: Horiba Checker Model: U-10
10. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative(s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

Supposed original

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TABLE NO. 17
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
June 24, 2009

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O ₂ ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1214H	7.21	1.060	7	1.86	27.0	0.04
MO-1: Bani Point (After Ash Disposal Area)	1058H	7.12	0.214	85	1.62	27.2	0.02
MO-2: Bani (NPC Nursery)	1143H	8.15	0.844	9	5.72	27.5	0.09
MO-3: Between Corafer And Duhok	1118H	8.89	0.229	9	0.89	27.6	0.00
MO-4: Duhok	1410H	6.92	0.336	88	0.85	27.5	0.04
MO-5: Bani (PNP Patrol Base)	1135H	6.74	0.940	2	1.81	27.9	0.04
MO-6: Bani	1110H	6.85	6.200	19	3.74	28.4	0.25
MOW-1: Bani (near Sedimentation Basin)	1151H	7.97	2.010	16	4.26	27.5	0.08
MOW-2: Bani (along embankment)	1055H	6.65	2.100	15	1.82	27.1	0.10
MOW-3: Bani (near warehouse)	1035H	6.57	0.637	122	1.87	26.50	0.02

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O₂ - Oxygen
5. °C - degrees Celsius
6. % - percent
7. Equipment used: Horiba Water Checker Model U-10
8. Monitoring conducted by the MPPCL Multipartite Water Quality Monitoring Team

DENR Representative(s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

perpetual original
Alphila
Erwin
nack
perpetual

TABLE NO. 21
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2009

EFFLUENT MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	Wastewater Treatment Facility	Coal Sedimentation Basin	Ash Sedimentation Basin	Cooling Water Discharge Canal	Storm Drain Canal	DENR AO No. 35 Series 1990
Date of Sampling	6/23/2009	6/23/2009	6/25/2009	6/23/2009	6/23/2009	-
Time of Sampling	0952H	0920H	1125H	1455H	1406H	-
pH	6.82	7.69	7.06	7.64	7.7	6.0 - 9.0
Conductivity, mSiemens/cm.	1.200	1.990	1.629	55.300	1.760	-
Turbidity, NTU	7	41	7	12	20	-
Dissolved Oxygen, ppm	7.20	5.33	5.35	6.28	4.34	-
Temperature, °C	30.1	23.9	28.5	37.8	33.6	-
Salinity, %	0.05	0.09	0.04	3.65	0.08	-

NOTES:

1. DENR AO No. 35 S. 1990 - Revised Effluent Regulations of 1990
2. ppm - parts per million
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees Celsius
5. % - percent
6. mSiemens/cm. - milliSiemens/centimeter
7. Equipment used : Horiba Water Checker, Model U-10
8. Monitoring Conducted by the MCFTPP Monitoring Team

DENR Representative(s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2009\water\w20091w-2q2009\effluent



MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

Department of Environment and Natural Resources

MRS. MARY O. HULLANA
Forester 1
Community Environment and Natural Resources Office

Protected Area Management Board

KAGAWAD LEONARDA T. DOMA
Member

Municipal Government Unit

MR. ROY A. BORJA
MAO Staff
Palauig, Zambales

MISS ELIZABETH ERVIN
Peace Corp USA / LGU-Masinloc
Masinloc, Zambales

Barangay Government Unit

KAGAWAD NIDA E. EBIDO
Kagawad ng Barangay

AES

Masinloc Power Partners Company Limited
Environmental Section

MRS. ANTONIA V. LOPEZ
Principal Engineer A

MR. HARRIS A. SUNE
Environmental Mgmt. Specialist

MR. JORGE A. AQUINO
Principal Chemist C

TABLE NO. 1
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009
SO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1429H-1529H	09/23/09	1.00	29.0	760	0.0000	0.0592	ND	DENR A. O. 14 s. 1993 340 ug/Ncm
	1531H-1631H	09/23/09	1.00	30.0	760	0.0000	0.0590	ND	
Inhobol	1415H-1515H	09/22/09	1.00	32.0	760	0.0000	0.0588	ND	
	1520H-1620H	09/22/09	1.00	31.0	760	0.0000	0.0588	ND	
Candelaria	1600H-1600H	09/23/09	1.00	28.0	760	0.0000	0.0594	ND	
	1602H-1702H	09/23/09	1.00	28.0	760	0.0000	0.0594	ND	
Palauig	1446H-1548H	09/22/09	1.00	34.0	760	0.0000	0.0582	ND	
	1548H-1648H	09/22/09	1.00	34.0	760	0.0000	0.0582	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi lit.} \times \text{P mm Hg} \times \frac{298 \text{ K}}{\text{T} + 273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{min} \times 760 \text{ mm Hg} \times \text{lit.}}$$

NOTE:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - Non Detectable

DENR Representative(s) 

PAMB Representative(s) 

MGU Representative(s) 

BGU Representative(s) 

AES Representative(s) 

TABLE NO. 2
AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

NO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1429H-1529H	09/23/09	1.00	29.0	760	0.0000	0.0592	ND	DENR A. O. 14 s. 1993 260 ug/Ncm
	1531H-1631H	09/23/09	1.00	30.0	760	0.0000	0.0590	ND	
Inhobol	1415H-1515H	09/22/09	1.00	32.0	760	0.0000	0.0586	ND	
	1520H-1620H	09/22/09	1.00	31.0	760	0.0000	0.0588	ND	
Candelaria	1500H-1600H	09/23/09	1.00	28.0	760	0.0000	0.0594	ND	
	1602H-1702H	09/23/09	1.00	28.0	760	0.0000	0.0594	ND	
Palauig	1446H-1546H	09/22/09	1.00	34.0	760	0.0526	0.0582	0.90	
	1548H-1648H	09/22/09	1.00	34.0	760	0.0526	0.0582	0.90	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{VI lit.} \times \frac{\text{P mm Hg}}{760 \text{ mm Hg}} \times \frac{273 \text{ K}}{\text{T}+273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{lit}}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griss Saltzman)
2. ug/Ncm- microgram per normal cubic meter
3. Wt- weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. VI - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) 

PAMB Representative(s) 

MGU Representative(s) 

BGU Representative(s) 

AES Representative(s) 

TABLE NO. 3

AES**MASINLOC POWER PARTNERS COMPANY LIMITED****Multipartite Monitoring Committee****Third Quarter, 2009****SUSPENDED PARTICULATE MATTER ANALYSIS**

AMBIENT AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	VI m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1429H-1529H	09/23/09	410.5	409.6	0.71	29.0	760	0.80	41.93	21.46	DENR A. O. 14 s. 1993 300ug/Ncm
	1531H-1631H	09/23/09	413.6	412.8	0.71	30.0	760	0.80	41.79	19.14	
Inhobol	1415H-1515H	09/22/09	552.8	552.4	0.80	32.0	760	0.40	48.90	8.53	
	1520H-1620H	09/22/09	551.4	551.0	0.70	31.0	760	0.40	41.17	9.72	
Candelaria	1500H-1600H	09/23/09	413.0	412.5	0.65	28.0	760	0.50	38.61	12.95	
	1602H-1702H	09/23/09	415.3	415.0	0.50	28.0	760	0.30	29.70	10.10	
Palauig	1446H-1546H	09/22/09	550.3	549.9	0.50	34.0	760	0.40	29.12	13.74	
	1548H-1648H	09/22/09	550.8	550.4	0.80	34.0	760	0.40	34.94	11.45	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times 1,000 \text{ ug/mg}$$

$$Vr = VI \frac{P}{760} \times \frac{273}{T+273} \times 60 \text{ min.}$$

$$Wt = Wfp - Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.
10. ND - Non Detectable

DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

AES Representative(s) _____

TABLE NO. 5

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2009

SO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lit./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2027H-2127H	09/22/09	1.00	29.00	760	0.0000	0.0592	ND	DOH 5000ug/Ncm
	2130H-2230H	09/22/09	1.00	28.50	760	0.0000	0.0593	ND	
Admin. Building	1422H-1522H	09/22/09	1.00	19.50	760	0.0758	0.0811	1.24	
	1524H-1624H	09/22/09	1.00	19.00	760	0.0758	0.0812	1.24	
WWT Control Room	0930H-1030H	09/22/09	1.00	26.00	760	0.0000	0.0598	ND	
	1034H-1134H	09/22/09	1.00	27.00	760	0.0000	0.0598	ND	
Coal Handling Control Room	0920H-1020H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
	1023H-1123H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
Chemical Laboratory	1137H-1237H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
	1239H-1339H	09/22/09	1.00	24.00	760	0.0412	0.0602	0.68	
Mechanical Shop	1650H-1750H	09/22/09	1.00	29.50	760	0.1104	0.0591	1.87	
	1753H-1853H	09/22/09	1.00	30.00	760	0.1036	0.0590	1.76	
Ash Handling Control Room	0920H-1020H	09/22/09	1.00	27.00	760	0.0000	0.0598	ND	
	1025H-1125H	09/22/09	1.00	27.00	760	0.0000	0.0598	ND	
Turbine Floor	2030H-2130H	09/22/09	1.00	33.00	760	0.0000	0.0584	ND	
	2132H-2232H	09/22/09	1.00	34.00	760	0.0000	0.0582	ND	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

DENR Representative(s) Dwight

$$Vr = \frac{Vi \text{ (l.)} \times P \text{ (mm Hg)}}{\text{min} \times 760 \text{ mm Hg}} \times \frac{273 \text{ K}}{T+273} \times 60 \text{ mins} \times 0.001 \frac{\text{cu.m.}}{\text{lit}}$$

PAMB Representative(s) D

Notes:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C

MGU Representative(s) Patricia 29 MAR 2010BGU Representative(s) manilaAES Representative(s) SS

TABLE NO. 0
AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009
NO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI lit/min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2027H-2127H	09/22/09	1.00	29.00	760	0.0000	0.0592	ND	DOH 6000ug/Ncm
	2130H-2230H	09/22/09	1.00	28.50	760	0.0000	0.0593	ND	
Admin. Building	1422H-1522H	09/22/09	1.00	19.50	760	0.0929	0.0811	1.52	
	1524H-1624H	09/22/09	1.00	19.00	760	0.1064	0.0612	1.74	
WWT Control Room	0930H-1030H	09/22/09	1.00	26.00	760	0.0000	0.0598	ND	
	1034H-1134H	09/22/09	1.00	27.00	760	0.0000	0.0596	ND	
Coal Handling Control Room	0920H-1020H	09/22/09	1.00	24.00	760	0.1199	0.0602	1.99	
	1023H-1123H	09/22/09	1.00	24.00	760	0.1054	0.0602	1.77	
Chemical Laboratory	1137H-1237H	09/22/09	1.00	24.00	760	0.0660	0.0602	1.10	
	1239H-1339H	09/22/09	1.00	24.00	760	0.0528	0.0602	0.87	
Mechanical Shop	1650H-1750H	09/22/09	1.00	29.50	760	0.0660	0.0591	1.12	DOLE 9000ug/Ncm
	1753H-1853H	09/22/09	1.00	30.00	760	0.0650	0.0590	1.12	
Ash Handling Control Room	0920H-1020H	09/22/09	1.00	27.00	760	0.0660	0.0596	1.11	
	1025H-1125H	09/22/09	1.00	27.00	760	0.0660	0.0596	1.11	
Turbine Floor	2030H-2130H	09/22/09	1.00	33.00	760	0.0660	0.0584	1.13	
	2132H-2232H	09/22/09	1.00	34.00	760	0.0391	0.0562	0.67	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{VI lit}}{\text{min}} \times \frac{\text{P mm Hg}}{760 \text{ mm Hg}} \times \frac{273 \text{ K}}{\text{T}+273} \times \frac{60 \text{ mins}}{1 \text{ hr}} \times \frac{0.001 \text{ cu.m.}}{\text{lit}}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzman)
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of NO₂, ug
4. Vr - volume at normal condition, Ncm
5. VI - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - non-detectable

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DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

AES Representative(s) _____

TABLE NO. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2027H-2127H	09/22/09	409.5	408.9	0.78	29.00	760	0.60	46.12	13.01	DOH 2000ug/Ncm
	2130H-2230H	09/22/09	414.1	413.6	0.57	28.50	760	0.50	33.60	14.88	
Admin. Building	1422H-1522H	09/22/09	411.2	411.0	0.40	19.60	760	0.20	24.45	8.18	
	1524H-1624H	09/22/09	523.9	523.4	0.65	19.00	760	0.40	39.80	10.05	
WWT Control Room	0930H-1030H	09/22/09	554.6	554.2	0.80	26.00	760	0.40	35.88	11.15	
	1034H-1134H	09/22/09	413.2	412.8	0.80	27.00	760	0.40	35.76	11.19	
Coal Handling Control Room	0920H-1020H	09/22/09	522.7	522.4	0.60	24.00	760	0.30	36.12	8.31	DOLE 1000ug/Ncm
	1023H-1123H	09/22/09	417.1	416.6	0.45	24.00	760	0.50	27.09	18.46	
Chemical Laboratory	1137H-1237H	09/22/09	552.9	552.6	0.71	24.00	760	0.30	42.64	7.04	
	1239H-1339H	09/22/09	551.8	551.2	0.71	24.00	760	0.60	42.64	14.07	
Mechanical Shop	1650H-1750H	09/22/09	557.8	557.2	0.57	29.50	760	0.60	33.49	17.92	
	1753H-1853H	09/22/09	412.5	412.1	0.50	30.00	760	0.40	29.25	13.67	
Ash Handling Control Room	0920H-1020H	09/22/09	416.3	416.0	0.70	27.00	760	0.30	41.72	7.19	
	1025H-1125H	09/22/09	417.4	416.7	0.70	27.00	760	0.70	41.72	16.78	
Turbine Floor	2030H-2130H	09/22/09	411.2	411.1	0.63	33.00	760	0.10	36.81	2.72	
	2132H-2232H	09/22/09	410.3	409.9	0.60	34.00	760	0.40	29.12	13.74	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times \frac{1000 \text{ ug/mg}}{1 \text{ Ncm}}$$

$$Vr = \frac{Vi \text{ cu.m.} \times P \text{ mm.Hg} \times 298 \text{ K} \times 60 \text{ min.}}{\text{min.} \times 760 \text{ mm.Hg} \times T+273}$$

$$Wt = Wfp - Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.

DENR Representative(s) DuyPAMB Representative(s) AmMGU Representative(s) SPBGU Representative(s) nealAES Representative(s) SS

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TABLE NO. 8
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

AMBIENT NOISE MONITORING
MORNING TIME
September 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0810H	67.2	69.1	65.7	66.1	TRICYCLE
2	Purok Percaloha (Junction)	0756H	71.3	85.6	66.1	72.8	MOTORCYCLE
3	Editor's Residence (150m. From Gate)	0809H	67.2	72.1	66.8	69.7	TRICYCLE
4	EPDC Building	0808H	66.5	66.8	65.7	66.0	BIRDS
5	C-Square (Benguet Loading Area)	0807H	66.1	66.1	65.7	65.8	BIRDS
6	Resettlement Site	0805H	68.0	68.3	67.2	67.6	TRICYCLE
7	Highway, waiting shed of Resettlement	0833H	70.2	70.2	68.0	69.0	MOTORCYCLE
8	Puerto Asinan	0835H	66.1	66.1	68.7	65.9	SOUND SYSTEM
9	Silo Atob, Purok Tanguile	0837H	77.0	78.1	71.3	73.8	TRICYCLE
10	Masinloc Town Plaza	0844H	74.7	80.1	70.6	76.3	VEHICLE
11	Bani National High School, (Annex), Taktal	0821H	67.2	71.3	66.5	68.1	SOUND SYSTEM
12	Brgy. Luis (Junction to Binabalian)	0826H	69.7	71.7	67.6	69.4	TRICYCLE
13	Luis Elementary School	0824H	66.1	70.6	65.7	66.8	TRICYCLE
14	Purok Bangal-Duhok (Junction)	0817H	66.5	69.8	66.1	66.8	TRICYCLE
15	Bani Elementary School, Bani	0813H	67.2	67.2	66.1	66.6	SOUND SYSTEM
16	Bani National High School, Bani	0812H	66.1	66.8	65.7	66.0	RADIO
17	Brgy. Bani Multi-purpose Complex	0811H	66.1	66.1	65.7	65.8	RADIO
18	Plant Site (Coal Yard)	0754H	73.6	90.6	66.5	76.3	CAR

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Morning Time Noise Level
Category	(0600H to 0900H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Signature]

[Signature]

[Signature] Edwin

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2009

AMBIENT NOISE MONITORING

DAYTIME

September 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1340H	76.6	86.0	66.1	75.0	PUMP
2	Purok Percaloha (Junction)	1338H	66.8	72.8	61.7	67.1	INSECTS
3	Editor's Residence (150m. From Gate)	1439H	66.8	66.8	65.7	70.5	RINGING BELL
4	EPDC Building	1437H	75.5	75.8	68.0	65.9	CHICKEN
5	C-Square (Benguet Loading Area)	1435H	69.5	69.5	67.6	71.9	BIRDS
6	Resettlement Site	1430H	68.2	68.3	66.3	66.9	
7	Highway, waiting shed of Resettlement	1355H	68.3	70.2	65.3	66.1	DUCK
8	Puerto Asinan	1404H	66.8	68.0	65.7	66.1	TV
9	Sitio Atob, Purok Tanguile	1405H	72.5	79.6	71.3	74.8	VEHICLES
10	Masinloc Town Plaza	1415H	67.2	69.5	66.5	67.5	TRICYCLE
11	Bani National High School, (Annex), Tattal	1340H	66.5	66.5	65.7	66.0	NOISY STUDENTS
12	Brgy. Luis (Junction to Binabalian)	1352H	66.5	66.8	65.7	66.1	NOISY PUPILS
13	Luis Elementary School	1353H	66.5	66.5	65.7	66.0	NOISY PEOPLE
14	Purok Bangal-Duhok (Junction)	1344H	66.1	66.5	65.7	65.9	NOISY PEOPLE
15	Bani Elementary School, Bani	1343H	87.3	87.8	69.5	81.3	TV
16	Bani National High School, Bani	1342H	66.5	70.6	65.7	66.7	RADIO
17	Brgy. Bani Multi-purpose Complex	1341H	68.7	67.5	66.1	67.5	CARPENTRY WORKS
18	Plant Site (Coal Yard)	1327H	68.7	69.8	65.7	66.5	

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Daytime Noise Level
Category	(0900H to 1800H)
Class AA - area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	50
Class A - Residential	55
Class B - Commercial	65
Class C - Light Industrial Area	70
Class D - Heavy Industrial Area	75


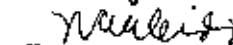
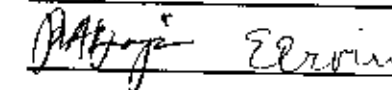
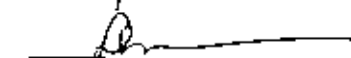
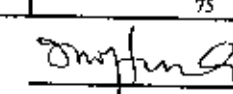
DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)



MASINLOC POWER PARTNERS COMPANY LIMITED

Third Quarter, 2009

AMBIENT NOISE MONITORING

NIGHT TIME

September 24, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2231H	68.3	67.6	65.7	66.1	TRICYCLE PASSING
2	Purok Percaloha (Junction)	2228H	70.2	69.8	67.6	67.9	MOTORCYCLE PASSING
3	Edillo's Residence (150m. From Gate)	2347H	66.5	72.5	65.7	67.8	INSECTS CHIRPING
4	EPDC Building	2345H	70.6	71.0	68.7	69.3	DOG BARKING
5	C-Square (Benguet Loading Area)	2344H	66.1	66.1	65.7	65.8	INSECTS CHIRPING
6	Resettlement Site	2340H	61.6	75.8	66.1	70.7	INSECTS CHIRPING
7	Highway, waiting shed of Resettlement	2307H	66.8	68.0	66.1	66.5	DOG BARKING
8	Puerto Asinan	2310H	68.0	67.2	66.1	66.4	DOG BARKING
9	Sitio Atoh, Purok Tanguile	2315H	66.6	67.2	66.5	66.7	DOG BARKING
10	Masinloc Town Plaza	2324H	67.2	67.6	66.5	66.7	TRICYCLE PASSING
11	Bani National High School, (Annex), Taltal	2247H	66.1	66.1	65.7	65.8	INSECTS CHIRPING
12	Brgy. Luis (Junction to Binabalian)	2255H	66.1	66.1	65.7	65.7	PEOPLE TALKING
13	Luis Elementary School	2253H	66.8	67.2	66.5	66.5	TRICYCLE PASSING
14	Purok Bangal-Duhok (Junction)	2236H	71.2	76.2	66.5	70.0	MOTORCYCLE PASSING
15	Bani Elementary School, Bani	2235H	66.1	71.0	65.7	66.7	PEOPLE TALKING
16	Bani National High School, Bani	2234H	66.5	66.8	65.7	66.2	INSECTS CHIRPING
17	Brgy. Bani Multi-purpose Complex	2233H	67.2	67.2	66.5	66.8	INSECTS CHIRPING
18	Plant Site (Coal Yard)	2226H	72.1	73.2	71.3	71.7	SEA WAVES SPLASH

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Night Time Noise Level
Category	(2200H to 0500H)
Class AA-area which requires quietness (within 100m. from school sites, nursery schools, hospitals and special home for the aged)	40
Class A - Residential	45
Class B - Commercial	55
Class C - Light Industrial Area	60
Class D - Heavy Industrial Area	65

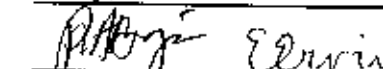
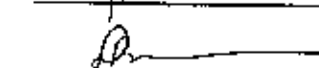
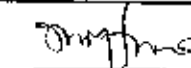
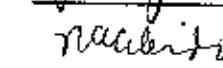
DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

 Elwin nacoito

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2009

AMBIENT NOISE MONITORING

EVENING TIME

September 22, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2044H	56.9	58.1	53.9	56.0	INSECTS
2	Purok Porcaloha (Junction)	2041H	61.4	61.8	55.8	58.1	RADIO
3	Edillo's Residence (150m. From Gate)	2154H	66.5	77.0	66.1	68.1	INSECTS
4	EPDC Building	2153H	69.1	69.1	66.1	66.8	INSECTS
5	C-Square (Benguet Loading Area)	2152H	66.8	66.8	66.5	66.5	INSECTS
6	Resettlement Site	2144H	66.1	75.8	65.7	66.6	INSECTS
7	Highway, waiting shed of Resettlement	2116H	65.9	66.2	66.1	66.3	PEOPLE TALKING
8	Puerto Asinan	2120H	66.1	68.0	65.7	66.4	TRICYCLE
9	Sitio Atob, Purok Tanguile	2121H	68.0	69.0	66.5	72.6	TRICYCLE
10	Masinloc Town Plaza	2128H	67.6	69.1	66.8	67.2	TRICYCLE
11	Bani National High School, (Annex), Taltai	2058H	76.5	78.5	65.7	71.4	DOG BARKING
12	Brgy. Luis (Junction to Binabalian)	2105H	68.0	68.0	66.1	66.5	DOG BARKING
13	Luis Elementary School	2108H	66.5	68.5	65.7	66.5	DOG BARKING
14	Purok Bangal-Duhok (Junction)	2050H	66.1	77.0	66.1	69.0	MOTORCYCLE
15	Bani Elementary School, Bani	2049H	50.6	53.2	49.1	50.3	PEOPLE TALKING
16	Bani National High School, Bani	2048H	52.4	54.3	50.6	52.0	INSECTS
17	Brgy. Bani Multi-purpose Complex	2047H	58.6	60.7	55.1	56.6	MOTORCYCLE
18	Plant Site (Coal Yard)	2039H	71.5	72.7	60.3	66.9	

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise Category	Evening Time Noise Level (1800H to 2200H)
Class AA-area which requires quietness (within 100m. from school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

Dagfin

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Miguel Edwin

Nasvito

S

TABLE 12
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter 2009

OCCUPATIONAL NOISE MONITORING
September 23, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	2028H	68.7	70.2	67.2	68.5	
2	Turbine Floor	2030H	92.0	92.3	90.8	91.3	
3	Laboratory Building	2111H	69.1	71.7	68.5	68.9	
4	Administration Building (Lobby)	2033H	66.8	67.6	66.5	66.7	
5	Coal Handling	2056H	66.8	69.1	66.1	66.8	
6	Ash Handling	2046H	75.8	76.2	70.7	75.5	
7	Machine Shop	2048H	71.7	70.6	69.5	69.8	
8	Water Treatment Control Room	2051H	69.5	72.5	68.3	69.5	
9	Boiler Feed Pump Unit #1	2020H	94.2	96.1	92.7	94.4	
10	Boiler Feed Pump Unit #2	2024H	96.8	97.6	95.3	96.6	
11	Circulating Water Pump Intake #1	2042H	93.5	96.1	91.2	92.8	
12	Circulating Water Pump Intake #2	2040H	90.8	94.6	89.7	91.5	
13	Smoke Stack (CEM Control Room)	2053H	71.0	72.8	69.8	70.7	
14	Generator Transformer Unit #1	2035H	78.1	81.5	77.0	78.4	
15	Generator Transformer Unit #2	2037H	77.0	77.3	75.8	76.6	
16	Guard House (Main Gate)	2100H	66.8	67.2	66.5	66.7	
17	230kV GIS (Switchyard)	2034H	73.2	74.0	72.8	73.3	
18	Coal Yard	2104H	67.6	70.6	66.5	77.9	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH Threshold Limit Values	DOLE Permissible Noise Exposure
16	80	-
8	85	90
6	-	92
4	90	95
3	-	97
2	95	100
1 1/2	-	102
1	100	105
1/2	105	110
1/4	110	115
1/8	115	-

*No exposure to continuous or intermittent in excess of 115 dba

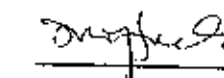
DENR Representative(s)

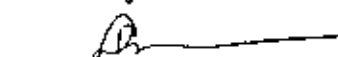
PAMB Representative(s)

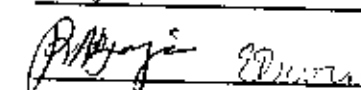
MGU Representative(s)

BGU Representative(s)

AES Representative(s)







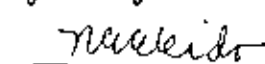




TABLE NO. 13

AES

MASINLOC POWER PARTNERS COMPANY LIMITED**Multipartite Monitoring Committee**

Third Quarter, 2009

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	09/24/09	09/23/09	09/23/09	09/23/09	09/23/09	09/22/09	-
Time of Sampling	0847H	1714H	0820H	0857H	1505H	1530H	-
pH	7.90	7.08	7.58	7.35	7.84	7.38	6.5 - 8.5
Conductivity, mSiemens / meter	0.157	1.010	0.279	0.321	0.568	1	-
Turbidity, NTU	1	0	1	1	4	0	5
Dissolved Oxygen, ppm	5.81	1.55	5.57	8.56	1.27	5.26	-
Temperature, °C	25.4	28.8	26.6	28.6	30.1	24.2	-
Salinity, ‰	0.00	0.04	0.01	0.01	0.02	0.06	-

NOTES:

1. MWD - Masinloc Water District
2. RES - Resettlement Area
3. LAB - Faucet near Environmental Laboratory
4. GH - Guesthouse
5. CWD - Candelaria Water District
6. PWD - Palauig Water District
7. DOH AO No. - Department of Health Administrative Order Number
8. PNSDW - Philippine National Standard for Drinking Water
9. NTU - Nephelometric Turbidity Unit
10. °C - degrees Celsius
11. ‰ - percent
12. Equipment used: Horiba Checker Model: U-10
13. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

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TABLE NO. 15
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
 Third Quarter, 2009

RIVER WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	LR-1: Lauis River upstream of fresh- water intake	LR-2: Lauis River near mouth nursery	MR-1: Masinloc River Collat Bridge	DENR AO No. 1990 Class B Fresh Surface Water
Date of Sampling	9/23/2009	9/23/2009	9/23/2009	-
Time of Sampling	1015H	1053H	1000H	-
pH	7.86	7.90	7.77	6.5 - 8.5
Conductivity, mSiemens / cm.	0.42	3.66	7.05	-
Turbidity, NTU	2	9	4	-
Dissolved Oxygen, ppm	7.60	6.00	8.84	5 minimum
Temperature, °C	27.0	28.9	26.4	-
Salinity, %	0.00	0.25	0.80	-

NOTES:

1. DENR AO No. 34 S. 1990: Revised Water Usage and Classification
2. Masinloc River is assumed Class B for purposes of comparison with the DENR criteria.
3. DENR MC 07 S. 1993 classified Lauis River as Class B Fresh Surface Water
4. ppm - parts per million
5. NTU - Nephelometric Turbidity Unit
6. °C - degrees Celsius
7. % - percent
8. mSiemens/cm - milliSiemens/centimeter
9. Equipment used: Horiba Checker Model: U-10
10. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative(s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

[Signature]

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[Signature]

TABLE NO. 17
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
September 24, 2009

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O ₂ ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1138H	6.79	1.030	8	2.67	25.2	0.04
MO-1: Bani Point (After Ash Disposal Area)	1048H	6.52	0.502	9	3.80	25.5	0.02
MO-2: Bani (NPC Nursery)	1123H	7.25	0.718	3	3.23	25.3	0.03
MO-3: Between Corafer And Puhok	1045H	7.02	0.079	3	5.11	25.1	0.00
MO-5: Bani (PNP Patrol Base)	1150H	6.45	0.661	47	2.70	25.8	0.02
MO-6: Bani	1101H	6.32	0.904	9	3.64	25.8	0.04
MOW-1: Bani (near Sedimentation Basin)	1127H	7.42	1.770	2	5.52	25.7	0.08
MOW-2: Bani (along embankment)	1030H	6.50	2.220	29	5.10	25.8	0.10
MOW-3: Bani (near warehouse)	1130H	6.32	1.260	57	2.90	25.60	0.05

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O₂ - Oxygen
5. °C - degrees Celsius
6. % - percent
7. Equipment used: Horiba Water Checker Model U-10
8. Monitoring conducted by the MPPCL Multipartite Water Quality Monitoring Team

DENR Representative(s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

TABLE NO. 19
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009
MARINE WATER MONITORING (IN-SITU ANALYSIS)
September 23, 2009

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity ‰	Remarks
M1	1110H	8.10	53.0	1	6.40	30.0	3.70	
M2	1130H	7.90	54.0	1	6.70	32.0	3.70	
M3	1138H	7.90	55.0	0	5.80	30.0	3.80	
M4	1210H	8.00	54.0	1	5.80	30.0	3.60	
M5	1215H	8.00	54.0	0	5.80	30.0	3.60	
M6	1200H	8.00	54.0	1	6.00	31.0	3.60	
M7	1150H	8.00	50.0	2	6.50	31.0	3.30	
M8	0920H	7.90	25.0	20	5.40	28.0	1.80	
M9	0945H	7.80	55.0	2	5.50	30.0	3.70	
M10	1000H	8.00	56.0	3	5.60	30.0	3.70	
M11	1025H	8.10	55.0	1	5.10	30.0	3.70	
M12	1035H	8.00	55.0	0	6.00	30.0	3.70	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations
M-1: Between Luis River & Bani Point
M-2: Outfall (Discharge Canal)
M-3: Cooling Water Intake
M-4: Resettlement

M-5: C-Square (Benguet Loading Area)
M-6: Puerto Asinan
M-7: Benguet Wharf
M-8: Masinloc River (Mouth)
M-9: Patron Depot (harbor)
M-10: BFAR

M-11: San Salvador
M-12: Along Veritas
2. mS/cm - millisiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees celsius

DENR Representative (s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

TABLE NO. 21
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2009

EFFLUENT MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	Wastewater Treatment Facility	Coal Sedimentation Basin	Ash Sedimentation Basin	Cooling Water Discharge Canal	Storm Drain Canal	DENR AO No. 35 Series 1990
Date of Sampling	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	-
Time of Sampling	1806H	1734H	1741H	1340H	1328H	-
pH	7.42	7.68	7.16	7.85	7.76	6.0 - 9.0
Conductivity, mSiemens/cm.	1.320	1.030	0.783	58.000	1.380	-
Turbidity, NTU	11	28	7	10	18	-
Dissolved Oxygen, ppm	7.73	4.79	2.28	8.71	5.31	-
Temperature, °C	32.6	30.3	29.2	37.7	29.1	-
Salinity, %	0.06	0.04	0.03	3.89	0.06	-

NOTES:

1. DENR AO No. 35 S. 1990 - Revised Effluent Regulations of 1990
2. ppm - parts per million
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees Celsius
5. % - percent
6. mSiemens/cm. - milliSiemens/centimeter
7. Equipment used : Horiba Water Checker, Model U-10
8. Monitoring Conducted by the MCCTPP Monitoring Team

DENR Representative(s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

Department of Environment and Natural Resources


MS. MARY O. HULLANA
Forester I / Protected Area Superintendent

PROTECTED AREA MANAGEMENT BOARD



KAG. LEONARDA T. DOMA
Member / Kagawad ng Barangay

Provincial Government Unit


MS. NERISSA G. VIGILIA
Community Development Assistant II
Environmental Natural Resources of Zambales


Municipal Government Unit


MS. OLIVE E. GREGORIO
HRMA-Coastal Res. Mgmt. Officer
Masinloc, Zambales


MR. RAMON I. EGUITA
Draftsman I
Masinloc, Zambales


MR. OSCAR E. EMPEÑO, JR
Admin Alde 4
Masinloc, Zambales

Barangay Government Unit


KAG. NIDA E. EBIDO
Kagawad ng Barangay

AES Philippines
Masinloc Power Partners Company Limited
Environmental Section

MS. ANTONIA V. LOPEZ
Principal Engineer A

MR. HARRIS A. SUNE
Environmental Mgmt. Specialist


MR. JORGE A. AQUINO
Chemist

TABLE NO. 1

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2009

SO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1030H-1130H	12/15/09	1.00	29.0	760	0.0000	0.0592	ND	DENR A. O. 14 s. 1993 340 ug/Ncm
	1132H-1232H	12/15/09	1.00	30.0	760	0.0000	0.0590	ND	
Inhobol	1430H-1530H	12/14/09	1.00	32.0	760	0.0260	0.0586	0.44	
	1535H-1635H	12/14/09	1.00	31.0	760	0.0216	0.0588	0.37	
Candelaria	1017H-1117H	12/15/09	1.00	28.0	760	0.0347	0.0594	0.58	
	1122H-1222H	12/15/09	1.00	28.0	760	0.0478	0.0594	0.80	
Palauig	1530H-1630H	12/14/09	1.00	34.0	760	0.0172	0.0582	0.30	
	1632H-1732H	12/14/09	1.00	34.0	760	0.0129	0.0582	0.22	

FORMULA:

$$\text{ug/Ncm} = \frac{\text{Wt}}{\text{Vr}}$$

$$\text{Vr} = \frac{\text{Vi li.} \times \frac{\text{P mmHg}}{\text{min}} \times \frac{298 \text{ K}}{\text{T} + 273} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{lit.}}$$

NOTE:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - Non Detectable

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 2
AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

NO₂ ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Resettlement	1030H-1130H	12/15/09	1.00	30.0	760	0.0029	0.0590	0.05	DENR A. O. 14 s. 1993 260 ug/Ncm
	1132H-1232H	12/15/09	1.00	30.0	760	0.0033	0.0590	0.06	
Inhobol	1430H-1530H	12/14/09	1.00	29.0	760	0.0016	0.0592	0.03	
	1535H-1635H	12/14/09	1.00	30.0	760	0.0013	0.0590	0.02	
Candelaria	1017H-1117H	12/15/09	1.00	29.0	760	0.0023	0.0592	0.04	
	1122H-1222H	12/15/09	1.00	30.0	760	0.0043	0.0590	0.07	
Palauig	1530H-1630H	12/14/09	1.00	31.0	760	0.0023	0.0588	0.04	
	1632H-1732H	12/14/09	1.00	30.0	760	0.0036	0.0590	0.06	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{Vi \text{ li.}}{\text{min}} \times \frac{P \text{ mm Hg}}{760 \text{ mm Hg}} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ mins} \times \frac{0.001 \text{ cu.m.}}{\text{lit}}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzman)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

AES Representative(s) _____

TABLE NO. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

AMBIENT AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Rosettlement	1030H-1130H	12/15/09	550.2	548.5	0.60	30.0	760	1.70	35.41	48.01	DENR A. O. 14
	1132H-1232H	12/15/09	552.2	550.3	0.60	30.0	760	1.90	35.41	53.66	
Inhobol	1430H-1530H	12/14/09	537.9	535.3	0.70	29.0	760	2.60	41.44	62.74	
	1535H-1635H	12/14/09	547.4	544.9	0.70	30.0	760	2.50	41.31	60.52	
Candelaria	1017H-1117H	12/15/09	553.3	551.5	1.00	29.0	760	1.80	59.21	30.40	s. 1993 300ug/Ncm
	1122H-1222H	12/15/09	554.4	551.7	1.00	30.0	760	2.70	59.01	45.76	
Palaug	1530H-1630H	12/14/09	547.0	545.7	1.00	31.0	760	1.30	58.82	22.10	
	1632H-1732H	12/14/09	547.3	543.8	1.00	30.0	760	3.50	59.01	59.31	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times 1,000 \text{ ug/mg}$$

$$Vr = \frac{Vi \text{ cu.m.}}{\text{min.}} \times \frac{P \text{ mm.Hg}}{760 \text{ mm Hg}} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ min.}$$

$$Wt = Wfp - Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.
10. ND - Non Detectable

DENR Representative(s)

PAMS Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

TABLE NO. 5
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter 2009

SO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI l/min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2020H-2120H	12/14/09	1.00	24.00	760	0.0000	0.0602	ND	DOH 5000ug/Ncm
	2122H-2222H	12/14/09	1.00	20.00	760	0.0042	0.0610	0.07	
Admin. Building	1600H-1700H	12/14/09	1.00	20.00	760	0.0129	0.0610	0.21	
	1702H-1802H	12/14/09	1.00	20.00	760	0.0172	0.0610	0.28	
WWT Control Room	0824H-1024H	12/14/09	1.00	25.00	760	0.0085	0.0600	0.14	
	1030H-1130H	12/14/09	1.00	25.00	760	0.0172	0.0600	0.29	
Coal Handling Control Room	0932H-1032H	12/14/09	1.00	24.50	760	0.0260	0.0601	0.43	
	1038H-1138H	12/14/09	1.00	24.00	760	0.0434	0.0602	0.72	
Chemical Laboratory	0912H-1012H	12/14/09	1.00	23.00	760	0.0478	0.0604	0.79	
	1020H-1120H	12/14/09	1.00	25.00	760	0.0391	0.0600	0.65	
Mechanical Shop	1625H-1725H	12/14/09	1.00	28.50	760	0.0303	0.0593	0.51	
	1727H-1827H	12/14/09	1.00	28.00	760	0.0250	0.0594	0.44	
Ash Handling Control Room	0940H-1040H	12/14/09	1.00	25.00	760	0.0347	0.0600	0.58	
	1043H-1143H	12/14/09	1.00	26.00	760	0.0522	0.0598	0.87	
Turbine Floor	2015H-2115H	12/14/09	1.00	29.00	760	0.0216	0.0592	0.36	
	2118H-2218H	12/14/09	1.00	31.00	760	0.0303	0.0588	0.52	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{VI \text{ li.} \times P \text{ mm Hg} \times 298 \text{ K} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{min} \times 760 \text{ mm Hg} \times T+273 \text{ K}}$$

Notes:

1. SO₂ samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm - microgram per normal cubic meter
3. Wt - weight of SO₂, ug.
4. Vr - volume at normal condition, Ncm
5. VI - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

AES Representative(s) _____

TABLE NO. 6
AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009
NO₂ ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	VI l./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2020H-2120H	12/14/09	1.00	24.00	760	0.0063	0.0802	0.09	DOH 8000ug/Ncm
	2122H-2222H	12/14/09	1.00	20.00	760	0.0028	0.0610	0.04	
Admin. Building	1600H-1700H	12/14/09	1.00	20.00	760	0.0000	0.0610	ND	
	1702H-1802H	12/14/09	1.00	20.00	760	0.0095	0.0610	0.16	
WWT Control Room	0924H-1024H	12/14/09	1.00	25.00	760	0.0026	0.0600	0.04	
	1030H-1130H	12/14/09	1.00	25.00	760	0.0023	0.0600	0.04	
Coal Handling Control Room	0932H-1032H	12/14/09	1.00	24.50	760	0.0036	0.0601	0.06	
	1036H-1136H	12/14/09	1.00	24.00	760	0.0026	0.0602	0.04	
Chemical Laboratory	0912H-1012H	12/14/09	1.00	23.00	760	0.0033	0.0604	0.05	DOLE 8000ug/Ncm
	1020H-1120H	12/14/09	1.00	25.00	760	0.0029	0.0600	0.05	
Mechanical Shop	1625H-1725H	12/14/09	1.00	28.60	760	0.0029	0.0593	0.05	
	1727H-1827H	12/14/09	1.00	28.00	760	0.0033	0.0594	0.06	
Ash Handling Control Room	0940H-1040H	12/14/09	1.00	25.00	760	0.0043	0.0600	0.07	
	1043H-1143H	12/14/09	1.00	26.00	760	0.0036	0.0598	0.06	
Turbine Floor	2015H-2115H	12/14/09	1.00	26.00	760	0.0056	0.0592	0.09	
	2118H-2218H	12/14/09	1.00	31.00	760	0.0056	0.0588	0.10	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr}$$

$$Vr = \frac{Vi \text{ l.} \times P \text{ mmHg} \times 298 \text{ K} \times 60 \text{ mins} \times 0.001 \text{ cu.m.}}{\text{min} \times 760 \text{ mmHg} \times T+273} \text{ lit}$$

Note:

1. NO₂ samples were analyzed using Colorimetric Method (Griess Saltzman)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO₂, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - non-detectable

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DENR Representative(s) 

PAMB Representative(s) 

PGU Representative(s) 

MGU Representative(s) 

BGU Representative(s) 

AES Representative(s) 

TABLE NO. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter 2009

SUSPENDED PARTICULATE MATTER ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS											
MONITORING STATION	TIME	DATE	Wfp mg	Wf mg	Vi m ³ /min	T °C	P mmHg	Wt mg	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2020H-2120H	12/14/09	549.0	548.8	0.70	24.00	760	0.20	42.14	4.75	DOH 2000ug/Ncm
	2122H-2222H	12/14/09	546.6	546.5	0.70	20.00	760	0.10	42.72	2.34	
Admin. Building	1600H-1700H	12/14/09	546.6	546.2	0.65	20.00	760	0.60	39.67	15.13	
	1702H-1802H	12/14/09	534.2	533.3	0.70	20.00	760	0.90	42.72	21.07	
WWT Control Room	0924H-1024H	12/14/09	546.3	545.9	0.70	25.00	760	0.40	42.00	9.52	
	1030H-1130H	12/14/09	552.8	551.2	0.70	25.00	760	1.40	42.00	33.33	DOLE 1000ug/Ncm
Coal Handling Control Room	0932H-1032H	12/14/09	551.9	550.2	0.60	24.50	760	1.70	38.06	47.14	
	1036H-1136H	12/14/09	551.4	551.2	0.70	24.00	760	0.20	42.14	4.75	
Chemical Laboratory	0912H-1012H	12/14/09	548.1	547.3	0.60	23.00	760	0.60	38.24	22.07	
	1020H-1120H	12/14/09	545.8	544.8	0.70	25.00	760	1.00	42.00	23.81	
Mechanical Shop	1625H-1725H	12/14/09	553.2	544.0	0.85	29.50	760	9.20	50.40	182.54	1000ug/Ncm
	1727H-1827H	12/14/09	579.0	566.9	0.96	28.00	760	12.10	37.21	211.49	
Ash Handling Control Room	0940H-1040H	12/14/09	552.2	551.4	0.71	25.00	760	0.80	42.49	18.83	
	1043H-1143H	12/14/09	550.1	548.7	0.85	26.00	760	1.40	50.82	27.69	
Turbine Floor	2015H-2115H	12/14/09	547.2	544.9	0.57	29.00	760	2.30	33.64	88.57	
	2118H-2218H	12/14/09	552.4	550.4	0.50	31.00	760	2.00	29.41	68.01	

FORMULA:

$$\text{ug/Ncm} = \frac{Wt}{Vr} \times 1000 \text{ ug/mg}$$

$$Vr = \frac{Vi \text{ cu.m.} \times P \text{ mm Hg} \times \frac{298 \text{ K}}{T+273} \times 60 \text{ min.}}{\text{min.} \times 760 \text{ mm Hg}}$$

$$Wt = Wfp + Wf$$

Notes:

1. SPM samples were analyzed using Gravimetric Method
2. ug/Ncm= microgram per normal cubic meter
3. Wt - weight of particulates, mg.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m³/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. Wfp - weight of filter paper and particulates, mg.
9. Wf - weight of filter paper, mg.

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

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TABLE NO. 8
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

AMBIENT NOISE MONITORING
MORNING TIME
December 18, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0750H	77.6	84.3	73.1	79.1	TRICYCLE
2	Purok Percaloha (Junction)	0748H	48.3	60.3	47.2	49.5	BIRDS
3	Editor's Residence (150m. From Gate)	0847H	60.3	65.9	53.6	60.8	PEOPLE TALKING
4	EPDC Building	0846H	50.6	62.9	47.6	54.6	DOG BARKING
5	C-Square (Benguet Loading Area)	0845H	47.2	47.6	46.4	46.7	
6	Resettlement Site	0841H	55.1	59.9	53.2	57.0	RADIO
7	Highway, waiting shed of Resettlement	0814H	65.9	65.9	62.2	64.0	TRICYCLE
8	Puerto Asinan	0816H	64.8	78.7	59.6	72.2	SOUND SYSTEM
9	Sitio Atob, Purok Tanguile	0818H	61.4	70.8	60.3	65.7	TRICYCLE
10	Masinloc Town Plaza	0824H	61.1	62.9	59.6	60.6	VEHICLE
11	Bani National High School, (Annex), Taltal	0801H	64.8	64.8	62.6	63.6	VEHICLE
12	Brgy. Luis (Junction to Binabalian)	0806H	56.2	68.9	52.1	58.7	TRICYCLE
13	Luis Elementary School	0809H	61.1	62.2	57.3	59.3	RADIO
14	Purok Bangal-Duhok (Junction)	0755H	56.9	57.7	54.7	55.7	PEOPLE TALKING
15	Bani Elementary School, Bani	0754H	70.4	79.1	62.2	68.5	SOUND SYSTEM
16	Bani National High School, Bani	0753H	55.6	69.3	49.1	58.4	TRICYCLE
17	Brgy. Bani Multi-purpose Complex	0752H	68.6	78.7	62.6	68.3	TRICYCLE
18	Plant Site (Coal Yard)	0745H	57.7	58.8	50.2	51.9	BIRDS

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Morning Time Noise Level (0600H to 0900H)
Category	
Class AA - area which requires quietness (within 100m. from school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]

TABLE NO. 9
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

AMBIENT NOISE MONITORING
DAYTIME
December 15, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1410H	59.2	59.6	58.1	58.9	TRICYCLE
2	Purok Percaloha (Junction)	1407H	60.3	89.9	56.6	75.5	VEHICLE
3	Edillo's Residence (150m. From Gate)	1446H	71.6	71.6	59.2	66.1	VEHICLE
4	EPDC Building	1448H	65.9	65.9	58.4	62.5	TRICYCLE
5	C-Square (Benguet Loading Area)	1449H	52.1	59.2	49.2	53.5	VEHICLE
6	Resettlement Site	1526H	66.3	80.6	65.9	73.4	VEHICLE
7	Highway, waiting shed of Resettlement	1455H	62.6	67.4	61.4	65.3	VEHICLE
8	Puerto Asinan	1523H	80.6	83.6	49.1	70.1	TRICYCLE
9	Sitio Atob, Purok Tanguile	1458H	65.2	65.2	57.3	60.5	VEHICLE
10	Masinloc Town Plaza	1508H	67.1	67.1	60.7	63.7	TRICYCLE
11	Bani National High School, (Annex), Taltal	1548H	67.8	63.8	62.9	64.6	VEHICLE
12	Brgy. Luis (Junction to Binabalian)	1554H	58.1	60.3	55.8	57.2	TRICYCLE
13	Luis Elementary School	1557H	54.7	61.1	53.6	56.7	TRICYCLE
14	Purok Bangal-Duhok (Junction)	1417H	60.6	60.6	48.7	56.3	PEOPLE TALKING
15	Bani Elementary School, Bani	1416H	59.2	70.3	53.2	59.6	TRICYCLE
16	Bani National High School, Bani	1414H	52.4	78.3	49.1	64.8	PEOPLE TALKING
17	Brgy. Bani Multi-purpose Complex	1412H	62.2	69.7	60.7	65.3	PEOPLE TALKING
18	Plant Site (Coal Yard)	1400H	61.2	51.7	50.2	51.0	BIRDS

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise	Daytime Noise Level
Category	(0900H to 1800H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	50
Class A - Residential	55
Class B - Commercial	65
Class C - Light Industrial Area	70
Class D - Heavy Industrial Area	75

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Signatures]

TABLE NO. 10
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

AMBIENT NOISE MONITORING
NIGHT TIME
December 14, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LtEQ	
1	Purok Little Baguio (Junction)	2246H	47.9	52.1	47.6	49.3	DOG BARKING
2	Purok Percatoha (Junction)	2243H	53.6	54.3	52.4	53.0	INSECTS
3	Editor's Residence (150m. From Gate)	2333H	47.9	52.4	47.2	49.7	SOUND SYSTEM
4	EPDC Building	2332H	51.3	51.3	47.9	48.1	DOG BARKING
5	C-Square (Benguet Loading Area)	2331H	48.7	50.2	47.6	48.4	INSECTS
6	Resettlement Site	2329H	48.7	57.7	47.6	49.6	INSECTS
7	Highway, waiting shed of Resettlement	2306H	49.4	58.1	47.9	50.1	MOTORCYCLE
8	Puerto Asinan	2308H	49.8	52.1	47.9	49.0	VIDEOKE
9	Sitio Atob, Purok Tanguile	2310H	49.8	61.4	47.6	54.9	DOG BARKING
10	Masinloc Town Plaza	2315H	56.2	61.8	52.8	58.1	MOTORCYCLE
11	Bani National High School, (Annex), Taitai	2357H	52.1	55.6	49.8	51.8	TRICYCLE
12	Brgy. Luis (Junction to Binahalian)	2402H	55.1	64.1	48.5	56.1	INSECTS
13	Luis Elementary School	2400H	62.5	82.4	47.2	73.3	DOG BARKING
14	Purok Bangal-Duhok (Junction)	2252H	53.6	61.1	50.6	55.1	FROGS CROAKING
15	Bani Elementary School, Bani	2251H	48.3	49.8	46.8	47.4	FROGS CROAKING
16	Bani National High School, Bani	2250H	49.5	49.3	48.3	49.0	FROGS CROAKING
17	Brgy. Bani Multi-purpose Complex	2249H	48.3	50.6	47.2	48.2	INSECTS
18	Plant Site (Coal Yard)	2240H	53.6	53.6	50.2	51.1	INSECTS

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise Category	Night Time Noise Level (2200H to 0500H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	40
Class A - Residential	45
Class B - Commercial	55
Class C - Light Industrial Area	60
Class D - Heavy Industrial Area	65

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Handwritten signatures and initials for DENR, PAMB, PGU, MGU, BGU, and AES representatives]

TABLE NO. 11
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

AMBIENT NOISE MONITORING
EVENING TIME
December 15, 2009

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1812H	64.1	78.7	62.6	68.1	PEOPLE TALKING
2	Purok Percolaha (Junction)	1809H	53.2	78.7	52.1	68.7	VEHICLE
3	Editor's Residence (150m. From Gate)	1904H	54.4	60.7	53.6	55.9	MOTORCYCLE
4	EPDC Building	1903H	50.2	50.9	49.1	50.0	DOG BARKING
5	C-Square (Benguet Loading Area)	1902H	50.2	50.9	49.3	40.2	INSECTS
6	Resettlement Site	1859H	64.1	65.9	49.8	55.1	INSECTS
7	Highway, waiting shed of Resettlement	1838H	67.8	69.3	57.7	62.7	VEHICLE
8	Puerto Asinan	1841H	50.9	57.2	41.8	51.4	TRICYCLE
9	Sitio Atob, Purok Tanguile	1842H	51.3	58.8	51.4	54.3	TRICYCLE
10	Masinloc Town Plaza	1849H	64.8	71.2	64.4	67.6	PEOPLE TALKING
11	Bani National High School, (Annex), Taltal	1824H	80.2	80.2	65.9	70.4	TRICYCLE
12	Brgy. Luis (Junction to Binahalian)	1850H	50.7	79.4	48.3	46.6	BIRDS
13	Luis Elementary School	1832H	56.9	80.2	51.7	67.4	TRICYCLE
14	Purok Bangal-Duhok (Junction)	1818H	67.4	77.9	54.3	69.1	DOG BARKING
15	Bani Elementary School, Bani	1817H	53.8	66.3	51.7	57.6	PEOPLE TALKING
16	Bani National High School, Bani	1815H	55.1	56.2	52.8	54.7	TRICYCLE
17	Brgy. Bani Multi-purpose Complex	1814H	64.1	76.8	52.1	63.8	PEOPLE TALKING
18	Plant Site (Coal Yard)	1808H	60.3	67.1	57.7	62.2	VEHICLE

Noise Quality Standards (NPCC Rules and Regulations and MC No. 2, 1980)

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise Category	Evening Time Noise Level (1800H to 2200H)
Class AA-area which requires quietness (within 100m. From school sites, nursery schools, hospitals and special home for the aged)	45
Class A - Residential	50
Class B - Commercial	60
Class C - Light Industrial Area	65
Class D - Heavy Industrial Area	70

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

[Handwritten signatures and initials for each representative]

TABLE 12
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter 2009

OCCUPATIONAL NOISE MONITORING
December 18, 2009

NO	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1103H	82.1	80.9	71.6	75.5	
2	Turbine Floor	1101H	87.7	87.7	86.9	87.0	
3	Laboratory Building	1120H	83.9	83.9	66.7	72.9	
4	Administration Building (Lobby)	0958H	55.8	65.6	55.4	59.1	
5	Coal Handling	1021H	54.7	56.9	50.9	54.3	
6	Ash Handling	1112H	80.6	82.1	79.1	79.8	
7	Machine Shop	1035H	71.9	71.9	70.8	70.6	
8	Water Treatment Control Room	1031H	62.9	63.7	62.6	62.8	
9	Boiler Feed Pump Unit #1	1108H	87.7	87.7	85.1	85.5	
10	Boiler Feed Pump Unit #2	1057H	95.6	95.6	94.8	93.7	
11	Circulating Water Pump Intake #1	1051H	75.7	77.6	75.3	76.2	
12	Circulating Water Pump Intake #2	1054H	88.4	89.6	88.1	88.4	
13	Smoke Stack (CEM Control Room)	1116H	80.9	78.7	58.1	67.0	
14	Generator Transformer Unit #1	1045H	67.8	77.9	66.7	71.4	
15	Generator Transformer Unit #2	1049H	76.4	76.4	75.7	76.0	
16	Guard House (Main Gate)	1011H	73.4	73.4	72.7	72.7	
17	230kV GIS (Switchyard)	1040H	63.7	63.7	62.9	63.1	
18	Coal Yard	1014H	52.4	61.4	50.2	54.2	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH (Threshold Limit Values)	DOLE (Permissible Noise Exposure)
16	80	-
8	85	90
6	-	92
4	90	95
3	-	97
2	95	100
1 1/2	-	102
1	100	105
7/2	105	110
7/4	110	115
7/8	115	-

*No exposure to continuous or intermittent in excess of 115 dba

DENR Representative(s)

PAMB Representative(s)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

AES Representative(s)

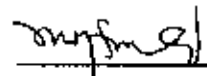
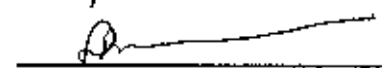
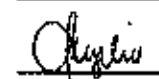

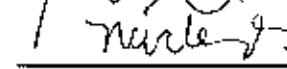








TABLE NO. 13
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

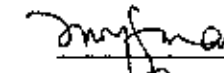
DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	12/14/09	12/15/09	12/17/09	12/17/09	12/15/09	12/14/09	-
Time of Sampling	1436H	1025H	0918H	1102H	0931H	1518H	-
pH	7.83	7.05	7.91	7.76	7.78	7.22	6.5 - 8.5
Conductivity, mSiemens / meter	0.159	1.170	0.329	0.330	0.475	0.602	-
Turbidity, NTU	0	0	0	0	0	0	5
Dissolved Oxygen, ppm	5.87	4.30	4.76	4.92	4.33	3.77	-
Temperature, °C	27.3	28.1	26.3	26.3	28.5	29.5	-
Salinity, ‰	0.00	0.05	0.01	0.01	0.01	0.02	-

NOTES:

1. MWD - Masinloc Water District
2. RES - Resettlement Area
3. LAB - Faucet near Environmental Laboratory
4. GH - Guesthouse
5. CWD - Candelaria Water District
6. PWD - Palauig Water District
7. DOH AO No. - Department of Health Administrative Order Number
8. PNSDW - Philippine National Standard for Drinking Water
9. NTU - Nephelometric Turbidity Unit
10. °C - degrees Celsius
11. ‰ - percent
12. Equipment used: Horiba Checker Model: U-10
13. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)



PAMB Representative (s)



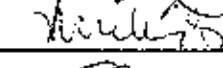
PGU Representative (s)



MGU Representative (s)



BGU Representative (s)



AES Representative (s)



TABLE NO. 15
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

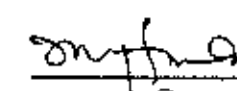
RIVER WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	LR-1: Lauis River upstream of fresh- water intake	LR-2: Lauis River near mouth nursery	MR-1: Masinloc River Collat Bridge	DENR AO No. 1990 Class B Fresh Surface Water
Date of Sampling	12/15/2009	12/15/2009	12/15/2009	-
Time of Sampling	1535H	1426H	1516H	-
pH	8.02	7.53	7.53	6.5 - 8.5
Conductivity, mSiemens / cm.	0.384	17.900	50.500	-
Turbidity, NTU	2	12	5	-
Dissolved Oxygen, ppm	6.77	5.5	7.42	5 minimum
Temperature, °C	27.6	30.3	30.5	-
Salinity, ‰	0.01	1.06	3.32	-

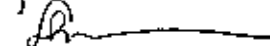
NOTES:

1. DENR AO No. 34 S. 1990: Revised Water Usage and Classification
2. Masinloc River is assumed Class B for purposes of comparison with the DENR criteria.
3. DENR MC 07 S. 1993 classified Lauis River as Class B Fresh Surface Water
4. ppm - parts per million
5. NTU - Nephelometric Turbidity Unit
6. °C - degrees Celsius
7. ‰ - percent
8. mSiemens/cm - milliSiemens/centimeter
9. Equipment used: Horiba Checker Model: U-10
10. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)



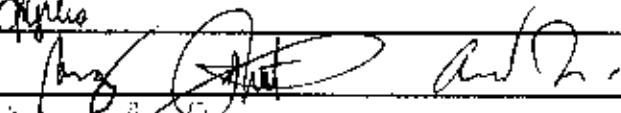
PAMB Representative (s)



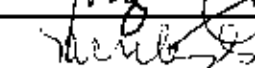
PGU Representative (s)



MGU Representative (s)



BGU Representative (s)



AES Representative (s)

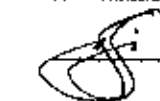


TABLE NO. 17
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
December 16, 2009

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O ₂ ppm	Temp. °C	Salinity %
MO-1: Near Main Gate, Right	1439H	7.13	1.030	9	2.21	28.4	0.04
MO-1: Bani Point (After Ash Disposal Area)	1055H	6.82	0.557	4	2.35	28.3	0.02
MO-2: Bani (NPC Nursery)	1138H	7.73	0.731	1	3.02	28.3	0.03
MO-3: Between Corafer And Duhok	1203H	6.98	0.215	8	3.12	28.0	0.00
MO-5: Bani (PNP Patrol Base)	1510H	6.74	0.965	16	2.24	27.9	0.04
MO-6: Bani	1105H	6.26	2.170	32	2.38	28.2	0.10
MO-W-1: Bani (near Sedimentation Basin)	1145H	7.70	1.870	2	4.07	28.1	0.08
MO-W-2: Bani (along embankment)	1214H	7.03	2.370	18	3.05	27.8	0.11
MO-W-3: Bani (near warehouse)	1419H	6.69	1.800	25	4.01	28.30	0.08

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O₂ - Oxygen
5. °C - degrees Celsius
6. % - percent
7. Equipment used: Horiba Water Checker Model U-10
8. Monitoring conducted by the MPPCL Multipartite Water Quality Monitoring Team

DENR Representative (s)

PAMB Representative (s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

TABLE NO.19
AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2009
MARINE WATER MONITORING (IN-SITU ANALYSIS)
December 16, 2009

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity ‰	Remarks
M1	1108H	7.48	57.5	1	5.54	28.4	3.83	
M2	1050H	7.51	57.6	1	5.22	30.0	3.84	
M3	1025H	7.43	57.6	2	5.81	28.2	3.85	
M4	1322H	7.71	57.6	5	5.54	29.1	3.84	
M5	1330H	7.78	57.7	3	5.34	29.1	3.84	
M6	1315H	7.54	57.9	14	5.39	29.3	3.85	
M7	1300H	7.66	57.5	2	6.30	25.2	3.83	
M8	1245H	7.58	57.3	2	6.54	30.0	3.82	
M9	1225H	7.45	57.8	1	5.10	29.1	3.85	
M10	1210H	7.55	58.3	1	5.80	28.4	3.88	
M11	1150H	7.57	57.2	2	6.42	28.9	3.83	
M12	1140H	7.61	57.8	9	5.65	28.7	3.84	
DENR AO#34, s.1990(Class SC)		8.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations
- M-1: Between Iaula River & Bani Point
- M-2: Outfall (Discharge Canal)
- M-3: Cooling Water Intake
- M-4: Resettlement

- M-5: C-Square (Benguet Loading Area)
- M-6: Puerto Asinen
- M-7: Benguet Wharf
- M-8: Masinloc River (Mouth)
- M-9: Petron Depot (harbor)
- M-10: B-AR

- M-11: San Salvador
- M-12: Along Veritas
2. mS/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees celsius

DENR Representative (s)

PAMB Representative (s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

EFFLUENT MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	Wastewater Treatment Facility	Coal Sedimentation Basin	Ash Sedimentation Basin	Cooling Water Discharge Canal	Storm Drain Canal	DENR AO No. 35 Series 1990
Date of Sampling	12/17/2009	12/15/2009	12/15/2009	12/17/2009	12/17/2009	-
Time of Sampling	1030H	1600H	1622H	1054H	1040H	-
pH	7.51		7.85	7.33	7.52	6.0 - 9.0
Conductivity, mSiemens/cm.	0.289	EMPTY	1.080	58.100	0.784	-
Turbidity, NTU	7	BASIN	11	10	4	-
Dissolved Oxygen, ppm	6.72		5.25	6.71	4.81	-
Temperature, °C	29.3		29.3	35.2	25.5	-
Salinity, ‰	0.01		0.04	3.83	0.03	-

NOTES:

1. DENR AO No. 35 S. 1990 - Revised Effluent Regulations of 1990
2. ppm - parts per million
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees Celsius
5. % - percent
6. mSiemens/cm. - milliSiemens/centimeter
7. Equipment used : Horiba Water Checker, Model U-10
8. Monitoring Conducted by the MPPCL Monitoring Team

DENR Representative (s)

PAMB Representative (s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

AES Representative (s)

APPENDIX – 10

Table 1

**INCIDENT
RECORDS**

AES

First Aid
Recordables
LTA

2009												
Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2009 Total
0	2	1	0	0	2	0	0	0	1	0	1	7
0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0

Contractors

First Aid
Recordables
LTA

0	0	5	1	0	0	0	0	0	0	0	1	7
0	2	1	0	0	0	0	0	0	0	0	0	3
0	0	0	0	0	0	0	0	0	0	1	0	1

Table 2

NEAR MISSES Per Category A/B

	2009												
Particulars	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	YTD
Total	181	120	145	190	193	145	185	140	102	101	111	261	1874
Cat - A	131	81	81	146	135	90	104	100	80	77	95	247	1367
Cat - B	50	39	64	44	58	55	81	40	22	24	16	14	507
Cat A - Closed	108	69	63	93	53	50	44	47	26	24	19	200	796
Cat B - Closed	48	38	63	38	39	37	65	19	11	11	6	12	387
% Closed Cat A	82%	85%	78%	64%	39%	56%	42%	47%	33%	31%	20%	81%	58%
% Closed Cat B	96%	97%	98%	86%	67%	67%	80%	48%	50%	46%	38%	86%	76%
% Overall Closed	86%	89%	87%	69%	48%	60%	59%	47%	36%	35%	23%	81%	63%
Walkdown	28	25	30	23	35	30	32	30	26	31	40	37	367