Environmental and Social Monitoring Report

Annual Report
2010

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.

SCHEDULE 8

Environmental and Social Performance Annual Monitoring Report (AMR)

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

Reporting Period: January 2010 through December 2010

AMR Completion Date: April 30, 2011

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 has been 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 l 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 Plant;**
- **Implementation of the Action Plan agreed with the Senior Lenders, including ADB;**
- **Implementation of the Environmental Management Plan;**
- **Compliance by MPPC 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

Telephone: 09175117105 **E-mail: Antonia.lopez@aes.com**

Signature: **Report Date: April 29, 2011**

Environmental Responsibility

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

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 l

Summary of Current Operations/Stage of Project:

Conducted the following Unit 2 Major Overhauling Activities:

- Rehabilitation of Circulating Water Pumps Intake Cathodic Protection System
- Oil Analysis/Diagnostics on Generator Transformers
- Testing and Inspection of Feeder and Transformer Protection Relays
- Overhaul/Repair of Generator Circuit Breaker System
- Realignment of Discharge Electrode Shafting 11S and 21S At Electrostatic Precipitator
- Condenser Tube Cleaning
- Work on Fabric Expansion Joint at Induced Draft Fan A and B
- Installation of Boiler Acoustic Leak Detector
- Inspection of Main Turbine Cross-Over Pipe
- Rehabilitation of Boiler Burners
- Rehabilitation of Drag Chain Conveyor
- Rehabilitation of Forced Draft Fan Outlet Dampers
- Replacement of Defective Warming Line Piping at Boiler Feed Pumps A, B and C
- Replacement of Defective Piping at Condensate Vacuum Pump
- Circulating Water Pump Pit Cleaning including Installation/Removal of Stop Plug

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Conducted the following Unit 1 Major Overhauling Activities:

- Turbine overhaul
- Inspection/Refurbish of CW Inlet 72” Butterfly Valves
- Inspection of CW Pipe Intake
- Repair/replacement of Boiler Tubes SH
- Repair/replacement/installation of new Erosion Shield of Biolere Tubes
- Rehabilitation of Boiler Burners
- Repair of Boiler Hopper Refractory
- Overhauling/Refurbishment/Replacement of Soot Blower Parts
- Installation of New SF6 Circuit Breaker at Coal Handling System

- Inspection of chlorination Piping
- Alignment of 21S field CE rapping system
- Rehabilitation of Drag Chain Conveyor
- & Bottom ash Belt Conveyor
- Rehabilitation of Circulating Water Pumps Intake Cathodic Protection System
- Installation of Acoustic sensor Probe Outer Tube
- Insulation and cladding of Turbine Area
- Repair/Replacement of of Corroded Vacuum Pump System Line
- Overhauling of Medium Voltage Motors
- Condenser Tube Cleaning
- Circulating Water Pump Pit Cleaning including Installation/Removal of Stop Plug
- Oil Analysis/Diagnostics of Generator Transformers
- Testing and Inspection of Feeder and Transformer Protection Relays
- Overhaul/Repair of Generator Circuit Breaker System

Ash Pond Improvement project 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.

Continuous monitoring of the following environmental samples every three months:

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

Please refer to Appendix 3 - Multipartite Monitoring Reports from First Quarter to Fourth Quarter 2010.

Masinloc Plant had the following Tests conducted by a Third Party contractor (TRC Environmental Corporation based in the USA and TEEM based in the Philippines) and passed in compliance to Republic Act 8749 (Philippine Clean Air Act):

- Opacity analyzer Audit - November 17, 2010
- Relative Accuracy Test Audit (RATA) - November 17, 2010

Continuous monitoring of Plant Emissions

Continuous plant emissions monitoring are conducted through the Continuous Emissions Monitoring Systems installed at the plant where data are recorded and printed at the Central Control Room through the Data Acquisition System. These reports are submitted to the DENR as part of the Self Monitoring Reports every three months. For this reporting period, there were eleven exceedances documented in eleven Environmental Nonconformance Events (ENE). Out of these 11 ENEs, nine refers to exceedance in the SO2 stack emission. This exceedance was mainly due to the burning of the only available coal in the foreign market, nevertheless, the results of the ambient air monitoring which were done twice a week meet the DENR standard (340 micrograms/Ncm and the World Bank standard (20 micrograms/Ncm).

Please refer to appendix 4for ENEs generated and the Ambient Air Monitoring results during this reporting period.

Continuous monitoring of Plant Effluents

Continuous plant emissions monitoring are conducted on a daily and quarterly basis. Reports are generated and documented in Daily 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

Solid Waste segregation is continuously implemented in MPPCL. Biodegradable and non biodegradable solid wastes are separately disposed in color coded and labeled trash bins strategically located within the plant. Collection of solid wastes are done regularly and brought to the Material Recover Facility (MRF) for further segregation. Recovered recyclable materials are separately stored in the MRF area until they are disposed/sold. Only residual wastes go to the municipal dumpsite.

Hazardous Waste Management

Management of hazardous wastes is continuously implemented in MPPCL. Used oil, busted bulbs, busted batteries and other hazardous wastes are controlled and recorded prior to their temporary storage in the Hazardous Wastes Storage Building. Removal and treatment of hazardous wastes from the plant are done by Transporter and Treater who are duly accredited by DENR. The choice for the transporter and treater is done through bidding.

Clean and Green Program

Plant Housekeeping is sustained in MPPCL. This includes roadways and landscape maintenance through street sweeping, trimming, grass cutting, watering, plant maintenance and cleaning of drainage canals including oil/water separators.

Protection and maintenance of Buffer zones – These are strategic locations where mixed reforestation tree species are planted, e. g. around the ASF, along the coal yard and MPPCL perimeter fence to prevent fly ash and coal dust dispersion, thus providing environmental safeguards through vegetative means within the plant site and environs.

Plant nursery is being maintained to support the planting materials need of MPPCL's initiative community outreached program of seedlings dispersal to host communities.

Protection activities include weed control and construction of firebreaks during summer. Other silvicultural activities like pruning, pests and disease controls are also being undertaken.

Participation on various environmental programs sponsored by DENR and LGUs such as tree planting, river clean up and coastal clean up are being sustained.

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:---Sherie

- **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 EHS and 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 Conversion 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, January to December 2010, MPPCL has completed the conduct of its Quarterly Multipartite Monitoring for 2010. 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, environmental monitoring includes:

- Ambient Air Quality (4 stations)
- Occupational Air Quality (8 station)
- River Water Quality (3 stations)
- Marine (10 stations)
- Domestic Water (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 2010), 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.

The use of SAP to capture time entries of employees has been introduced late part of 2010.

An internship/OJT Program has been established to accommodate students within the locality wherein undergoing a training is a requirement before graduation/enrollment.

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, 2010

Regular Employees;	184
Contractual Employees;	105

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.

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' other support for host community projects and support to local government initiatives.

MPPCL has its Corporate Social Responsibility Program for the year 2010 prioritizing the three (3) nearest barangays in Masinloc, Zambales such as :

- Feeding Program – benefited 311 students daily (January-March, June-December)
- College Scholarship Program for seven students
- Gift-Giving Program - Share a Noche Buena program for 1000 indigents.
- Donation of Packed lunch to Senior Citizens Federation

- Financial Assistance to CBM Foundation
- AES Sight Saving Program – Benefited 388 visually impaired students
- Donation of Musical Instruments to two schools
- Donation of Packed Lunch to TMKK Foundation
- Donation of Umbrellas to Pastoral Care for Children
- Donation to PCC and MCDC of grocery packs for fiesta
- Partial donation of t-shirts to four schools.

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.

There is no formal procedure for this but normally people can contact the CRO or the environmental group if ever. No grievance was received during this reporting period. Conducts monthly meeting with the Community and Religious Leaders to address issues and concerns.

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

Hired around 200 qualified local employees during the Major Outage in the plant.

Worker Health and Occupational Safety

MPPCL is continuously upgrading its Safety Management System to meet the demands of a world class safety culture. It is actively engaged in implementing proactive initiatives such as hazard recognition, area safety meetings, audits and safety promotion. Moreover, programs and procedures are reviewed in conformance with the requirements of OHSAS 18001:2007.
2010 MPPCL Safety Procedures

- Management of Change Procedure
- Incident reporting and Investigation Report
- Safe Work Permit Procedure – Lock Out/Tag Out
- Fall Protection Program
- Personal Protective Equipment
- Confined Space Procedure
- Hot Work Program
- Security Procedure
- Risk Assessment Procedure
- Electrical Safety Program
- Storage Handling Transfer and Process Management of Hazardous Chemical
- Fire Prevention Program
- Safety Committee Procedure
- Contractor Safety Management Program
- Pre-Job Briefing and Job Safety Analysis
- Emergency Response and Contingency Plan
- Housekeeping
- Hoisting and Rigging

- Solid Fuel Handling
- Diving-Underwater Safety
- Grounding Program
- Excavation Program
- Machine Guarding
- Safety Promotion and Recognition Program
- Procurement of Equipment
- Medical Surveillance
- Hearing Conservation
- Illumination
- Earthquakes, High Winds & Typhoons and Imminent Volcanic Eruption

MPPCL ensures that any person under its control and performing tasks that can impact occupational safety and health are competent on the basis of appropriate training or experience. Visitors are required to attend safety orientation and contractors are given risk-based safety trainings. The following trainings were conducted for MPPCL personnel in 2010:

Internal Trainings

- Permit to Work System
- Fall Protection Program
- Risk Assessment Procedure
- Electrical Safety Program/Arc Flash
- Hazard Communication
- Fire Fighting/Prevention Program
- Contractor Safety Management Program
- Emergency Response and Contingency Plan
- Hearing Conservation
- Housekeeping
- Medical Health Program
- Illumination
- Confined Space Procedure and Gas Monitoring
- Hot Work Program
- Defensive Driving
- Machine Guarding
- Solid Fuel Handling
- Excavation

External Trainings

- Training on Establishing Integrated Management System (OHSAS 18001:2007 and ISO 14001:2004)

- First Aid/BLS-CPR/AED
- Forklift Safety and Operations Training Course
- High Angle and Confined Space Rescue
- Safety in Basic Rigging
- Rigging and Slinging Safety
- Internal Audit Training
- NEBOSH – IGC Training
- Post Graduate Course on Basic Occupational Safety and Health (BOSH) for Nurses
- Scientific Training on Gas Detection and Control
- Arc Flash/NFPA 70E

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 incidents shown on Table 1 below indicates very minimal numbers, even with that for the contractors, considering the fact that Outages took place in the 1st and 4th quarter of 2010 where contractor personnel numbered as high as 480 and AES at more than 180.
In 2010, MPPCL for the first time ended a year without a Lost Time Injury (LTI) and completed more than 1 million LTI-free man-hours. It has made great progress instilling a safety culture since it became an AES business and this milestone achievement is proof of a successful transformation in a fairly short period of time.

Table 1 - Incident Records for 2010

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
AES													
First Aid	1	1	0	0	0	1	0	0	0	0	0	0	3
Recordables	0	0	0	0	0	0	0	0	1	0	0	0	1
LTA	0	0	0	0	0	0	0	0	0	0	0	0	0
Man hours	41,741	33,446	34,938	37,268	29,955	42,591	43,322	44,404	42,768	32,248	41,095	47,757	471,533
CONTRACTORS													
First Aid	8	2	1	0	0	2	0	1	0	0	0	2	16
Recordables	0	1	0	0	0	0	0	0	0	0	0	0	1
LTA	0	0	0	0	0	0	0	0	0	0	0	0	0
Man hours	104,464	44,712	44,712	34,168	19,128	32,904	30,752	52,328	47,760	40,176	39,600	119,040	588,848

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 Facility Improvement Program. This is in compliance to Environmental Compliance Certificate, section ll.9.
- Plant expansion plan (additional of 2 X 300MW). Permitting activity is in progress. Unit 3 to start construction in 2012.

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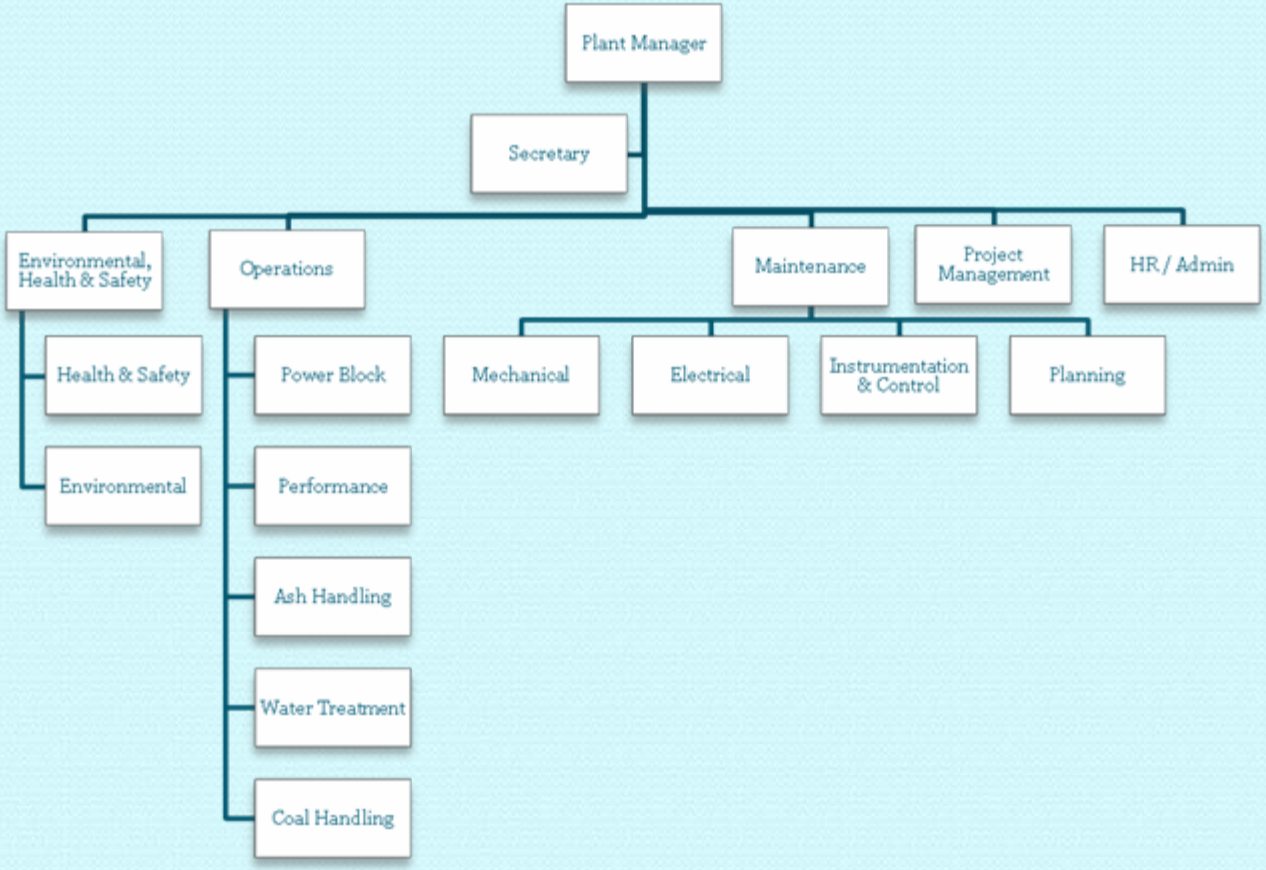
* Examples of significant incidents follow. Chemical and/or hydrocarbon materials spills, fire, explosion or unplanned releases, industrial injuries, fatalities including transportation, ecological damage/destruction; local population disruption; disruption of emissions or effluent treatment; legal/administrative notice of violation; penalties, fines, or increase in pollution charges; negative media attention; chance cultural finds; labor unrest or disputes.

Masinloc Power Partners Co. Ltd. (MPPCL)



PERMITS/LICENSES/CLEARANCES/CERTIFICATES

MASINLOC POWER PARTNERS COMPANY LIMITED

AGENCY	LAWS	PERMIT	PERMIT NUMBER	DATE ISSUE	EXPIRY DATE
LGU	BARANGAY	BARANGAY CLEARANCE (MPPCL)		JAN. 11, 2011	December 31, 2011
LGU	BARANGAY	BARANGAY CLEARANCE (MASIN AES PTE, LTD.)		JAN. 11, 2011	December 31, 2011
LGU	LGU	MAYOR'S PERMIT (MPPCL)	MAYOR'S PERMIT NO. 2011-0257	JAN. 26, 2011	December 31, 2011
LGU	LGU	MAYOR'S PERMIT (MASIN-AES PTE. LTD.)	MAYOR'S PERMIT NO. 2011-0053	JAN. 13, 2011	December 31, 2011
DOLE	PD442	PERMIT TO OPERATE STEAM BOILER (Unit #1)	DL III 18-08, O.R NO. 4494639	April 7,2010	April 6,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Quarters for Local Personnel)	EEDL III 01-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Machine Shop)	EEDL III 02-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Boiler Building)	EEDL III 03-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Pump House)	EEDL III 04-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Fuel Oil Pump)	EEDL III 05-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Quest House)	EEDL III 06-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Water Treatment Control House	EEDL III 07-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION (Ash Handling Building)	EEDL III 08-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 09-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 10-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 11-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 12-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 13-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 14-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 15-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 16-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 17-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 18-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD422	CERTIFICATE OF ELECTRICAL INSPECTION	EEDL III 19-2008, O.R. #4494639	April 12, 2010	April 11,2011*
DOLE	PD442	PERMIT TO OPERATE STEAM BOILER (Unit #1)	DL III 19-08, O.R NO. 4494638	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heate No. 7)	PVDL III 02-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heate No. 7)	PVDL III 03-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Condenser)	PVDL III 04-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Condenser)	PVDL III 05-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 2)	PVDL III 06-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 2)	PVDL III 07-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 3)	PVDL III 08-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 3)	PVDL III 09-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Yuba Heat Transfer Division)	PVDL III 10-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 4)	PVDL III 11-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Steam Drum)	PVDL III 12-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Steam Drum)	PVDL III 13-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 1)	PVDL III 14-2008, O.R. #4494639	April 7, 2010	April 6,2011*

* APPLICATION FOR RENEWAL SUBMITTED

MASINLOC POWER PARTNERS COMPANY LIMITED

AGENCY	LAWS	PERMIT	PERMIT NUMBER	DATE ISSUE	EXPIRY DATE
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Low Pressure Heater No. 1)	PVDL III 15-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD422	PERMIT TO OPERATE PRESSURE VESSEL (Deaerator)	PVDL III 16-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Deaerator)	PVDL III 17-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No. 6)	PVDL III 18-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No. 6)	PVDL III 19-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No.8)	PVDL III 20-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (High Pressure Heater No.8)	PVDL III 21-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Bearing Cooling Heat Exch.)	PVDL III 26-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DOLE	PD442	PERMIT TO OPERATE PRESSURE VESSEL (Bearing Cooling Heat Exch.)	PVDL III 27-2008, O.R. #4494639	April 7, 2010	April 6,2011*
DENR	RA 8749	PERMIT TO OPERATE AIR POLLUTION SOURCE AND CONTROL INSTALLATIONS	POA-10K-03ZA-054	###############	November 30, 2011
DENR	RA 9275	WATER DISCHARGE PERMIT (Cooling Water)	DP-10F-03ZA-814	November 25, 2010	November 30, 2011
DENR	RA 9275	WATER DISCHARGE PERMIT (Wastewater)	DP-10F-03ZA-814	November 25, 2010	November 30, 2011
DENR	RA 7586	SPECIAL USE AGREEMENT FOR PROTECTED AREAS (SAPA)	NO. 2010-01	May 23, 2010	May 23, 2035
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)	No. 021749	April 16, 2008	
PDEA	RA9165	LICENSE TO HANDLE CONTROLLED PRECURSORS AND ESSENTIAL CHEMICALS	P6-00560001-R01800 / P3-00560001-R01500	February 16, 2010	May 13, 2011
PNRI	RA3589	RADIOACTIVE MATERIAL LICENSE	Y03.03060.10	OCT.18, 2010	October 31, 2011

* APPLICATION FOR RENEWAL SUBMITTED

APPENDIX 3:
2010 QUARTERLY MULTIPARTITE MONITORING REPORTS

AES
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MASINLOC POWER PARTNERS COMPANY LIMITED

MULTIPARTITE MONITORING REPORT

First Quarter 2010

March 22 – 26, 2010

AES
the power of being global

MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

Department of Environment and Natural Resources

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PENRO Focal Person For Environment

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Forester/Protected Area Superintendent

Protected Area Management Board

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Environmental Manager -PCO

MR. JORGE A. AQUINO
Chemist

TABLE OF CONTENTS

MASINLOC POWER PARTNERS COMPANY LIMITED

FIRST QUARTER MULTI PARTITE MONITORING REPORT
March 22-26, 2010

EXECUTIVE BRIEF

The First Quarter 2010 Multipartite Monitoring of the Masinloc Power Partners Company Limited was conducted on March 22-26, 2010 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 Masinloc Power Partners Company Limited.

For this quarter, monitoring was conducted jointly by two (2) representatives from the office of the Department of Environment and Natural Resources (CENRO and PENRO), one (1) representative from the office of Protected Area Management Board, one (1) representative from the office of the Provincial Government Unit, one (1) representative from the office of the Barangay Government Unit (Brgy. Bani), three (3) representatives from the office of Municipal Government Unit (Masinloc), and three (3) representatives from Masinloc Power Partners Company Limited-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), groundwater quality (8 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. Fourteen parameters for domestic water, fifteen parameters for river water, twelve parameters for groundwater, fifteen parameters for marine water and fifteen parameters for plant effluent. Metals detected were Antimony, Arsenic, Cadmium, Chromium^{+6}, Total Chromium, Gold, Lead, Manganese, Mercury, Selenium and Silver.

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 five (5) stations. 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).*

5. Ground and domestic water samples are in compliance with the standards set by the Department of Health Administrative Order No. 2007-0012 *(PNSDW 2007 – Philippine National Standards for Drinking Water 2007).*

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 March 22-26, 2010. Sampling activities were conducted based on the 2010 First 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
2.1.1.2 Inhobol
2.1.1.3 Candelaria
2.1.1.4 Palauig

2.1.2 OCCUPATIONAL AIR (SO_2 / NO_2 / 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 Lauis Elementary School
2.1.3.13 Brgy. Lauis (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 SO_2 & NO_2 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, SO_2 & NO_2 analysis.

2.3 ANALYSIS OF SO_2 / NO_2 / 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 (West-Gaeke Method) and NO2 samples (Griess Saltzmann Method). 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 SO_2 (Tables 1 & 5), NO_2 (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
2.4.2.2 Date of Sampling
2.4.2.3 Volumetric Flow Rate
2.4.2.4 Temperature
2.4.2.5 Pressure
2.4.2.6 Volume at normal condition
2.4.2.7 Weight of filter paper
2.4.2.8 Weight of filter paper and particulate
2.4.2.9 Weight of particulate
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 March 22-26, 2010. Sampling activities were conducted based on the 2010 First 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 5:

3.1.1 RIVER WATER QUALITY MONITORING STATIONS

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

3.1.2 GROUNDWATER 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)
3.1.3.8 MOW-2 Bani (along embankment)

3.1.3 DOMESTIC WATER QUALITY MONITORING STATIONS

3.1.3.1 MWD: Masinloc Water District
3.1.3.2 RES: Resettlement Area
3.1.3.3 LAB: Faucet near Laboratory Building
3.1.3.4 GHS: NPC Guesthouse
3.1.3.5 PWD: Palauig Water District
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 (no sample)
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 Lauis River & Bani Point
3.1.5.2 M-2 Outfall (100 m from discharge canal)
3.1.5.3 M-3 Cooling Water Intake
3.1.5.4 M-4 Resettlement
3.1.5.5 M-5 C-Square (Benguet Loading area)
3.1.5.6 M-6 Puerto Asinan
3.1.5.7 M-7 Benguet Wharf
3.1.5.8 M-8 Masinloc River (Near mouth)
3.1.51.9 M-9 Petron (harbor)
3.1.5.10 M-10 BFAR
3.1.5.11 M-11 San Salvador
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 GROUNDWATER SAMPLING

Water samples were collected from the eight (8)-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 four (4) monitoring stations; Wastewater Treatment Facility, 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
3.4.1.2 Conductivity
3.4.1.3 Turbidity
3.4.1.4 Dissolved Oxygen
3.4.1.5 Temperature
3.4.1.6 Salinity

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 Antimony
3.4.2.6 Arsenic
3.4.2.7 Cadmium
3.4.2.8 Chromium Hexavalent
3.4.2.9 Chromium Total
3.4.2.10 Gold
3.4.2.11 Lead
3.4.2.12 Manganese
3.4.2.13 Mercury
3.4.2.14 Selenium
3.4.2.15 Silver

4.0 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.

4.1 **RIVER SEDIMENTS QUALITY MONITORING STATIONS**

4.1.1 LR-1 Lauis River (upstream of freshwater intake)
4.1.2 LR-2 Lauis River (near mouth / nursery)
4.1.3 MR-1 Masinloc River (Collat Bridge)

4.2 **MARINE SEDIMENTS QUALITY MONITORING STATIONS**

4.2.1 M-1 Between Lauis River & Bani Point
4.2.2 M-2 Outfall (100 m from discharge canal)
4.2.3 M-3 Cooling Water Intake
4.2.4 M-4 Resettlement
4.2.5 M-5 C-Square (Benguet Loading area)
4.2.6 M-6 Puerto Asinan
4.2.7 M-7 Benguet Wharf
4.2.8 M-8 Masinloc River (Near mouth)
4.2.9 M-9 Petron (harbor)
4.2.10 M-10 BFAR
4.2.11 M-11 San Salvador
4.2.12 M-12 Along Veritas

4.3 **SOIL QUALITY MONITORING STATIONS**

4.3.1 S-1 Masinloc National High School (across highway)
4.3.2 S-2 Candelaria (back of Elementary School)
4.3.3 S-3 Puerto Asinan (across highway)
4.3.4 S-4 NPC Resettlement (beside roadside)
4.3.5 S-5 Bani Elementary School (beside roadside)
4.3.6 S-6 Palauig (back of Town Plaza)
4.3.7 S-7 Bani National High School (mango area)
4.3.8 S-8 CENRO Office (near MPPCL Monitoring Station)
4.3.9 S-9 Sto. Niño, Palauig (intersection)
4.3.10 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

First Quarter, 2010

SO_2 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	1356H-1456H	03/22/10	1.00	30.0	763.56	0.0095	0.0590	0.16	DENR A. O. 14 s. 1993 340 ug/Ncm
	1500H-1600H	03/22/10	1.00	30.0	763.56	0.0226	0.0590	0.38	
Inhobol	1445H-1545H	03/23/10	1.00	31.0	763.56	0.0095	0.0588	0.16	
	1547H-1647H	03/23/10	1.00	31.0	763.56	0.0140	0.0588	0.24	
Candelaria	1410H-1510H	03/23/10	1.00	35.0	763.56	0.0140	0.0581	0.24	
	1515H-1615H	03/23/10	1.00	34.0	763.56	0.0226	0.0582	0.39	
Palauig	1500H-1600H	03/22/10	1.00	29.0	763.56	0.0270	0.0592	0.46	
	1604H-1704H	03/22/10	1.00	28.0	763.56	0.0313	0.0594	0.53	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

c:\windows\desktop\monitoring\multipartite\multipartite2010\so2\so2-ambient.xls

TABLE NO. 2

AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

NO_2 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	1356H-1456H	03/22/10	1.00	30.0	763.56	0.0017	0.0590	0.03	DENR A. O. 14 s. 1993 260 ug/Ncm
	1500H-1600H	03/22/10	1.00	30.0	763.56	0.0013	0.0590	0.02	
Inhobol	1445H-1545H	03/23/10	1.00	31.0	763.56	0.0020	0.0588	0.03	
	1547H-1647H	03/23/10	1.00	31.0	763.56	0.0017	0.0588	0.03	
Candelaria	1410H-1510H	03/23/10	1.00	35.0	763.56	0.0013	0.0581	0.02	
	1515H-1615H	03/23/10	1.00	34.0	763.56	0.0017	0.0582	0.03	
Palauig	1500H-1600H	03/22/10	1.00	29.0	763.56	0.0010	0.0592	0.02	
	1604H-1704H	03/22/10	1.00	28.0	763.56	0.0010	0.0594	0.02	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, 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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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	1356H-1456H	03/22/10	558.2	557.9	0.60	30.0	763.56	0.30	35.41	8.47	
	1500H-1600H	03/22/10	554.3	554.0	0.60	30.0	763.56	0.30	35.41	8.47	DENR A. O. 14
Inhobol	1445H-1545H	03/23/10	553.9	550.6	1.50	31.0	763.56	3.30	88.22	37.40	
	1547H-1647H	03/23/10	557.4	553.7	1.50	31.0	763.56	3.70	88.22	41.94	
Candelaria	1410H-1510H	03/23/10	547.5	547.2	0.70	35.0	763.56	0.30	40.64	7.38	s. 1993
	1515H-1615H	03/23/10	551.5	551.1	0.70	34.0	763.56	0.40	40.77	9.81	300*ug/Ncm*
Palauig	1500H-1600H	03/22/10	565.2	565.1	0.60	29.0	763.56	0.10	35.52	2.82	
	1604H-1704H	03/22/10	541.0	540.9	0.60	28.0	763.56	0.10	35.64	2.81	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 4

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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	1356H-1456H	03/22/10	0.60	30.0	763.56	0.0000	35.41	ND	10 µg/Ncm DENR A. O. 14 s. 1993
	1500H-1600H	03/22/10	0.60	30.0	763.56	0.0000	35.41	ND	
Masinloc	1445H-1545H	03/23/10	1.50	31.0	763.56	0.0000	88.22	ND	
	1547H-1647H	03/23/10	1.50	31.0	763.56	0.0000	88.22	ND	
Candelaria	1410H-1510H	03/23/10	0.70	35.0	763.56	0.0000	40.64	ND	
	1515H-1615H	03/23/10	0.70	34.0	763.56	0.0000	40.77	ND	
Palauig	1500H-1600H	03/22/10	0.60	29.0	763.56	0.0000	35.52	ND	
	1604H-1704H	03/22/10	0.60	28.0	763.56	0.0000	35.64	ND	

FORMULA:

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

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

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, m^3/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
First Quarter, 2010
SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1955H-2055H	03/22/10	1.00	24.00	763.56	0.0052	0.0602	0.0864	DOH 5000ug/Ncm
	2103H-2203H	03/22/10	1.00	24.00	763.56	0.0008	0.0602	0.0133	
Admin. Building	2008H-2108H	03/22/10	1.00	22.00	763.56	0.0000	0.0606	ND	
	2109H-2209H	03/22/10	1.00	21.00	763.56	0.0000	0.0608	ND	
WWT Control Room	0951H-1051H	03/22/10	1.00	26.00	763.56	0.0008	0.0598	0.0134	
	1055H-1155H	03/22/10	1.00	25.00	763.56	0.0000	0.0600	ND	
Coal Handling Control Room	0937H-1037H	03/22/10	1.00	26.00	763.56	0.0008	0.0598	0.0134	
	1040H-1140H	03/22/10	1.00	27.00	763.56	0.0183	0.0596	0.3070	
Chemical Laboratory	0935H-1035H	03/22/10	1.00	27.00	763.56	0.0095	0.0596	0.1594	
	1038H-1138H	03/22/10	1.00	27.00	763.56	0.0095	0.0596	0.1594	
Mechanical Shop	0803H-0903H	03/22/10	1.00	27.00	763.56	0.0313	0.0596	0.5252	
	0912H-1012H	03/22/10	1.00	28.00	763.56	0.0183	0.0594	0.3081	
Ash Handling Control Room	0940H-1140H	03/22/10	1.00	27.00	763.56	0.0313	0.0596	0.5252	
	1045H-1145H	03/22/10	1.00	29.00	763.56	0.0313	0.0592	0.5287	
Turbine Floor	2000H-2100H	03/22/10	1.00	34.00	763.56	0.0313	0.0582	0.5374	
	2103H-2203H	03/22/10	1.00	35.00	763.56	0.0270	0.0581	0.4651	

FORMULA:

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

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

Notes:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 6

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1955H-2055H	03/22/10	1.00	24.00	763.56	0.0020	0.0602	0.0332	DOH 6000*ug/Ncm* DOLE 9000*ug/Ncm*
	2103H-2203H	03/22/10	1.00	24.00	763.56	0.0023	0.0602	0.0382	
Admin. Building	2008H-2108H	03/22/10	1.00	22.00	763.56	0.0017	0.0606	0.0280	
	2109H-2209H	03/22/10	1.00	21.00	763.56	0.0017	0.0608	0.0280	
WWT Control Room	0951H-1051H	03/22/10	1.00	26.00	763.56	0.0020	0.0598	0.0334	
	1055H-1155H	03/22/10	1.00	25.00	763.56	0.0006	0.0600	0.0100	
Coal Handling Control Room	0937H-1037H	03/22/10	1.00	26.00	763.56	0.0013	0.0598	0.0217	
	1040H-1140H	03/22/10	1.00	27.00	763.56	0.0020	0.0596	0.0336	
Chemical Laboratory	0935H-1035H	03/22/10	1.00	27.00	763.56	0.0023	0.0596	0.0386	
	1038H-1138H	03/22/10	1.00	27.00	763.56	0.0020	0.0596	0.0336	
Mechanical Shop	0803H-0903H	03/22/10	1.00	27.00	763.56	0.0010	0.0596	0.0168	
	0912H-1012H	03/22/10	1.00	28.00	763.56	0.0010	0.0594	0.0168	
Ash Handling Control Room	0940H-1140H	03/22/10	1.00	27.00	763.56	0.0010	0.0596	0.0168	
	1045H-1145H	03/22/10	1.00	29.00	763.56	0.0012	0.0592	0.0203	
Turbine Floor	2000H-2100H	03/22/10	1.00	34.00	763.56	0.0023	0.0582	0.0395	
	2103H-2203H	03/22/10	1.00	35.00	763.56	0.0023	0.0581	0.0396	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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	1955H-2055H	03/22/10	562.1	561.4	0.90	24.00	763.56	0.70	54.18	12.92	
	2103H-2203H	03/22/10	570.3	569.2	0.80	24.00	763.56	1.10	48.16	22.84	
Admin. Building	2008H-2108H	03/22/10	538.1	537.5	0.50	22.00	763.56	0.60	30.31	19.80	DOH
	2109H-2209H	03/22/10	537.8	537.4	0.50	21.00	763.56	0.40	30.41	13.15	
WWT Control Room	0951H-1051H	03/22/10	524.6	524.5	0.42	26.00	763.56	0.10	25.41	3.94	2000*ug/Ncm*
	1055H-1155H	03/22/10	533.0	532.1	0.76	25.00	763.56	0.90	45.89	19.61	
Coal Handling Control Room	0937H-1037H	03/22/10	522.8	521.9	0.62	26.00	763.56	0.90	37.27	24.15	
	1040H-1140H	03/22/10	520.1	519.2	0.68	27.00	763.56	0.90	40.52	22.21	
Chemical Laboratory	0935H-1035H	03/22/10	515.3	514.9	0.60	27.00	763.56	0.40	35.76	11.19	DOLE
	1038H-1138H	03/22/10	544.1	543.7	0.70	27.00	763.56	0.40	41.72	9.59	
Mechanical Shop	0803H-0903H	03/22/10	545.8	545.1	1.00	27.00	763.56	0.70	59.60	11.74	1000*ug/Ncm*
	0912H-1012H	03/22/10	541.9	541.4	0.60	28.00	763.56	0.50	35.64	14.03	
Ash Handling Control Room	0940H-1140H	03/22/10	549.2	548.6	1.00	27.00	763.56	0.60	59.60	10.07	
	1045H-1145H	03/22/10	542.9	542.4	1.00	29.00	763.56	0.50	59.21	8.45	
Turbine Floor	2000H-2100H	03/22/10	542.9	542.4	1.00	34.00	763.56	0.50	58.24	8.59	
	2103H-2203H	03/22/10	558.9	558.3	1.00	35.00	763.56	0.60	58.05	10.34	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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.

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DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____ Erwin

BGU Representative(s) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

TABLE NO. 8

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

AMBIENT NOISE MONITORING

MORNING TIME

March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0720H	55.1	60.7	51.7	56.5	tricycle
2	Purok Percaloha (Junction)	0718H	58.4	58.4	53.6	54.8	birds
3	Edillor's Residence (150m. From Gate	0823H	48.6	59.8	44.1	50.7	birds
4	EPDC Building	0822H	54.9	57.6	46.9	54.4	birds
5	C-Square (Benguet Loading Area)	0821H	42.9	44.4	39.6	40.4	birds
6	Resettlement Site	0818H	54.6	53.8	48.6	50.1	birds
7	Highway, waiting shed of Resettlement	0751H	69.2	69.2	53.1	57.2	tricycle
8	Puerto Asinan	0754H	67.7	67.7	62.1	63.8	tricycle
9	Sitio Atob, Purok Tanguile	0758H	63.3	68.1	60.9	64.0	tricycle
10	Masinloc Town Plaza	0805H	70.3	74.4	66.9	71.3	tricycle
11	Bani National High School, (Annex), Taltal	0733H	64.7	71.1	63.6	67.4	tricycle
12	Brgy. Lauis (Junction to Binabalian)	0742H	57.2	75.6	51.6	66.5	tricycle
13	Lauis Elementary School	0744H	71.4	72.9	59.8	67.7	tricycle
14	Purok Bangal-Duhok (Junction)	0726H	62.1	69.6	60.9	63.5	tricycle
15	Bani Elementary School, Bani	0725H	56.6	59.6	50.6	54.8	tricycle
16	Bani National High School, Bani	0724H	58.4	68.6	48.7	60.6	birds
17	Brgy. Bani Multi-purpose Complex	0723H	63.3	75.7	58.1	72.9	truck
18	Plant Site (Coal Yard)	0716H	57.7	81.3	52.1	65.4	bulldozer

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

PARAMETERS	NOISE STANDARD (dBA)
Emission Noise	90 @ 10m. distance from source
Ambient Noise Category	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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)

PGU Representative(s)

MPPCL Representative(s)

TABLE NO. 9

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

AMBIENT NOISE MONITORING

DAYTIME

March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1445H	52.3	53.8	50.1	51.2	
2	Purok Percaloha (Junction)	1443H	54.2	57.6	50.1	52.4	
3	Edillor's Residence (150m. From Gate	1446H	66.9	70.7	64.3	67.5	tricycle
4	EPDC Building	1447H	50.8	52.7	45.9	48.4	radio
5	C-Square (Benguet Loading Area)	1448H	52.8	56.9	49.8	52.9	
6	Resettlement Site	1451H	50.6	58.1	47.6	51.3	
7	Highway, waiting shed of Resettlement	1510H	57.2	60.9	53.4	56.3	motorcycle
8	Puerto Asinan	1512H	73.3	80.4	69.9	75.4	vehicle
9	Sitio Atob, Purok Tanguile	1514H	65.8	77.4	65.4	73.3	tricycle
10	Masinloc Town Plaza	1522H	72.9	72.9	63.9	68.0	tricycle
11	Bani National High School, (Annex), Taltal	1455H	51.7	52.4	50.6	51.4	
12	Brgy. Lauis (Junction to Binabalian)	1502H	58.4	65.9	50.9	55.4	radio
13	Lauis Elementary School	1505H	62.4	66.7	61.7	63.5	motorcycle
14	Purok Bangal-Duhok (Junction)	1554H	66.2	72.6	64.7	68.6	motorcycle
15	Bani Elementary School, Bani	1556H	60.9	69.9	59.4	63.1	van
16	Bani National High School, Bani	1602H	63.6	73.3	49.3	63.8	tricycle
17	Brgy. Bani Multi-purpose Complex	1603H	63.6	73.3	62.1	68.3	tricycle
18	Plant Site (Coal Yard)	1441H	57.2	66.5	56.4	58.5	bulldozer

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

PARAMETERS Emission Noise	NOISE STANDARD (dBA) 90 @ 10m. distance from source
Ambient Noise Category	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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)

PGU Representative(s)

MPPCL Representative(s)

TABLE NO. 10

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

First Quarter, 2010

AMBIENT NOISE MONITORING

NIGHT TIME

March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2207H	55.7	55.7	41.9	44.2	insects chirping
2	Purok Percaloha (Junction)	2205H	56.1	56.1	54.9	55.4	
3	Edillor's Residence (150m. From Gate	2256H	67.8	67.8	60.3	63.5	insects chirping
4	EPDC Building	2255H	47.9	61.8	47.6	50.9	insects chirping
5	C-Square (Benguet Loading Area)	2254H	43.3	58.3	41.8	48.6	insects chirping
6	Resettlement Site	2251H	44.1	48.6	41.1	43.9	
7	Highway, waiting shed of Resettlement	2226H	48.3	56.9	47.6	48.8	dog barking
8	Puerto Asinan	2228H	50.2	50.2	48.7	49.2	
9	Sitio Atob, Purok Tanguile	2230H	48.9	59.4	48.2	52.2	dog barking
10	Masinloc Town Plaza	2236H	66.8	66.8	64.3	64.9	tricycle
11	Bani National High School, (Annex), Taltal	2216H	59.9	73.4	51.7	75.1	motorcycle
12	Brgy. Lauis (Junction to Binabalian)	2221H	49.8	53.2	48.7	50.1	insects chirping
13	Lauis Elementary School	2220H	49.1	49.1	47.9	48.5	
14	Purok Bangal-Duhok (Junction)	2211H	49.1	49.1	47.9	48.5	insects chirping
15	Bani Elementary School, Bani	2210H	47.6	52.1	46.8	47.9	
16	Bani National High School, Bani	2209H	49.4	57.3	47.6	50.1	insects chirping
17	Brgy. Bani Multi-purpose Complex	2208H	53.8	57.9	44.4	51.6	people talking
18	Plant Site (Coal Yard)	2204H	62.1	67.3	59.1	62.9	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 quiet-ness (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)

PGU Representative(s)

MPPCL Representative(s)

TABLE NO. 11

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

AMBIENT NOISE MONITORING

EVENING TIME

March 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1821H	66.7	66.7	56.9	60.9	people talking
2	Purok Percaloha (Junction)	2018H	52.4	56.9	51.7	53.5	
3	Edillor's Residence (150m. From Gate	2114H	52.1	66.5	49.1	55.0	insects chirping
4	EPDC Building	2113H	51.3	65.6	47.2	53.9	dog barking
5	C-Square (Benguet Loading Area)	2112H	51.3	51.3	48.7	49.8	insects chirping
6	Resettlement Site	2108H	55.4	56.9	54.3	55.4	dog barking
7	Highway, waiting shed of Resettlement	2045H	56.9	64.8	55.8	60.1	dog barking
8	Puerto Asinan	2048H	79.8	79.8	60.3	72.8	tricycle
9	Sitio Atob, Purok Tanguile	2050H	52.1	56.6	51.3	53.4	people talking
10	Masinloc Town Plaza	2056H	60.7	61.1	56.9	59.4	people talking
11	Bani National High School, (Annex), Taltal	2032H	71.6	71.9	67.8	69.7	tricycle
12	Brgy. Lauis (Junction to Binabalian)	2038H	52.1	75.3	48.7	60.1	people talking
13	Lauis Elementary School	2040H	60.3	63.3	58.4	60.6	radio
14	Purok Bangal-Duhok (Junction)	2027H	55.9	60.7	52.4	56.7	people talking
15	Bani Elementary School, Bani	2026H	59.2	59.6	57.3	58.2	jeep
16	Bani National High School, Bani	2024H	57.3	59.6	54.3	57.0	tricycle
17	Brgy. Bani Multi-purpose Complex	2025H	67.4	67.4	58.1	62.0	people talking
18	Plant Site (Coal Yard)	2017H	62.6	62.6	53.9	57.0	

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 quiet-ness (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)

PGU Representative(s)

MPPCL Representative(s)

TABLE 12

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter 2010

OCCUPATIONAL NOISE MONITORING

March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	2029H	57.9	69.9	52.7	59.7	
2	Turbine Floor	2028H	87.6	87.9	86.8	87.3	
3	Laboratory Building	2012H	66.9	68.8	66.2	67.2	
4	Administration Building (Lobby)	2014H	54.2	75.9	51.6	62.1	
5	Coal Handling	2104H	68.8	74.1	51.9	60.9	
6	Ash Handling	2033H	68.4	71.1	67.7	68.8	
7	Machine Shop	2040H	68.4	76.4	65.8	67.4	
8	Water Treatment Control Room	2037H	63.9	74.4	62.8	64.8	
9	Boiler Feed Pump Unit #1	2026H	95.1	96.2	92.1	94.5	
10	Boiler Feed Pump Unit #2	2023H	96.6	96.6	90.9	94.0	
11	Circulating Water Pump Intake #1	2021H	93.6	94.3	91.7	93.0	
12	Circulating Water Pump Intake #2	2020H	91.7	92.1	87.2	90.2	
13	Smoke Stack (CEM Control Room)	2035H	61.3	65.1	60.2	62.6	
14	Generator Transformer Unit #1	2017H	77.1	76.6	75.9	76.6	
15	Generator Transformer Unit #2	2018H	75.6	81.6	94.1	76.2	
16	Guard House (Main Gate)	2109H	53.1	55.3	47.8	50.0	
17	230kV GIS (Switchyard)	2016H	69.2	69.9	68.4	69.0	
18	Coal Yard	2106H	57.6	60.6	55.3	56.2	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH	DOLE
	Threshold Limit Values	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)

PGU Representative(s)

MPPCL Representative(s)

APPENDIX 2

MULTIPARTITE WATER QUALITY MONITORING RESULTS

PAGES 24-33

TABLE NO. 13

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	3/23/10	3/23/10	3/22/10	3/22/10	3/23/10	3/22/10	-
Time of Sampling	1645H	1400H	0815H	0839H	1414H	1530H	-
pH	7.73	7.07	8.08	8.02	7.71	7.34	6.5 - 8.5
Conductivity, mSiemens / meter	0.164	1.750	0.266	0.262	0.561	3	-
Turbidity, NTU	2	0	2	5	4	3	5
Dissolved Oxygen, ppm	6.40	1.38	5.26	4.79	2.03	5.77	-
Temperature, °C	29.0	28.5	31.2	31.3	31.7	31.2	-
Salinity, %	0.00	0.08	0.01	0.01	0.02	0.17	-

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 Dstrict
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 Multi-Partite Monitoring Team

DENR Representative (s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

PGU Representative (s)

MPPCL Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-1q2010\domestic

TABLE NO. 14

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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	25	0	0	0	0	0	0
Total Coliform,MPN/100ml	63	2	3	3	0	0	0
Total Suspended Solids	0.3	0.1	0.9	0.6	0.9	0.5	-
Antimony	ND	ND	ND	ND	ND	ND	0.02
Arsenic	ND	ND	ND	ND	ND	ND	0.05
Cadmium	ND	ND	ND	ND	ND	ND	0.003
$Chromium^{+6}$	ND	ND	ND	ND	ND	ND	-
Chromium, Total	ND	ND	ND	ND	ND	ND	0.05
Gold	ND	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	ND	0.01
Manganese	ND	ND	ND	ND	ND	ND	0.4
Mercury	ND	ND	ND	ND	ND	ND	0.001
Selenium	ND	ND	ND	ND	ND	ND	0.01
Silver	ND	ND	ND	ND	ND	ND	-

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

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TABLE NO. 15

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

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	3/23/2010	3/23/2010	3/23/2010	-
Time of Sampling	1020H	1050H	1001H	-
pH	7.82	7.69	7.47	6.5 - 8.5
Conductivity, mSiemens / cm.	0.556	23.80	53.4	-
Turbidity, NTU	3	2.0	2.0	-
Dissolved Oxygen, ppm	8.94	7.22	6.42	5 minimum
Temperature, °C	27.8	29.95	28.2	-
Salinity, %	0.01	1.18	3.27	-

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 Multi-Partite Monitoring Team

DENR Representative (s) _____

PAMB Representative (s) _____

MGU Representative (s) _____

BGU Representative (s) _____

PGU Representative (s) _____

MPPCL Representative (s) _____

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TABLE NO. 16

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

RIVER WATER QUALITY MONITORING (LABORATORY ANALYSIS)

Parameters	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.34 s.1990 (Class B)
Oil & Grease	ND	ND	ND	1
Fecal Coliform	72	2	128	200
Total Coliform	214	21	361	1,000
Total Suspended Solids	0.4	5.70	7.9	<30 mg/l increase
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	0.05
Cadmium	ND	ND	ND	0.01
Chromium^{+6}	ND	0.00029	0.00029	0.05
Chromium, Total	ND	0.0385	0.0773	
Gold	ND	ND	ND	-
Lead	ND	ND	ND	0.05*
Manganese	ND	ND	ND	-
Mercury	ND	ND	ND	0.002
Selenium	ND	ND	ND	
Silver	ND	ND	ND	-

NOTES:

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

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TABLE NO. 17

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)

March 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	1130H	7.45	0.970	2	1.44	27.1	0.04
MO-1: Bani Point (After Ash Disposal Area)	0940H	6.87	0.676	6	1.43	26.7	0.02
MO-2: Bani (NPC Nursery)	1030H	7.92	0.801	5	1.32	26.9	0.02
MO-3: Between Corafer And Duhok	1045H	7.33	0.771	42	1.17	27.0	0.02
MO-5: Bani (PNP Patrol Base)	1140H	6.57	1.100	3	1.14	28.0	0.04
MO-6: Bani	0955H	6.72	3.860	3	1.20	27.7	0.19
MOW-1: Bani (near Sedimentation Basin)	1020H	7.98	1.610	4	2.95	26.6	0.07
MOW-2: Bani (along embankment)	1055H	7.81	2.110	27	1.28	27.7	0.06
MOW-3: Bani (near warehouse)	NO WATER						

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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)

PGU Representative (s)

MPPCL Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-1q2010\ground

TABLE NO. 18

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

GROUNDWATER MONITORING (LABORATORY ANALYSIS)

Parameters	MD-1	MO-1	MO-2	MO-3	MO-5	MO-6	MOW-1	MOW-2	PNSDW	NBC
Total Suspended Solids	0.5	0.7	0.4	0.2	0.3	1.1	3.4	1.7	-	≤3,847
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.0174
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	0.003	≤0.01
Chromium^{+6}	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	0.05	-
Gold	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Lead	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.12
Manganese	ND	ND	ND	ND	ND	ND	0.0124	ND	0.4	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	0.001	-
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	0.01	-
Silver	ND	ND	ND	ND	ND	ND	ND	ND	-	-

NOTES:

1. Monitoring Stations
   - MD-1: Near Main Gate, Right
   - MD-2 : Taltal (Near Lauis 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
   - MOW-1: Bani (near Sedimentation Basin)
   - MOW-2: Bani (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 Absoption Spectrometer.
9. Monitoring conducted by the MPPCL Multipartite Monitoring Team
10. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-1q2010\ground-lab

TABLE NO.19

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

MARINE WATER MONITORING (IN-SITU ANALYSIS)

March 23, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1213H	7.84	57.4	1	6.78	29.6	3.82	
M2	1221H	7.83	57.9	3	6.18	32.4	3.86	
M3	1239H	7.87	57.7	3	6.17	30.2	3.84	
M4	0845H	7.81	57.9	7	5.63	29.6	3.87	
M5	0836H	7.81	57.2	5	5.58	29.3	3.80	
M6	0853H	7.25	56.9	2	6.52	29.3	3.73	
M7	0911H	7.83	57.9	1	5.51	29.8	3.86	
M8	0928H	7.83	58.1	1	6.90	29.6	3.87	
M9	1044H	7.82	58.8	5	6.12	31.2	3.91	
M10	1100H	7.82	58.3	2	5.61	30.9	3.88	
M11	1119H	7.87	57.8	1	5.45	29.7	3.84	
M12	1134H	7.87	57.7	3	5.80	29.8	3.84	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Lauis 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. 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) _____

PGU Representative (s) _____

MPPCL Representative (s) _____

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-1q2010\marine

TABLE NO. 20

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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 A0 No.34 s.1990 (Class SC)
Oil & Grease	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	0.1	3
Fecal Coliform,MPN/100ml	0	0	0	0	0	0	0	2	0	0	0	0	-
Total Coliform,MPN/100ml	1	26	25	41	32	35	30	42	46	15	28	29	5,000
Total Suspended Solids	7.7	7.6	7.8	7.2	8.3	11.4	7.8	8.4	16.7	7.3	7.5	8.1	<30 mg/l increase
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
Chromium^{+6}	0.0023	0.0016	0.0016	0.0016	0.0016	0.0016	0.0023	0.0016	0.0016	0.0016	0.0016	0.0016	0.1
Chromium, Total	0.0911	0.1089	0.1048	0.1047	0.1033	0.1014	0.0988	0.1014	0.1032	0.1012	0.0990	0.0997	-
Gold	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*
Manganese	0.0041	0.0002	ND	ND	ND	0.0086	0.0064	0.0064	0.0058	0.0004	0.0045	0.0038	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002
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	-

NOTES:

1. Monitoring Stations
   - M-1: Between Lauis 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) $\leq$0.35 ppm

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TABLE NO. 21

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

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	3/25/2010	3/25/2010	3/25/2010	3/23/2010	3/23/2010	-
Time of Sampling	1022H	0910H	1435H	1736H	1730H	-
pH	7.02	NO	8.19	7.72	7.67	6.0 - 9.0
Conductivity, mSiemens/cm.	1.76		1.32	58.00	1.00	-
Turbidity, NTU	15	SAMPLE	21	13	2	-
Dissolved Oxygen, ppm	5.84		7.50	6.39	4.82	-
Temperature, °C	31.0	(EMPTY)	36.5	35.7	27.3	-
Salinity, %	0.07		0.06	3.85	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 MPPCL Multi-Partite Monitoring Team

DENR Representative (s)

PAMB Representative (s)

MGU Representative (s)

BGU Representative (s)

PGU Representative (s)

MPPCL Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-1q2010\effluent

TABLE NO. 22

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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	10
Total Suspended Solids	0.5	N	0.8	7.7	11.70	150
Biochemical Oxygen Demand	2.0	O	5.0	5.0	2.00	100
Chemical Oxygen Demand	2.0		6.0	110.0	2.00	200
Antimony	ND	S	ND	ND	ND	
Arsenic	ND	A	ND	ND	ND	0.5
Cadmium	ND	M	ND	ND	ND	0.1
Chromium^{+6}	ND	P	ND	0.002	ND	0.2
Chromium, Total	0.0007	L	0.0044	0.0911	0.0035	
Gold	ND	E	ND	ND	ND	-
Lead	ND		ND	ND	ND	0.5
Manganese	ND		ND	ND	ND	-
Mercury	ND	EMPTY	ND	ND	ND	0.005
Selenium	ND		ND	ND	ND	
Silver	ND		ND	ND	ND	-

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 waas analyzed using Colorimetric Method
12. Monitoring conducted by the MPPCL Multipartite Monitoring Team
13. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-1q2010\effluent-lab

APPENDIX 3

MULTIPARTITE SEDIMENTS, COAL, SOLID WASTES AND SOIL QUALITY MONITORING RESULTS

PAGES 35-38

TABLE NO. 23

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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
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	
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	183	23	24	137	245	40	346	136	194	71	19	27	≤7,077
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤46.02
Lead	ND	ND	ND	ND	1.01	ND	ND	ND	ND	ND	ND	ND	≤97.7
Manganese	609	101	122	268	267	107	611	227	353	143	49	65	
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤0.13
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	≤3.0

NOTES:

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

7.Monitoring Stations

M-1: Between Lauis 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

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TABLE NO. 24

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

RIVER SEDIMENT MONITORING (LABORATORY ANALYSIS)

Parameters	LR-1: Lauis River upstream of fresh-water intake	LR-2: Lauis River near mouth nursery	MR-1: Masinloc River Collat Bridge	NBC
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	≤1.84
Cadmium	ND	ND	ND	≤1.066
Chromium	231	138	95	-
Gold	ND	ND	ND	-
Lead	ND	ND	ND	≤24.0
Mercury	ND	ND	ND	-
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

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

First Quarter, 2010

COAL AND ASH MONITORING (LABORATORY ANALYSIS)

Parameters	COAL	BOTTOM ASH	FLY ASH	WTF SLUDGE	R.A. 6969 DAO 29
Antimony	ND	ND	ND	ND	-
Arsenic	ND	ND	ND	ND	5
Cadmium	ND	ND	ND	ND	5
Chromium	ND	ND	ND	ND	5
Gold	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	5
Manganese	98	171	99	94	-
Mercury	ND	ND	ND	ND	0.2
Selenium	ND	ND	ND	ND	5
Silver	ND	ND	ND	ND	-

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 parts per million.
4. ND - Non Detectable
5. WTF - Wastewater Treatment Facility
6. Samples for Arsenic, Cadmium Chromium, Lead, Mercury and Selenium Analysis were processed using TCLP.
7. Other sample parameters 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. 26

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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
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	0.1752
Chromium	290	276	202	227	247	211	254	540	161	210
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	14.735	ND	38.014	1.589	ND	32.277
Manganese	564	264	767	417	611	380	621	349	305	395
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

1.Monitoring Stations

S1: Masinloc National High School (across highway)
S-2: Candelaria (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 (Estella Compound)

2. No DENR limits for soil.
3. Units are in milligrams per kilogram sample.
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 Multipartite Water Quality Monitoring Team
8. Analysis conducted at MCFTPP Environmental Laboratory, Masinloc, Zambales

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APPENDIX 4

MULTIPARTITE MONITORING SCHEDULE

FIRST QUARTER 2010

PAGE 40

AES
the power of being global

Masinloc Power Partners Company Lilmited

1st QUARTER 2010 MULTI-PARTITE AIR, WATER, NOISE, SEDIMENTS, COAL, AND SOLID WASTE

ACTIVITY	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	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.	2,4,5,6,
Air Sampling (Occupational)						MCFTPP	2,4,5,6
Marine Water/Sediments						Masinloc and Oyon Bays	3,4,6,
Bacteriological Test						Env Lab	2, 5
Groundwater & River Water/Sediments						Lauis 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	2,4,5
Noise Monitoring (Ambient)		**	***	*		Can., Mas., Res. MCFTPP	2,3,4,5,6,
Plant Effluent						ASB, CSB, CWD	4,5,6
Fly Ash, Bottom Ash & Sludge						Fly Ash Silo / DCC, Pal,Mas,Res,Inho	4,5,6
Preparation of Reports/Exit Meeting						Env. Lab	All

* morning time & day time
** evening time
***night time

Note:

1 A.V. Lopez
2. J. A. Aquino
3. H. A. Sune
4. J. E. Tiburcio
5. Q. D. Loo
6. E. Eclarinal

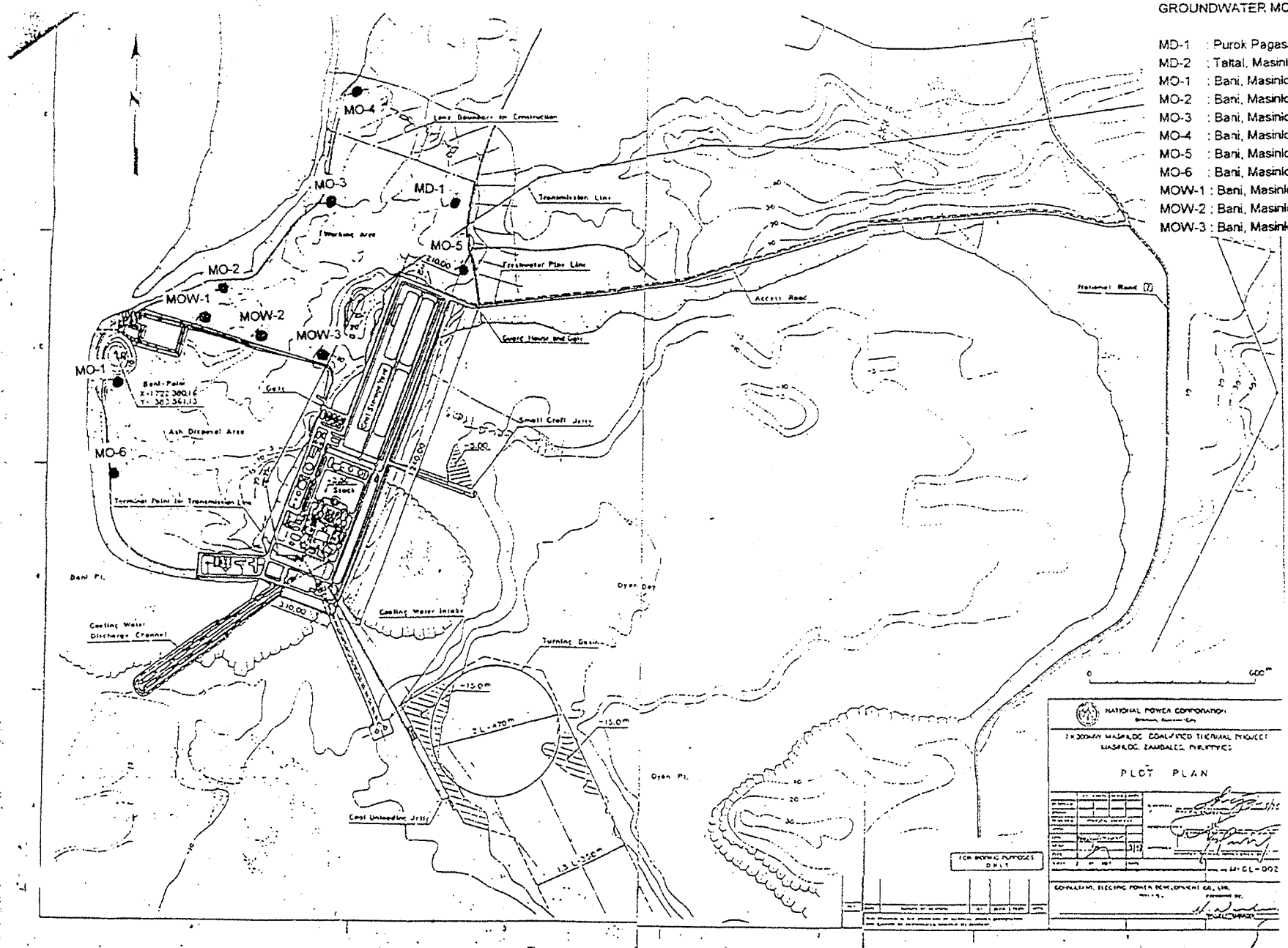
Prepared by:

ANTONIA V. LOPEZ
Environmental Manager
Environmental Section

APPENDIX 5

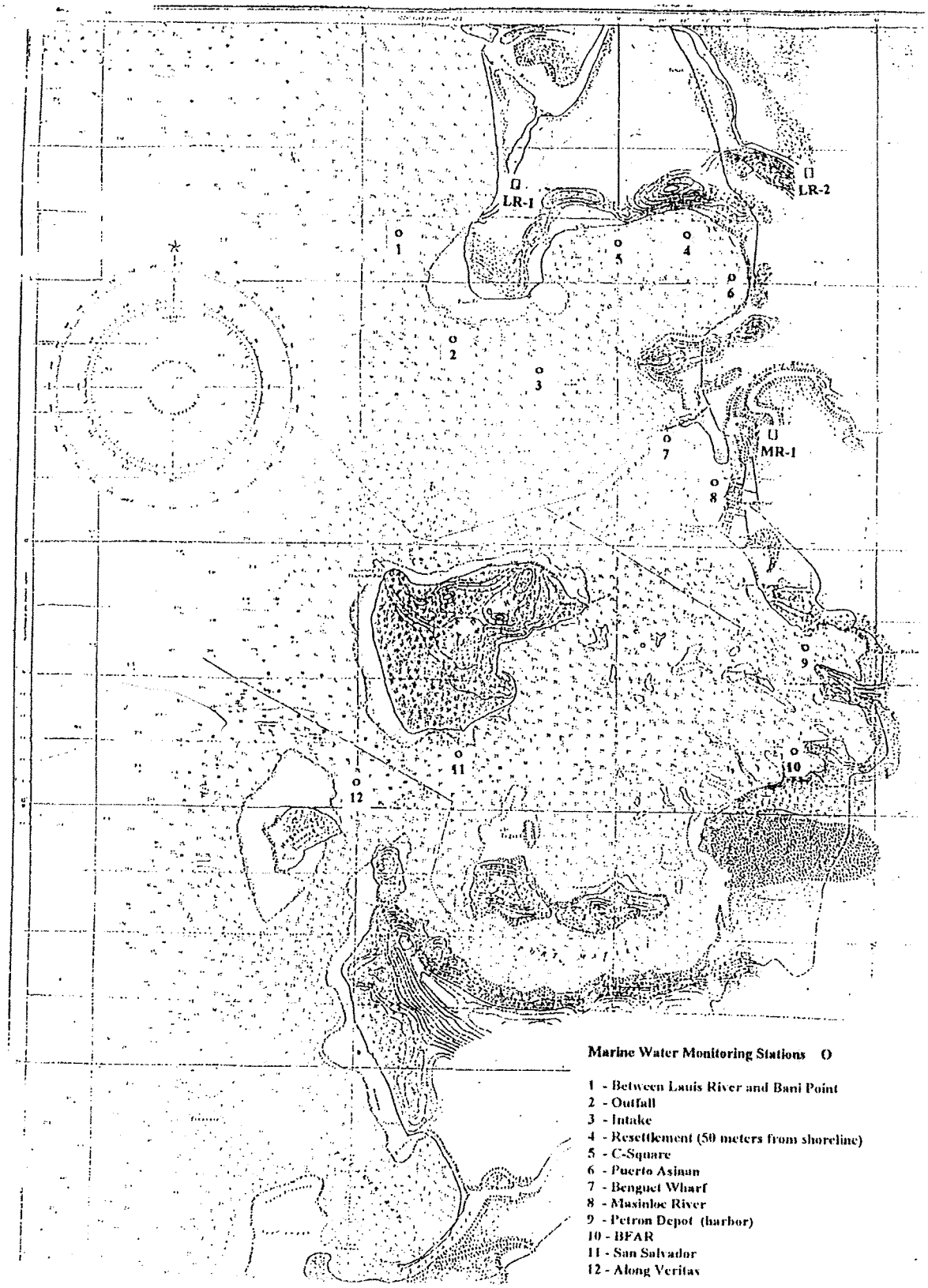
MULTIPARTITE MONITORING MAPS OF SAMPLING STATIONS

PAGES 42-44



GROUNDWATER MONITORING STATIONS

MD-1 : Purok Pagasa, Bani, Masinloc
MD-2 : Taltal, Masinloc (near Lauis River)
MO-1 : Bani, Masinloc
MO-2 : Bani, Masinloc (Watershed Nursery)
MO-3 : Bani, Masinloc
MO-4 : Bani, Masinloc
MO-5 : Bani, Masinloc (PNP Patrol Base)
MO-6 : Bani, Masinloc
MOW-1 : Bani, Masinloc (along embankment)
MOW-2 : Bani, Masinloc (along embankment)
MOW-3 : Bani, Masinloc (along embankment)

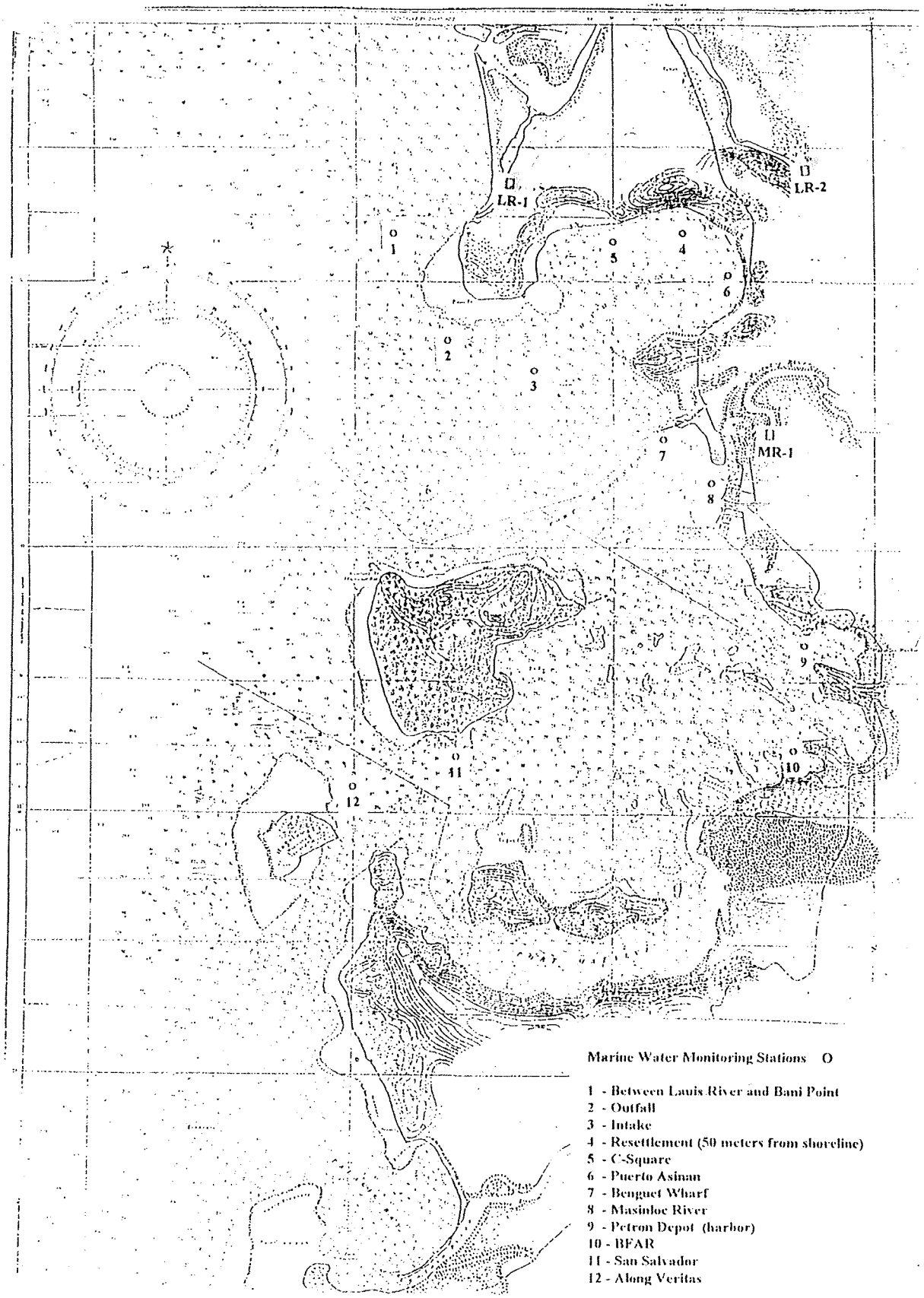


Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations ()

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)



Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations ⊡

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)

APPENDIX 6

MULTIPARTITE MANAGEMENT MONITORING SET-UP

PAGE 46

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
PAMB
NGO
MPPCL

WATER QUALITY TEAM
DENR
LGU
PAMB
NGO
MPPCL

MARINE ECOLOGY TEAM
DENR
LGU
PAMB
NGO
MPPCL

APPENDIX 7

MULTIPARTITE MONITORING TEAM ATTENDANCE SHEET

PAGES 48

AES PHILIPPINES
Masinloc Power Partners Company Limited
FIRST QUARTER 2010 MULTIPARTITE MONITORING

ATTENDANCE SHEET

Name	Agency	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar
1 Mary O. Hullcana	DENR					
2 Leonarda T. Lomas	BGU					
3 Nerissa C. Vigilia	ENRR					
4 HARRIS A. SUAVE	ENV'l					
5 JORGE A. AQUINO	Env'l					
6 RAMON I. EGUITA	LGU-MASINLOC					
7 Oscar E. Empeño Jr.	MGU					
8 Beth Ervin	Peace Corps LGU					
9 VEDINIA B. PERALTA	DENR PENRO					
10 Antonia V. Lopez	Envt'l					
11 DUWIN E GREGORIO	PAMB					
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						

APPENDIX 8

DETECTION LIMITS

PAGES 50

DETECTION LIMITS

Parameters	Detection imit	Unit
Antimony	0.2900	ppb
Arsenic	0.3300	ppb
Cadmium	0.0100	ppb
Chromium	0.0250	ppb
Gold	0.0130	ppm
Lead	0.0300	ppb
Manganese	0.0016	ppm
Mercury	3.3000	ppb
Selenium	0.3200	ppb
Silver	0.0032	ppm

APPENDIX 9

ENVIRONMENTAL COMPLIANCE CERTIFICATE STATUS

PAGES 52-60

ENVIRONMENTAL COMPLIANCE CERTIFICATE
Granted: December 18, 1992
(Status of MPPCL Compliance as of March 31, 2010)

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	➢ 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).	➢ 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.	➢ 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.			➢ Created an Environmental, Health and Safety Committee. ➢ Safety is everybody's responsibility and is the first value of the company. Safety walkdown, inspection and walk observations are conducted by managers, team leaders and peers.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	Complied		
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.		➢ Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (MPPCL, PAMB, and LGU. ➢ Copies of the Multipartite Monitoring Reports are provided to DENR, LGU, and PAMB.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	➢ 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.	Continuous Emission Monitoring System (CEMS) installed and operational. ➢ Two (2) SOx analyzers: operational ➢ Two (2) Nox: 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.	➢ Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig) ➢ Analyzers installed at each station: 1. SO_2 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	➢ 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".		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	➢ 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.		➢ Mangrove inspection is a daily/routine activity. ➢ Mangrove replanting is done yearly.
III. OPERATIONS PHASE **16.** Management and handling of coal (airborne coal dusts and spontaneous combustion free)			
a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity.			a. Complying
b. Adoption of "first in, first out".			b. Complying
c. Compaction of coal stockpiles;			c. Bulldozers are used in compacting operation.
d. Installation of water spray system.	d. Water Spray System (WSS) installed.		
e. Installation of temperature monitoring system	e. Temperature Monitoring System installed.		
f. Installation of an effective physical windbreak around the coal yard;	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. Maintenance and/or provision of buffers around the plant's perimeter	g. Complied. A major reforestation around the project site was completed. 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283		g. Management and maintenance is a routine / continuing activity.
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

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.	➢ 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			➢ 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
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.	➢ 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.	➢ 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.	➢ 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 **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.	➢ 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.		➢ Semi Annual Medical Mission is being conducted by MPPCL in collaboration w/ host community & 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.	➢ 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		➢ 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, PAMB & 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.			➢ 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.	➢ Environmental monitoring program/plan submitted to DENR-EMB on February 15, 1993. ➢ Environmental laboratory is operational.		➢ Water quality monitoring is a continuing activity. ➢ Results are provided to DENR, LGU, PAMB, MPPCL.
VI. FURTHER STUDIES REQUIRED			
32. Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	➢ DENR – EMB analytical methods and procedures being followed.		➢ 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.	➢ 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.	➢ 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.	➢ The Risk Assessment Study has been submitted to DENR - EMD.		

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.	➢ On going coordination with EMB re: setting up		
VIII. ENVIRONMENTAL REPORTING/ PUBLIC INFORMATION 37. Set a system for public relations / information, to discuss / resolve issues that may develop / affect the community.			➢ 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.

APPENDIX 10

ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

PAGES 62-70

Masinloc Power Partners Company Limited

ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

As of March 31, 2010

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 METEROLOGY 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.	2.3.1 MCFTPP will utilize a screw type coal unloader to eliminate dust dispersion during coal unloading.	Installed and operational.
	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.	Installed and operational.
	2.3.3 Water sprayers will be installed at coal stockyard.	Installed and operational.
	2.3.4 The height of fall of coal from stacker shall be made as low as possible during stacking.	Being implemented.
	2.3.5 Reclaimers/stackers shall be operated only at wind speed lower than 5 mps.	Being implemented.
	2.3.6 Planting of trees around MCFTPP to serve as wind breakers.	To date 55,436 trees have been planted.
2.4 Spontaneous combustion may occur at the coal stockyard emitting smoke and smoldering smell.	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.	Being implemented.
	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.	Being implemented.
	2.4.3 Regular re-piling and water sprinkling of coal file shall be undertaken to prevent spontaneous combustion.	Being implemented.

IMPACTS	MITIGATING MEASURES	STATUS
	2.4.4 Coal pile portion where spontaneous combustion occurs shall be compacted by bulldozer.	Being implemented.
2.5 MCFTPP will emit SO2, NO and air particulates in the environment.	2.5.1 MCFTPP will utilize 100% imported coal with low sulfur and ash content to reduce SO2, NO2 and air particulate emission.	Being implemented.
Emission levels of SO2, NOx and air particulates are within DENR standard.	2.5.2 MCFTPP will utilize a stack of 150 m high for maximum dispersion of SO2, NO2 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 Nox releases by 25-30%, or to less than 400 ppm at the boiler outlet.	
	2.5.5 Regular monitoring of ambient SO2, NO2 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 Candelaria.
2.6 Dust may be dispersed during ash transport, unloading and at the ash disposal area.	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.	2.7.1 Use of low noise equipment installation of soundproof washes and doors; indoor installation of fans, pumps, compressor and motors.	Being implemented.
	2.7.2 Operation of coal stockyard and ash disposal area shall be done only during daytime.	Regular ambient & occupational noise level monitoring is conducted regularly; data shows compliance to DOH & DOLE requirements.
	2.7.3 Regular monitoring of noise levels in population centers near MCFTPP during plant operation.	Multipartite monitoring is conducted quarterly.
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.	3.1.1 Revetment around the reclaimed area shall be constructed prior to start of reclamation.	Implemented
	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.	Revetment and embankment already constructed. Stabilization of slopes by sodding/planting completed. Revegetation is a continuing activity.
3.2 Possible contamination of Oyon Bay and groundwater due to the operation of ash disposal system.	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.	Monitoring of plant effluent is regularly conducted.
	3.2.2 The ash disposal area will be provided with sedimentation basin and embankment.	Completed
	3.2.3 The NW embankment of ash disposal area shall be lined with empervious material such as clay to avoid groundwater contamination.	Completed.
	3.2.4 Five (5) deep walls shall be constructed at the northern portion of ash disposal area for the monitoring of groundwater quality.	Implemented.

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 TERRESTIAL 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.	Implemented
4.2 The emission of SO2, NO2 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.	Completed

IMPACTS	MITIGATING MEASURES	STATUS
5.0 AQUATIC ECOLOGY		
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.	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.	Completed
	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.	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.
5.2 The discharge of treated effluent may cause ecological effects to the aquatic system at Oyon Bay.	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.	Completed.
	5.2.2 Biological studies at the discharge area will be undertaken during MCFTPP operation to determine possible effects of thermal effluent chlorination.	Permanent coral quadrat deployed near the discharge area. Biological monitoring is a continuing activity by the MM group.
5.3 The chlorination of cooling water may cause ecological effects to the aquatic system at Oyon Bay	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.	Being implemented.
5.4 The cooling water system will cause entrainment and impingement of marine organisms.	5.4.1 Velocity cap at the intake structure of the cooling water system will be installed to reduce entrapment of fishes. 5.4.2 Entrapment of fishes at the intake structure will be monitored during MCFTPP Operation.	Implemented.
5.5 The operation of ash disposal system may cause ecological effects to the aquatic system at Oyon Bay.	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.	Operational.

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 estruarine 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.	Completed Completed
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.	Completed
6.3 The influx of migrant construction workers will induce the proliferation of service establishments (food eateries, 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 MCFTPP to be spearheaded by NAPOCOR's Community Relations Department will be created to formulate and implement public information activities during plant operation.	Implemented The Community Relations Officer regularly coordinates with host communities re: community-related programs thru its Corporate Social Responsibility Program

IMPACTS	MITIGATING MEASURES	STATUS
6.6 The operation of MCFTPP will mean an additional 600 MW to the Luzon grid.		MPPCL 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	Implemented.
peace and order, sanitary condition of temporary camps and others.	practices. 7.1.2 Conduct of health and safety seminar to all construction personnel. 7.1.3 Provision for a construction camp at the site with safe drinking water supply, adequate sewage facilities and solid waste disposal facilities. 7.1.4 Provision for medical staff at site during construction to conduct routine physical examination and to attend to medical emergencies. 7.1.5 Provision for adequate security staff to ensure peace and order in the camp during construction.	 Implemented. Implemented. Implemented. Implemented.
7.2 Plant personnel and the general public near MCFTPP will be exposed to dust, noise, SO2, NO2 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 or SO2, NO2, dust and noise to levels within DENR ambient standards. 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. 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 MCFTPP.	Continuing.
	7.2.7 Implementation of Industrial Health and Occupational Safety Audit Program at MCFTPP 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.

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MASINLOC POWER PARTNERS COMPANY LIMITED

MULTIPARTITE MONITORING REPORT

Second Quarter 2010

June 21 – 25, 2010

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

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PENRO Focal Person For Environment

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Chemist

TABLE OF CONTENTS

MASINLOC POWER PARTNERS COMPANY LIMITED

SECOND QUARTER MULTI PARTITE MONITORING REPORT
June 21-25, 2010

EXECUTIVE BRIEF

The Second Quarter 2010 Multipartite Monitoring of the Masinloc Power Partners Company Limited was conducted on June 21-25, 2010 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 Masinloc Power Partners Company Limited.

For this quarter, monitoring was conducted jointly by two (2) representatives from the office of the Department of Environment and Natural Resources (CENRO and PENRO), one (1) representative from the office of Protected Area Management Board, one (1) representative from the office of the Provincial Government Unit, 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 Masinloc Power Partners Company Limited-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), groundwater quality (8 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. Fourteen parameters for domestic water, fifteen parameters for river water, twelve parameters for groundwater, fifteen parameters for marine water and sixteen parameters for plant effluent. Metals detected were Antimony, Arsenic, Cadmium, Chromium^{+6}, Total Chromium, Copper, Gold, Lead, Mercury, Selenium and Silver.

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 five (5) stations. 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).*

5. Ground and domestic water samples are in compliance with the standards set by the Department of Health Administrative Order No. 2007-0012 *(PNSDW 2007 – Philippine National Standards for Drinking Water 2007).*

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 June 21-25, 2010. Sampling activities were conducted based on the 2010 Second 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
2.1.1.2 Inhobol
2.1.1.3 Candelaria
2.1.1.4 Palauig

2.1.2 OCCUPATIONAL AIR (SO_2 / NO_2 / 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 Lauis Elementary School
2.1.3.13 Brgy. Lauis (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 SO_2 & NO_2 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, SO_2 & NO_2 analysis.

2.3 ANALYSIS OF SO_2 / NO_2 / 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 (West-Gaeke Method) and NO2 samples (Griess Saltzmann Method). 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 SO_2 (Tables 1 & 5), NO_2 (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
2.4.2.2 Date of Sampling
2.4.2.3 Volumetric Flow Rate
2.4.2.4 Temperature
2.4.2.5 Pressure
2.4.2.6 Volume at normal condition
2.4.2.7 Weight of filter paper
2.4.2.8 Weight of filter paper and particulate
2.4.2.9 Weight of particulate
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 June 21-25, 2010. Sampling activities were conducted based on the 2010 Second 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 5:

3.1.1 RIVER WATER QUALITY MONITORING STATIONS

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

3.1.2 GROUNDWATER 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)
3.1.3.8 MOW-2 Bani (along embankment)

3.1.3 DOMESTIC WATER QUALITY MONITORING STATIONS

3.1.3.1 MWD: Masinloc Water District
3.1.3.2 RES: Resettlement Area
3.1.3.3 LAB: Faucet near Laboratory Building
3.1.3.4 GHS: NPC Guesthouse
3.1.3.5 PWD: Palauig Water District
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 (no sample)
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 Lauis River & Bani Point
3.1.5.2 M-2 Outfall (100 m from discharge canal)
3.1.5.3 M-3 Cooling Water Intake
3.1.5.4 M-4 Resettlement
3.1.5.5 M-5 C-Square (Benguet Loading area)
3.1.5.6 M-6 Puerto Asinan
3.1.5.7 M-7 Benguet Wharf
3.1.5.8 M-8 Masinloc River (Near mouth)
3.1.51.9 M-9 Petron (harbor)
3.1.5.10 M-10 BFAR
3.1.5.11 M-11 San Salvador
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 GROUNDWATER SAMPLING

Water samples were collected from the eight (8)-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, Ash Sedimentation Basin, Coal Sedimentation Basin, Storm Drain Canal & 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
3.4.1.2 Conductivity
3.4.1.3 Turbidity
3.4.1.4 Dissolved Oxygen
3.4.1.5 Temperature
3.4.1.6 Salinity

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, marine and domestic water only)
3.4.2.4 Total Coliform (For river, marine and domestic water only)
3.4.2.5 Antimony
3.4.2.6 Arsenic
3.4.2.7 Cadmium
3.4.2.8 Chromium Hexavalent
3.4.2.9 Chromium Total
3.4.2.10 Copper
3.4.2.11 Gold
3.4.2.12 Lead
3.4.2.13 Mercury
3.4.2.14 Selenium
3.4.2.15 Silver

4.0 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.

4.1 **RIVER SEDIMENTS QUALITY MONITORING STATIONS**

4.1.1 LR-1 Lauis River (upstream of freshwater intake)
4.1.2 LR-2 Lauis River (near mouth / nursery)
4.1.3 MR-1 Masinloc River (Collat Bridge)

4.2 MARINE SEDIMENTS QUALITY MONITORING STATIONS

4.2.1 M-1 Between Lauis River & Bani Point
4.2.2 M-2 Outfall (100 m from discharge canal)
4.2.3 M-3 Cooling Water Intake
4.2.4 M-4 Resettlement
4.2.5 M-5 C-Square (Benguet Loading area)
4.2.6 M-6 Puerto Asinan
4.2.7 M-7 Benguet Wharf
4.2.8 M-8 Masinloc River (Near mouth)
4.2.9 M-9 Petron (harbor)
4.2.10 M-10 BFAR
4.2.11 M-11 San Salvador
4.2.12 M-12 Along Veritas

4.3 SOIL QUALITY MONITORING STATIONS

4.3.1 S-1 Masinloc National High School (across highway)
4.3.2 S-2 Candelaria (back of Elementary School)
4.3.3 S-3 Puerto Asinan (across highway)
4.3.4 S-4 NPC Resettlement (beside roadside)
4.3.5 S-5 Bani Elementary School (beside roadside)
4.3.6 S-6 Palauig (back of Town Plaza)
4.3.7 S-7 Bani National High School (mango area)
4.3.8 S-8 CENRO Office (near MPPCL Monitoring Station)
4.3.9 S-9 Sto. Niño, Palauig (intersection)
4.3.10 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

Second Quarter, 2010

SO_2 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	1330H-1430H	06/21/10	1.00	29.0	762.1	0.0066	0.0594	0.11	DENR A. O. 14 s. 1993 340 ug/Ncm
	1438H-1538H	06/21/10	1.00	29.0	762.1	0.0758	0.0594	1.28	
Inhobol	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0412	0.0592	0.70	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0066	0.0592	0.11	
Candelaria	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0066	0.0592	0.11	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0066	0.0592	0.11	
Palauig	1453H-1553H	06/21/10	1.00	30.0	762.1	0.3871	0.0592	6.54	
	1556H-1656H	06/21/10	1.00	30.0	762.1	0.3179	0.0592	5.37	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

MPPCL Representative(s) _____

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Table No. 2

AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

NO_2 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	1330H-1430H	06/21/10	1.00	29.0	762.1	0.0165	0.0594	0.28	DENR A. O. 14 s. 1993 260 ug/Ncm
	1438H-1538H	06/21/10	1.00	29.0	762.1	0.0199	0.0594	0.34	
Inhobol	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0098	0.0592	0.17	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0098	0.0592	0.17	
Candelaria	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0232	0.0592	0.39	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0098	0.0592	0.17	
Palauig	1453H-1553H	06/21/10	1.00	30.0	762.1	0.0232	0.0592	0.39	
	1556H-1656H	06/21/10	1.00	30.0	762.1	0.0165	0.0592	0.28	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, 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) _____

MPPCL Representative(s) _____

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Table No. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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	1330H-1430H	06/21/10	540.3	539.9	0.70	29.0	762.1	0.40	41.56	9.63	
	1438H-1538H	06/21/10	543.6	543.0	0.80	29.0	762.1	0.60	47.49	12.63	DENR A. O. 14
Inhobol	1438H-1538H	06/22/10	548.6	547.4	0.75	30.0	762.1	1.20	44.38	27.04	
	1543H-1643H	06/22/10	547.3	546.5	0.80	30.0	762.1	0.80	47.34	16.90	
Candelaria	1438H-1538H	06/22/10	549.9	548.2	0.70	30.0	762.1	1.70	41.42	41.04	s. 1993
	1543H-1643H	06/22/10	549.0	548.1	0.70	30.0	762.1	0.90	41.42	21.73	300*ug/Ncm*
Palauig	1453H-1553H	06/21/10	541.6	540.8	0.60	30.0	762.1	0.80	35.50	22.53	
	1556H-1656H	06/21/10	543.9	543.0	0.60	30.0	762.1	0.90	35.50	25.35	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

MPPCL Representative(s) _____

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TABLE NO. 4

NATIONAL POWER CORPORATION
MASINLOC COAL-FIRED THERMAL POWER PLANT
Multipartite Monitoring Committee
Second Quarter, 2009

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	1330H-1430H	06/21/10	0.71	29.0	762.1	0.0000	41.93	ND	10 µg/Ncm DENR A. O. 14 s. 1993
	1438H-1538H	06/21/10	0.71	29.0	762.1	0.0000	41.93	ND	
Masinloc	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0000	59.01	ND	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0000	59.01	ND	
Candelaria	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0000	59.01	ND	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0000	59.01	ND	
Palauig	1453H-1553H	06/21/10	0.80	30.0	762.1	0.0000	47.21	ND	
	1556H-1656H	06/21/10	0.80	30.0	762.1	0.0000	47.21	ND	

FORMULA:

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

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

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, m^3/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

Second Quarter, 2010

SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2011H-2111H	06/21/10	1.00	25.00	762.1	0.1795	0.0602	2.9836	DOH 5000*ug/Ncm*
	2116H-2216H	06/21/10	1.00	25.00	762.1	0.2141	0.0602	3.5587	
Admin. Building	2032H-2132H	06/21/10	1.00	22.00	762.1	0.1450	0.0608	2.3859	
	2135H-2235H	06/21/10	1.00	21.00	762.1	0.1104	0.0610	1.8104	
WWT Control Room	0915H-1015H	06/21/10	1.00	28.00	762.1	0.1104	0.0596	1.8535	
	1018H-1118H	06/21/10	1.00	29.00	762.1	0.2833	0.0594	4.7721	
Coal Handling Control Room	0913H-1013H	06/21/10	1.00	23.00	762.1	0.1450	0.0606	2.3940	
	1018H-1118H	06/21/10	1.00	23.00	762.1	0.1795	0.0606	2.9635	
Chemical Laboratory	2056H-2156H	06/21/10	1.00	23.00	762.1	0.3871	0.0606	6.3910	
	2200H-2300H	06/21/10	1.00	22.00	762.1	0.4563	0.0608	7.5081	
Mechanical Shop	0901H-1001H	06/21/10	1.00	29.00	762.1	0.0412	0.0594	0.6940	
	1003H-1103H	06/21/10	1.00	29.00	762.1	0.0758	0.0594	1.2768	
Ash Handling Control Room	0925H-1025H	06/21/10	1.00	28.00	762.1	0.1104	0.0596	1.8535	
	1028H-1128H	06/21/10	1.00	29.00	762.1	0.1795	0.0594	3.0236	
Turbine Floor	2010H-2110H	06/21/10	1.00	34.00	762.1	0.1795	0.0584	3.0737	
	2115H-2215H	06/21/10	1.00	34.00	762.1	0.2487	0.0584	4.2586	

FORMULA:

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

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

Notes:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s)

PAMB Representative(s)

MGU Representative(s)

BGU Representative(s)

MPPCL Representative(s)

Table No. 6

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2011H-2111H	06/21/10	1.00	25.00	762.1	0.1065	0.0602	1.7702	
	2116H-2216H	06/21/10	1.00	25.00	762.1	0.0131	0.0602	0.2177	
Admin. Building	2032H-2132H	06/21/10	1.00	22.00	762.1	0.0199	0.0608	0.3274	
	2135H-2235H	06/21/10	1.00	21.00	762.1	0.0332	0.0610	0.5444	DOH
WWT Control Room	0915H-1015H	06/21/10	1.00	28.00	762.1	0.0131	0.0596	0.2199	6000*ug/Ncm*
	1018H-1118H	06/21/10	1.00	29.00	762.1	0.0098	0.0594	0.1651	
Coal Handling Control Room	0913H-1013H	06/21/10	1.00	23.00	762.1	0.0266	0.0606	0.4392	
	1018H-1118H	06/21/10	1.00	23.00	762.1	0.0064	0.0606	0.1057	
Chemical Laboratory	2056H-2156H	06/21/10	1.00	23.00	762.1	0.0502	0.0606	0.8288	DOLE
	2200H-2300H	06/21/10	1.00	22.00	762.1	0.0333	0.0608	0.5479	9000*ug/Ncm*
Mechanical Shop	0901H-1001H	06/21/10	1.00	29.00	762.1	0.0199	0.0594	0.3352	
	1003H-1103H	06/21/10	1.00	29.00	762.1	0.0401	0.0594	0.6755	
Ash Handling Control Room	0925H-1025H	06/21/10	1.00	28.00	762.1	0.0266	0.0596	0.4466	
	1028H-1128H	06/21/10	1.00	29.00	762.1	0.0401	0.0594	0.6755	
Turbine Floor	2010H-2110H	06/21/10	1.00	34.00	762.1	0.0401	0.0584	0.6867	
	2115H-2215H	06/21/10	1.00	34.00	762.1	0.0434	0.0584	0.7432	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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)

MPPCL Representative(s)

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Table No. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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	2011H-2111H	06/21/10	541.8	541.4	0.60	25.00	762.1	0.40	36.10	11.08	
	2116H-2216H	06/21/10	551.4	551.1	0.70	25.00	762.1	0.30	42.11	7.12	
Admin. Building	2032H-2132H	06/21/10	551.8	551.3	0.70	22.00	762.1	0.50	42.54	11.75	DOH
	2135H-2235H	06/21/10	548.9	548.3	0.70	21.00	762.1	0.60	42.69	14.06	
WWT Control Room	0915H-1015H	06/21/10	536.7	536.2	0.70	28.00	762.1	0.50	41.69	11.99	2000*ug/Ncm*
	1018H-1118H	06/21/10	536.1	535.5	0.70	29.00	762.1	0.60	41.56	14.44	
Coal Handling Control Room	0913H-1013H	06/21/10	540.9	540.4	0.60	23.00	762.1	0.50	36.34	13.76	
	1018H-1118H	06/21/10	538.0	537.3	0.80	23.00	762.1	0.70	48.46	14.45	
Chemical Laboratory	2056H-2156H	06/21/10	546.9	546.8	0.57	23.00	762.1	0.10	34.32	2.91	DOLE
	2200H-2300H	06/21/10	549.3	548.3	0.62	22.00	762.1	1.00	37.88	26.40	
Mechanical Shop	0901H-1001H	06/21/10	533.2	532.1	0.71	29.00	762.1	1.10	42.04	26.16	1000*ug/Ncm*
	1003H-1103H	06/21/10	536.3	535.8	0.71	29.00	762.1	0.50	42.04	11.89	
Ash Handling Control Room	0925H-1025H	06/21/10	541.9	540.9	0.60	28.00	762.1	1.00	35.74	27.98	
	1028H-1128H	06/21/10	535.2	534.1	0.65	29.00	762.1	1.10	38.59	28.51	
Turbine Floor	2010H-2110H	06/21/10	535.7	535.0	0.70	34.00	762.1	0.70	40.88	17.12	
	2115H-2215H	06/21/10	543.4	542.8	0.70	34.00	762.1	0.60	40.88	14.68	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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Table No. 8

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

AMBIENT NOISE MONITORING
MORNING TIME
June 24, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0722H	66.3	69.3	64.4	66.7	Tricycle
2	Purok Percaloha (Junction)	0721H	59.9	74.9	57.3	62.0	
3	Edillor's Residence (150m. From Gate	0724H	64.4	64.4	60.3	62.1	Tricycle
4	EPDC Building	0725H	61.4	62.9	58.8	60.5	
5	C-Square (Benguet Loading Area)	0726H	66.7	73.4	59.9	66.7	Dog
6	Resettlement Site	0733H	53.6	56.9	52.8	54.6	
7	Highway, waiting shed of Resettlement	0734H	62.6	64.8	60.3	62.8	Jeep
8	Puerto Asinan	0737H	62.2	88.1	53.2	77.8	Tricycle
9	Sitio Atob, Purok Tanguile	0738H	52.1	52.1	48.7	50.9	
10	Masinloc Town Plaza	0745H	66.9	67.8	64.7	66.1	Tricycle
11	Bani National High School, (Annex), Taltal	0801H	70.3	80.8	57.2	72.8	Truck, vehicle
12	Brgy. Lauis (Junction to Binabalian)	0809H	43.3	69.2	41.4	58.5	Birds
13	Lauis Elementary School	0812H	55.3	56.8	54.2	55.5	
14	Purok Bangal-Duhok (Junction)	0820H	64.3	72.2	49.3	63.0	Tricycle, radio
15	Bani Elementary School, Bani	0821H	52.3	53.4	48.2	51.0	Chicken
16	Bani National High School, Bani	0822H	52.3	53.8	49.7	51.1	
17	Brgy. Bani Multi-purpose Complex	0823H	63.6	66.9	62.4	64.4	Truck
18	Plant Site (Coal Yard)	0719H	62.9	64.8	61.8	63.3	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	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

Table No. 9

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

AMBIENT NOISE MONITORING
DAYTIME
June 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1404H	68.6	68.6	49.1	53.6	
2	Purok Percaloha (Junction)	1401H	53.9	50.9	59.6	51.9	
3	Edillor's Residence (150m. From Gate	1405H	82.1	29.8	52.8	23.9	Tricycle
4	EPDC Building	1407H	49.1	50.9	48.3	48.8	
5	C-Square (Benguet Loading Area)	1408H	53.9	56.6	49.4	50.7	
6	Resettlement Site	1411H	47.9	52.1	47.2	48.1	
7	Highway, waiting shed of Resettlement	1427H	64.8	50.8	62.6	67.4	Tricycle
8	Puerto Asinan	1432H	80.9	87.3	55.4	79.1	Tricycle
9	Sitio Atob, Purok Tanguile	1434H	68.6	74.9	56.9	68.9	Vehicle, tricycle
10	Masinloc Town Plaza	1441H	61.8	74.2	56.6	64.5	Tricycle
11	Bani National High School, (Annex), Taltal	1415H	58.8	59.6	55.8	57.4	Motorcycle
12	Brgy. Lauis (Junction to Binabalian)	1419H	64.4	67.1	47.6	56.2	
13	Lauis Elementary School	1422H	56.9	69.7	55.8	63.6	Tricycle
14	Purok Bangal-Duhok (Junction)	1503H	61.4	70.1	59.6	65.5	Tricycle
15	Bani Elementary School, Bani	1504H	49.8	52.1	47.9	49.4	
16	Bani National High School, Bani	1505H	62.2	62.2	47.9	51.4	
17	Brgy. Bani Multi-purpose Complex	1506H	51.7	52.4	47.6	49.8	
18	Plant Site (Coal Yard)	1400H	61.4	59.9	55.1	56.6	

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	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

Table No. 10

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Second Quarter, 2010

AMBIENT NOISE MONITORING

NIGHT TIME

June 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2213H	51.7	51.7	49.8	50.8	
2	Purok Percaloha (Junction)	2212H	53.2	53.2	51.3	52.1	Insect
3	Edillor's Residence (150m. From Gate	2302H	52.8	55.1	52.4	53.1	Insect
4	EPDC Building	2301H	59.6	66.7	54.7	60.0	Dog
5	C-Square (Benguet Loading Area)	2300H	58.4	58.4	57.3	57.7	Insect
6	Resettlement Site	2257H	53.6	53.2	51.3	52.0	Insect
7	Highway, waiting shed of Resettlement	2237H	49.8	50.2	49.1	49.3	
8	Puerto Asinan	2239H	50.9	53.6	49.8	51.0	
9	Sitio Atob, Purok Tanguile	2241H	68.6	68.6	60.7	64.5	Tricycle
10	Masinloc Town Plaza	2248H	62.2	63.7	59.2	61.1	People talking
11	Bani National High School, (Annex), Taltal	2225H	58.1	79.4	54.7	69.0	Insect
12	Brgy. Lauis (Junction to Binabalian)	2230H	56.6	67.8	50.2	59.1	Dog
13	Lauis Elementary School	2234H	53.6	54.7	50.2	52.1	Insect
14	Purok Bangal-Duhok (Junction)	2219H	64.4	82.7	51.3	71.1	Tricycle
15	Bani Elementary School, Bani	2218H	77.2	75.7	52.4	64.5	Vehicle
16	Bani National High School, Bani	2217H	50.6	62.2	49.4	53.1	Insect
17	Brgy. Bani Multi-purpose Complex	2216H	70.1	78.7	68.2	75.7	Car
18	Plant Site (Coal Yard)	2210H	65.2	65.6	64.4	65.0	Insect

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 quiet-ness (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) _____

MPPCL Representative(s) _____

Table No. 11

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

AMBIENT NOISE MONITORING

EVENING TIME

June 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2013H	56.6	63.3	53.2	56.1	People talking
2	Purok Percaloha (Junction)	2011H	53.9	65.2	52.4	54.9	Insects
3	Edillor's Residence (150m. From Gate	2103H	51.7	55.1	50.9	51.9	Television
4	EPDC Building	2102H	77.9	81.3	53.6	68.1	Dog barking
5	C-Square (Benguet Loading Area)	2100H	61.1	61.1	52.4	56.2	Tricycle
6	Resettlement Site	2057H	52.8	53.9	51.3	52.3	Insects
7	Highway, waiting shed of Resettlement	2038H	60.3	60.3	54.3	57.7	Jeep
8	Puerto Asinan	2040H	55.8	69.3	50.2	54.8	Television
9	Sitio Atob, Purok Tanguile	2041H	62.6	74.9	60.3	64.7	Dog barking
10	Masinloc Town Plaza	2047H	66.7	70.8	61.8	66.0	Tricycle
11	Bani National High School, (Annex), Taltal	2023H	55.5	58.8	54.7	56.5	Insects
12	Brgy. Lauis (Junction to Binabalian)	2028H	55.4	78.7	49.4	65.6	Dog barking
13	Lauis Elementary School	2031H	68.2	75.3	51.3	62.2	Dog barking
14	Purok Bangal-Duhok (Junction)	2018H	55.4	55.8	53.9	55.0	Insects
15	Bani Elementary School, Bani	2017H	55.4	67.8	54.7	59.3	Horn
16	Bani National High School, Bani	2016H	59.9	67.8	51.3	56.4	Insects
17	Brgy. Bani Multi-purpose Complex	2015H	56.9	58.4	51.7	53.8	Crying baby
18	Plant Site (Coal Yard)	2008H	62.9	62.9	60.3	61.6	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	Evening Time Noise Level (1800H to 2200H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

Table No. 12

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter 2010

OCCUPATIONAL NOISE MONITORING
June 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1643H	64.8	64.8	61.4	61.5	
2	Turbine Floor	1642H	88.4	88.8	87.7	88.1	
3	Laboratory Building	1658H	62.6	62.6	61.8	61.9	
4	Administration Building (Lobby)	1700H	56.6	67.1	53.6	57.9	
5	Coal Handling	1544H	76.8	70.1	57.7	66.1	
6	Ash Handling	1635H	71.2	69.7	67.8	68.6	
7	Machine Shop	1537H	67.1	73.8	65.2	67.6	
8	Water Treatment Control Room	1539H	65.2	69.3	64.4	65.8	
9	Boiler Feed Pump Unit #1	1638H	96.7	97.1	95.6	96.2	
10	Boiler Feed Pump Unit #2	1639H	91.8	93.3	91.4	92.3	
11	Circulating Water Pump Intake #1	1649H	90.3	95.9	89.2	93.6	
12	Circulating Water Pump Intake #2	1648H	90.7	90.3	88.1	90.3	
13	Smoke Stack (CEM Control Room)	1542H	65.2	65.6	61.8	63.3	
14	Generator Transformer Unit #1	1652H	76.1	76.4	75.7	75.9	
15	Generator Transformer Unit #2	1651H	76.1	76.4	75.3	75.7	
16	Guard House (Main Gate)	1548H	49.4	49.4	47.9	48.4	
17	230kV GIS (Switchyard)	1653H	73.1	74.9	69.7	71.0	
18	Coal Yard	1546H	56.6	56.6	53.9	54.7	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH	DOLE
	Threshold Limit Values	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) _____

MPPCL Representative(s) _____

APPENDIX 2

MULTIPARTITE WATER QUALITY MONITORING RESULTS

PAGES 24-33

Table No. 13

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	6/22/10	6/22/10	6/21/10	6/21/10	6/22/10	6/21/10	-
Time of Sampling	1006H	1417H	1020H	1140H	1457H	1435H	-
pH	6.67	6.95	8.22	8.23	7.57	7.70	6.5 - 8.5
Conductivity, mSiemens / meter	0.202	3.390	0.253	0.249	0.546	4	-
Turbidity, NTU	4.5	0	0	0	3.0	4.0	5
Dissolved Oxygen, ppm	9.28	1.28	4.67	4.54	2.15	5.13	-
Temperature, °C	26.9	29.3	28.7	27.2	31.1	24.8	-
Salinity, %	0.00	0.17	0.00	0.00	0.02	0.21	-

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 Dstrict
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) _____

MPPCL Representative (s) _____

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TABLE NO. 14

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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	9	0	0	0	0
Total Coliform,MPN/100ml	37	4	27	10	0	0	0
Total Suspended Solids	0.2	0.2	0.1	0.5	0.1	0.1	-
Antimony	ND	ND	ND	ND	ND	ND	0.02
Arsenic	ND	ND	ND	ND	ND	ND	0.05
Cadmium	ND	ND	ND	ND	ND	ND	0.003
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	1.0
Gold	ND	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	ND	0.01
Mercury	ND	ND	ND	ND	ND	ND	0.001
Selenium	ND	ND	ND	ND	ND	ND	0.01
Silver	ND	ND	ND	ND	ND	ND	-

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

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Table No. 15

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

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	6/22/2010	6/22/2010	6/22/2010	-
Time of Sampling	1037H	1059H	1018H	-
pH	7.80	7.65	7.03	6.5 - 8.5
Conductivity, mSiemens / cm.	0.460	9.88	7.58	-
Turbidity, NTU	9.0	12.0	70.0	-
Dissolved Oxygen, ppm	5.73	9.05	6.42	5 minimum
Temperature, °C	28.2	29.0	27.7	-
Salinity, %	0.01	0.41	0.31	-

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) _____

MPPCL Representative (s) _____

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TABLE NO. 16

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

RIVER WATER QUALITY MONITORING (LABORATORY ANALYSIS)

Parameters	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.34 s.1990 (Class B)
Oil & Grease	ND	ND	ND	1
Fecal Coliform	5	7	3	200
Total Coliform	92	131	48	1,000
Total Suspended Solids	0.9	6.30	4.0	<30 mg/l increase
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	0.05
Cadmium	ND	ND	ND	0.01
Chromium^{+6}	ND	0.00066	0.00066	0.05
Chromium, Total	ND	0.0028	0.0107	
Copper	ND	ND	ND	-
Gold	ND	ND	ND	-
Lead	ND	ND	ND	0.05*
Mercury	ND	ND	ND	0.002
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

NOTES:

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

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Table No. 17

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
June 23, 2010

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O_2 ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1321H	7.48	0.728	3	0.74	28.1	0.01
MO-1: Bani Point (After Ash Disposal Area)	1037H	7.09	0.170	0	0.91	28.4	0.03
MO-2: Bani (NPC Nursery)	1110H	8.03	0.687	1	1.04	28.1	0.02
MO-3: Between Corafer And Duhok	1140H	7.43	1.610	7	0.91	28.7	0.07
MO-5: Bani (PNP Patrol Base)	1330H	6.81	1.590	0	1.33	28.1	0.07
MO-6: Bani	1046H	6.83	5.620	4	1.11	28.8	0.29
MOW-1: Bani (near Sedimentation Basin)	1101H	7.90	1.370	4	1.07	28.0	0.06
MOW-2: Bani (along embankment)	1122H	6.99	0.679	18	1.07	28.9	0.02
MOW-3: Bani (near warehouse)	No Water						

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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) _____

MPPCL Representative (s) _____

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Table No. 18

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010
GROUNDWATER MONITORING (LABORATORY ANALYSIS)

Parameters	MD-1	MO-1	MO-2	MO-3	MO-5	MO-6	MOW-1	MOW-2	MOW-3	PNSDW	NBC
Total Suspended Solids	ND	0.1	0.5	3.6	1.0	7.6	0.1	1.5		2.5	≤3,847
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	N	0.2	-
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	O	-	-
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND		0.01	≤0.0174
Chromium^{+6}	ND	ND	ND	ND	ND	ND	ND	ND	W	0.003	≤0.01
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	A	-	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	T	1.0	-
Gold	ND	ND	ND	ND	ND	ND	ND	ND	E	-	-
Lead	ND	ND	ND	ND	ND	ND	ND	ND	R	0.05	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND		-	-
Selenium	ND	ND	ND	ND	ND	ND	ND	ND		1	-
Silver	ND	ND	ND	ND	ND	ND	ND	ND		0.01	≤0.12

NOTES:

1. Monitoring Stations
   - MD-1: Near Main Gate, Right
   - MD-2 : Taltal (Near Lauis 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
   - MOW-1: Bani (near Sedimentation Basin)
   - MOW-2: Bani (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 Absoption Spectrometer.
9. Monitoring conducted by the MPPCL Multipartite Monitoring Team
10. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-2q2010\ground-lab

Table No. 19

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

MARINE WATER MONITORING (IN-SITU ANALYSIS)

June 22, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1014H	8.08	56.08	1.0	5.43	31.3	3.78	
M2	1000H	8.02	56.07	3.0	5.60	33.2	3.70	
M3	0947H	7.95	55.07	2.0	5.24	30.7	3.71	
M4	1314H	8.06	55.10	1.0	5.35	30.8	3.66	
M5	1322H	8.06	54.80	3.0	5.76	30.8	3.63	
M6	1304H	8.06	55.80	3.0	5.30	31.7	3.71	
M7	1247H	7.99	49.90	12.0	5.60	31.3	3.29	
M8	1236H	7.81	27.60	36.0	5.55	30.5	1.72	
M9	1200H	8.02	55.00	3.0	5.30	31.1	3.65	
M10	1142H	7.99	56.70	3.0	5.87	31.4	3.73	
M11	1111H	8.06	55.80	1.0	5.96	30.8	3.70	
M12	1100H	8.07	55.90	2.0	5.50	30.7	3.71	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Lauis 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. 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) _____

MPPCL Representative (s) _____

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-2q2010\marine

TABLE NO. 20

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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 A0 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	6	3	5	2	0	12	24	32	8	6	5	-
Total Coliform,MPN/100ml	8	17	18	28	48	12	52	72	103	62	43	37	5,000
Total Suspended Solids	7.8	8.5	7.7	8.8	7.7	6.7	6.5	3.9	7.6	7.9	7.2	7.7	<30 mg/l increase
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
Chromium^{+6}	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0013	0.0007	0.0007	0.0007	0.0007	0.0013	0.1
Chromium, Total	0.0511	0.0523	0.0490	0.0476	0.0480	0.0498	0.0410	0.0174	0.0437	0.0488	0.0406	0.0480	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Gold	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*
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002
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	-

NOTES:

1.Monitoring Stations
- M-1: Between Lauis 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) $\leq$0.35 ppm

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w2q2010\marine-lab

Table No. 21

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

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	6/23/2010	6/23/2010	6/23/2010	6/22/2010	6/22/2010	-
Time of Sampling	1338H	1303H	1030H	1130H	1147H	-
pH	6.08	7.46	7.17	7.79	7.69	6.0 - 9.0
Conductivity, mSiemens/cm.	2.02	1.27	1.39	58.40	2.07	-
Turbidity, NTU	10	16	1.0	11.0	7.0	-
Dissolved Oxygen, ppm	6.37	5.63	4.47	5.48	4.03	-
Temperature, °C	34.5	34.1	31.7	37.2	26.2	-
Salinity, %	0.09	0.05	0.06	3.57	0.09	-

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)

MPPCL Representative (s)

TABLE NO. 22

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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	0.5	1.8	0.4	9.2	11.80	150
Biochemical Oxygen Demand	3.0	5.0	5.0	5.0	3.00	100
Chemical Oxygen Demand	3	4	6	108	3	200
Color, PCU	0	70	9	0	0	150
Antimony	ND	ND	ND	ND	ND	
Arsenic	ND	ND	ND	ND	ND	0.5
Cadmium	ND	ND	ND	ND	ND	0.1
Chromium^{+6}	ND	ND	ND	0.001	ND	0.2
Chromium, Total	ND	ND	ND	0.0536	0.0014	
Copper	ND	ND	ND	ND	ND	-
Gold	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	0.5
Mercury	ND	ND	ND	ND	ND	0.005
Selenium	ND	ND	ND	ND	ND	
Silver	ND	ND	ND	ND	ND	-

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
10. PCU -Platinum Cobalt Units
11. Digested samples were analyzed using Atomic Absorption Spectrometer
12. Chromium Hexavalent waas analyzed using Colorimetric Method
13. Monitoring conducted by the MPPCL Multipartite Monitoring Team
14. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

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APPENDIX 3

MULTIPARTITE SEDIMENTS, COAL, SOLID WASTES AND SOIL QUALITY MONITORING RESULTS

PAGES 35-38

TABLE NO. 23

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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
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	
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	145	10	18	53	193	31	282	98	127	52	14	21	≤7,077
Copper	24	3	4	24	35	6	26	14	30	18	4	7	≤410
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤46.02
Lead	ND	ND	ND	ND	1.01	ND	ND	ND	ND	ND	ND	ND	≤97.7
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤0.13
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	≤3.0

NOTES:

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

7.Monitoring Stations

M-1: Between Lauis 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

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TABLE NO. 24

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

RIVER SEDIMENT MONITORING (LABORATORY ANALYSIS)

Parameters	LR-1: Lauis River upstream of fresh-water intake	LR-2: Lauis River near mouth nursery	MR-1: Masinloc River Collat Bridge	NBC
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	≤1.84
Cadmium	ND	ND	ND	≤1.066
Chromium	186	128	99	-
Copper	41	29	15	
Gold	ND	ND	ND	-
Lead	ND	ND	ND	≤24.0
Mercury	ND	ND	ND	-
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

NOTES:
1. No DENR limits for river sediments
2. Units are in milligrams per kilogram (mg/kg).
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

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-2q2010\river-sed

TABLE NO. 25

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

COAL AND ASH MONITORING (LABORATORY ANALYSIS)

Parameters	COAL	BOTTOM ASH	FLY ASH	WTF SLUDGE	R.A. 6969 DAO 29
Antimony	ND	ND	ND	ND	-
Arsenic	ND	ND	ND	ND	5
Cadmium	ND	ND	ND	ND	5
Chromium	ND	ND	ND	ND	5
Copper	7.87	5.64	16.35	18.05	-
Gold	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	5
Mercury	ND	ND	ND	ND	0.2
Selenium	ND	ND	ND	ND	5
Silver	ND	ND	ND	ND	-

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 parts per million.
4. ND - Non Detectable
5. WTF - Wastewater Treatment Facility
6. Samples for Arsenic, Cadmium Chromium, Lead, Mercury and Selenium Analysis were processed using TCLP.
7. Other sample parameters 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. 26

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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
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
Chromium	193	218	93	68	165	136	197	477	92	171
Copper	30	19	40	30	53	27	49	15	20	47
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	4.996	ND	ND	ND	13.167	ND	33.105	2.472	ND	30.045
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

1.Monitoring Stations
- S1: Masinloc National High School (across highway)
- S-2: Candelaria (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-10: Masinloc Plaza (Estella Compound)

2. No DENR limits for soil.
3. Units are in milligrams per kilogram sample.
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 Multipartite Water Quality Monitoring Team
8. Analysis conducted at MCFTPP Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-2q2010\soil

APPENDIX 4

MULTIPARTITE MONITORING SCHEDULE

SECOND QUARTER 2010

PAGE 40

AES
the power of being global

Masinloc Power Partners Company Lilmited

2nd QUARTER 2010 MULTI-PARTITE AIR, WATER, NOISE, SEDIMENTS, COAL, AND SOLID WASTE

ACTIVITY	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun	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.	2,4,5,6,
Air Sampling (Occupational)						MCFTPP	2,4,5,6
Marine Water/Sediments						Masinloc and Oyon Bays	3,4
Bacteriological Test						Env Lab	2, 5
Groundwater & River Water/Sediments						Lauis R, Mas River, MCFTPP	2,3,4,5, 6
Domestic Water Sampling						Pal., Mas, Res. and MCFTPP	2,4,5,6
Noise Monitoring (Occupational)						MCFTPP	2,4,5,6
Noise Monitoring (Ambient)						Can., Mas., Res. MCFTPP	2,4,5,6,
Plant Effluent						ASB, CSB, CWD	4,5,6
Soil, Fly Ash, Bottom Ash & Sludge						Fly Ash Silo / DCC, Pal,Mas,Res,Inho	4,5,6
Preparation of Reports/Exit Meeting						Env. Lab	All

* morning time & day time
** evening time
***night time

Note:

1 A.V. Lopez
2. J. A. Aquino
3. H. A. Sune
4. J. E. Tiburcio
5. Q. D. Loo
6. M. E. delos Reyes

Prepared by:

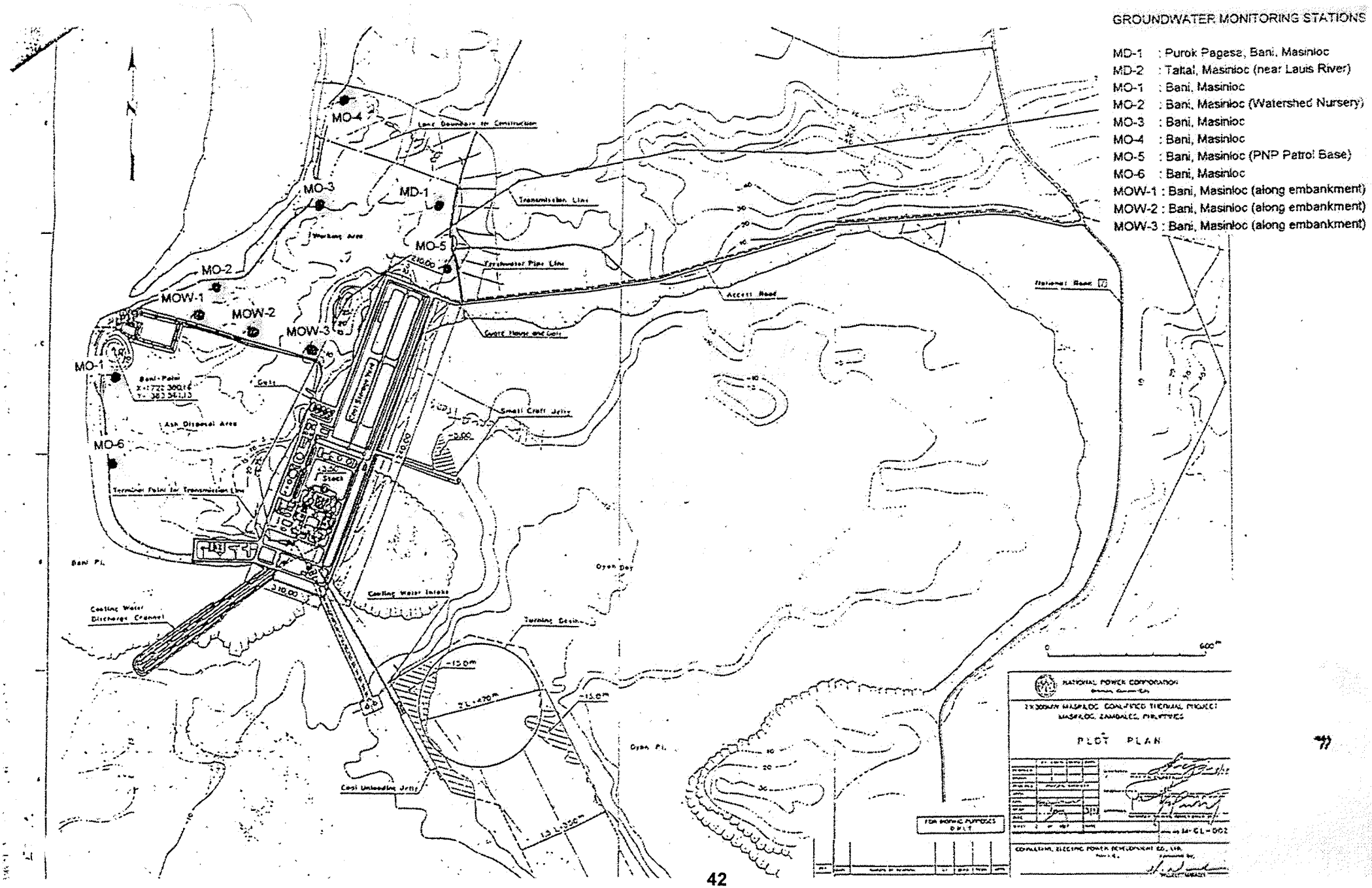
Antonia V. Lopez

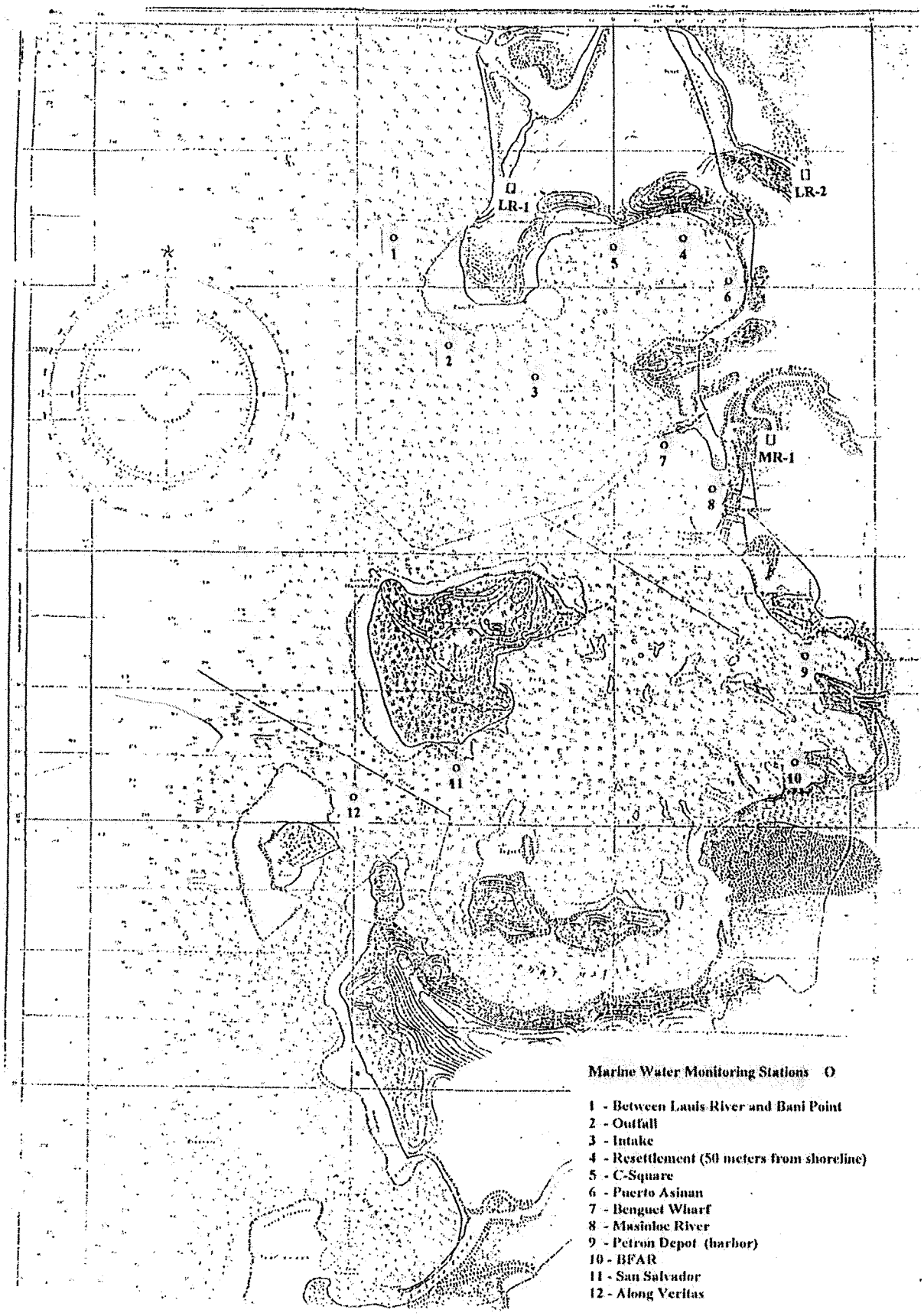
ANTONIA V. LOPEZ
Environmental Manager
Environmental Section

APPENDIX 5

MULTIPARTITE MONITORING MAPS OF SAMPLING STATIONS

PAGES 42-44


GROUNDWATER MONITORING STATIONS
MD-1 : Purok Pagasa, Bani, Masinloc
MD-2 : Taltal, Masinloc (near Lauis River)
MO-1 : Bani, Masinloc
MO-2 : Bani, Masinloc (Watershed Nursery)
MO-3 : Bani, Masinloc
MO-4 : Bani, Masinloc
MO-5 : Bani, Masinloc (PNP Patrol Base)
MO-6 : Bani, Masinloc
MOW-1 : Bani, Masinloc (along embankment)
MOW-2 : Bani, Masinloc (along embankment)
MOW-3 : Bani, Masinloc (along embankment)
MO-1
MO-2
MO-3
MO-4
MO-5
MO-6
MD-1
MOW-1
MOW-2
MOW-3
Transmission Line
Freshwater Pipe Line
Access Road
Gate House and Gate
Small Craft Jetty
Ash Disposal Area
Terminal Point for Transmission Line
Cooling Water Intake
Cooling Water Discharge Channel
Coal Unloading Jetty
Turning Basin
Open Pit
Bani PL
Open Dry
Stack
Coal Storage Yard
Working Area
Gate
Bani-Point
Land Boundary for Construction
National Road
0
600m
NATIONAL POWER CORPORATION
PLOT PLAN
FOR WORKING PURPOSES ONLY

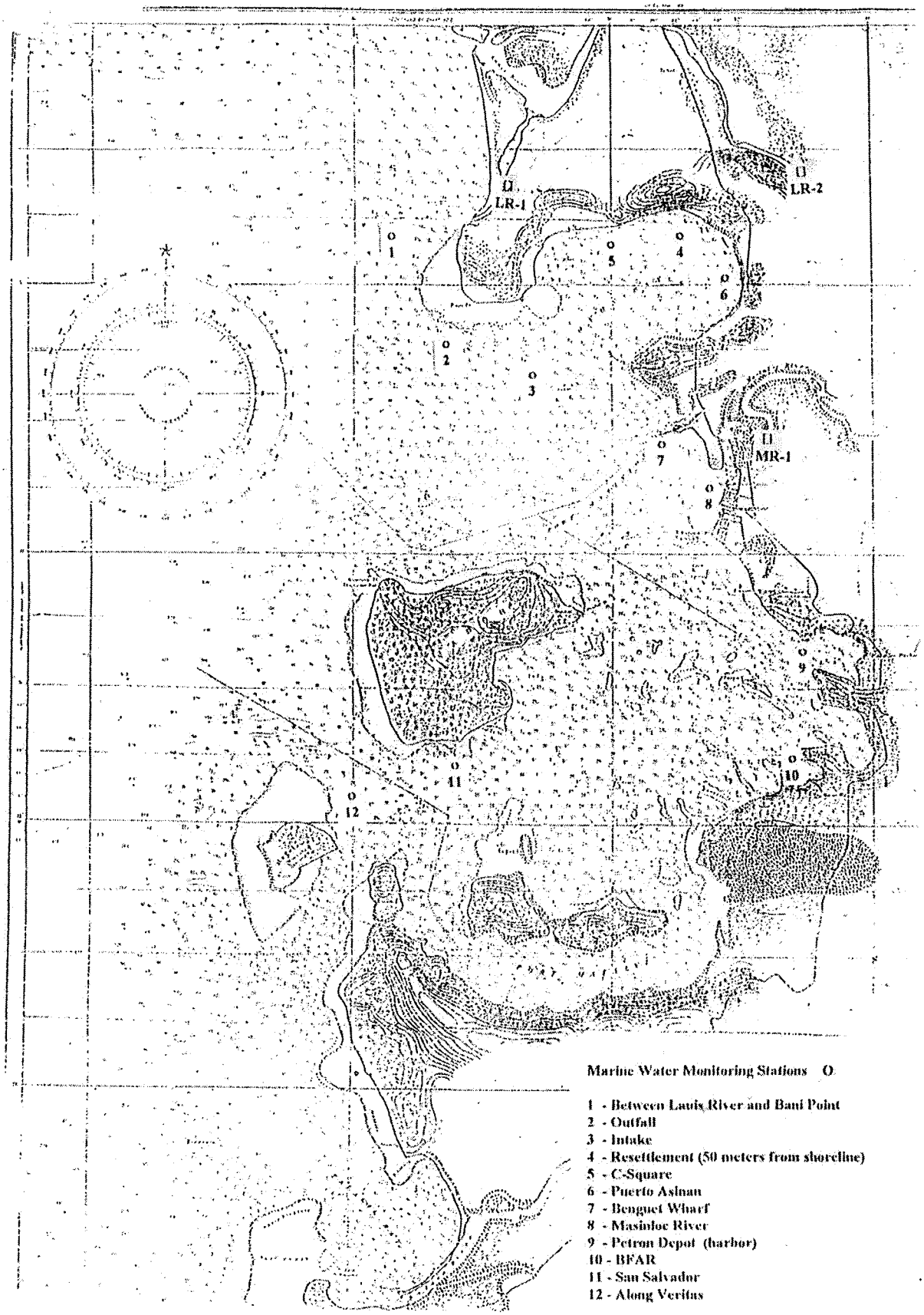


Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations U

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)



Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations □

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)

APPENDIX 6

MULTIPARTITE MANAGEMENT MONITORING SET-UP

PAGE 46

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	WATER QUALITY TEAM	MARINE ECOLOGY TEAM
DENR	DENR	DENR
LGU	LGU	LGU
PAMB	PAMB	PAMB
NGO	NGO	NGO
MPPCL	MPPCL	MPPCL

APPENDIX 7

MULTIPARTITE MONITORING TEAM ATTENDANCE SHEET

PAGES 48

AES

Masinloc Power Partners Company Limited

SECOND QUARTER 2010 MULTIPARTITE MONITORING

ATTENDANCE SHEET

Name	Agency	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun
1 Mary O. Hualda	DENR					
2 Lowanda T. Lopez	BGY					
3 Olive K. Gregorio	PAMB					
4 RAMON I. ECHITA	LGU-Kawili					
5 NEDINIA B. PERALTA	DENR					
6 JORGE A. AQUINO	MPPCL					
7 JOSEPH E. Tiburcio	SFI					
8 QUIRINO D. LOO	SFI					
9 AARON SLWE	MPPCL					
10 MARLON DELOS REYES	SFI					
11 ROY A. MONJA	L.G.U					
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						

APPENDIX 8

DETECTION LIMITS

PAGES 50

DETECTION LIMITS

Parameters	Detection imit	Unit
Antimony	0.2900	ppb
Arsenic	0.3300	ppb
Cadmium	0.0100	ppb
Chromium	0.0250	ppb
Copper	0.0045	ppm
Gold	0.0130	ppm
Lead	0.0300	ppb
Mercury	3.3000	ppb
Selenium	0.3200	ppb
Silver	0.0032	ppm

APPENDIX 9

ENVIRONMENTAL COMPLIANCE CERTIFICATE STATUS

PAGES 52-60

ENVIRONMENTAL COMPLIANCE CERTIFICATE
Granted: December 18, 1992
(Status of MPPCL Compliance as of June 2010)

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	➢ 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).	➢ 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.	➢ 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.			➢ Created an Environmental, Health and Safety Committee. ➢ Safety is everybody's responsibility and is the first value of the company. Safety walkdown, inspection and walk observations are conducted by managers, team leaders and peers.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	Complied		
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.		➢ Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (MPPCL, PAMB, and LGU. ➢ Copies of the Multipartite Monitoring Reports are provided to DENR, LGU, and PAMB.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	➢ 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.	Continuous Emission Monitoring System (CEMS) installed and operational. ➢ Two (2) SOx analyzers: operational ➢ Two (2) Nox: 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.	➢ Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig) ➢ Analyzers installed at each station: 1. SO_2 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	➢ 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".		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	➢ 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.		➢ Mangrove inspection is a daily/routine activity. ➢ Mangrove replanting is done yearly.
III. OPERATIONS PHASE **16.** Management and handling of coal (airborne coal dusts and spontaneous combustion free)			
a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity.			a. Complying
b. Adoption of "first in, first out".			b. Complying
c. Compaction of coal stockpiles;			c. Bulldozers are used in compacting operation.
d. Installation of water spray system.	d. Water Spray System (WSS) installed.		
e. Installation of temperature monitoring system	e. Temperature Monitoring System installed.		
f. Installation of an effective physical windbreak around the coal yard;	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. Maintenance and/or provision of buffers around the plant's perimeter	g. Complied. A major reforestation around the project site was completed. 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283		g. Management and maintenance is a routine / continuing activity.
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

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.	➢ 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 one percent (1%). Proof from supplier shall be required for new deliveries.			➢ Automotive diesel oil is used. Supplier is required to submit analysis. ➢ Average Sulfur content is less than 0.1%
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
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.	➢ 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.	➢ 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.	➢ 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 **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.	➢ 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.		➢ Semi Annual Medical Mission is being conducted by MPPCL in collaboration w/ host community & 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.	➢ 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		➢ 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, PAMB & 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.			➢ 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.	➢ Environmental monitoring program/plan submitted to DENR-EMB on February 15, 1993. ➢ Environmental laboratory is operational.		➢ Water quality monitoring is a continuing activity. ➢ Results are provided to DENR, LGU, PAMB, MPPCL.
VI. FURTHER STUDIES REQUIRED			
32. Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	➢ DENR – EMB analytical methods and procedures being followed.		➢ 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.	➢ 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.	➢ 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.	➢ The Risk Assessment Study has been submitted to DENR - EMD.		

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.	➢ On going coordination with EMB re: setting up		
VIII. ENVIRONMENTAL REPORTING/ PUBLIC INFORMATION **37.** Set a system for public relations / information, to discuss / resolve issues that may develop / affect the community.			➢ Either MPPCL & LGU initiates meeting to discuss / resolve issues concerning the plant & the community ➢ Multipartite 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 June 2010

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 METEROLOGY 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 or 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.	2.3.1 MCFTPP will utilize a screw type coal unloader to eliminate dust dispersion during coal unloading.	Installed and operational.
	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.	Installed and operational.
	2.3.3 Water sprayers will be installed at coal stockyard.	Installed and operational.
	2.3.4 The height of fall of coal from stacker shall be made as low as possible during stacking.	Being implemented.
	2.3.5 Reclaimers/stackers shall be operated only at wind speed lower than 5 mps.	Being implemented.
	2.3.6 Planting of trees around MCFTPP to serve as wind breakers.	To date 55,436 trees have been planted.
2.4 Spontaneous combustion may occur at the coal stockyard emitting smoke and smoldering smell.	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.	Being implemented.
	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.	Being implemented.
	2.4.3 Regular re-piling and water sprinkling of coal file shall be undertaken to prevent spontaneous combustion.	Being implemented.

IMPACTS	MITIGATING MEASURES	STATUS
	2.4.4 Coal pile portion where spontaneous combustion occurs shall be compacted by bulldozer.	Being implemented.
2.5 MCFTPP will emit SO2, NO and air particulates in the environment.	2.5.1 MCFTPP will utilize 100% imported coal with low sulfur and ash content to reduce SO2, NO2 and air particulate emission.	Being implemented.
Emission levels of SO2, NOx and air particulates are within DENR standard.	2.5.2 MCFTPP will utilize a stack of 150 m high for maximum dispersion of SO2, NO2 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 Nox releases by 25-30%, or to less than 400 ppm at the boiler outlet.	
	2.5.5 Regular monitoring of ambient SO2, NO2 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 Candelaria.
2.6 Dust may be dispersed during ash transport, unloading and at the ash disposal area.	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.	2.7.1 Use of low noise equipment installation of soundproof washes and doors; indoor installation of fans, pumps, compressor and motors.	Being implemented.
	2.7.2 Operation of coal stockyard and ash disposal area shall be done only during daytime.	Regular ambient & occupational noise level monitoring is conducted regularly; data shows compliance to DOH & DOLE requirements.
	2.7.3 Regular monitoring of noise levels in population centers near MCFTPP during plant operation.	Multipartite monitoring is conducted quarterly.
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.	3.1.1 Revetment around the reclaimed area shall be constructed prior to start of reclamation.	Implemented
	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.	Revetment and embankment already constructed. Stabilization of slopes by sodding/planting completed. Revegetation is a continuing activity.
3.2 Possible contamination of Oyon Bay and groundwater due to the operation of ash disposal system.	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.	Monitoring of plant effluent is regularly conducted.
	3.2.2 The ash disposal area will be provided with sedimentation basin and embankment.	Completed
	3.2.3 The NW embankment of ash disposal area shall be lined with empervious material such as clay to avoid groundwater contamination.	Completed.
	3.2.4 Five (5) deep walls shall be constructed at the northern portion of ash disposal area for the monitoring of groundwater quality.	Implemented.

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 0.06 mg/l shall be adopted to ensure a residual chlorine concentration of 0.02 to 0.05 mg/l. at the outfall is expected.	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 TERRESTIAL 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.	Implemented
4.2 The emission of SO2, NO2 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.	Completed

IMPACTS	MITIGATING MEASURES	STATUS
5.0 AQUATIC ECOLOGY		
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.	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.	Completed
	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.	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.
5.2 The discharge of treated effluent may cause ecological effects to the aquatic system at Oyon Bay.	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.	Completed.
	5.2.2 Biological studies at the discharge area will be undertaken during MCFTPP operation to determine possible effects of thermal effluent chlorination.	Permanent coral quadrat deployed near the discharge area. Biological monitoring is a continuing activity by the MM group.
5.3 The chlorination of cooling water may cause ecological effects to the aquatic system at Oyon Bay	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.	Being implemented.
5.4 The cooling water system will cause entrainment and impingement of marine organisms.	5.4.1 Velocity cap at the intake structure of the cooling water system will be installed to reduce entrapment of fishes.	Implemented.
	5.4.2 Entrapment of fishes at the intake structure will be monitored during MCFTPP Operation.	
5.5 The operation of ash disposal system may cause ecological effects to the aquatic system at Oyon Bay.	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.	Operational.

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 estruarine 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.	Completed Completed
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.	Completed
6.3 The influx of migrant construction workers will induce the proliferation of service establishments (food eateries, 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 MCFTPP to be spearheaded by NAPOCOR's Community Relations Department will be created to formulate and implement public information activities during plant operation.	Implemented The Community Relations Officer regularly coordinates with host communities re: community-related programs thru its Corporate Social Responsibility Program

IMPACTS	MITIGATING MEASURES	STATUS
6.6 The operation of MCFTPP will mean an additional 600 MW to the Luzon grid.		MPPCL 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	Implemented.
peace and order, sanitary condition of temporary camps and others.	practices. 7.1.2 Conduct of health and safety seminar to all construction personnel. 7.1.3 Provision for a construction camp at the site with safe drinking water supply, adequate sewage facilities and solid waste disposal facilities. 7.1.4 Provision for medical staff at site during construction to conduct routine physical examination and to attend to medical emergencies. 7.1.5 Provision for adequate security staff to ensure peace and order in the camp during construction.	 Implemented. Implemented. Implemented. Implemented.
7.2 Plant personnel and the general public near MCFTPP will be exposed to dust, noise, SO2, NO2 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 or SO2, NO2, dust and noise to levels within DENR ambient standards. 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. 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 MCFTPP.	Continuing.
	7.2.7 Implementation of Industrial Health and Occupational Safety Audit Program at MCFTPP 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.

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MASINLOC POWER PARTNERS COMPANY LIMITED

MULTIPARTITE MONITORING REPORT

Third Quarter 2010

September 20– 24, 2010

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

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TABLE OF CONTENTS

MASINLOC POWER PARTNERS COMPANY LIMITED

THIRD QUARTER MULTI PARTITE MONITORING REPORT
September 20-24, 2010

EXECUTIVE BRIEF

The Third Quarter 2010 Multipartite Monitoring of the Masinloc Power Partners Company Limited was conducted on September 20-24, 2010 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 Masinloc Power Partners Company Limited.

For this quarter, monitoring was conducted jointly by two (2) representatives from the office of the Department of Environment and Natural Resources (CENRO and PENRO), one (1) representative from the office of Protected Area Management Board, one (1) representative from the office of the Barangay Government Unit (Brgy. Bani), one (1) representative from the office of Municipal Government Unit (Masinloc), and three (3) representatives from Masinloc Power Partners Company Limited-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), groundwater 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. Fourteen parameters for domestic water, fifteen parameters for river water, twelve parameters for groundwater, fifteen parameters for marine water and sixteen parameters for plant effluent. Metals detected were Antimony, Arsenic, Cadmium, Chromium^{+6}, Total Chromium, Copper, Gold, Lead, Mercury, Selenium and Silver.

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 five (5) stations. 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).*

5. Ground and domestic water samples are in compliance with the standards set by the Department of Health Administrative Order No. 2007-0012 *(PNSDW 2007 – Philippine National Standards for Drinking Water 2007).*

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 20-24, 2010. Sampling activities were conducted based on the 2010 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
2.1.1.2 Inhobol
2.1.1.3 Candelaria
2.1.1.4 Palauig

2.1.2 OCCUPATIONAL AIR (SO_2 / NO_2 / 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 Lauis Elementary School
2.1.3.13 Brgy. Lauis (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 SO_2 & NO_2 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, SO_2 & NO_2 analysis.

2.3 ANALYSIS OF SO_2 / NO_2 / 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 (West-Gaeke Method) and NO2 samples (Griess Saltzmann Method). 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 SO_2 (Tables 1 & 5), NO_2 (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
2.4.2.2 Date of Sampling
2.4.2.3 Volumetric Flow Rate
2.4.2.4 Temperature
2.4.2.5 Pressure
2.4.2.6 Volume at normal condition
2.4.2.7 Weight of filter paper
2.4.2.8 Weight of filter paper and particulate
2.4.2.9 Weight of particulate
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 20-24, 2010. Sampling activities were conducted based on the 2010 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 5:

3.1.1 RIVER WATER QUALITY MONITORING STATIONS

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

3.1.2 GROUNDWATER 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)
3.1.3.8 MOW-2 Bani (along embankment)

3.1.3 DOMESTIC WATER QUALITY MONITORING STATIONS

3.1.3.1 MWD: Masinloc Water District
3.1.3.2 RES: Resettlement Area
3.1.3.3 LAB: Faucet near Laboratory Building
3.1.3.4 GHS: NPC Guesthouse
3.1.3.5 PWD: Palauig Water District
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 (no sample)
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 Lauis River & Bani Point
3.1.5.2 M-2 Outfall (100 m from discharge canal)
3.1.5.3 M-3 Cooling Water Intake
3.1.5.4 M-4 Resettlement
3.1.5.5 M-5 C-Square (Benguet Loading area)
3.1.5.6 M-6 Puerto Asinan
3.1.5.7 M-7 Benguet Wharf
3.1.5.8 M-8 Masinloc River (Near mouth)
3.1.51.9 M-9 Petron (harbor)
3.1.5.10 M-10 BFAR
3.1.5.11 M-11 San Salvador
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 GROUNDWATER SAMPLING

Water samples were collected from the eight (8)-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, Ash Sedimentation Basin, Coal Sedimentation Basin, Storm Drain Canal & 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
3.4.1.2 Conductivity
3.4.1.3 Turbidity
3.4.1.4 Dissolved Oxygen
3.4.1.5 Temperature
3.4.1.6 Salinity

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, marine and domestic water only)
3.4.2.4 Total Coliform (For river, marine and domestic water only)
3.4.2.5 Antimony
3.4.2.6 Arsenic
3.4.2.7 Cadmium
3.4.2.8 Chromium Hexavalent
3.4.2.9 Chromium Total
3.4.2.10 Copper
3.4.2.11 Gold
3.4.2.12 Lead
3.4.2.13 Mercury
3.4.2.14 Selenium
3.4.2.15 Silver

4.0 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.

4.1 RIVER SEDIMENTS QUALITY MONITORING STATIONS

4.1.1 LR-1 Lauis River (upstream of freshwater intake)
4.1.2 LR-2 Lauis River (near mouth / nursery)
4.1.3 MR-1 Masinloc River (Collat Bridge)

4.2 MARINE SEDIMENTS QUALITY MONITORING STATIONS

4.2.1 M-1 Between Lauis River & Bani Point
4.2.2 M-2 Outfall (100 m from discharge canal)
4.2.3 M-3 Cooling Water Intake
4.2.4 M-4 Resettlement
4.2.5 M-5 C-Square (Benguet Loading area)
4.2.6 M-6 Puerto Asinan
4.2.7 M-7 Benguet Wharf
4.2.8 M-8 Masinloc River (Near mouth)
4.2.9 M-9 Petron (harbor)
4.2.10 M-10 BFAR
4.2.11 M-11 San Salvador
4.2.12 M-12 Along Veritas

4.3 SOIL QUALITY MONITORING STATIONS

4.3.1 S-1 Masinloc National High School (across highway)
4.3.2 S-2 Candelaria (back of Elementary School)
4.3.3 S-3 Puerto Asinan (across highway)
4.3.4 S-4 NPC Resettlement (beside roadside)
4.3.5 S-5 Bani Elementary School (beside roadside)
4.3.6 S-6 Palauig (back of Town Plaza)
4.3.7 S-7 Bani National High School (mango area)
4.3.8 S-8 CENRO Office (near MPPCL Monitoring Station)
4.3.9 S-9 Sto. Niño, Palauig (intersection)
4.3.10 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, 2010

SO_2 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	1352H-1452H	09/20/10	1.00	29.0	763.6	0.0719	0.0595	1.21	DENR A. O. 14 s. 1993 340 ug/Ncm
	1453H-1553H	09/20/10	1.00	30.0	763.6	0.0383	0.0593	0.65	
Inhobol	1410H-1510H	09/21/10	1.00	34.0	763.6	0.1054	0.0585	1.80	
	1515H-1615H	09/21/10	1.00	33.0	763.6	0.1054	0.0587	1.80	
Candelaria	1632H-1732H	09/21/10	1.00	31.0	763.6	0.0000	0.0591	ND	
	1734H-1834H	09/21/10	1.00	31.0	763.6	0.0000	0.0591	ND	
Palauig	1512H-1612H	09/20/10	1.00	31.0	763.6	0.1054	0.0591	1.78	
	1614H-1714H	09/20/10	1.00	31.0	763.6	0.1390	0.0591	2.35	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

MPPCL Representative(s) _____

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TABLE NO. 2

AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

NO_2 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	1352H-1452H	09/20/10	1.00	29.0	763.6	0.0189	0.0595	0.32	DENR A. O. 14 s. 1993 260 ug/Ncm
	1453H-1553H	09/20/10	1.00	30.0	763.6	0.0121	0.0593	0.20	
Inhobol	1410H-1510H	09/21/10	1.00	34.0	763.6	0.0019	0.0585	0.03	
	1515H-1615H	09/21/10	1.00	33.0	763.6	0.0087	0.0587	0.15	
Candelaria	1632H-1732H	09/21/10	1.00	31.0	763.6	0.0053	0.0591	0.09	
	1734H-1834H	09/21/10	1.00	31.0	763.6	0.0087	0.0591	0.15	
Palauig	1512H-1612H	09/20/10	1.00	31.0	763.6	0.0155	0.0591	0.26	
	1614H-1714H	09/20/10	1.00	31.0	763.6	0.0155	0.0591	0.26	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, 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) _____

MPPCL Representative(s) _____

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TABLE NO. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

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	1352H-1152H	09/20/10	555.2	553.6	0.85	29.0	763.6	1.60	50.32	31.80	
	1453H-1553H	09/20/10	555.3	553.4	0.85	30.0	763.6	1.90	50.15	37.89	DENR A. O. 14
Inhobol	1410H-1510H	09/21/10	541.1	540.9	0.70	34.0	763.6	0.20	40.77	4.91	
	1515H-1615H	09/21/10	547.8	547.7	0.80	33.0	763.6	0.10	46.75	2.14	
Candelaria	1632H-1732H	09/21/10	543.4	543.4	0.70	31.0	763.6	0.00	41.17	ND	s. 1993
	1734H-1834H	09/21/10	543.1	543.0	0.70	31.0	763.6	0.10	41.17	2.43	300*ug/Ncm*
Palauig	1512H-1612H	09/20/10	554.8	554.6	0.60	31.0	763.6	0.20	35.29	5.67	
	1614H-1714H	09/20/10	557.0	556.7	0.60	31.0	763.6	0.30	35.29	8.50	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

MPPCL Representative(s) _____

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TABLE NO. 4

NATIONAL POWER CORPORATION
MASINLOC COAL-FIRED THERMAL POWER PLANT
Multipartite Monitoring Committee
Third Quarter, 2010

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	1352H-1152H	09/20/10	0.85	29.0	763.6	0.0000	50.32	ND	10 µg/Ncm DENR A. O. 14 s. 1993
	1453H-1553H	09/20/10	0.85	30.0	763.6	0.0000	50.15	ND	
Inhobol	1410H-1510H	09/21/10	0.70	34.0	763.6	0.0000	40.77	ND	
	1515H-1615H	09/21/10	0.80	33.0	763.6	0.0000	46.75	ND	
Candelaria	1632H-1732H	09/21/10	0.70	31.0	763.6	0.0000	41.17	ND	
	1734H-1834H	09/21/10	0.70	31.0	763.6	0.0000	41.17	ND	
Palauig	1512H-1612H	09/20/10	0.60	31.0	763.6	0.0000	35.29	ND	
	1614H-1714H	09/20/10	0.60	31.0	763.6	0.0000	35.29	ND	

FORMULA:

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

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

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, m^3/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, 2010

SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2030H-2130H	09/20/10	1.00	24.00	763.6	0.0719	0.0605	1.1887	DOH 5000*ug/Ncm*
	2138H-2238H	09/20/10	1.00	24.00	763.6	0.0719	0.0605	1.1887	
Admin. Building	2045H-2145H	09/20/10	1.00	20.00	763.6	0.0383	0.0613	0.6247	
	2150H-2250H	09/20/10	1.00	20.00	763.6	0.1054	0.0613	1.7191	
WWT Control Room	0923H-1023H	09/20/10	1.00	20.00	763.6	0.0000	0.0613	ND	
	1026H-1126H	09/20/10	1.00	20.00	763.6	0.0000	0.0613	ND	
Coal Handling Control Room	0918H-1018H	09/20/10	1.00	24.50	763.6	0.3403	0.0604	5.6357	
	1020H-1120H	09/20/10	1.00	24.00	763.6	0.3738	0.0605	6.1801	
Chemical Laboratory	0909H-1009H	09/20/10	1.00	24.00	763.6	0.0383	0.0605	0.6332	
	1015H-1115H	09/20/10	1.00	24.00	763.6	0.0048	0.0605	0.0794	
Mechanical Shop	2045H-2145H	09/20/10	1.00	27.00	763.6	0.1390	0.0599	2.3213	
	2147H-2247H	09/20/10	1.00	28.00	763.6	0.1390	0.0597	2.3291	
Ash Handling Control Room	0920H-1020H	09/20/10	1.00	27.00	763.6	0.2061	0.0599	3.4419	
	1021H-1121H	09/20/10	1.00	28.00	763.6	0.2396	0.0597	4.0147	
Turbine Floor	2032H-2132H	09/20/10	1.00	36.00	763.6	0.2061	0.0581	3.5452	
	2136H-2236H	09/20/10	1.00	36.00	763.6	0.2396	0.0581	4.1214	

FORMULA:

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

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

Notes:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 6

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2030H-2130H	09/20/10	1.00	24.00	763.6	0.0053	0.0605	0.0876	
	2138H-2238H	09/20/10	1.00	24.00	763.6	0.0053	0.0605	0.0876	
Admin. Building	2045H-2145H	09/20/10	1.00	20.00	763.6	0.0053	0.0613	0.0864	
	2150H-2250H	09/20/10	1.00	20.00	763.6	0.0087	0.0613	0.1419	DOH
WWT Control Room	0923H-1023H	09/20/10	1.00	20.00	763.6	0.0087	0.0613	0.1419	6000*ug/Ncm*
	1026H-1126H	09/20/10	1.00	20.00	763.6	0.0053	0.0613	0.0864	
Coal Handling Control Room	0918H-1018H	09/20/10	1.00	24.50	763.6	0.0358	0.0604	0.5929	
	1020H-1120H	09/20/10	1.00	24.00	763.6	0.0358	0.0605	0.5919	
Chemical Laboratory	0909H-1009H	09/20/10	1.00	24.00	763.6	0.0155	0.0605	0.2563	DOLE
	1015H-1115H	09/20/10	1.00	24.00	763.6	0.0257	0.0605	0.4249	9000*ug/Ncm*
Mechanical Shop	2045H-2145H	09/20/10	1.00	27.00	763.6	0.0257	0.0599	0.4292	
	2147H-2247H	09/20/10	1.00	28.00	763.6	0.0257	0.0597	0.4306	
Ash Handling Control Room	0920H-1020H	09/20/10	1.00	27.00	763.6	0.0290	0.0599	0.4843	
	1021H-1121H	09/20/10	1.00	28.00	763.6	0.0290	0.0597	0.4859	
Turbine Floor	2032H-2132H	09/20/10	1.00	36.00	763.6	0.0155	0.0581	0.2666	
	2136H-2236H	09/20/10	1.00	36.00	763.6	0.0189	0.0581	0.3251	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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) _____

MPPCL Representative(s) _____

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TABLE NO. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

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	2030H-2130H	09/20/10	546.7	546.6	0.70	24.00	763.6	0.10	42.34	2.36	
	2138H-2238H	09/20/10	546.1	546.0	0.70	24.00	763.6	0.10	42.34	2.36	
Admin. Building	2045H-2145H	09/20/10	550.4	550.3	0.57	20.00	763.6	0.10	34.74	2.88	DOH
	2150H-2250H	09/20/10	553.3	553.2	0.57	20.00	763.6	0.10	34.74	2.88	
WWT Control Room	0923H-1023H	09/20/10	552.6	552.0	0.57	20.00	763.6	0.60	34.74	17.27	2000*ug/Ncm*
	1026H-1126H	09/20/10	552.5	551.9	0.57	20.00	763.6	0.60	34.74	17.27	
Coal Handling Control Room	0918H-1018H	09/20/10	542.4	541.7	0.70	24.50	763.6	0.70	42.27	16.56	
	1020H-1120H	09/20/10	544.0	543.4	0.70	24.00	763.6	0.60	42.34	14.17	
Chemical Laboratory	0909H-1009H	09/20/10	552.4	552.1	0.70	24.00	763.6	0.30	42.34	7.09	DOLE
	1015H-1115H	09/20/10	552.1	551.8	0.70	24.00	763.6	0.30	42.34	7.09	
Mechanical Shop	2045H-2145H	09/20/10	553.4	552.9	0.70	27.00	763.6	0.50	41.92	11.93	1000*ug/Ncm*
	2147H-2247H	09/20/10	551.1	550.4	0.70	28.00	763.6	0.70	41.78	16.76	
Ash Handling Control Room	0920H-1020H	09/20/10	543.4	542.5	0.60	27.00	763.6	0.90	35.93	25.05	
	1021H-1121H	09/20/10	543.5	541.4	0.65	28.00	763.6	2.10	38.79	54.13	
Turbine Floor	2032H-2132H	09/20/10	544.7	544.3	0.70	36.00	763.6	0.40	40.69	9.83	
	2136H-2236H	09/20/10	547.8	547.6	0.70	36.00	763.6	0.20	40.69	4.91	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 8

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

AMBIENT NOISE MONITORING

MORNING TIME

September 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0804H	51.9	58.7	47.1	51.3	
2	Purok Percaloha (Junction)	0802H	48.9	66.9	47.1	58.7	
3	Edillor's Residence (150m. From Gate	0852H	64.3	68.8	52.7	59.1	tricycle
4	EPDC Building	0851H	62.1	65.8	42.9	57.6	roster crow
5	C-Square (Benguet Loading Area)	0850H	65.1	69.2	55.3	63.9	tricycle
6	Resettlement Site	0848H	67.3	74.4	46.7	66.5	noisy people
7	Highway, waiting shed of Resettlement	0829H	63.9	68.1	62.8	64.9	vehicle
8	Puerto Asinan	0831H	69.6	76.7	67.3	72.2	music
9	Sitio Atob, Purok Tanguile	0833H	69.2	76.7	55.7	66.9	vehicle
10	Masinloc Town Plaza	0839H	66.2	79.3	64.7	72.1	vehicle
11	Bani National High School, (Annex), Taltal	0816H	63.6	72.6	59.1	63.5	noisy people
12	Brgy. Lauis (Junction to Binabalian)	0822H	66.2	69.9	64.7	67.4	vehicle
13	Lauis Elementary School	0824H	60.2	78.2	57.2	65.7	vehicle
14	Purok Bangal-Duhok (Junction)	0811H	59.8	65.1	49.3	58.1	radio
15	Bani Elementary School, Bani	0810H	49.7	53.4	45.6	49.0	
16	Bani National High School, Bani	0809H	71.8	81.6	69.9	76.0	tricycle
17	Brgy. Bani Multi-purpose Complex	0805H	64.7	70.3	60.2	63.6	tricycle
18	Plant Site (Coal Yard)	0800H	50.1	67.3	45.2	57.8	

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 Category	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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)

MPPCL Representative(s)

TABLE NO. 9

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

AMBIENT NOISE MONITORING

DAYTIME

September 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1437H	62.8	63.9	59.4	62.3	vehicles
2	Purok Percaloha (Junction)	1431H	47.9	48.3	42.2	47.4	
3	Edillor's Residence (150m. From Gate	1439H	69.9	71.1	54.9	65.1	dog barking
4	EPDC Building	1445H	48.6	53.4	43.3	46.9	television
5	C-Square (Benguet Loading Area)	1446H	43.3	43.7	40.7	42.0	
6	Resettlement Site	1450H	59.4	62.8	52.3	57.4	cement mixer
7	Highway, waiting shed of Resettlement	1452H	64.3	66.2	62.4	64.2	tricycle
8	Puerto Asinan	1526H	73.3	83.1	65.1	76.5	vehicle
9	Sitio Atob, Purok Tanguile	1528H	75.6	81.9	51.6	70.9	tricycle
10	Masinloc Town Plaza	1530H	68.8	74.4	66.2	69.9	tricycle
11	Bani National High School, (Annex), Taltal	1455H	59.4	68.1	53.8	61.7	motorcycle
12	Brgy. Lauis (Junction to Binabalian)	1515H	57.6	71.1	56.4	61.1	tricycle
13	Lauis Elementary School	1518H	64.4	69.9	59.8	63.2	truck
14	Purok Bangal-Duhok (Junction)	1539H	53.4	53.4	42.6	46.8	
15	Bani Elementary School, Bani	1600H	75.0	75.2	57.6	69.8	noisy kids
16	Bani National High School, Bani	1605H	50.2	58.7	47.4	52.0	noisy kids
17	Brgy. Bani Multi-purpose Complex	1606H	53.8	60.9	52.3	59.1	tricycle
18	Plant Site (Coal Yard)	1429H	54.2	63.6	46.7	55.6	

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	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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)

MPPCL Representative(s)

TABLE NO. 10

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Third Quarter, 2010

AMBIENT NOISE MONITORING

NIGHT TIME

September 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2215H	57.9	62.1	48.9	55.2	
2	Purok Percaloha (Junction)	2212H	48.6	53.1	47.4	48.4	
3	Edillor's Residence (150m. From Gate	2308H	63.2	63.2	53.4	59.2	insects
4	EPDC Building	2306H	68.8	69.2	58.7	63.6	dog barking
5	C-Square (Benguet Loading Area)	2305H	44.1	52.3	42.6	45.1	
6	Resettlement Site	2302H	42.9	59.2	41.4	47.8	
7	Highway, waiting shed of Resettlement	2242H	71.8	72.2	63.6	66.9	cars
8	Puerto Asinan	2244H	68.8	75.3	66.3	71.0	tricycle
9	Sitio Atob, Purok Tanguile	2246H	53.1	56.5	43.5	48.6	
10	Masinloc Town Plaza	2252H	59.1	63.2	54.2	58.1	
11	Bani National High School, (Annex), Taltal	2227H	53.4	81.9	52.3	68.3	ringtone
12	Brgy. Lauis (Junction to Binabalian)	2234H	47.8	53.8	45.2	49.7	
13	Lauis Elementary School	2237H	51.9	51.9	43.7	47.4	
14	Purok Bangal-Duhok (Junction)	2221H	48.6	58.7	45.9	49.9	
15	Bani Elementary School, Bani	2220H	44.4	80.8	42.9	70.2	car
16	Bani National High School, Bani	2219H	49.7	58.3	49.4	48.2	
17	Brgy. Bani Multi-purpose Complex	2218H	46.3	58.3	43.7	48.5	
18	Plant Site (Coal Yard)	2210H	58.7	61.7	53.4	55.7	

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 quiet-ness (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) _____

MPPCL Representative(s) _____

TABLE NO. 11

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

AMBIENT NOISE MONITORING

EVENING TIME

September 21, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2015H	53.4	73.3	51.6	61.0	tricycle
2	Purok Percaloha (Junction)	2012H	50.4	51.2	48.9	50.3	
3	Edillor's Residence (150m. From Gate	2017H	56.8	61.7	50.5	59.0	vehicle
4	EPDC Building	2018H	60.2	74.1	55.3	64.0	people talking
5	C-Square (Benguet Loading Area)	2019H	47.1	51.6	41.0	46.4	
6	Resettlement Site	2022H	53.8	69.2	51.2	59.4	people talking
7	Highway, waiting shed of Resettlement	2024H	59.1	59.1	55.7	57.6	vehicle
8	Puerto Asinan	2042H	55.3	72.9	52.7	65.2	vehicle
9	Sitio Atob, Purok Tanguile	2043H	59.4	66.6	57.9	61.5	tricycle
10	Masinloc Town Plaza	2049H	72.9	73.7	66.9	70.8	people talking
11	Bani National High School, (Annex), Taltal	2027H	55.7	57.9	55.3	56.5	
12	Brgy. Lauis (Junction to Binabalian)	2032H	61.7	73.7	54.2	63.3	motorcycle
13	Lauis Elementary School	2035H	57.2	59.4	43.7	52.4	dog barking
14	Purok Bangal-Duhok (Junction)	2107H	48.9	57.6	48.9	53.2	
15	Bani Elementary School, Bani	2108H	47.4	51.2	45.2	46.9	
16	Bani National High School, Bani	2109H	45.6	53.8	44.1	46.3	
17	Brgy. Bani Multi-purpose Complex	2110H	67.7	68.8	48.6	53.5	people talking
18	Plant Site (Coal Yard)	2010H	54.9	63.2	53.8	56.3	

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 Category	Evening Time Noise Level (1800H to 2200H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

TABLE NO. 12

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter 2010

OCCUPATIONAL NOISE MONITORING

September 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1643H	63.6	64.3	56.8	59.9	
2	Turbine Floor	1642H	88.7	89.1	87.9	88.3	
3	Laboratory Building	1620H	56.8	64.3	54.9	56.9	
4	Administration Building (Lobby)	1656H	56.8	57.9	54.6	55.6	
5	Coal Handling	1608H	62.8	64.3	56.3	61.0	
6	Ash Handling	1709H	71.8	80.4	69.6	71.8	
7	Machine Shop	1613H	74.1	74.8	73.5	73.6	
8	Water Treatment Control Room	1610H	65.2	65.4	64.3	64.7	
9	Boiler Feed Pump Unit #1	1639H	95.8	96.2	93.6	94.9	
10	Boiler Feed Pump Unit #2	1646H	91.3	94.3	90.2	92.8	
11	Circulating Water Pump Intake #1	1650H	93.9	96.2	88.7	92.0	
12	Circulating Water Pump Intake #2	1649H	91.3	93.2	87.9	91.1	
13	Smoke Stack (CEM Control Room)	1706H	63.6	68.4	59.1	62.8	
14	Generator Transformer Unit #1	1654H	75.9	78.9	75.6	77.0	
15	Generator Transformer Unit #2	1652H	75.6	75.6	74.1	74.8	
16	Guard House (Main Gate)	1625H	45.9	63.9	43.3	53.3	
17	230kV GIS (Switchyard)	1655H	69.2	79.7	67.7	71.9	
18	Coal Yard	1607H	47.8	56.1	44.4	48.4	

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) _____

MPPCL Representative(s) _____

APPENDIX 2

MULTIPARTITE WATER QUALITY MONITORING RESULTS

PAGES 24-33

TABLE NO. 13

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	9/21/10	9/21/10	9/21/10	9/21/10	9/21/10	9/21/10	-
Time of Sampling	1557H	1845H	2001H	1955H	1635H	1509H	-
pH	7.65	7.61	7.85	7.33	7.72	8.15	6.5 - 8.5
Conductivity, mSiemens / meter	0.102	1.440	0.319	0.327	0.669	1	-
Turbidity, NTU	1	0	0	0	1	1	5
Dissolved Oxygen, ppm	6.21	7.27	7.54	6.13	7.61	8.44	-
Temperature, °C	27.3	27.9	27.7	29.3	29.2	28.7	-
Salinity, %	0.000	0.004	0.001	0.001	0.002	0.004	-

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 Dstrict
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) _____

MPPCL Representative (s) _____

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\domestic

TABLE NO. 14

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

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	186	0	0	0	0	0	0
Total Coliform,MPN/100ml	210	0	0	0	0	0	0
Total Suspended Solids	0.1	0.1	0.0	0.0	0.1	0.1	-
Antimony	ND	ND	ND	ND	ND	ND	0.02
Arsenic	ND	ND	ND	ND	ND	ND	0.05
Cadmium	ND	ND	ND	ND	ND	ND	0.003
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	1.0
Gold	ND	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	ND	0.01
Mercury	ND	ND	ND	ND	ND	ND	0.001
Selenium	ND	ND	ND	ND	ND	ND	0.01
Silver	ND	ND	ND	ND	ND	ND	-

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

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\domestic-lab

TABLE NO. 15

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

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	9/21/2010	9/21/2010	9/21/2010	-
Time of Sampling	1030H	1120H	1020H	-
pH	8.08	8.02	7.50	6.5 - 8.5
Conductivity, mSiemens / cm.	0.535	6.46	38.5	-
Turbidity, NTU	3	7	7	-
Dissolved Oxygen, ppm	9.40	6.04	6.75	5 minimum
Temperature, °C	27.3	30.2	30.3	-
Salinity, %	0.001	0.024	0.255	-

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) _____

MPPCL Representative (s) _____

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\river

TABLE NO. 16

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

RIVER WATER QUALITY MONITORING (LABORATORY ANALYSIS)

Parameters	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.34 s.1990 (Class B)
Oil & Grease	ND	ND	ND	1
Fecal Coliform	18	120	178	200
Total Coliform	58	360	420	1,000
Total Suspended Solids	0.1	0.4	7.2	<30 mg/l increase
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	0.05
Cadmium	ND	ND	ND	0.01
Chromium^{+6}	ND	ND	0.00318	0.05
Chromium, Total	ND	ND	0.0342	
Copper	ND	ND	ND	-
Gold	ND	ND	ND	-
Lead	ND	ND	ND	0.05*
Mercury	ND	ND	ND	0.002
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

NOTES:

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

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\river-lab

TABLE NO. 17

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)

September 22, 2010

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O_2 ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1340H	7.03	1.020	2	1.12	27.0	0.04
MO-1: Bani Point (After Ash Disposal Area)	1009H	6.54	0.502	2	1.39	27.4	0.02
MO-2: Bani (NPC Nursery)	1105H	8.28	0.760	6	1.30	27.5	0.03
MO-3: Between Corafer And Duhok	1120H	7.20	0.797	1	0.55	27.9	0.00
MO-5: Bani (PNP Patrol Base)	1400H	6.99	0.910	1	1.31	28.0	0.04
MO-6: Bani	1036H	6.85	9.400	4	0.78	28.5	0.52
MOW-1: Bani (near Sedimentation Basin)	1106H	7.95	1.370	0	2.71	27.9	0.06
MOW-2: Bani (along embankment)	1146H	7.05	1.990	18	0.39	28.4	0.09
MOW-3: Bani (near warehouse)	1350H	6.78	1.460	25	0.66	28.30	0.06

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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) _____

MPPCL Representative (s) _____

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\ground

TABLE NO. 18

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

GROUNDWATER MONITORING (LABORATORY ANALYSIS)

Parameters	MD-1	MO-1	MO-2	MO-3	MO5	MO-6	MOW-1	MOW-2	MOW-3	PNSDW	NBC
Total Suspended Solids	ND	0.1	ND	1.4	0.6	5.2	0.2	0.6	1.4	2.5	≤3,847
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	-
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.0174
Chromium^{+6}	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003	≤0.01
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	-
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	-
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.12

NOTES:

1. Monitoring Stations
   - MD-1: Near Main Gate, Right
   - MD-2 : Taltal (Near Lauis 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
   - MOW-1: Bani (near Sedimentation Basin)
   - MOW-2: Bani (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 Absoption Spectrometer.
9. Monitoring conducted by the MPPCL Multipartite Monitoring Team
10. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\ground-lab

TABLE NO.19

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

MARINE WATER MONITORING (IN-SITU ANALYSIS)

September 21, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1054H	8.08	55.5	14	6.37	30.7	3.68	
M2	1039H	8.05	55.4	1	5.36	32.2	3.69	
M3	1028H	8.02	55.5	5	5.60	31.4	3.68	
M4	1323H	8.09	54.7	2	6.44	31.2	3.64	
M5	1331H	8.11	54.9	2	7.30	31.1	3.64	
M6	1318H	8.08	54.8	2	6.70	31.2	3.64	
M7	1301H	8.10	54.4	3	7.34	31.2	3.61	
M8	1249H	7.90	24.5	5	5.78	30.7	1.51	
M9	1228H	8.10	55.3	4	5.72	31.4	3.67	
M10	1210H	7.99	55.4	1	5.81	31.6	3.67	
M11	1142H	8.10	55.0	7	6.13	30.7	3.64	
M12	1132H	8.12	55.6	13	5.53	31.0	3.68	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Lauis 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. 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)

MPPCL Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\marine

TABLE NO. 20

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

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 A0 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	0	0	0	0	32	0	125	0	0	-
Total Coliform,MPN/100ml	0	7	5	7	0	21	17	22	125	268	4	0	5,000
Total Suspended Solids	5.2	8.6	7.8	7.9	7.9	8.7	7.8	3.1	9.1	8.4	7.9	7.8	<30 mg/l increase
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
Chromium^{+6}	0.0032	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038	0.0045	0.0038	0.0038	0.0038	0.0038	0.1
Chromium, Total	0.0507	0.0502	0.0509	0.0495	0.0499	0.0458	0.0450	0.0115	0.0564	0.0569	0.0555	0.0551	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Gold	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*
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002
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	-

NOTES:

1.Monitoring Stations
- M-1: Between Lauis 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) $\leq$0.35 ppm

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w3q2010\marine-lab

TABLE NO. 21

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

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	9/22/2010	9/21/2010	9/21/2010	9/22/2010	9/22/2010	-
Time of Sampling	1445H	1149H	1200H	1325H	1510H	-
pH	7.62	7.34	8.05	7.91	7.64	6.0 - 9.0
Conductivity, mSiemens/cm.	1.720	1.120	1.260	57.700	1.760	-
Turbidity, NTU	6	22	22	13	4	-
Dissolved Oxygen, ppm	6.91	5.72	6.03	6.85	3.31	-
Temperature, °C	33.5	32.3	30.3	38.0	29.9	-
Salinity, %	0.080	0.003	0.003	3.830	0.080	-

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) _____

MPPCL Representative (s) _____

TABLE NO. 22

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010
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	0.2	5.7	ND	8.1	6.70	150
Biochemical Oxygen Demand	3.0	6.0	5.0	5.0	3.00	100
Chemical Oxygen Demand	3	7	7	125	3	200
Color, PCU	0	65	12	0	0	150
Antimony	ND	ND	ND	ND	ND	
Arsenic	ND	ND	ND	ND	ND	0.5
Cadmium	ND	ND	ND	ND	ND	0.1
Chromium^{+6}	ND	ND	ND	0.004	ND	0.2
Chromium, Total	ND	ND	ND	0.0586	ND	
Copper	ND	ND	ND	ND	ND	-
Gold	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	0.5
Mercury	ND	ND	ND	ND	ND	0.005
Selenium	ND	ND	ND	ND	ND	
Silver	ND	ND	ND	ND	ND	-

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 waas analyzed using Colorimetric Method
12. Monitoring conducted by the MPPCL Multipartite Monitoring Team
13. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\effluent-lab

APPENDIX 3

MULTIPARTITE SEDIMENTS, COAL, SOLID WASTES AND SOIL 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
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	
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	152	18	19	97	211	32	277	99	145	55	15	21	≤7,077
Copper	32	5	6	21	29	9	24	20	21	12	11	15	≤410
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤46.02
Lead	ND	ND	ND	ND	1.01	ND	ND	ND	ND	ND	ND	ND	≤97.7
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤0.13
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	≤3.0

NOTES:
1. No DENR 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.
5. Monitoring/sampling conducted by the MPPCL Multipartite Monitoring Team.
6. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc Zambales.
7. NBC - Natural Background Concentration

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-3q2010\marine-sed

7.Monitoring Stations
- M-1: Between Lauis 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, 2010

RIVER SEDIMENT MONITORING (LABORATORY ANALYSIS)

Parameters	LR-1: Lauis River upstream of fresh-water intake	LR-2: Lauis River near mouth nursery	MR-1: Masinloc River Collat Bridge	NBC
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	≤1.84
Cadmium	ND	ND	ND	≤1.066
Chromium	197	130	104	-
Copper	38	34	24	
Gold	ND	ND	ND	-
Lead	ND	ND	ND	≤24.0
Mercury	ND	ND	ND	-
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

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

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

COAL AND ASH MONITORING (LABORATORY ANALYSIS)

Parameters	COAL	BOTTOM ASH	FLY ASH	WTF SLUDGE	R.A. 6969 DAO 29
Antimony	ND	ND	ND	ND	-
Arsenic	ND	ND	ND	ND	5
Cadmium	ND	ND	ND	ND	5
Chromium	ND	ND	ND	ND	5
Copper	9.80	7.21	18.54	25.60	-
Gold	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	5
Mercury	ND	ND	ND	ND	0.2
Selenium	ND	ND	ND	ND	5
Silver	ND	ND	ND	ND	-

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. 26

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

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
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
Chromium	176	209	82	64	173	149	206	453	87	167
Copper	30	19	40	30	53	27	49	15	20	47
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	8.170	ND	24.350	ND	ND	27.210
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

1.Monitoring Stations

S1: Masinloc National High School (across highway)
S-2: Candelaria (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 (Estella 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

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APPENDIX 4

MULTIPARTITE MONITORING SCHEDULE

THIRD QUARTER 2010

PAGE 40

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Masinloc Power Partners Company Lilmited

2nd QUARTER 2010 MULTI-PARTITE AIR, WATER, NOISE, SEDIMENTS, COAL, AND SOLID WASTE

ACTIVITY	20-Sep	21-Sep	22-Sep	23-Sep	24-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.	2,4,5,6,
Air Sampling (Occupational)						MCFTPP	2,4,5,6
Marine Water/Sediments						Masinloc and Oyon Bays	3,4
Bacteriological Test						Env Lab	2, 5
Groundwater & River Water/Sediments						Lauis R, Mas River, MCFTPP	2,3,4,5, 6
Domestic Water Sampling						Pal., Mas, Res. and MCFTPP	2,4,5,6
Noise Monitoring (Occupational)						MCFTPP	2,4,5,6
Noise Monitoring (Ambient)		**	***	*		Can., Mas., Res. MCFTPP	2,4,5,6,
Plant Effluent						ASB, CSB, CWD	4,5,6
Soil, Fly Ash, Bottom Ash & Sludge						Fly Ash Silo / DCC, Pal,Mas,Res,Inho	4,5,6
Preparation of Reports/Exit Meeting						Env. Lab	All

* morning time & day time
** evening time
***night time

Note:

1 A.V. Lopez
2. J. A. Aquino
3. H. A. Sune
4. J. E. Tiburcio
5. Q. D. Loo
6. M. E. delos Reyes

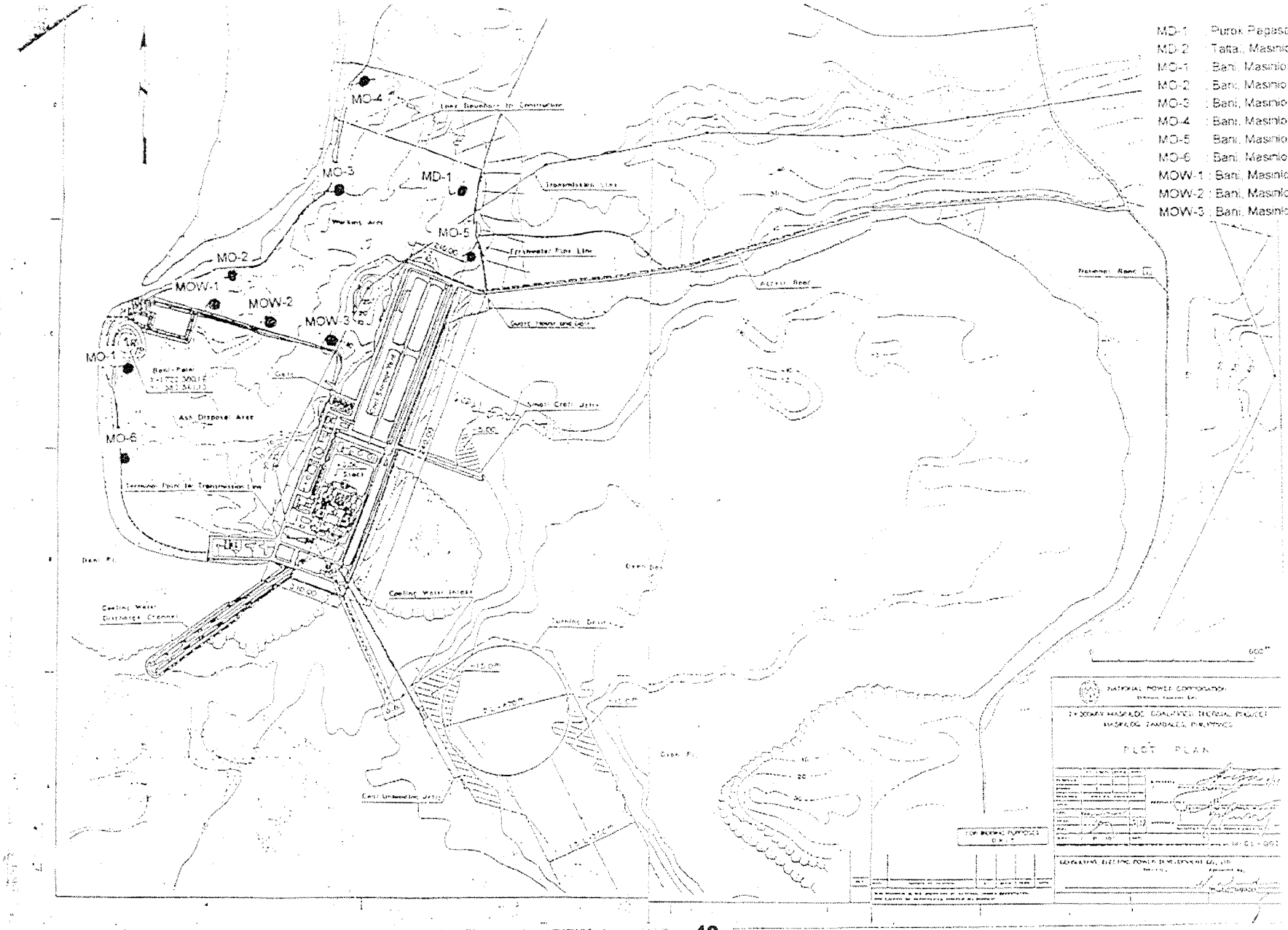
Prepared by:

ANTONIA V. LOPEZ
Environmental Manager
Environmental Section

APPENDIX 5

MULTIPARTITE MONITORING MAPS OF SAMPLING STATIONS

PAGES 42-44



GROUNDWATER MONITORING STATIONS

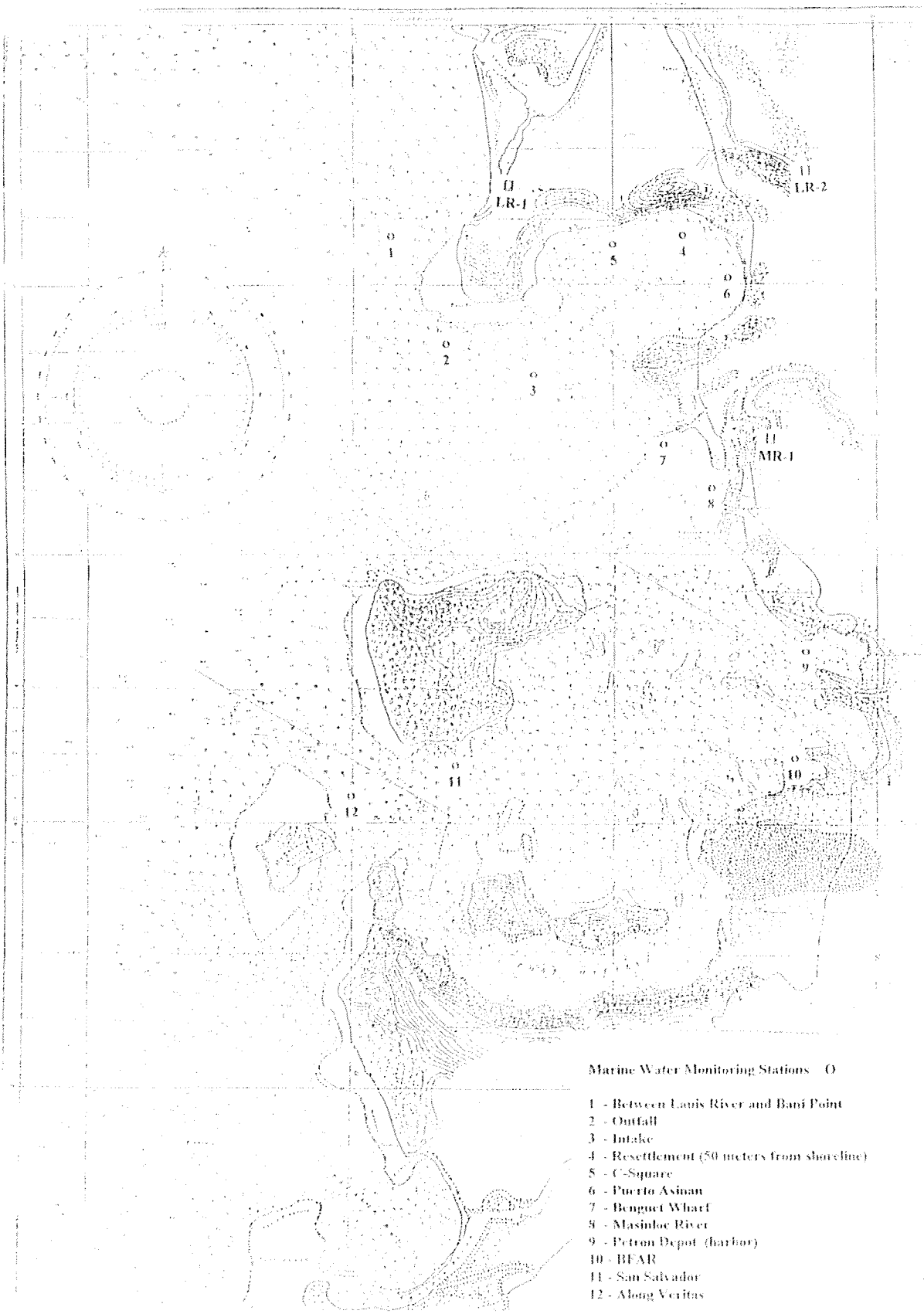
MD-1 : Purok Pegasa, Bani, Masinloc
MD-2 : Tatta, Masinloc (near Lauis River)
MO-1 : Bani, Masinloc
MO-2 : Bani, Masinloc (Watershed Nursery)
MO-3 : Bani, Masinloc
MO-4 : Bani, Masinloc
MO-5 : Bani, Masinloc (PNP Patrol Base)
MO-6 : Bani, Masinloc
MOW-1 : Bani, Masinloc (along embankment)
MOW-2 : Bani, Masinloc (along embankment)
MOW-3 : Bani, Masinloc (along embankment)

Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations II

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)



Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)

APPENDIX 6

MULTIPARTITE MANAGEMENT

MONITORING SET-UP

PAGE 46

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	WATER QUALITY TEAM	MARINE ECOLOGY TEAM
DENR	DENR	DENR
LGU	LGU	LGU
PAMB	PAMB	PAMB
NGO	NGO	NGO
MPPCL	MPPCL	MPPCL

APPENDIX 7

MULTIPARTITE MONITORING TEAM ATTENDANCE SHEET

PAGES 48

AES

Masinloc Power Partners Company Limited

THIRD QUARTER 2010 MULTIPARTITE MONITORING

ATTENDANCE SHEET

	Name	Agency	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep
1	Mary O. Hurilao	DENR					
2	Leonarda T. Dorne	BGY					
3	Olive K. Gregorio	PAMB					
4	RAMON I. EGUIZA	LGU-Masinloc					
5	VEDINIA B. PERALTA	DENR					
6	JORGE A. AQUINO	MPPCL					
7	JOSEPH E. Tiburcio	SFI					
8	QUIRINO D. LOO	SFI					
9	HARRY SUNE	MPPCL					
10	MARLON DELOS REYES	SFI					
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

APPENDIX 8

DETECTION LIMITS

PAGES 50

DETECTION LIMITS

Parameters	Detection imit	Unit
Antimony	0.2900	ppb
Arsenic	0.3300	ppb
Cadmium	0.0100	ppb
Chromium	0.0250	ppb
Copper	0.0045	ppm
Gold	0.0130	ppm
Lead	0.0300	ppb
Mercury	3.3000	ppb
Selenium	0.3200	ppb
Silver	0.0032	ppm

APPENDIX 9

ENVIRONMENTAL COMPLIANCE CERTIFICATE STATUS

PAGES 52-60

ENVIRONMENTAL COMPLIANCE CERTIFICATE
Granted: December 18, 1992
(Status of MPPCL Compliance as of September 2010)

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	➢ 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).	➢ 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.	➢ 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.			➢ Created an Environmental, Health and Safety Committee. ➢ Safety is everybody's responsibility and is the first value of the company. Safety walkdown, inspection and walk observations are conducted by managers, team leaders and peers.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	Complied		
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.		➢ Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (MPPCL, PAMB, and LGU. ➢ Copies of the Multipartite Monitoring Reports are provided to DENR, LGU, and PAMB.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	➢ 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.	Continuous Emission Monitoring System (CEMS) installed and operational. ➢ Two (2) SOx analyzers: operational ➢ Two (2) Nox: 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.	➢ Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig) ➢ Analyzers installed at each station: 1. SO_2 Analyzer 2. NO_x. Analyzer 3. Dust Density Meter		
14. No dredging operations in waters around the plant and in Masinloc shall be undertaken at anytime	➢ 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".		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	➢ 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.		➢ Mangrove inspection is a daily/routine activity. ➢ Mangrove replanting is done yearly.
III. OPERATIONS PHASE **16.** Management and handling of coal (airborne coal dusts and spontaneous combustion free)			
a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity.			a. Complying
b. Adoption of "first in, first out".			b. Complying
c. Compaction of coal stockpiles;			c. Bulldozers are used in compacting operation.
d. Installation of water spray system.	d. Water Spray System (WSS) installed.		
e. Installation of temperature monitoring system	e. Temperature Monitoring System installed.		
f. Installation of an effective physical windbreak around the coal yard;	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. Maintenance and/or provision of buffers around the plant's perimeter	g. Complied. A major reforestation around the project site was completed. 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283		g. Management and maintenance is a routine / continuing activity.
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

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.	➢ 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 one percent (1%). Proof from supplier shall be required for new deliveries.			➢ Automotive diesel oil is used. Supplier is required to submit analysis. ➢ Average Sulfur content is less than 0.1%
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
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.	➢ 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.	➢ 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.	➢ 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 **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.	➢ 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.		➢ Semi Annual Medical Mission is being conducted by MPPCL in collaboration w/ host community & 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.	➢ 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		➢ 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, PAMB & 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.			➢ 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.	➢ Environmental monitoring program/plan submitted to DENR-EMB on February 15, 1993. ➢ Environmental laboratory is operational.		➢ Water quality monitoring is a continuing activity. ➢ Results are provided to DENR, LGU, PAMB, MPPCL.
VI. FURTHER STUDIES REQUIRED			
32. Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	➢ DENR – EMB analytical methods and procedures being followed.		➢ 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.	➢ 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.	➢ 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.	➢ The Risk Assessment Study has been submitted to DENR - EMD.		

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.	➢ On going coordination with EMB re: setting up		
VIII. ENVIRONMENTAL REPORTING/ PUBLIC INFORMATION **37.** Set a system for public relations / information, to discuss / resolve issues that may develop / affect the community.			➢ Either MPPCL & LGU initiates meeting to discuss / resolve issues concerning the plant & the community ➢ Multipartite 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 2010

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 METEROLOGY 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 or 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.	2.3.1 MCFTPP will utilize a screw type coal unloader to eliminate dust dispersion during coal unloading.	Installed and operational.
	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.	Installed and operational.
	2.3.3 Water sprayers will be installed at coal stockyard.	Installed and operational.
	2.3.4 The height of fall of coal from stacker shall be made as low as possible during stacking.	Being implemented.
	2.3.5 Reclaimers/stackers shall be operated only at wind speed lower than 5 mps.	Being implemented.
	2.3.6 Planting of trees around MCFTPP to serve as wind breakers.	To date 55,436 trees have been planted.
2.4 Spontaneous combustion may occur at the coal stockyard emitting smoke and smoldering smell.	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.	Being implemented.
	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.	Being implemented.
	2.4.3 Regular re-piling and water sprinkling of coal file shall be undertaken to prevent spontaneous combustion.	Being implemented.

IMPACTS	MITIGATING MEASURES	STATUS
	2.4.4 Coal pile portion where spontaneous combustion occurs shall be compacted by bulldozer.	Being implemented.
2.5 MCFTPP will emit SO2, NO and air particulates in the environment.	2.5.1 MCFTPP will utilize 100% imported coal with low sulfur and ash content to reduce SO2, NO2 and air particulate emission.	Being implemented.
Emission levels of SO2, NOx and air particulates are within DENR standard.	2.5.2 MCFTPP will utilize a stack of 150 m high for maximum dispersion of SO2, NO2 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 Nox releases by 25-30%, or to less than 400 ppm at the boiler outlet.	
	2.5.5 Regular monitoring of ambient SO2, NO2 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 Candelaria.
2.6 Dust may be dispersed during ash transport, unloading and at the ash disposal area.	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.	2.7.1 Use of low noise equipment installation of soundproof washes and doors; indoor installation of fans, pumps, compressor and motors.	Being implemented.
	2.7.2 Operation of coal stockyard and ash disposal area shall be done only during daytime.	Regular ambient & occupational noise level monitoring is conducted regularly; data shows compliance to DOH & DOLE requirements.
	2.7.3 Regular monitoring of noise levels in population centers near MCFTPP during plant operation.	Multipartite monitoring is conducted quarterly.
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.	3.1.1 Revetment around the reclaimed area shall be constructed prior to start of reclamation.	Implemented
	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.	Revetment and embankment already constructed. Stabilization of slopes by sodding/planting completed. Revegetation is a continuing activity.
3.2 Possible contamination of Oyon Bay and groundwater due to the operation of ash disposal system.	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.	Monitoring of plant effluent is regularly conducted.
	3.2.2 The ash disposal area will be provided with sedimentation basin and embankment.	Completed
	3.2.3 The NW embankment of ash disposal area shall be lined with empervious material such as clay to avoid groundwater contamination.	Completed.
	3.2.4 Five (5) deep walls shall be constructed at the northern portion of ash disposal area for the monitoring of groundwater quality.	Implemented.

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 0.06 mg/l shall be adopted to ensure a residual chlorine concentration of 0.02 to 0.05 mg/l. at the outfall is expected.	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 TERRESTIAL 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.	Implemented
4.2 The emission of SO2, NO2 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.	Completed

IMPACTS	MITIGATING MEASURES	STATUS
5.0 AQUATIC ECOLOGY		
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.	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.	Completed
	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.	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.
5.2 The discharge of treated effluent may cause ecological effects to the aquatic system at Oyon Bay.	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.	Completed.
	5.2.2 Biological studies at the discharge area will be undertaken during MCFTPP operation to determine possible effects of thermal effluent chlorination.	Permanent coral quadrat deployed near the discharge area. Biological monitoring is a continuing activity by the MM group.
5.3 The chlorination of cooling water may cause ecological effects to the aquatic system at Oyon Bay	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.	Being implemented.
5.4 The cooling water system will cause entrainment and impingement of marine organisms.	5.4.1 Velocity cap at the intake structure of the cooling water system will be installed to reduce entrapment of fishes. 5.4.2 Entrapment of fishes at the intake structure will be monitored during MCFTPP Operation.	Implemented.
5.5 The operation of ash disposal system may cause ecological effects to the aquatic system at Oyon Bay.	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.	Operational.

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 estruarine 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.	Completed Completed
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.	Completed
6.3 The influx of migrant construction workers will induce the proliferation of service establishments (food eateries, 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 MCFTPP to be spearheaded by NAPOCOR's Community Relations Department will be created to formulate and implement public information activities during plant operation.	Implemented The Community Relations Officer regularly coordinates with host communities re: community-related programs thru its Corporate Social Responsibility Program

IMPACTS	MITIGATING MEASURES	STATUS
6.6 The operation of MCFTPP will mean an additional 600 MW to the Luzon grid.		MPPCL operates generating & contributing 600MW of power to the Luzon Grid.
7.0INDUSTRIAL 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	Implemented.
peace and order, sanitary condition of temporary camps and others.	practices. 7.1.2 Conduct of health and safety seminar to all construction personnel. 7.1.3 Provision for a construction camp at the site with safe drinking water supply, adequate sewage facilities and solid waste disposal facilities. 7.1.4 Provision for medical staff at site during construction to conduct routine physical examination and to attend to medical emergencies. 7.1.5 Provision for adequate security staff to ensure peace and order in the camp during construction.	Implemented. Implemented. Implemented. Implemented.
7.2 Plant personnel and the general public near MCFTPP will be exposed to dust, noise, SO2, NO2 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 or SO2, NO2, dust and noise to levels within DENR ambient standards. 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. 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 MCFTPP.	Continuing.
	7.2.7 Implementation of Industrial Health and Occupational Safety Audit Program at MCFTPP 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.

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MASINLOC POWER PARTNERS COMPANY LIMITED

MULTIPARTITE MONITORING REPORT

Fourth Quarter 2010

December 6-10, 2010

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MASINLOC POWER PARTNERS COMPANY LIMITED
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Fourth Quarter, 2010

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TABLE OF CONTENTS

MASINLOC POWER PARTNERS COMPANY LIMITED

FOURTH QUARTER MULTI PARTITE MONITORING REPORT
December 6 - 10, 2010

EXECUTIVE BRIEF

The Fourth Quarter 2010 Multipartite Monitoring of the Masinloc Power Partners Company Limited was conducted on December 6 - 10, 2010 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 Masinloc Power Partners Company Limited.

For this quarter, monitoring was conducted jointly by two (2) representatives from the office of the Department of Environment and Natural Resources (CENRO and PENRO), one (1) representative from the office of Protected Area Management Board, two (2) representatives 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 Masinloc Power Partners Company Limited-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), groundwater 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).

Laboratory analysis of samples was conducted based on the DENR recommended methods of analysis. Twelve parameters for domestic water, fifteen parameters for river water, twelve parameters for groundwater, fifteen parameters for marine water and fifteen parameters for plant effluent. Metals detected were Antimony, Arsenic, Cadmium, Chromium^{+6}, Total Chromium, Copper, Gold, Lead, Mercury, Selenium and Silver.

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 four (4) stations. 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).*

5. Ground and domestic water samples are in compliance with the standards set by the Department of Health Administrative Order No. 2007-0012 *(PNSDW 2007 – Philippine National Standards for Drinking Water 2007).*

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 December 7-9, 2010. Sampling activities were conducted based on the 2010 Fourth 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 (SO_2 / NO_2/LEAD / SUSPENDED PARTICULATE MATTER)

2.1.1.1 NPC Resettlement
2.1.1.2 Inhobol
2.1.1.3 Candelaria
2.1.1.4 Palauig

2.1.2 OCCUPATIONAL AIR (SO_2 / NO_2 / 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 Lauis Elementary School
2.1.3.13 Brgy. Lauis (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 SO_2 & NO_2 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, SO_2 & NO_2 analysis.

2.3 ANALYSIS OF SO_2 / NO_2 / 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 (West-Gaeke Method) and NO2 samples (Griess Saltzmann Method). 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 SO_2 (Tables 1 & 5), NO_2 (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
2.4.2.2 Date of Sampling
2.4.2.3 Volumetric Flow Rate
2.4.2.4 Temperature
2.4.2.5 Pressure
2.4.2.6 Volume at normal condition
2.4.2.7 Weight of filter paper
2.4.2.8 Weight of filter paper and particulate
2.4.2.9 Weight of particulate
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 December 7-9, 2010. Sampling activities were conducted based on the 2010 Fourth 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 5:

3.1.1 RIVER WATER QUALITY MONITORING STATIONS

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

3.1.2 GROUNDWATER 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)
3.1.3.8 MOW-2 Bani (along embankment)

3.1.3 DOMESTIC WATER QUALITY MONITORING STATIONS

3.1.3.1 MWD: Masinloc Water District
3.1.3.2 RES: Resettlement Area
3.1.3.3 LAB: Faucet near Laboratory Building
3.1.3.4 GHS: NPC Guesthouse
3.1.3.5 PWD: Palauig Water District
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 (no sample)
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 Lauis River & Bani Point
3.1.5.2 M-2 Outfall (100 m from discharge canal)
3.1.5.3 M-3 Cooling Water Intake
3.1.5.4 M-4 Resettlement
3.1.5.5 M-5 C-Square (Benguet Loading area)
3.1.5.6 M-6 Puerto Asinan
3.1.5.7 M-7 Benguet Wharf
3.1.5.8 M-8 Masinloc River (Near mouth)
3.1.51.9 M-9 Petron (harbor)
3.1.5.10 M-10 BFAR
3.1.5.11 M-11 San Salvador
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 GROUNDWATER 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, Ash Sedimentation Basin, Coal Sedimentation Basin, Storm Drain Canal & 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
3.4.1.2 Conductivity
3.4.1.3 Turbidity
3.4.1.4 Dissolved Oxygen
3.4.1.5 Temperature
3.4.1.6 Salinity

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, marine and domestic water only)
3.4.2.4 Total Coliform (For river, marine and domestic water only)
3.4.2.5 Antimony
3.4.2.6 Arsenic
3.4.2.7 Cadmium
3.4.2.8 Chromium Hexavalent
3.4.2.9 Chromium Total
3.4.2.10 Copper
3.4.2.11 Gold
3.4.2.12 Lead
3.4.2.13 Mercury
3.4.2.14 Selenium
3.4.2.15 Silver

4.0 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.

4.1 RIVER SEDIMENTS QUALITY MONITORING STATIONS

4.1.1 LR-1 Lauis River (upstream of freshwater intake)
4.1.2 LR-2 Lauis River (near mouth / nursery)
4.1.3 MR-1 Masinloc River (Collat Bridge)

4.2 **MARINE SEDIMENTS QUALITY MONITORING STATIONS**

4.2.1 M-1 Between Lauis River & Bani Point
4.2.2 M-2 Outfall (100 m from discharge canal)
4.2.3 M-3 Cooling Water Intake
4.2.4 M-4 Resettlement
4.2.5 M-5 C-Square (Benguet Loading area)
4.2.6 M-6 Puerto Asinan
4.2.7 M-7 Benguet Wharf
4.2.8 M-8 Masinloc River (Near mouth)
4.2.9 M-9 Petron (harbor)
4.2.10 M-10 BFAR
4.2.11 M-11 San Salvador
4.2.12 M-12 Along Veritas

4.3 **SOIL QUALITY MONITORING STATIONS**

4.3.1 S-1 Masinloc National High School (across highway)
4.3.2 S-2 Candelaria (back of Elementary School)
4.3.3 S-3 Puerto Asinan (across highway)
4.3.4 S-4 NPC Resettlement (beside roadside)
4.3.5 S-5 Bani Elementary School (beside roadside)
4.3.6 S-6 Palauig (back of Town Plaza)
4.3.7 S-7 Bani National High School (mango area)
4.3.8 S-8 CENRO Office (near MPPCL Monitoring Station)
4.3.9 S-9 Sto. Niño, Palauig (intersection)
4.3.10 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
Fourth Quarter, 2010

SO_2 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	1434H-1534H	12/06/10	1.00	31.0	762.8	0.0383	0.0590	0.65	DENR A. O. 14 s. 1993 340 ug/Ncm
	1536H-1636H	12/06/10	1.00	31.0	762.8	0.0719	0.0590	1.22	
Inhobol	1626H-1726H	12/07/10	1.00	29.0	762.8	0.0048	0.0594	0.08	
	1730H-1830H	12/07/10	1.00	29.0	762.8	0.0048	0.0594	0.08	
Candelaria	1400H-1500H	12/07/10	1.00	30.0	762.8	0.0000	0.0592	ND	
	1505H-1605H	12/07/10	1.00	31.0	762.8	0.0000	0.0590	ND	
Palauig	1510H-1610H	12/06/10	1.00	32.0	762.8	0.0000	0.0588	ND	
	1615H-1715H	12/06/10	1.00	32.0	762.8	0.0000	0.0588	ND	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

MPPCL Representative(s) _____

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TABLE NO. 2

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

NO_2 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	1434H-1534H	12/06/10	1.00	31.0	762.8	0.0155	0.0590	0.26	DENR A. O. 14 s. 1993 260 ug/Ncm
	1536H-1636H	12/06/10	1.00	31.0	762.8	0.0121	0.0590	0.20	
Inhobol	1626H-1726H	12/07/10	1.00	29.0	762.8	0.0257	0.0594	0.43	
	1730H-1830H	12/07/10	1.00	29.0	762.8	0.0290	0.0594	0.49	
Candelaria	1400H-1500H	12/07/10	1.00	30.0	762.8	0.0121	0.0592	0.20	
	1505H-1605H	12/07/10	1.00	31.0	762.8	0.0121	0.0590	0.20	
Palauig	1510H-1610H	12/06/10	1.00	32.0	762.8	0.0121	0.0588	0.21	
	1615H-1715H	12/06/10	1.00	32.0	762.8	0.0121	0.0588	0.21	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, 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) _____

MPPCL Representative(s) _____

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TABLE NO. 3

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

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	1434H-1534H	12/06/10	556.8	555.9	0.70	31.0	762.8	0.90	41.17	21.86	DENR A. O. 14 s. 1993 300*ug/Ncm*
	1536H-1636H	12/06/10	565.6	564.2	0.70	31.0	762.8	1.40	41.17	34.00	
Inhobol	1626H-1726H	12/07/10	568.3	567.5	0.60	29.0	762.8	0.80	35.52	22.52	
	1730H-1830H	12/07/10	567.7	566.9	0.60	29.0	762.8	0.80	35.52	22.52	
Candelaria	1400H-1500H	12/07/10	564.3	563.9	0.60	30.0	762.8	0.40	35.41	11.30	
	1505H-1605H	12/07/10	564.2	563.8	0.70	31.0	762.8	0.40	41.17	9.72	
Palauig	1510H-1610H	12/06/10	568.0	566.7	0.50	32.0	762.8	1.30	29.31	44.35	
	1615H-1715H	12/06/10	567.5	566.2	0.60	32.0	762.8	1.30	35.17	36.96	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 4

NATIONAL POWER CORPORATION
MASINLOC COAL-FIRED THERMAL POWER PLANT
Multipartite Monitoring Committee
Fourth Quarter, 2010

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	1434H-1534H	12/06/10	0.70	31.0	762.8	0.0000	41.17	ND	10 µg/Ncm DENR A. O. 14 s. 1993
	1536H-1636H	12/06/10	0.70	31.0	762.8	0.0000	41.17	ND	
Inhobol	1626H-1726H	12/07/10	0.60	29.0	762.8	0.0000	35.52	ND	
	1730H-1830H	12/07/10	0.60	29.0	762.8	0.0000	35.52	ND	
Candelaria	1400H-1500H	12/07/10	0.60	30.0	762.8	0.0000	35.41	ND	
	1505H-1605H	12/07/10	0.70	31.0	762.8	0.0000	41.17	ND	
Palauig	1510H-1610H	12/06/10	0.50	32.0	762.8	0.0000	29.31	ND	
	1615H-1715H	12/06/10	0.60	32.0	762.8	0.0000	35.17	ND	

FORMULA:

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

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

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, m^3/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
Fourth Quarter, 2010
SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2100H-2200H	12/06/10	1.00	24.00	762.8	0.0000	0.0604	ND	DOH 5000*ug/Ncm*
	2202H-2302H	12/06/10	1.00	24.00	762.8	0.2732	0.0604	4.5213	
Admin. Building	2105H-2205H	12/06/10	1.00	20.00	762.8	0.0048	0.0612	0.0784	
	2207H-2307H	12/06/10	1.00	20.00	762.8	0.1054	0.0612	1.7208	
WWT Control Room	0935H-1035H	12/06/10	1.00	20.00	762.8	0.3067	0.0612	5.0074	
	1037H-1137H	12/06/10	1.00	20.00	762.8	0.4073	0.0612	6.6498	
Coal Handling Control Room	0940H-1040H	12/06/10	1.00	24.50	762.8	0.1725	0.0603	2.8596	
	1043H-1143H	12/06/10	1.00	24.00	762.8	0.1390	0.0604	2.3004	
Chemical Laboratory	0925H-1025H	12/06/10	1.00	24.00	762.8	0.5080	0.0604	8.4071	
	1030H-1130H	12/06/10	1.00	24.00	762.8	0.4744	0.0604	7.8511	
Mechanical Shop	2102H-2202H	12/06/10	1.00	27.00	762.8	0.9105	0.0598	15.2205	
	2205H-2305H	12/06/10	1.00	28.00	762.8	0.9776	0.0596	16.3967	
Ash Handling Control Room	0942H-1042H	12/06/10	1.00	27.00	762.8	0.7093	0.0598	11.8571	
	1045H-1145H	12/06/10	1.00	28.00	762.8	0.8099	0.0596	13.5839	
Turbine Floor	2049H-2149H	12/06/10	1.00	36.00	762.8	0.9105	0.0581	15.6771	
	2154H-2254H	12/06/10	1.00	36.00	762.8	0.8099	0.0581	13.9450	

FORMULA:

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

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

Notes:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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TABLE NO. 6

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2100H-2200H	12/06/10	1.00	24.00	762.8	0.0392	0.0604	0.6487	
	2202H-2302H	12/06/10	1.00	24.00	762.8	0.0460	0.0604	0.7613	
Admin. Building	2105H-2205H	12/06/10	1.00	20.00	762.8	0.0290	0.0612	0.4735	
	2207H-2307H	12/06/10	1.00	20.00	762.8	0.0290	0.0612	0.4735	DOH
WWT Control Room	0935H-1035H	12/06/10	1.00	20.00	762.8	0.0121	0.0612	0.1976	6000*ug/Ncm*
	1037H-1137H	12/06/10	1.00	20.00	762.8	0.0087	0.0612	0.1420	
Coal Handling Control Room	0940H-1040H	12/06/10	1.00	24.50	762.8	0.0087	0.0603	0.1442	
	1043H-1143H	12/06/10	1.00	24.00	762.8	0.0222	0.0604	0.3674	
Chemical Laboratory	0925H-1025H	12/06/10	1.00	24.00	762.8	0.0290	0.0604	0.4799	DOLE
	1030H-1130H	12/06/10	1.00	24.00	762.8	0.0257	0.0604	0.4253	9000*ug/Ncm*
Mechanical Shop	2102H-2202H	12/06/10	1.00	27.00	762.8	0.0460	0.0598	0.7690	
	2205H-2305H	12/06/10	1.00	28.00	762.8	0.0426	0.0596	0.7145	
Ash Handling Control Room	0942H-1042H	12/06/10	1.00	27.00	762.8	0.1137	0.0598	1.9007	
	1045H-1145H	12/06/10	1.00	28.00	762.8	0.1104	0.0596	1.8517	
Turbine Floor	2049H-2149H	12/06/10	1.00	36.00	762.8	0.1036	0.0581	1.7838	
	2154H-2254H	12/06/10	1.00	36.00	762.8	0.0968	0.0581	1.6667	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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) _____

MPPCL Representative(s) _____

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TABLE NO. 7

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

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	2100H-2200H	12/06/10	566.9	566.7	0.60	24.00	762.8	0.20	36.25	5.52	
	2202H-2302H	12/06/10	552.0	551.8	0.70	24.00	762.8	0.20	42.30	4.73	
Admin. Building	2105H-2205H	12/06/10	565.3	564.0	0.60	20.00	762.8	1.30	36.75	35.37	DOH
	2207H-2307H	12/06/10	549.0	547.9	0.65	20.00	762.8	1.10	39.81	27.63	
WWT Control Room	0935H-1035H	12/06/10	551.5	551.0	0.70	20.00	762.8	0.50	42.87	11.66	2000*ug/Ncm*
	1037H-1137H	12/06/10	549.4	548.8	0.70	20.00	762.8	0.60	42.87	13.99	
Coal Handling Control Room	0940H-1040H	12/06/10	544.7	543.6	0.70	24.50	762.8	1.10	42.23	26.05	
	1043H-1143H	12/06/10	544.4	543.8	0.70	24.00	762.8	0.60	42.30	14.19	
Chemical Laboratory	0925H-1025H	12/06/10	538.6	537.1	0.70	24.00	762.8	1.50	42.30	35.46	DOLE
	1030H-1130H	12/06/10	539.8	538.2	0.70	24.00	762.8	1.60	42.30	37.83	
Mechanical Shop	2102H-2202H	12/06/10	570.6	569.8	0.57	27.00	762.8	0.80	33.89	23.60	1000*ug/Ncm*
	2205H-2305H	12/06/10	567.3	565.7	0.57	28.00	762.8	1.60	33.78	47.37	
Ash Handling Control Room	0942H-1042H	12/06/10	538.8	537.3	0.62	27.00	762.8	1.50	37.28	40.23	
	1045H-1145H	12/06/10	543.3	542.0	0.57	28.00	762.8	1.30	33.78	38.48	
Turbine Floor	2049H-2149H	12/06/10	575.8	574.9	0.80	36.00	762.8	0.90	46.46	19.37	
	2154H-2254H	12/06/10	549.1	548	0.80	36.00	762.8	1.10	46.46	23.67	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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.

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DENR Representative(s) _____

PAMB Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

TABLE NO. 8

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

AMBIENT NOISE MONITORING

MORNING TIME

December 9, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0740H	66.7	68.1	60.5	64.0	tricycle passing by
2	Purok Percaloha (Junction)	0738H	46.3	59.1	42.2	52.5	
3	Edillor's Residence (150m. From Gate	0848H	53.2	56.2	48.3	50.9	
4	EPDC Building	0847H	53.2	53.9	50.6	51.6	
5	C-Square (Benguet Loading Area)	0846H	58.8	58.8	47.2	53.6	
6	Resettlement Site	0842H	59.9	61.8	59.6	60.1	
7	Highway, waiting shed of Resettlement	0809H	67.5	69.1	63.3	65.1	dog barking
8	Puerto Asinan	0812H	52.1	57.3	48.3	54.0	
9	Sitio Atob, Purok Tanguile	0814H	55.8	63.7	55.1	58.4	
10	Masinloc Town Plaza	0820H	76.1	77.9	73.4	75.8	tricycle passing by
11	Bani National High School, (Annex), Taltal	0756H	60.7	64.4	59.2	62.6	tricycle passing by
12	Brgy. Lauis (Junction to Binabalian)	0801H	58.1	58.1	54.3	56.5	
13	Lauis Elementary School	0804H	61.7	78.9	61.3	67.0	van passing by
14	Purok Bangal-Duhok (Junction)	0751H	70.3	75.3	64.4	70.1	tricycle passing by
15	Bani Elementary School, Bani	0748H	61.1	66.3	59.6	63.4	tricycle passing by
16	Bani National High School, Bani	0744H	57.6	61.3	53.8	57.2	
17	Brgy. Bani Multi-purpose Complex	0743H	66.2	69.2	65.1	66.3	people talking
18	Plant Site (Coal Yard)	0735H	47.8	50.8	40.7	45.2	

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	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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)

MPPCL Representative(s)

TABLE NO. 9

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

AMBIENT NOISE MONITORING

DAYTIME

December 8, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1521H	58.3	61.3	53.8	58.6	
2	Purok Percaloha (Junction)	1517H	66.9	70.3	64.7	67.5	tricycle passing by
3	Edillor's Residence (150m. From Gate	1631H	65.1	74.8	64.5	71.7	tricycle passing by
4	EPDC Building	1629H	54.6	55.3	50.3	52.8	
5	C-Square (Benguet Loading Area)	1628H	51.6	56.1	40.7	49.2	
6	Resettlement Site	1626H	51.6	55.7	50.8	53.5	
7	Highway, waiting shed of Resettlement	1603H	68.8	79.1	67.7	72.5	tricycle passing by
8	Puerto Asinan	1606H	56.4	66.2	51.6	57.8	
9	Sitio Atob, Purok Tanguile	1607H	60.6	62.4	58.7	60.3	
10	Masinloc Town Plaza	1614H	69.6	69.6	68.1	68.7	
11	Bani National High School, (Annex), Taltal	1535H	62.1	63.9	55.3	59.3	
12	Brgy. Lauis (Junction to Binabalian)	1555H	54.9	59.4	53.8	56.0	
13	Lauis Elementary School	1558H	62.4	64.7	62.1	62.7	
14	Purok Bangal-Duhok (Junction)	1529H	58.3	58.3	48.6	62.9	
15	Bani Elementary School, Bani	1528H	52.7	67.3	49.6	57.6	
16	Bani National High School, Bani	1521H	52.3	53.1	47.8	50.0	
17	Brgy. Bani Multi-purpose Complex	1523H	55.7	55.7	52.7	53.6	
18	Plant Site (Coal Yard)	1516H	54.9	58.7	54.2	56.0	

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	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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)

MPPCL Representative(s)

TABLE NO. 10

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

AMBIENT NOISE MONITORING

NIGHT TIME

December 8, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1039H	57.4	75.9	47.8	61.6	car passing by
2	Purok Percaloha (Junction)	1035H	49.3	49.3	44.8	47.0	
3	Edillor's Residence (150m. From Gate	1139H	54.8	55.7	49.3	58.2	
4	EPDC Building	1137H	68.1	76.7	66.6	68.4	insects chirping
5	C-Square (Benguet Loading Area)	1136H	55.3	59.8	54.2	58.0	insects chirping
6	Resettlement Site	1132H	46.3	52.7	39.9	44.7	insects chirping
7	Highway, waiting shed of Resettlement	1109H	52.3	55.3	42.9	44.3	
8	Puerto Asinan	1113H	59.8	60.9	42.6	52.1	dog barking
9	Sitio Atob, Purok Tanguile	1114H	59.8	60.6	45.9	51.3	car passing by
10	Masinloc Town Plaza	1120H	52.3	63.2	49.3	55.7	people talking
11	Bani National High School, (Annex), Taltal	1057H	52.1	53.4	45.6	47.5	tricycle passing by
12	Brgy. Lauis (Junction to Binabalian)	1107H	54.6	54.6	44.4	47.1	
13	Lauis Elementary School	1103H	54.6	54.2	40.7	44.7	
14	Purok Bangal-Duhok (Junction)	1045H	49.7	74.4	44.1	63.8	people talking
15	Bani Elementary School, Bani	1044H	44.8	54.9	42.2	46.8	
16	Bani National High School, Bani	1043H	51.9	77.8	47.4	64.4	people talking
17	Brgy. Bani Multi-purpose Complex	1042H	48.9	74.8	44.8	63.0	people talking
18	Plant Site (Coal Yard)	1033H	48.9	68.1	45.6	56.0	

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 quiet-ness (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)

MPPCL Representative(s)

TABLE NO. 11

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

AMBIENT NOISE MONITORING

EVENING TIME

December 7, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2045H	58.7	70.9	54.2	60.3	people talking
2	Purok Percaloha (Junction)	2043H	52.8	53.2	50.9	52.1	
3	Edillor's Residence (150m. From Gate	2153H	50.4	55.3	46.7	50.1	
4	EPDC Building	2150H	49.7	51.9	46.3	48.8	
5	C-Square (Benguet Loading Area)	2147H	68.4	75.6	47.8	67.0	insects chirping
6	Resettlement Site	2146H	49.3	55.7	43.3	48.2	
7	Highway, waiting shed of Resettlement	2116H	72.6	77.8	69.9	74.0	vehicles passing by
8	Puerto Asinan	2120H	62.8	73.3	60.9	67.4	motorcycle passing by
9	Sitio Atob, Purok Tanguile	2122H	64.7	65.1	50.4	58.8	motorcycle passing by
10	Masinloc Town Plaza	2129H	62.8	62.8	58.3	59.9	tricycle passing by
11	Bani National High School, (Annex), Taltal	2059H	60.6	71.8	54.6	64.0	motorcycle passing by
12	Brgy. Lauis (Junction to Binabalian)	2105H	61.7	78.9	41.3	70.1	tricycle passing by
13	Lauis Elementary School	2108H	69.9	75.2	65.4	71.4	tricycle passing by
14	Purok Bangal-Duhok (Junction)	2052H	54.6	74.1	47.1	68.8	dog barking
15	Bani Elementary School, Bani	2051H	68.4	71.4	53.1	62.0	tricycle passing by
16	Bani National High School, Bani	2049H	51.2	52.7	50.1	51.1	tricycle passing by
17	Brgy. Bani Multi-purpose Complex	2048H	77.8	77.8	60.6	70.5	tricycle passing by
18	Plant Site (Coal Yard)	2040H	59.2	59.8	55.7	56.9	

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 quiet-ness (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)

MPPCL Representative(s)

TABLE NO. 12

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter 2010

OCCUPATIONAL NOISE MONITORING

December 8, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1731H	62.1	62.1	54.2	58.4	
2	Turbine Floor	1730H	84.6	85.3	84.2	84.7	
3	Laboratory Building	1746H	62.4	78.9	61.7	64.7	
4	Administration Building (Lobby)	1743H	52.3	80.1	50.4	62.8	
5	Coal Handling	1712H	56.8	78.9	52.7	65.8	
6	Ash Handling	1722H	69.2	72.2	68.1	69.1	
7	Machine Shop	1745H	64.7	68.1	61.7	63.6	
8	Water Treatment Control Room	1716H	64.3	65.8	63.9	64.5	
9	Boiler Feed Pump Unit #1	1727H	83.8	90.2	83.4	85.2	
10	Boiler Feed Pump Unit #2	1725H	95.8	96.6	93.2	94.9	
11	Circulating Water Pump Intake #1	1737H	76.3	76.3	71.8	73.2	
12	Circulating Water Pump Intake #2	1738H	95.8	95.8	89.8	93.1	
13	Smoke Stack (CEM Control Room)	1720H	57.2	74.8	55.3	59.5	
14	Generator Transformer Unit #1	1740H	75.9	76.3	74.8	75.5	
15	Generator Transformer Unit #2	1739H	75.2	75.2	74.1	74.8	
16	Guard House (Main Gate)	1700H	63.6	63.6	60.1	61.8	
17	230kV GIS (Switchyard)	1741H	68.4	86.4	65.8	69.0	
18	Coal Yard	1709H	51.6	79.3	45.2	65.2	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH	DOLE
	Threshold Limit Values	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)

PGU Representative(s)

MGU Representative(s)

BGU Representative(s)

MPPCL Representative(s)

APPENDIX 2

MULTIPARTITE WATER QUALITY MONITORING RESULTS

PAGES 24-33

TABLE NO. 13

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	12/9/10	12/6/10	12/6/10	12/6/10	12/9/10	12/6/10	-
Time of Sampling	1130H	1645H	2020H	2011H	1205H	1609H	-
pH	7.71	7.06	7.70	7.70	7.60	7.50	6.5 - 8.5
Conductivity, mSiemens / meter	0.167	1.230	0.257	0.252	0.538	2	-
Turbidity, NTU	5	5	1	1	4	1	5
Dissolved Oxygen, ppm	6.37	3.86	4.50	5.31	1.48	5.21	-
Temperature, °C	25.5	26.1	29.3	27.5	30.3	26.2	-
Salinity, %	0.00	0.05	0.00	0.00	0.02	0.07	-

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 Dstrict
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) _____

MPPCL Representative (s) _____

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TABLE NO. 14

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

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	0	0	0	0	0
Total Coliform,MPN/100ml	27	0	0	10	0	0	0
Total Suspended Solids	ND	ND	ND	ND	ND	ND	-
Antimony	ND	ND	ND	ND	ND	ND	0.02
Arsenic	ND	ND	ND	ND	ND	ND	0.05
Cadmium	ND	ND	ND	ND	ND	ND	0.003
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	1.0
Lead	ND	ND	ND	ND	ND	ND	0.01
Mercury	ND	ND	ND	ND	ND	ND	0.001
Selenium	ND	ND	ND	ND	ND	ND	0.01

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

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TABLE NO. 15

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

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	12/7/2010	12/7/2010	12/7/2010	-
Time of Sampling	1030H	1110H	1000H	-
pH	8.46	8.34	7.57	6.5 - 8.5
Conductivity, mSiemens / cm.	0.268	10.60	17.10	-
Turbidity, NTU	2.5	3.0	4.4	-
Dissolved Oxygen, ppm	7.42	5.07	7.54	5 minimum
Temperature, °C	26.13	29.5	27.7	-
Salinity, %	0.02	0.05	0.08	-

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)

MPPCL Representative (s)

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TABLE NO. 16

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

RIVER WATER QUALITY MONITORING (LABORATORY ANALYSIS)

Parameters	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.34 s.1990 (Class B)
Oil & Grease	ND	ND	ND	1
Fecal Coliform	11	62	150	200
Total Coliform	58	102	220	1,000
Total Suspended Solids	ND	1.80	4.2	<30 mg/l increase
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	0.05
Cadmium	ND	ND	ND	0.01
Chromium^{+6}	ND	0.00055	0.00192	0.05
Chromium, Total	ND	0.0012	0.0301	
Copper	ND	ND	ND	-
Gold	ND	ND	ND	-
Lead	ND	ND	ND	0.05*
Mercury	ND	ND	ND	0.002
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

NOTES:

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

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TABLE NO. 17

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
December 8, 2010

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O_2 ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1209H	7.08	1.020	4	0.95	27.60	0.04
MO-1: Bani Point (After Ash Disposal Area)	1042H	6.34	0.532	8	1.13	26.80	0.02
MO-2: Bani (NPC Nursery)	1123H	8.11	0.746	0	1.02	27.50	0.03
MO-3: Between Corafer And Duhok	1423H	7.56	0.354	17	0.34	27.80	0.01
MO-5: Bani (PNP Patrol Base)	1224H	6.75	1.180	0	0.58	28.00	0.05
MO-6: Bani	1053H	6.81	6.700	7	1.04	28.50	0.35
MOW-1: Bani (near Sedimentation Basin)	1117H	7.80	1.870	2	1.53	27.60	0.08
MOW-2: Bani (along embankment)	1140H	7.10	1.380	12	0.33	28.10	0.06
MOW-3: Bani (near warehouse)	1204H	6.59	1.570	10	1.63	28.20	0.07

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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)

MPPCL Representative (s)

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TABLE NO. 18

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

GROUNDWATER MONITORING (LABORATORY ANALYSIS)

Parameters	MD-1	MO-1	MO-2	MO-3	MO-5	MO-6	MOW-1	MOW-2	MOW-3	PNSDW	NBC
Total Suspended Solids	ND	ND	ND	0.5	1.4	31.6	ND	4.5	1.7	2.5	≤3,847
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	-
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.0174
Chromium^{+6}	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003	≤0.01
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	-
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	-
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	-
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	≤0.12

NOTES:

1. Monitoring Stations
   - MD-1: Near Main Gate, Right
   - MD-2 : Taltal (Near Lauis 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
   - MOW-1: Bani (near Sedimentation Basin)
   - MOW-2: Bani (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 Absoption Spectrometer.
9. Monitoring conducted by the MPPCL Multipartite Monitoring Team
10. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\ground-lab

TABLE NO. 19

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

MARINE WATER MONITORING (IN-SITU ANALYSIS)

December 7, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1405H	7.92	56.70	1	5.65	30.1	3.77	
M2	1345H	7.09	58.90	1	6.05	31.7	3.93	
M3	1340H	7.20	58.70	6	5.60	31.0	3.91	
M4	1653H	7.95	58.40	2	6.56	30.1	3.89	
M5	1703H	7.92	58.40	2	5.96	29.6	3.89	
M6	1640H	7.92	58.30	5	6.20	30.4	3.89	
M7	1629H	7.94	58.30	3	7.24	30.1	3.89	
M8	1614H	7.83	57.50	5	6.79	30.1	2.39	
M9	1543H	7.93	58.60	1	6.21	30.4	3.91	
M10	1530H	7.90	58.60	3	6.31	30.6	3.91	
M11	1450H	7.99	58.80	1	5.84	30.2	3.92	
M12	1510H	7.94	58.60	1	6.25	30.0	3.91	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Lauis 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. 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) _____

MPPCL Representative (s) _____

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\marine

TABLE NO. 20

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

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 A0 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	0	0	0	0	5	4	1	0	0	-
Total Coliform,MPN/100ml	0	7	0	0	18	20	20	31	26	3	7	11	5,000
Total Suspended Solids	13.3	6.9	7.4	10.6	7.6	10.0	10.2	4.9	15.9	12.6	8.3	6.5	<30 mg/l increase
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
Chromium^{+6}	0.0040	0.0040	0.0047	0.0040	0.0047	0.0047	0.0047	0.0053	0.0047	0.0040	0.0040	0.0047	0.1
Chromium, Total	0.0446	0.0389	0.0467	0.0512	0.0510	0.0497	0.0449	0.0158	0.0427	0.0508	0.0518	0.0509	-
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Gold	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*
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002
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	-

NOTES:

1.Monitoring Stations
- M-1: Between Lauis 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) $\leq$0.35 ppm

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w4q2010\marine-lab

TABLE NO. 21

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

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	12/8/2010	12/82010	12/7/2010	12/8/2010	12/8/2010	-
Time of Sampling	1030H	1455H	1130H	1237H	1500H	-
pH	7.01	8.41	8.09	7.79	7.74	6.0 - 9.0
Conductivity, mSiemens/cm.	10.20	1.27	1.75	58.90	1.58	-
Turbidity, NTU	1.0	20.0	10.0	12.0	7.0	-
Dissolved Oxygen, ppm	6.81	9.71	5.10	6.50	4.88	-
Temperature, °C	31.2	31.4	28.2	36.9	28.6	-
Salinity, %	0.57	0.05	0.01	3.91	0.07	-

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
9. * - No discharge during the monitoring (Sample was taken inside the basin)

DENR Representative(s)

PAMB Representative (s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

MPPCL Representative (s)

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\effluent

TABLE NO. 22

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

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	2.1	ND	0.7	10.7	1.20	150
Biochemical Oxygen Demand	3.0	5.0	5.0	5.0	3.00	100
Chemical Oxygen Demand	3	4	6	112	3	200
Antimony	ND	ND	ND	ND	ND	
Arsenic	ND	ND	ND	ND	ND	0.5
Cadmium	ND	ND	ND	ND	ND	0.1
Chromium^{+6}	ND	ND	ND	0.004	ND	0.2
Chromium, Total	ND	ND	ND	0.0586	ND	
Copper	ND	ND	ND	ND	ND	-
Gold	ND	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	ND	0.5
Mercury	ND	ND	ND	ND	ND	0.005
Selenium	ND	ND	ND	ND	ND	
Silver	ND	ND	ND	ND	ND	-

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
10. PCU -Platinum Cobalt Units
11. Digested samples were analyzed using Atomic Absorption Spectrometer
12. Chromium Hexavalent waas analyzed using Colorimetric Method
13. Monitoring conducted by the MPPCL Multipartite Monitoring Team
14. Analysis conducted at MPPCL - Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\effluent-lab

APPENDIX 3

MULTIPARTITE SEDIMENTS, COAL, SOLID WASTES AND SOIL QUALITY MONITORING RESULTS

PAGES 35-38

TABLE NO. 23

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

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
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	
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	156	15	17	105	194	33	302	124	159	51	13	20	≤7,077
Copper	25	1	3	24	36	5	27	14	30	18	3	6	≤410
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤46.02
Lead	ND	ND	ND	ND	1.01	ND	ND	ND	0.0043	ND	ND	ND	≤97.7
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	≤0.13
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	≤3.0

NOTES:

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

7.Monitoring Stations

M-1: Between Lauis 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

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\marine-sed

TABLE NO. 24

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Fourth Quarter, 2010

RIVER SEDIMENT MONITORING (LABORATORY ANALYSIS)

Parameters	LR-1: Lauis River upstream of fresh-water intake	LR-2: Lauis River near mouth nursery	MR-1: Masinloc River Collat Bridge	NBC
Antimony	ND	ND	ND	-
Arsenic	ND	ND	ND	≤1.84
Cadmium	ND	ND	ND	≤1.066
Chromium	238	159	108	-
Copper	42	29	17	
Gold	ND	ND	ND	-
Lead	ND	ND	0.003	≤24.0
Mercury	ND	ND	ND	-
Selenium	ND	ND	ND	-
Silver	ND	ND	ND	-

NOTES:
1. No DENR limits for river sediments
2. Units are in milligrams per kilogram (mg/kg).
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

Fourth Quarter, 2010

COAL AND ASH MONITORING (LABORATORY ANALYSIS)

Parameters	COAL	BOTTOM ASH	FLY ASH	WTF SLUDGE	R.A. 6969 DAO 29
Antimony	ND	ND	ND	ND	-
Arsenic	ND	ND	ND	ND	5
Cadmium	ND	ND	ND	ND	5
Chromium	ND	ND	ND	ND	5
Copper	1.58	5.68	16.83	17.97	-
Gold	ND	ND	ND	ND	-
Lead	ND	ND	ND	ND	5
Mercury	ND	ND	ND	ND	0.2
Selenium	ND	ND	ND	ND	5
Silver	ND	ND	ND	ND	-

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 parts per million.
4. ND - Non Detectable
5. WTF - Wastewater Treatment Facility
6. Samples for Arsenic, Cadmium Chromium, Lead, Mercury and Selenium Analysis were processed using TCLP.
7. Other sample parameters 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.

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\ash

TABLE NO. 26

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010
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
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
Chromium	185	188	85	63	171	140	169	427	114	159
Copper	31	19	40	31	55	27	51	15	21	49
Gold	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	4.01	ND	ND	ND	12.61	ND	36.01	ND	ND	31.92
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

1.Monitoring Stations
- S1: Masinloc National High School (across highway)
- S-2: Candelaria (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-10: Masinloc Plaza (Estella Compound)

2. No DENR limits for soil.
3. Units are in milligrams per kilogram sample.
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 Multipartite Water Quality Monitoring Team
8. Analysis conducted at MCFTPP Environmental Laboratory, Masinloc, Zambales

C:\windows\desktop\monitoring\multipartite\multipartite2010\water\w2010\w-4q2010\soil

APPENDIX 4

MULTIPARTITE MONITORING SCHEDULE

FOURTH QUARTER 2010

PAGE 40

Masinloc Power Partners Co. Ltd.
Barangay Bani, Masinloc, Zambales
2211 Philippines

4th QUARTER 2010 MULTI-PARTITE AIR, WATER, NOISE, SEDIMENTS, COAL, AND SOLID WASTE

ACTIVITY	6-Dec	7-Dec	8-Dec	9-Dec	10-Dec	Stations	MPPCL Personnel
Entrance Meeting						Env Lab	All
Preparation						Env. Lab	1,2,3,4,5,6,7
Air Sampling(Ambient)						Pal., Cand., Mas and Res.	2,4,5,6,7
Air Sampling (Occupational)						MCFTPP	2,4,5,6,7
Marine Water/Sediments						Masinloc and Oyon Bays	3,4
Bacteriological Test						Env Lab	2, 5
Groundwater & River Water/Sediments						Lauis R, Mas River, MCFTPP	2,3,4,5, 6,7
Domestic Water Sampling						Pal., Mas, Res. and MCFTPP	2,4,5,6,7
Noise Monitoring (Occupational)						MCFTPP	2,4,5,6,7
Noise Monitoring (Ambient)		**	***	*		Can., Mas., Res. MCFTPP	2,4,5,6,7
Plant Effluent						ASB, CSB, CWD	4,5,6,7
Soil, Fly Ash, Bottom Ash & Sludge						Fly Ash Silo / DCC, Pal,Mas,Res,Inho	4,5,6,7
Preparation of Reports/Exit Meeting						Env. Lab	All

* morning time & day time
** evening time
***night time

Note:

1 A.V. Lopez
2. J. A. Aquino
3. H. A. Sune
4. J. E. Tiburcio
5. Q. D. Loo
6. M. E. delos Reyes
7. E. E. Eclarinal

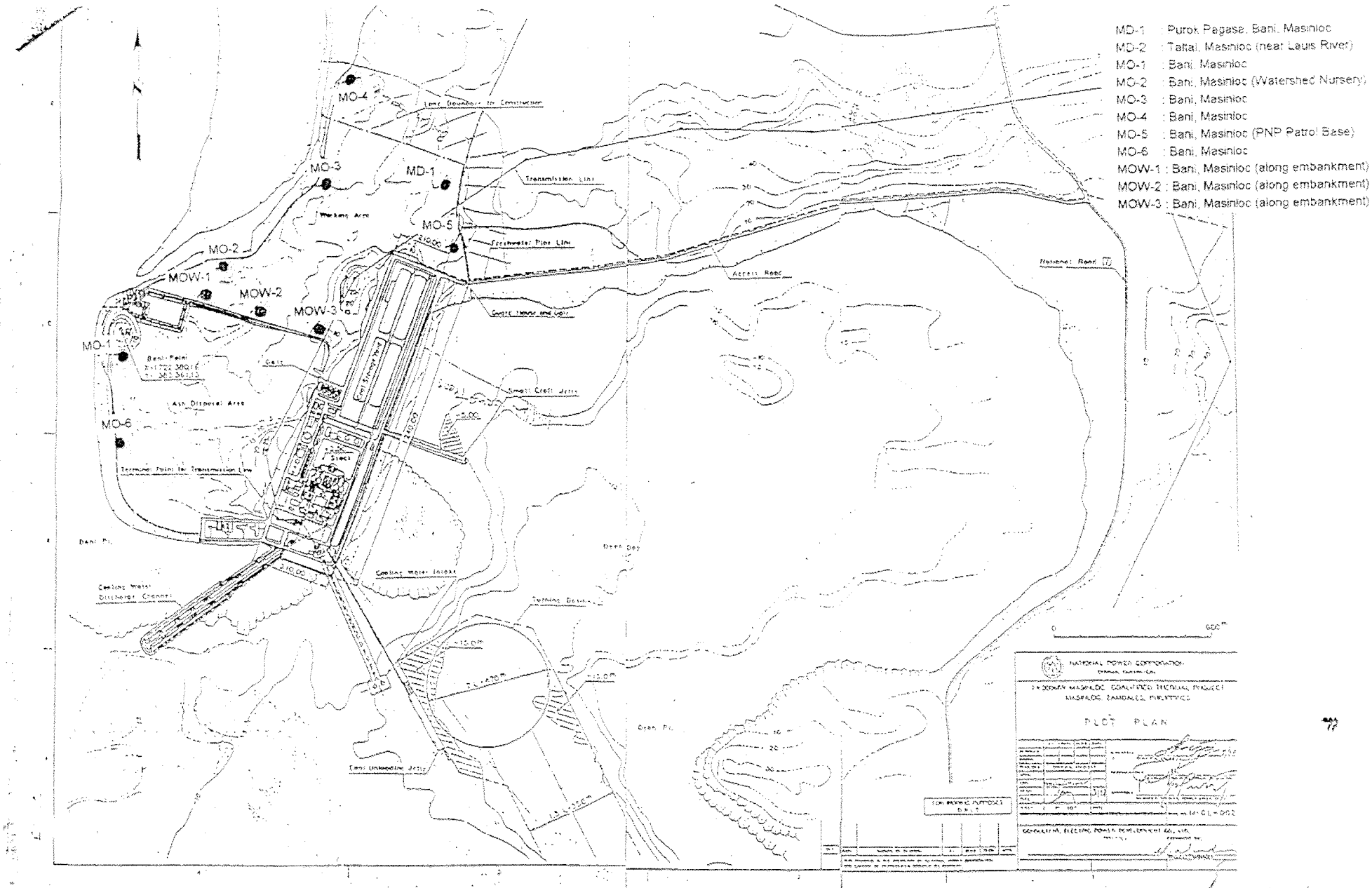
Prepared by:

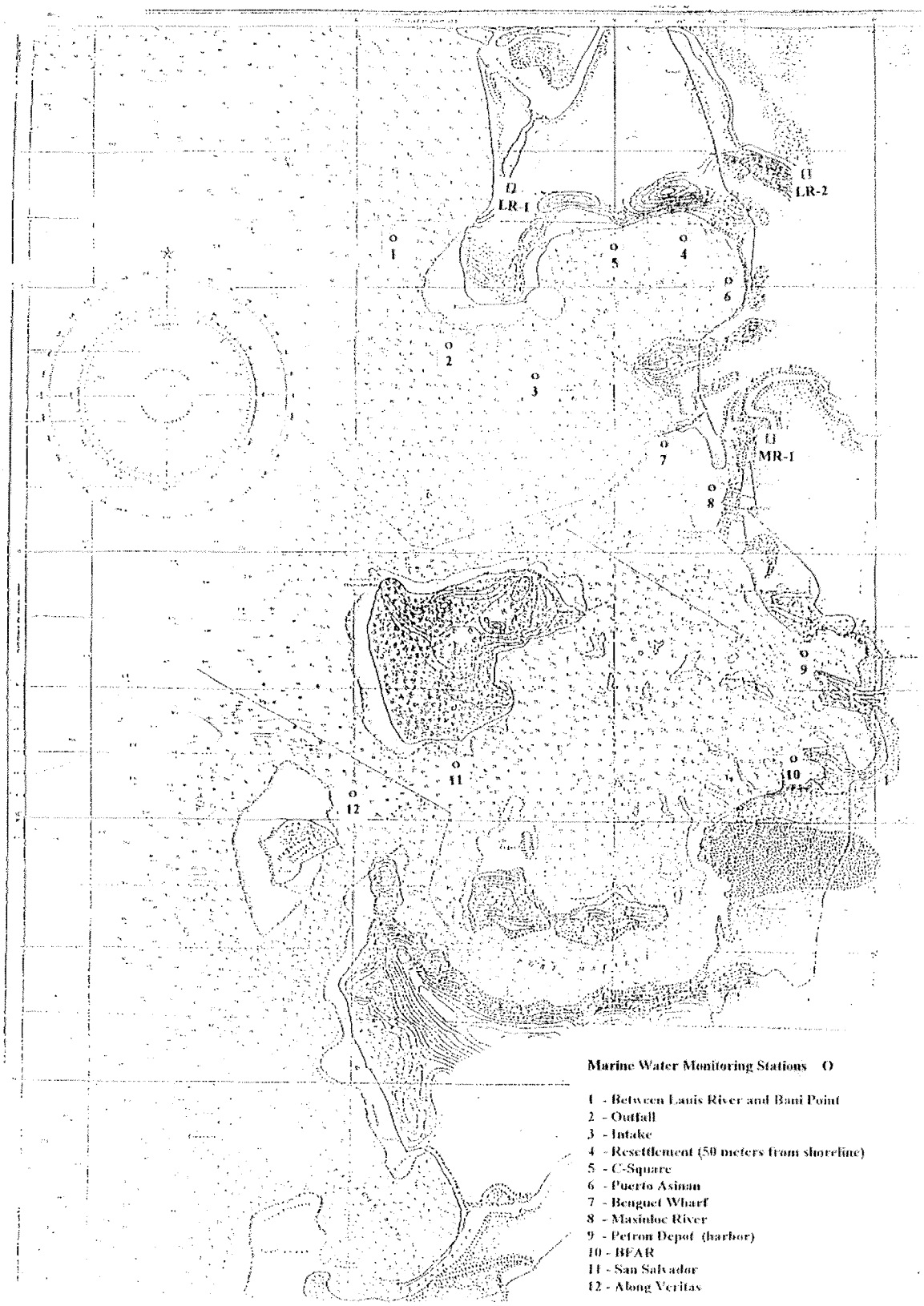
ANTONIA V. LOPEZ
Environmental Manager
Environmental Section

APPENDIX 5

MULTIPARTITE MONITORING MAPS OF SAMPLING STATIONS

PAGES 42-44


GROUNDWATER MONITORING STATIONS
MD-1 : Purok Pagasa, Bani, Masinloc
MD-2 : Taltal, Masinloc (near Lauis River)
MO-1 : Bani, Masinloc
MO-2 : Bani, Masinloc (Watershed Nursery)
MO-3 : Bani, Masinloc
MO-4 : Bani, Masinloc
MO-5 : Bani, Masinloc (PNP Patrol Base)
MO-6 : Bani, Masinloc
MOW-1 : Bani, Masinloc (along embankment)
MOW-2 : Bani, Masinloc (along embankment)
MOW-3 : Bani, Masinloc (along embankment)
MO-1
MO-2
MO-3
MO-4
MO-5
MO-6
MD-1
MOW-1
MOW-2
MOW-3
Transmission Line
Freshwater Pipe Line
Access Road
Cooling Water Intake
Cooling Water Discharge Channel
Coal Stockpile
Ash Disposal Area
Small Craft Jetty
Turning Basin
Coal Unloading Jetty
Bani Pier
Bani Point
Gate
Working Area
Terminal Point for Transmission Line
Green Belt
PLOT PLAN

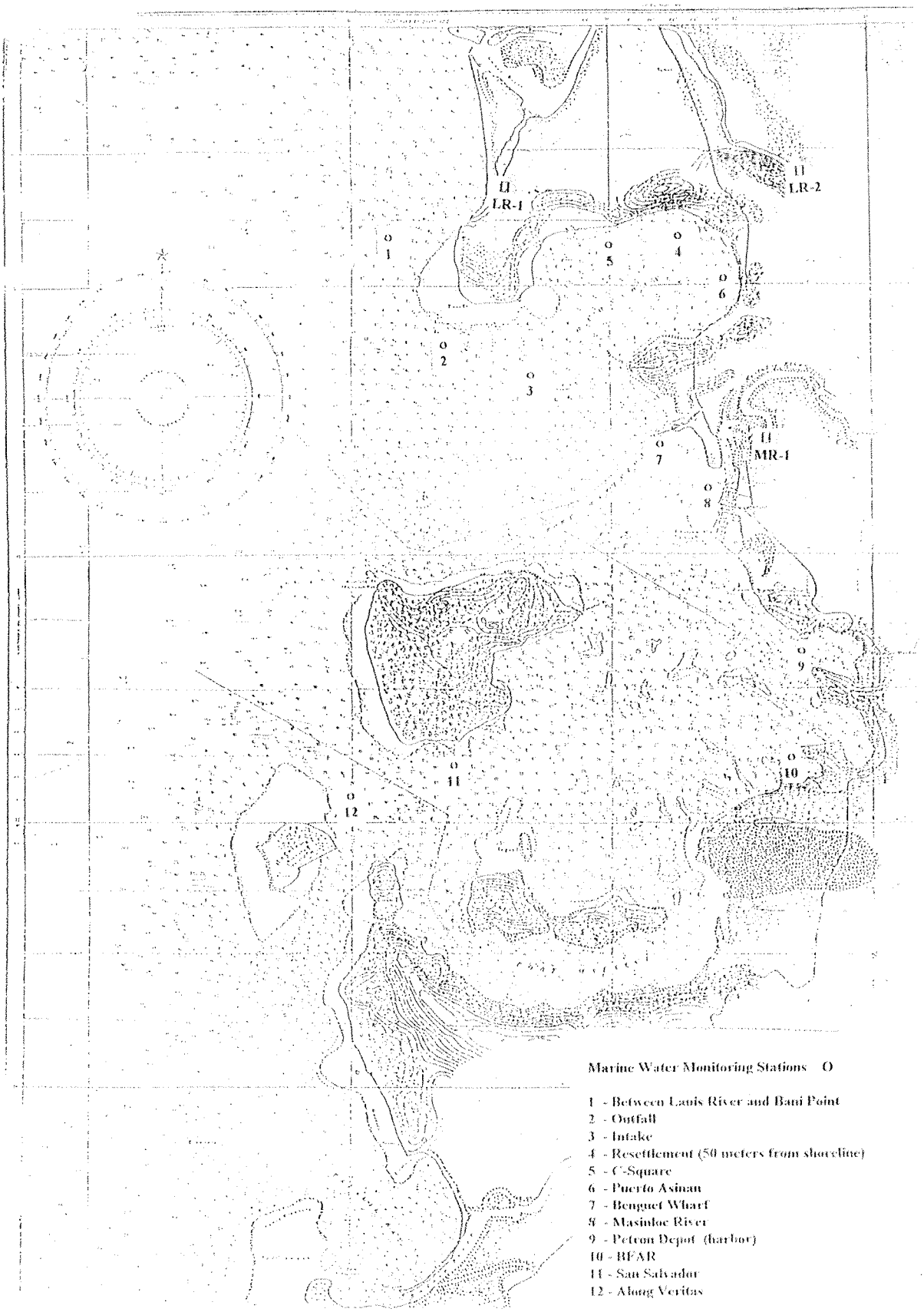


Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations 11

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Collat Bridge)



Marine Water Monitoring Stations O

1 - Between Lauis River and Bani Point
2 - Outfall
3 - Intake
4 - Resettlement (50 meters from shoreline)
5 - C-Square
6 - Puerto Asinan
7 - Benguet Wharf
8 - Masinloc River
9 - Petron Depot (harbor)
10 - BFAR
11 - San Salvador
12 - Along Veritas

River Water Monitoring Stations II

LR-1 Lauis River (upstream of the fresh water intake)
LR-2 Lauis River (near mouth & nursery)
MR-1 Masinloc River (Callat Bridge)

APPENDIX 6

MULTIPARTITE MANAGEMENT

MONITORING SET-UP

PAGE 46

AES
MASINLOC POWER PARTNERS COMPANY LIMITED

MPPCL MULTIPARTITE MONITORING GROUP

CHAIRMAN ; MAYOR, MASINLOC

REPRESENTATIVE FROM THE OFFICE OF THE GOVERNOR, ZAMBALES (ENROZ)
REPRESENTATIVE FROM THE OFFICE OF THE MAYOR, MASINLOC
REPRESENTATIVE FROM THE OFFICE OF THE MAYOR, PALAUIG
REPRESENTATIVE FROM THE OFFICE OF THE MAYOR, CANDELARIA
REPRESENTATIVE FROM THE MASINLOC POWER PARTNERS COMPANY LIMITED
REPRESENTATIVE FROM THE PROTECTED AREA MANAGEMENT BOARD
REPRESENTATIVE FROM THE BARANGAY COUNCIL, BANI
REPRESENTATIVE FROM THE DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES
REPRESENTATIVE FROM THE NGO

AIR QUALITY TEAM	WATER QUALITY TEAM	MARINE ECOLOGY TEAM
DENR	DENR	DENR
LGU	LGU	LGU
PAMB	PAMB	PAMB
NGO	NGO	NGO
MPPCL	MPPCL	MPPCL

APPENDIX 7

MULTIPARTITE MONITORING TEAM ATTENDANCE SHEET

PAGES 48

AES

Masinloc Power Partners Company Limited

FOURTH QUARTER 2010 MULTIPARTITE MONITORING

ATTENDANCE SHEET

Name	Agency	6-Dec	7-Dec	8-Dec	9-Dec	10-Dec
1 VERGINIA B. PERALTA	DENR					
2 RAMON I. EGUITA	LGU-MASINLOC					
3 Nerissa Vaglia	ENRM-Cagayan					
4 Jorge A. Aquino	AES					
5 MARLON DELOS REYES	SFI					
6 SEAN A. ELAD	BGU					
7 OLIVE E. GREGORIO	LGU					
8 Armanda T. Osma	PAMB					
9 [illegible]	DENR					
10 EDWARD ECLARINAL	SFI					
11 JOSEPH E. Tibuncio	SFI					
12 HARRY GANZON	SF					
13 JESSU EBID	BLU					
14 Antonia V. Lopez	AES					
15 HARRIS A. SUNE	AES					
16 QUIRINO LOO	SFI					
17						
18						
19						
20						
21						

APPENDIX 8

DETECTION LIMITS

PAGES 50

DETECTION LIMITS

Parameters	Detection imit	Unit
Antimony	0.2900	ppb
Arsenic	0.3300	ppb
Cadmium	0.0100	ppb
Chromium	0.0250	ppb
Gold	0.0130	ppm
Lead	0.0300	ppb
Manganese	0.0016	ppm
Mercury	3.3000	ppb
Selenium	0.3200	ppb
Silver	0.0032	ppm

APPENDIX 9

ENVIRONMENTAL COMPLIANCE CERTIFICATE STATUS

PAGES 52-60

ENVIRONMENTAL COMPLIANCE CERTIFICATE
Granted: December 18, 1992
(Status of MPPCL Compliance as of December 31, 2010)

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	➢ 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).	➢ 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.	➢ 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.			➢ Created an Environmental, Health and Safety Committee. ➢ Safety is everybody's responsibility and is the first value of the company. Safety walkdown, inspection and walk observations are conducted by managers, team leaders and peers.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	Complied		
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.		➢ Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (MPPCL, PAMB, and LGU. ➢ Copies of the Multipartite Monitoring Reports are provided to DENR, LGU, and PAMB.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	➢ 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.	Continuous Emission Monitoring System (CEMS) installed and operational. ➢ Two (2) SOx analyzers: operational ➢ Two (2) Nox: 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.	➢ Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig) ➢ Analyzers installed at each station: 1. SO_2 Analyzer 2. NO_x Analyzer 3. Dust Density Meter		
14. No dredging operations in waters around the plant and in Masinloc shall be undertaken at anytime	➢ 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".		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	➢ 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.		➢ Mangrove inspection is a daily/routine activity. ➢ Mangrove replanting is done yearly.
III. OPERATIONS PHASE **16.** Management and handling of coal (airborne coal dusts and spontaneous combustion free)			
a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity.			a. Complying
b. Adoption of "first in, first out".			b. Complying
c. Compaction of coal stockpiles;			c. Bulldozers are used in compacting operation.
d. Installation of water spray system.	d. Water Spray System (WSS) installed.		
e. Installation of temperature monitoring system	e. Temperature Monitoring System installed.		
f. Installation of an effective physical windbreak around the coal yard;	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. Maintenance and/or provision of buffers around the plant's perimeter	g. Complied. A major reforestation around the project site was completed. 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283		g. Management and maintenance is a routine / continuing activity.
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

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.	➢ 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			➢ 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
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.	➢ 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.	➢ 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.	➢ 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 **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.	➢ 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.		➢ Semi Annual Medical Mission is being conducted by MPPCL in collaboration w/ host community & 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.	➢ 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		➢ 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, PAMB & 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.			➢ 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.	➢ Environmental monitoring program/plan submitted to DENR-EMB on February 15, 1993. ➢ Environmental laboratory is operational.		➢ Water quality monitoring is a continuing activity. ➢ Results are provided to DENR, LGU, PAMB, MPPCL.
VI. FURTHER STUDIES REQUIRED			
32. Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	➢ DENR – EMB analytical methods and procedures being followed.		➢ 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.	➢ 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.	➢ 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.	➢ The Risk Assessment Study has been submitted to DENR - EMD.		

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.	➢ On going coordination with EMB re: setting up		
VIII. ENVIRONMENTAL REPORTING/ PUBLIC INFORMATION 37. Set a system for public relations / information, to discuss / resolve issues that may develop / affect the community.			➢ 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.

APPENDIX 10

ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

PAGES 62-70

Masinloc Power Partners Company Limited

ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

As of December 2010

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 METEROLOGY 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 or 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.	2.3.1 MCFTPP will utilize a screw type coal unloader to eliminate dust dispersion during coal unloading. 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. 2.3.3 Water sprayers will be installed at coal stockyard. 2.3.4 The height of fall of coal from stacker shall be made as low as possible during stacking. 2.3.5 Reclaimers/stackers shall be operated only at wind speed lower than 5 mps. 2.3.6 Planting of trees around MCFTPP to serve as wind breakers.	Installed and operational. Installed and operational. Installed and operational. Being implemented. Being implemented. To date 55,436 trees have been planted.
2.4 Spontaneous combustion may occur at the coal stockyard emitting smoke and smoldering smell.	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. 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. 2.4.3 Regular re-piling and water sprinkling of coal file shall be undertaken to prevent spontaneous combustion.	Being implemented. Being implemented. Being implemented.

IMPACTS	MITIGATING MEASURES	STATUS
	2.4.4 Coal pile portion where spontaneous combustion occurs shall be compacted by bulldozer.	Being implemented.
2.5 MCFTPP will emit SO2, NO and air particulates in the environment.	2.5.1 MCFTPP will utilize 100% imported coal with low sulfur and ash content to reduce SO2, NO2 and air particulate emission.	Being implemented.
Emission levels of SO2, NOx and air particulates are within DENR standard.	2.5.2 MCFTPP will utilize a stack of 150 m high for maximum dispersion of SO2, NO2 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 Nox releases by 25-30%, or to less than 400 ppm at the boiler outlet.	
	2.5.5 Regular monitoring of ambient SO2, NO2 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 Candelaria.
2.6 Dust may be dispersed during ash transport, unloading and at the ash disposal area.	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.	2.7.1 Use of low noise equipment installation of soundproof washes and doors; indoor installation of fans, pumps, compressor and motors.	Being implemented.
	2.7.2 Operation of coal stockyard and ash disposal area shall be done only during daytime.	Regular ambient & occupational noise level monitoring is conducted regularly; data shows compliance to DOH & DOLE requirements.
	2.7.3 Regular monitoring of noise levels in population centers near MCFTPP during plant operation.	Multipartite monitoring is conducted quarterly.
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.	3.1.1 Revetment around the reclaimed area shall be constructed prior to start of reclamation.	Implemented
	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.	Revetment and embankment already constructed. Stabilization of slopes by sodding/planting completed. Revegetation is a continuing activity.
3.2 Possible contamination of Oyon Bay and groundwater due to the operation of ash disposal system.	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.	Monitoring of plant effluent is regularly conducted.
	3.2.2 The ash disposal area will be provided with sedimentation basin and embankment.	Completed
	3.2.3 The NW embankment of ash disposal area shall be lined with empervious material such as clay to avoid groundwater contamination.	Completed.
	3.2.4 Five (5) deep walls shall be constructed at the northern portion of ash disposal area for the monitoring of groundwater quality.	Implemented.

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 0.06 mg/l shall be adopted to ensure a residual chlorine concentration of 0.02 to 0.05 mg/l. at the outfall is expected.	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 TERRESTIAL 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.	Implemented
4.2 The emission of SO2, NO2 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.	Completed

IMPACTS	MITIGATING MEASURES	STATUS
5.0 AQUATIC ECOLOGY		
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.	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.	Completed
	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.	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.
5.2 The discharge of treated effluent may cause ecological effects to the aquatic system at Oyon Bay.	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.	Completed.
	5.2.2 Biological studies at the discharge area will be undertaken during MCFTPP operation to determine possible effects of thermal effluent chlorination.	Permanent coral quadrat deployed near the discharge area. Biological monitoring is a continuing activity by the MM group.
5.3 The chlorination of cooling water may cause ecological effects to the aquatic system at Oyon Bay	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.	Being implemented.
5.4 The cooling water system will cause entrainment and impingement of marine organisms.	5.4.1 Velocity cap at the intake structure of the cooling water system will be installed to reduce entrapment of fishes.	Implemented.
	5.4.2 Entrapment of fishes at the intake structure will be monitored during MCFTPP Operation.	
5.5 The operation of ash disposal system may cause ecological effects to the aquatic system at Oyon Bay.	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.	Operational.

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 estruarine 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.	Completed Completed
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.	Completed
6.3 The influx of migrant construction workers will induce the proliferation of service establishments (food eateries, 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 MCFTPP to be spearheaded by NAPOCOR's Community Relations Department will be created to formulate and implement public information activities during plant operation.	Implemented The Community Relations Officer regularly coordinates with host communities re: community-related programs thru its Corporate Social Responsibility Program

IMPACTS	MITIGATING MEASURES	STATUS
6.6 The operation of MCFTPP will mean an additional 600 MW to the Luzon grid.		MPPCL 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	Implemented.
peace and order, sanitary condition of temporary camps and others.	practices. 7.1.2 Conduct of health and safety seminar to all construction personnel. 7.1.3 Provision for a construction camp at the site with safe drinking water supply, adequate sewage facilities and solid waste disposal facilities. 7.1.4 Provision for medical staff at site during construction to conduct routine physical examination and to attend to medical emergencies. 7.1.5 Provision for adequate security staff to ensure peace and order in the camp during construction.	 Implemented. Implemented. Implemented. Implemented.
7.2 Plant personnel and the general public near MCFTPP will be exposed to dust, noise, SO2, NO2 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 or SO2, NO2, dust and noise to levels within DENR ambient standards. 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. 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 MCFTPP.	Continuing.
	7.2.7 Implementation of Industrial Health and Occupational Safety Audit Program at MCFTPP 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.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	March 1, 2010
Date of Emission Event	February 16 to 28, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	February 16, 2010
Estimated Duration of the Emission Event	11 days for Unit 1 and 13 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	602.5 ppm to 784.1 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	April 7, 2010
Date of Emission Event	March 1 to 18, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	March 1 to 18, 2010
Estimated Duration of the Emission Event	18 days for Unit 1 and 13 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	579.1 ppm to 878.0 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	May 4, 2010
Date of Emission Event	April 11-20 & 23-30, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	April 11-20 & 23-30, 2010
Estimated Duration of the Emission Event	18 days for Unit 1 and 13 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	579.1 ppm to 878.0 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	June 1, 2010
Date of Emission Event	May 1-31, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	May 1-31, 2010
Estimated Duration of the Emission Event	21 days for Unit 1 and 14 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	579.1 ppm to 878.0 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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MASINLOC POWER PARTNERS COMPANY LIMITED

ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	May 25, 2010
Date of Emission Event	May 24 (2300H) to May 25, 2010 (0400H)
Type of Emission Event	Opacity emission exceedance, Unit 2
Time of Discover of Emission Event	May 24, 2010, at 2300H
Estimated Duration of the Emission Event	4 hours
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	76.8 % to 78.5%
Physical Location of Excess Emission Event	Stack
Cause of the Event	Equipment Failure
Immediate Action Taken to Correct Excess Emission Event	Ash Handling Operator checked the malfunctioned equipment, called Electrical Maintenance to check/troubleshoot the breakers& transformer rectifier, energized the 3 power packs which increased the ash collection capability thus controls the dust density/opacity emissions meeting the DENR limits.
Follow-up Actions to Prevent Future Events	Perform Root Cause Analysis on the Rectifiers burnt out & check coordination of bus breakers and incoming breakers down stream.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	July 1, 2010
Date of Emission Event	June 1-30, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	June 1-30, 2010
Estimated Duration of the Emission Event	26 days for Unit 1 and 15 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	579.1 ppm to 878.0 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	July 1, 2010
Date of Emission Event	June 1-30, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	June 1-30, 2010
Estimated Duration of the Emission Event	26 days for Unit 1 and 15 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	579.1 ppm to 878.0 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	July 20, 2010
Date of Emission Event	July 17-19, 2010
Type of Emission Event	Unit 1: Smoke Density emission exceedance
Time of Discover of Emission Event	July 17-19, 2010
Estimated Duration of the Emission Event	15 hours - July 17, 2010 20 hours - July 18, 2010 5 hours - July 19, 2010
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	More than 200 ppm
Physical Location of Excess Emission Event	Stack
Cause of the Event	Failure of three(3) ESP Transformer rectifiers, possible breakage on the electrodes and ash accumulation
Immediate Action Taken to Correct Excess Emission Event	Electrical maintenance group immediately conducted inspection/rectification, manually aid ash conveying to hasten ash removal and re energization.
Follow-up Actions to Prevent Future Events	Close monitoring on ash conveying, internal ESP inspection will be done as soon as possible.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	August 2, 2010
Date of Emission Event	July 1-31, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	July 1-31, 2010
Estimated Duration of the Emission Event	30 days for Unit 1 and 29 days for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	greater than 573.06
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	September 1, 2010
Date of Emission Event	August 2-4, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	August 2-4, 2010
Estimated Duration of the Emission Event	2 days for Unit 1 and 1 day for Unit 2
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	greater than 573.06
Physical Location of Excess Emission Event	Stack
Cause of the Event	High sulfur content of fuel
Immediate Action Taken to Correct Excess Emission Event	Sent letter to DENR (02/04/10) re "Variance-Coal Sulfur Content" prior to the delivery/use of coal with high sulfur content. Approval of the request by DENR was granted on 02/10/10
Follow-up Actions to Prevent Future Events	Long term plan for Coal Procurement to avoid procuring of off specs coal.

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ENVIRONMENTAL EMISSION NONCONFORMANCE EVENT REPORT

Date of Nonconformance Event Report	November 3, 2010
Date of Emission Event	October 13, 15 and 16, 2010
Type of Emission Event	SOx emission exceedance
Time of Discover of Emission Event	October 13, 15 and 16, 2010
Estimated Duration of the Emission Event	October 13 (21 hrs), 15 (18 hrs)and 16 (20 hrs), 2010
Estimated Total Amount of Excess Emissions Other than Capacity Emitted During the Emission Event	greater than 573.06
Physical Location of Excess Emission Event	Stack
Cause of the Event	High blending ratio of high sulfur coal to low sulfur coal and failure of operator to promptly effect necessary adjustment.
Immediate Action Taken to Correct Excess Emission Event	Lower blending ratio of high sulfur coal to low sulfur coal.
Follow-up Actions to Prevent Future Events	Review and implement additional oversight procedure to pro-actively address and preclude any emission exceedance.

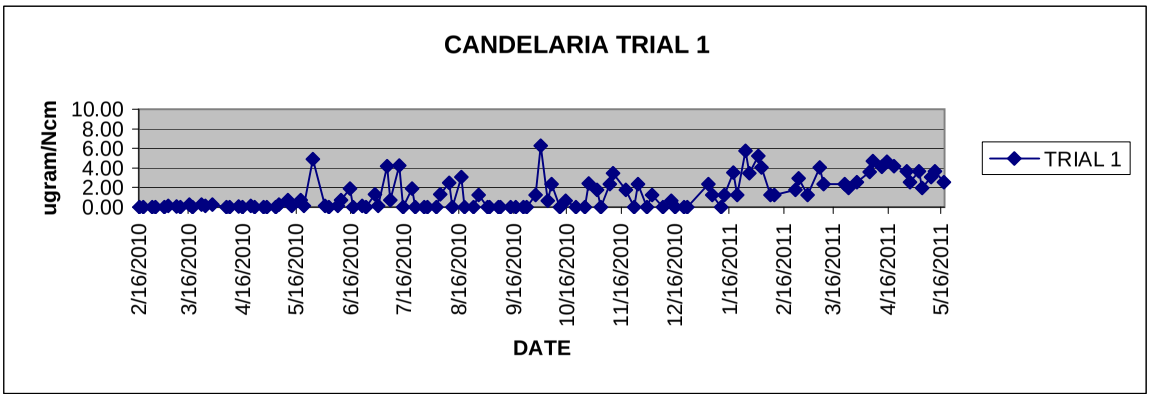
MASINLOC POWER PARTNES COMPANY LIMITED
AMBIENT AIR MONITORING
SO_2 MONITORING

LIMIT = 340 ug/Ncm

DATE	CANDELARIA STATION ug/Ncm		INHOBOL STATION ug/Ncm	
	TRIAL 1	TRIAL 2	TRIAL 1	TRIAL 2
2/16/2010	0.0000	0.0000	0.1588	0.2323
2/18/2010	0.0000	0.0000	0.0140	0.0140
2/23/2010	0.0138	0.0138	0.0869	0.0869
2/25/2010	0.0139	0.0139	0.1607	0.1607
3/2/2010	0.0000	0.0000	0.2328	0.2328
3/4/2010	0.1593	0.1593	0.3078	0.3078
3/9/2010	0.0866	0.0866	0.3796	0.3796
3/11/2010	0.0000	0.0000	0.1591	0.1591
3/16/2010	0.2334	0.2334	0.1968	0.1968
3/18/2010	0.0139	0.0139	0.0869	0.0869
3/23/2010	0.2384	0.3866	0.1616	0.0000
3/25/2010	0.1616	0.3091	0.1616	0.0878
3/29/2010	0.2365	0.2365	0.3076	0.3076
4/6/2010	0.0142	0.0000	0.1605	0.0872
4/8/2010	0.0000	0.0000	0.0141	0.1623
4/13/2010	0.0885	0.2372	0.4587	0.4587
4/15/2010	0.0140	0.0140	0.1621	0.1621
4/20/2010	0.1630	0.1630	0.2367	0.2367
4/22/2010	0.0000	0.0000	0.0000	0.0000
4/27/2010	0.0000	0.0000	0.2363	0.2363
4/29/2010	0.0000	0.0000	0.0883	0.0883
5/4/2010	0.0000	0.0883	0.0877	0.1614
5/6/2010	0.2387	0.2387	0.1629	0.1629
5/11/2010	0.7099	0.7099	1.3020	1.3020
5/13/2010	0.1126	0.1126	0.7037	0.7037
5/18/2010	0.7019	0.7019	1.8842	1.8842
5/20/2010	0.1134	0.1134	1.3020	1.3020
5/25/2010	4.8891	4.2922	1.3075	1.3075
6/1/2010	0.1115	0.6969	1.8676	1.2822
6/3/2010	0.0000	0.6900	1.2696	1.8492
6/8/2010	0.1122	0.1122	3.0583	3.0583
6/10/2010	0.6946	0.6946	3.6118	3.6118
6/15/2010	1.8774	1.8774	3.6428	3.6428
6/17/2010	0.0000	0.0000	1.8737	1.8737
6/22/2010	0.1115	0.1115	0.6963	0.1115
6/24/2010	0.0000	0.0000	1.8713	1.8713
6/29/2010	1.2835	1.2835	1.8694	1.8694
7/1/2010	0.1122	0.1122	2.4635	2.4635
7/6/2010	4.1994	4.1994	1.8756	1.8756
7/8/2010	0.7028	0.7028	1.8836	1.8836
7/13/2010	4.2215	4.2215	2.4602	2.4602
7/15/2010	0.0000	0.0000	1.2860	1.2860
7/20/2010	1.8940	1.8940	4.8623	4.8623
7/22/2010	0.0000	0.0000	1.8651	1.8651
7/27/2010	0.0000	0.0000	3.0513	3.0513
7/29/2010	0.0000	0.0000	1.2877	1.2877
8/3/2010	0.0000	0.0000	1.8713	1.8713
8/5/2010	1.2915	0.0000	1.8811	1.2915
8/10/2010	2.4708	0.0000	1.8811	1.2915
8/12/2010	0.0000	0.0000	1.8774	2.4659

8/17/2010	3.0443	2.4578	0.6982	3.5200
8/19/2010	0.0000	0.0000	1.8571	1.8571
8/24/2010	0.0000	0.0000	1.2907	1.2907
8/27/2010	1.2733	1.2733	0.0000	0.0000
9/1/2010	0.0000	0.0000	1.2776	1.2776
9/2/2010	0.0000	0.0000	0.6943	0.6943
9/7/2010	0.0000	0.0000	1.2919	1.2919
9/8/2010	0.0000	0.0000	0.6930	0.6930
9/14/2010	0.0000	0.0000	1.2864	1.2864
9/17/2010	0.0000	0.0000	0.6976	0.6976
9/21/2010	0.0000	0.0000	1.8013	1.7954
9/23/2010	0.0000	0.0000	0.0814	0.0814
9/28/2010	1.2297	1.2297	3.5251	3.5251
10/1/2010	6.2443	6.2443	2.3643	2.3643
10/5/2010	0.6552	0.6552	2.3751	0.2759
10/7/2010	2.3798	2.3798	4.0897	4.0897
10/12/2010	0.0000	0.0000	1.7995	1.7995
10/15/2010	0.6537	0.6537	2.9417	2.9417
10/21/2010	0.0000	0.0000	3.5230	3.5230
10/26/2010	0.0000	0.0000	1.8012	1.8012
10/28/2010	2.3875	2.3875	4.6927	4.6927
11/2/2010	1.7683	1.7683	4.0189	4.0189
11/4/2010	0.0000	0.0000	3.5102	3.5102
11/9/2010	2.3619	2.3619	4.0723	4.0723
11/11/2010	3.4516	3.4516	4.5753	4.5753
11/18/2010	1.7877	1.7877	3.4941	3.4941
11/23/2010	0.0000	0.0000	4.0723	4.0723
11/25/2010	2.3697	2.3697	5.8016	5.8016
11/30/2010	0.0000	0.0000	3.5286	3.5286
12/3/2010	1.2361	1.2361	4.6973	4.6973
12/9/2010	0.0000	0.0000	2.3666	2.3666
12/14/2010	0.6509	0.6509	4.6378	4.6378
12/16/2010	0.0000	0.0000	4.0897	4.0897
12/21/2010	0.0000	0.0000	4.6583	4.6583
12/23/2010	0.0000	0.0000	5.7702	5.7702
1/4/2011	2.3569	2.3569	7.4760	7.4760
1/6/2011	1.2232	1.2232	4.0761	4.0761
1/11/2011	0.0000	0.0000	3.5211	3.5211
1/13/2011	1.2232	1.2232	4.6477	4.6477
1/18/2011	3.5027	3.5027	5.7835	5.7835
1/20/2011	1.2220	1.2220	6.3528	6.3528
1/25/2011	5.7447	5.7447	8.5767	8.5767
1/27/2011	3.4941	3.4941	5.7694	6.3382
2/1/2011	5.2125	5.2125	9.2034	8.6333
2/3/2011	4.0590	3.4907	6.3320	6.3320
2/8/2011	1.2161	1.2161	4.0536	3.4861
2/10/2011	1.2201	1.2201	5.7751	6.3444
2/22/2011	1.7842	2.9196	7.4611	7.4611
2/24/2011	2.9321	2.9321	6.3528	6.4531
3/1/2011	1.2253	1.2253	4.0844	4.6561
3/8/2011	4.0844	4.0844	5.2280	5.2280
3/10/2011	2.3674	2.3674	4.6531	4.6531
3/22/2011	2.3418	2.3418	5.1682	5.1682
3/24/2011	1.9891	3.6167	5.7867	7.4142
3/29/2011	2.5259	2.5259	4.6910	4.6910
4/5/2011	3.6167	3.6167	6.3292	6.3292
4/7/2011	4.7063	4.7063	7.4215	7.4215
4/12/2011	4.1456	4.1456	8.4715	8.4715
4/15/2011	4.6649	4.6649	8.9710	8.9710
4/19/2011	4.1538	4.1538	5.7792	5.7792

4/26/2011	3.6402	3.6402	9.1006	9.1006
4/28/2011	2.5399	2.5399	4.7170	4.7170
5/3/2011	3.6438	3.6438	5.2835	5.2835
5/5/2011	1.9801	1.9801	4.1402	4.1402
5/10/2011	3.0972	3.0972	5.2835	5.2835
5/12/2011	3.6285	3.6825	5.8055	5.8055
5/17/2011	2.5234	2.5234	4.1456	4.1456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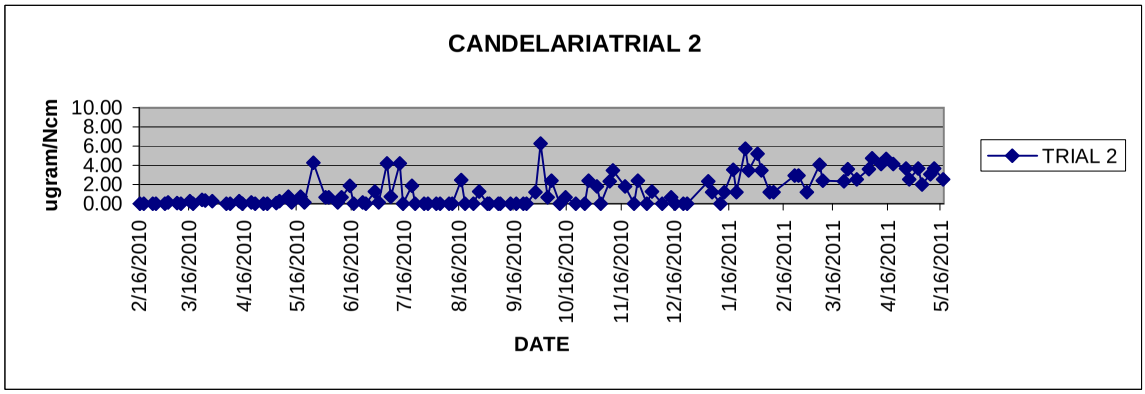
DATE
TRIAL 1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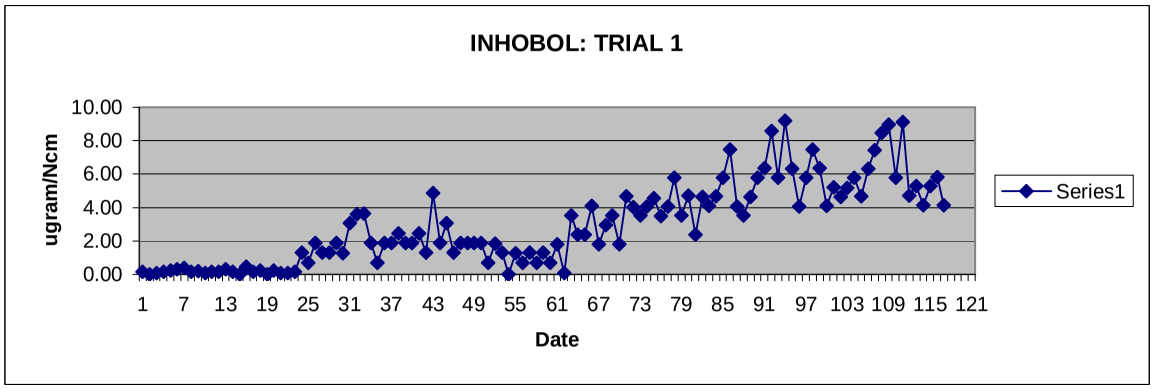
TRIAL 2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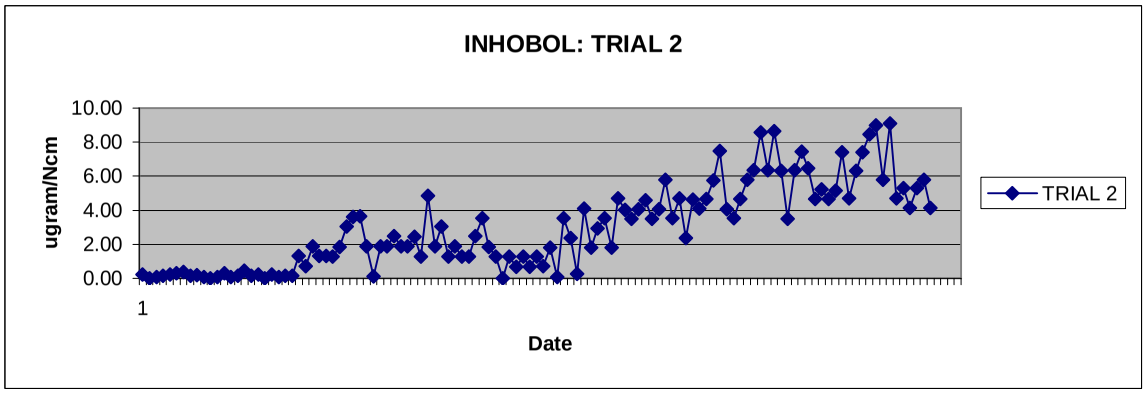
Series1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TRIAL 2

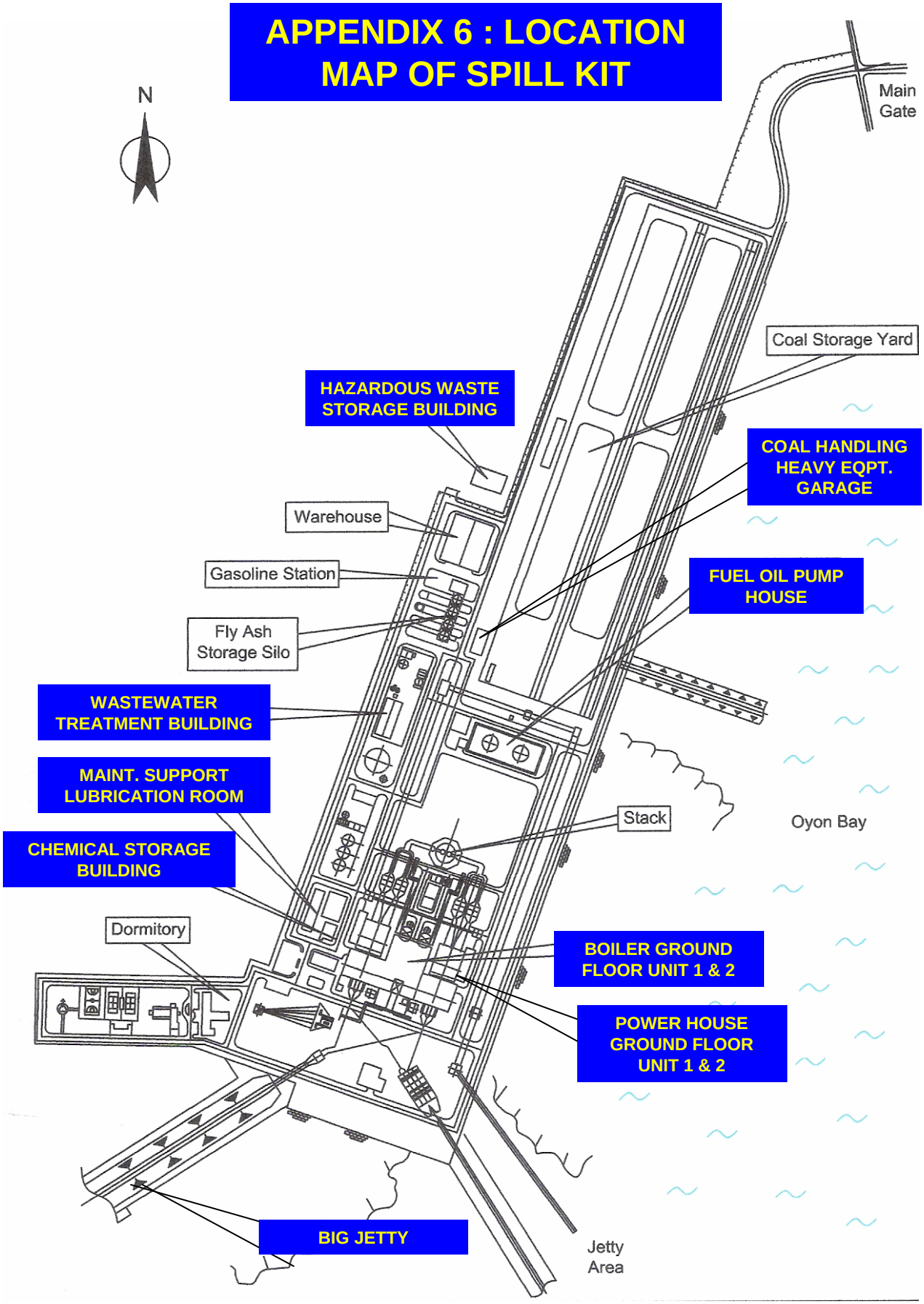
ENVIRONMENTAL MONITORING FOR TODAY (APRIL 6, 2010)

Parameters	Cooling Water Intake	Cooling Water Discharge	Storm Drain Canal	Wastewater Treatment Facility	DENR Limits DENR A.O. #35
Time	0930H	0915H	0900H	0950H	-
pH	7.79	7.73	7.63	8.90	6 .0 - 9.0
Conductivity, mS/cm	58.20	58.50	1.04	0.950	
Turbidity, NTU	7	7	11	22	
Dissolved Oxygen, ppm	5.47	6.71	3.94	5.61	
Temperature, ^{o}C	29.40	35.60	29.50	34.4	
Salinity, %	3.87	3.86	0.04	0.04	
Chlorine Residual, ppm	0.00	0.01			1.0 MAXIMUM

Wastewater Treated (April 5, 2010) =842 m^3

Data for volume of wastewater treated is from Chemical Section.

APPENDIX 6 : LOCATION MAP OF SPILL KIT



Appendix 7

TASK
Air Emissions
Electrostatic Precipitators (ESPs)
Repair ESPs
Continuous Emission Monitoring Systems (CEMS):
Repair the CEMS and ensure the CEMS are operable
Check and/or calibrateCEMS performance/reliability
Equipment Repair and Maintenance
Repair equipment
Establish maintenance schedules for equipment
Wastewater Discharge
Wastewater Treatment Plant (WWTP)
Repair WWTP
Conduct regular maintenance of WWTP
Stormwater Drainage System:
Inspect, unblock and repair damaged area of the stormwater drainage system
Maintenance stormwater drains
Material Handling and Storage
AppropriateWaste Management chemical and waste storage areas should be constru
Waste Management
Ash Collection and Disposal
Identify alternative contractor
Removal of ash piles
Ash disposal area to be engineered for future disposal activities
Solid Waste Disposal

Identify alternative disposal route for solid wastes
Develop and implement a solid waste management program
Waste Chemical and Chemical Containers
Clear all waste drums and chemicals
Marine Impact
Marine water and sediment monitoring is done quarterly.
Daily temperature monitoring at the intake and discharge points.
Contaminated Groundmass
Undertake an intrusive soil and groundwater site investigation
Prepare a soil and groundwater site investigation report
Conduct periodic soil/groundwater sampling/analysis
Environmental Management
Develop and document an environmental management system (EMS)
Implement EMS.

MPPCL ENVIRONMENTAL ACTION PLAN	
Indicator of Completion	**Anticipated Completion**
Operating ESPs	April 2009
	February 2010
Operating CEMS	Annually
Calibrated CEMS	Routine
Working Equipment	
Maintenance Schedules	Routine
Operating WWTP	8-Jun
Maintenance logs	as required
Operating stormwater drains	Routine
Operating stormwater drains	Routine
Appropriately designed storage areas	8-Oct
Operational storage building	Existing
	2010-Oct
Suitable engineereed	
ash contained in ash disposal area	Routine

Established MRF	2010 June
Solid waste management plan	Existing
Cleared Site	Routine process
MMT Report	Every Quarter
Daily Monitoring Report	Routine
Site work completed	8-Jan
Report	8-Feb
complying soil/groundwater quality	every six months/weekly
EMS developed	2010 May
Operating EMS	2010 June

Status
Unit 2 ESP rehabilitation completed in April, 2009 now operating with dust density belov
Unit 1 ESP rehabilitation completed in February 2010, now operating ith dust density bel
Conducted and passed Annual RATA and Opacity analyzers Audit on November 17, 2
Cylinder Gas Audit conducted in-house by I&C group.
Equipment repair, rehabilitation and replacement of spare parts is conducted when n
Maintenance program in MAXIMO was in-placed/implemented, but was shifted to SAF
quarter of 2010.
Awaiting arrival of the OEM (AQUATECH) to restore the WWTP into its original opeeratin
In-house repair by the maintenance group.
Inspection and declogging s a routine activity prior to the onset of rainy season.
Operating storm drains.
Construction of Chemical and Waste Storage Buildings completed.
Daily monitoring of storage building for leaks/spills
Design for the improvement/rehab of Ash Disposal Area completed.
Rehab of Neutralization system completed
Good housekeeping of the area

Solid Wastes are segregated by type. Corresponding location by type of waste.
Implementation of solid waste segregation.
Hazardous Waste (Used Oil = 100 drums) reported to Supply chain as waste subject for
Waste chemical plastic drums are being buy back by the supplier. Used metal drums a
cleaned and donated to the host communities.
Conducted on a quarterly basis by MMT. Please refer to Appendix 3 for sample reports.
Please refer to Appendix 5.
Site work conducted by third party (ENSR)
Report submitted on January 2009.
Soil monitoring sampling/analysis
EMS Procedures in the review process
Objectives, Targets and Programs in the review process

w 150mg/Ncm.
low 150 mg/Ncm.

010.

ecessary.
during the last

g design

bidding for sale
re steam

APPENDIX 8

ENVIRONMENTAL COMPLIANCE CERTIFICATE
Granted: December 18, 1992
(Status of MPPCL Compliance as of December 31, 2010)

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	➢ 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).	➢ 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.	➢ 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.			➢ ❄he plant has a Health and Safety group, an EHS safety committee who spear head the conduct of safety walkdown walkdown to insure compliance to safety rules and regulations. Safety first is the company's first value. & everyone's responsibility.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	Complied		
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.		➢ Inspection, sampling and analyses of groundwater from these monitoring wells are continuing activities on a quarterly basis jointly conducted by Multipartite Monitoring Team (NPC, PAMB, DENR, LGU and NGO). ➢ Increaced monitoring and analyses of groundwater is done by the plant on a weeklybasis to determine water quality.

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
11. Installation of appropriate pollution control equipment and facilities in the plant.	➢ 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.	Continuous Emission Monitoring System (CEMS) installed and operational. ➢ Two (2) SOx analyzers: operational ➢ Two (2) Nox: 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.	➢ Four (4) continuous fixed ambient air monitoring stations are located at the Resettlement, Inhobol, Candelaria & Palauig) ➢ Analyzers installed at each station: 1. SO_2 Analyzer 2. NO_x - Analyzer 3. Dust Density Meter		
14. No dredging operations in waters around the plant and in Masinloc shall be undertaken at anytime	➢ 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".		

ECC CONDITIONS	STATUS		
	COMPLIED	TO BE COMPLIED	FOR CONTINUING COMPLIANCE
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.	➢ 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.		➢ Mangrove inspection is a daily/routine activity. ➢ Mangrove replanting is done yearly.
III. OPERATIONS PHASE **16.** Management and handling of coal (airborne coal dusts and spontaneous combustion free)			
a. Adoption of coal stockpiles to a maximum of sixty (60) days capacity.			a. Complying
b. Adoption of "first in, first out".			b. Complying
c. Compaction of coal stockpiles;			c. Bulldozers are used in compacting operation.
d. Installation of water spray system.	d. Water Spray System (WSS) installed.		
e. Installation of temperature monitoring system	e. Temperature Monitoring System installed.		
f. Installation of an effective physical windbreak around the coal yard;	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. Maintenance and/or provision of buffers around the plant's perimeter	g. Complied. A major reforestation around the project site was completed. 1. Estimated area planted w/ trees = 32.0 hectares 2. Total no. of trees planted = 55,283		g. Management and maintenance is a routine / continuing activity.
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

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.	➢ Two (2) units Screw type coal unloader installed & operation ➢ Covered conveyor system in placed & 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			➢ 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.	➢ 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.	➢ 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.	➢ NPC released P1.86M for the relocatees thru SPRB. ➢ NPC released P10M to LGU MCDO as livelihood fund thru micro-lending project.		Addressed in the plant's Corporate Social Responsibility Program.
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		The plant is engaged in the DENR & Host communities' various tree planting programs, seedlings dispersal, and reforestation project thru ER 1-94.
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.	➢ 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.		➢ Monitoring of mortality rate & morbidity rate of the three (3) studies barangays is a continuing activity. ➢ Annual Medical Missions is a continuing program being conducted by MPPCL.

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.	➢ 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		➢ 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, PAMB, 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.			➢ Plant effluent & air emission monitoring is a continuing activity. ➢ Results are provided to LGU & 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.	➢ Environmental monitoring program/plan submitted to DENR-EMB on February 15, 1993. ➢ Environmental laboratory is operational.		➢ Water quality monitoring is a continuing activity. ➢ Results are provided to DENR, LGU, PAMB, NGO, MPPCL.
VI. FURTHER STUDIES REQUIRED **32.** Adoption of DENR-EMB analytical methods and procedures for standardization purposes.	➢ DENR – EMB analytical methods and procedures being followed.		➢ 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.	➢ Marine Impact study was undertaken by ABB; report was submitted to DENR on October 28, 1993.		Marine Ecological monitoring is conducted twice a year by an independent organization - a conti-. nuing activity by the plant.
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.	➢ 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.	➢ The Risk Assessment Study has been submitted to DENR - EMD.		

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.	➢ 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.			➢ 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.

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MASINLOC POWER PARTNERS COMPANY LIMITED

2010 MULTIPARTITE MONITORING

In-Situ Analysis

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

Department of Environment and Natural Resources

MRS. VEDINIA BUGARIN-PERALTA
PENRO Focal Person For Environment

MRS. MARY O. HULLANA
Forester/Protected Area Superintendent

Protected Area Management Board

MRS. OLIVE E. GREGORIO
Member

Provincial Government Unit

MRS. NERISSA G. VIGLIA
Community Development Assistant II
Environmental Natural Resources of Zambales

Municipal Government Unit

MR. RAMON I. EGUITA
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Peace Corp USA / LGU-Masinloc
Masinloc, Zambales

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

Barangay Government Unit

KAG. LEONARDA T. DOMA
Kagawad ng Barangay

AES Philippines
Masinloc Power Partners Company Limited
Environmental Section

MR. HARRIS A. SUNE
Environmental Mgmt. Specialist

MRS. ANTONIA V. LOPEZ
Environmental Manager -PCO

MR. JORGE A. AQUINO
Chemist

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

SO_2 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	1356H-1456H	03/22/10	1.00	30.0	763.56	0.0095	0.0590	0.16	DENR A. O. 14 s. 1993 340 ug/Ncm
	1500H-1600H	03/22/10	1.00	30.0	763.56	0.0226	0.0590	0.38	
Inhobol	1445H-1545H	03/23/10	1.00	31.0	763.56	0.0095	0.0588	0.16	
	1547H-1647H	03/23/10	1.00	31.0	763.56	0.0140	0.0588	0.24	
Candelaria	1410H-1510H	03/23/10	1.00	35.0	763.56	0.0140	0.0581	0.24	
	1515H-1615H	03/23/10	1.00	34.0	763.56	0.0226	0.0582	0.39	
Palauig	1500H-1600H	03/22/10	1.00	29.0	763.56	0.0270	0.0592	0.46	
	1604H-1704H	03/22/10	1.00	28.0	763.56	0.0313	0.0594	0.53	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

NO_2 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	1356H-1456H	03/22/10	1.00	30.0	763.56	0.0017	0.0590	0.03	DENR A. O. 14 s. 1993 260 ug/Ncm
	1500H-1600H	03/22/10	1.00	30.0	763.56	0.0013	0.0590	0.02	
Inhobol	1445H-1545H	03/23/10	1.00	31.0	763.56	0.0020	0.0588	0.03	
	1547H-1647H	03/23/10	1.00	31.0	763.56	0.0017	0.0588	0.03	
Candelaria	1410H-1510H	03/23/10	1.00	35.0	763.56	0.0013	0.0581	0.02	
	1515H-1615H	03/23/10	1.00	34.0	763.56	0.0017	0.0582	0.03	
Palauig	1500H-1600H	03/22/10	1.00	29.0	763.56	0.0010	0.0592	0.02	
	1604H-1704H	03/22/10	1.00	28.0	763.56	0.0010	0.0594	0.02	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, 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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

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	1356H-1456H	03/22/10	558.2	557.9	0.60	30.0	763.56	0.30	35.41	8.47	
	1500H-1600H	03/22/10	554.3	554.0	0.60	30.0	763.56	0.30	35.41	8.47	DENR A. O. 14
Inhobol	1445H-1545H	03/23/10	553.9	550.6	1.50	31.0	763.56	3.30	88.22	37.40	
	1547H-1647H	03/23/10	557.4	553.7	1.50	31.0	763.56	3.70	88.22	41.94	
Candelaria	1410H-1510H	03/23/10	547.5	547.2	0.70	35.0	763.56	0.30	40.64	7.38	s. 1993
	1515H-1615H	03/23/10	551.5	551.1	0.70	34.0	763.56	0.40	40.77	9.81	300*ug/Ncm*
Palauig	1500H-1600H	03/22/10	565.2	565.1	0.60	29.0	763.56	0.10	35.52	2.82	
	1604H-1704H	03/22/10	541.0	540.9	0.60	28.0	763.56	0.10	35.64	2.81	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010
SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1955H-2055H	03/22/10	1.00	24.00	763.56	0.0052	0.0602	0.0864	DOH 5000ug/Ncm
	2103H-2203H	03/22/10	1.00	24.00	763.56	0.0008	0.0602	0.0133	
Admin. Building	2008H-2108H	03/22/10	1.00	22.00	763.56	0.0000	0.0606	ND	
	2109H-2209H	03/22/10	1.00	21.00	763.56	0.0000	0.0608	ND	
WWT Control Room	0951H-1051H	03/22/10	1.00	26.00	763.56	0.0008	0.0598	0.0134	
	1055H-1155H	03/22/10	1.00	25.00	763.56	0.0000	0.0600	ND	
Coal Handling Control Room	0937H-1037H	03/22/10	1.00	26.00	763.56	0.0008	0.0598	0.0134	
	1040H-1140H	03/22/10	1.00	27.00	763.56	0.0183	0.0596	0.3070	
Chemical Laboratory	0935H-1035H	03/22/10	1.00	27.00	763.56	0.0095	0.0596	0.1594	
	1038H-1138H	03/22/10	1.00	27.00	763.56	0.0095	0.0596	0.1594	
Mechanical Shop	0803H-0903H	03/22/10	1.00	27.00	763.56	0.0313	0.0596	0.5252	
	0912H-1012H	03/22/10	1.00	28.00	763.56	0.0183	0.0594	0.3081	
Ash Handling Control Room	0940H-1140H	03/22/10	1.00	27.00	763.56	0.0313	0.0596	0.5252	
	1045H-1145H	03/22/10	1.00	29.00	763.56	0.0313	0.0592	0.5287	
Turbine Floor	2000H-2100H	03/22/10	1.00	34.00	763.56	0.0313	0.0582	0.5374	
	2103H-2203H	03/22/10	1.00	35.00	763.56	0.0270	0.0581	0.4651	

FORMULA:

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

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

Notes:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

First Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	1955H-2055H	03/22/10	1.00	24.00	763.56	0.0020	0.0602	0.0332	DOH 6000*ug/Ncm* DOLE 9000*ug/Ncm*
	2103H-2203H	03/22/10	1.00	24.00	763.56	0.0023	0.0602	0.0382	
Admin. Building	2008H-2108H	03/22/10	1.00	22.00	763.56	0.0017	0.0606	0.0280	
	2109H-2209H	03/22/10	1.00	21.00	763.56	0.0017	0.0608	0.0280	
WWT Control Room	0951H-1051H	03/22/10	1.00	26.00	763.56	0.0020	0.0598	0.0334	
	1055H-1155H	03/22/10	1.00	25.00	763.56	0.0006	0.0600	0.0100	
Coal Handling Control Room	0937H-1037H	03/22/10	1.00	26.00	763.56	0.0013	0.0598	0.0217	
	1040H-1140H	03/22/10	1.00	27.00	763.56	0.0020	0.0596	0.0336	
Chemical Laboratory	0935H-1035H	03/22/10	1.00	27.00	763.56	0.0023	0.0596	0.0386	
	1038H-1138H	03/22/10	1.00	27.00	763.56	0.0020	0.0596	0.0336	
Mechanical Shop	0803H-0903H	03/22/10	1.00	27.00	763.56	0.0010	0.0596	0.0168	
	0912H-1012H	03/22/10	1.00	28.00	763.56	0.0010	0.0594	0.0168	
Ash Handling Control Room	0940H-1140H	03/22/10	1.00	27.00	763.56	0.0010	0.0596	0.0168	
	1045H-1145H	03/22/10	1.00	29.00	763.56	0.0012	0.0592	0.0203	
Turbine Floor	2000H-2100H	03/22/10	1.00	34.00	763.56	0.0023	0.0582	0.0395	
	2103H-2203H	03/22/10	1.00	35.00	763.56	0.0023	0.0581	0.0396	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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) _____

PGU Representative(s) _____

MPPCL Representative(s) _____

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010
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	1955H-2055H	03/22/10	562.1	561.4	0.90	24.00	763.56	0.70	54.18	12.92	
	2103H-2203H	03/22/10	570.3	569.2	0.80	24.00	763.56	1.10	48.16	22.84	
Admin. Building	2008H-2108H	03/22/10	538.1	537.5	0.50	22.00	763.56	0.60	30.31	19.80	DOH
	2109H-2209H	03/22/10	537.8	537.4	0.50	21.00	763.56	0.40	30.41	13.15	
WWT Control Room	0951H-1051H	03/22/10	524.6	524.5	0.42	26.00	763.56	0.10	25.41	3.94	2000*ug/Ncm*
	1055H-1155H	03/22/10	533.0	532.1	0.76	25.00	763.56	0.90	45.89	19.61	
Coal Handling Control Room	0937H-1037H	03/22/10	522.8	521.9	0.62	26.00	763.56	0.90	37.27	24.15	
	1040H-1140H	03/22/10	520.1	519.2	0.68	27.00	763.56	0.90	40.52	22.21	
Chemical Laboratory	0935H-1035H	03/22/10	515.3	514.9	0.60	27.00	763.56	0.40	35.76	11.19	DOLE
	1038H-1138H	03/22/10	544.1	543.7	0.70	27.00	763.56	0.40	41.72	9.59	
Mechanical Shop	0803H-0903H	03/22/10	545.8	545.1	1.00	27.00	763.56	0.70	59.60	11.74	1000*ug/Ncm*
	0912H-1012H	03/22/10	541.9	541.4	0.60	28.00	763.56	0.50	35.64	14.03	
Ash Handling Control Room	0940H-1140H	03/22/10	549.2	548.6	1.00	27.00	763.56	0.60	59.60	10.07	
	1045H-1145H	03/22/10	542.9	542.4	1.00	29.00	763.56	0.50	59.21	8.45	
Turbine Floor	2000H-2100H	03/22/10	542.9	542.4	1.00	34.00	763.56	0.50	58.24	8.59	
	2103H-2203H	03/22/10	558.9	558.3	1.00	35.00	763.56	0.60	58.05	10.34	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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.

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DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____ Ervin

BGU Representative(s) _____

PGU Representative(s) _____

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Multipartite Monitoring Committee
First Quarter, 2010

AMBIENT NOISE MONITORING
MORNING TIME
March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0720H	55.1	60.7	51.7	56.5	tricycle
2	Purok Percaloha (Junction)	0718H	58.4	58.4	53.6	54.8	birds
3	Edillor's Residence (150m. From Gate	0823H	48.6	59.8	44.1	50.7	birds
4	EPDC Building	0822H	54.9	57.6	46.9	54.4	birds
5	C-Square (Benguet Loading Area)	0821H	42.9	44.4	39.6	40.4	birds
6	Resettlement Site	0818H	54.6	53.8	48.6	50.1	birds
7	Highway, waiting shed of Resettlement	0751H	69.2	69.2	53.1	57.2	tricycle
8	Puerto Asinan	0754H	67.7	67.7	62.1	63.8	tricycle
9	Sitio Atob, Purok Tanguile	0758H	63.3	68.1	60.9	64.0	tricycle
10	Masinloc Town Plaza	0805H	70.3	74.4	66.9	71.3	tricycle
11	Bani National High School, (Annex), Taltal	0733H	64.7	71.1	63.6	67.4	tricycle
12	Brgy. Lauis (Junction to Binabalian)	0742H	57.2	75.6	51.6	66.5	tricycle
13	Lauis Elementary School	0744H	71.4	72.9	59.8	67.7	tricycle
14	Purok Bangal-Duhok (Junction)	0726H	62.1	69.6	60.9	63.5	tricycle
15	Bani Elementary School, Bani	0725H	56.6	59.6	50.6	54.8	tricycle
16	Bani National High School, Bani	0724H	58.4	68.6	48.7	60.6	birds
17	Brgy. Bani Multi-purpose Complex	0723H	63.3	75.7	58.1	72.9	truck
18	Plant Site (Coal Yard)	0716H	57.7	81.3	52.1	65.4	bulldozer

Noise Quality Standards (NPCC Rules and Regulations [illegible] No. 2, 1980

PARAMETERS	NOIS[illegible]ARD (dBA)
Emission Noise	90 @ 10m. dis[illegible] source
Ambient Noise Category	Morning Time No[illegible]evel (0600H to 0900H)
Class AA-area which requires quiet-ness (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)

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Multipartite Monitoring Committee
First Quarter, 2010

AMBIENT NOISE MONITORING
DAYTIME
March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1445H	52.3	53.8	50.1	51.2	
2	Purok Percaloha (Junction)	1443H	54.2	57.6	50.1	52.4	
3	Edillor's Residence (150m. From Gate	1446H	66.9	70.7	64.3	67.5	tricycle
4	EPDC Building	1447H	50.8	52.7	45.9	48.4	radio
5	C-Square (Benguet Loading Area)	1448H	52.8	56.9	49.8	52.9	
6	Resettlement Site	1451H	50.6	58.1	47.6	51.3	
7	Highway, waiting shed of Resettlement	1510H	57.2	60.9	53.4	56.3	motorcycle
8	Puerto Asinan	1512H	73.3	80.4	69.9	75.4	vehicle
9	Sitio Atob, Purok Tanguile	1514H	65.8	77.4	65.4	73.3	tricycle
10	Masinloc Town Plaza	1522H	72.9	72.9	63.9	68.0	tricycle
11	Bani National High School, (Annex), Taltal	1455H	51.7	52.4	50.6	51.4	
12	Brgy. Lauis (Junction to Binabalian)	1502H	58.4	65.9	50.9	55.4	radio
13	Lauis Elementary School	1505H	62.4	66.7	61.7	63.5	motorcycle
14	Purok Bangal-Duhok (Junction)	1554H	66.2	72.6	64.7	68.6	motorcycle
15	Bani Elementary School, Bani	1556H	60.9	69.9	59.4	63.1	van
16	Bani National High School, Bani	1602H	63.6	73.3	49.3	63.8	tricycle
17	Brgy. Bani Multi-purpose Complex	1603H	63.6	73.3	62.1	68.3	tricycle
18	Plant Site (Coal Yard)	1441H	57.2	66.5	56.4	58.5	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 Category	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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

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First Quarter, 2010

AMBIENT NOISE MONITORING
NIGHT TIME
March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2207H	55.7	55.7	41.9	44.2	insects chirping
2	Purok Percaloha (Junction)	2205H	56.1	56.1	54.9	55.4	
3	Edillor's Residence (150m. From Gate	2256H	67.8	67.8	60.3	63.5	insects chirping
4	EPDC Building	2255H	47.9	61.8	47.6	50.9	insects chirping
5	C-Square (Benguet Loading Area)	2254H	43.3	58.3	41.8	48.6	insects chirping
6	Resettlement Site	2251H	44.1	48.6	41.1	43.9	
7	Highway, waiting shed of Resettlement	2226H	48.3	56.9	47.6	48.8	dog barking
8	Puerto Asinan	2228H	50.2	50.2	48.7	49.2	
9	Sitio Atob, Purok Tanguile	2230H	48.9	59.4	48.2	52.2	dog barking
10	Masinloc Town Plaza	2236H	66.8	66.8	64.3	64.9	tricycle
11	Bani National High School, (Annex), Taltal	2216H	59.9	73.4	51.7	75.1	motorcycle
12	Brgy. Lauis (Junction to Binabalian)	2221H	49.8	53.2	48.7	50.1	insects chirping
13	Lauis Elementary School	2220H	49.1	49.1	47.9	48.5	
14	Purok Bangal-Duhok (Junction)	2211H	49.1	49.1	47.9	48.5	insects chirping
15	Bani Elementary School, Bani	2210H	47.6	52.1	46.8	47.9	
16	Bani National High School, Bani	2209H	49.4	57.3	47.6	50.1	insects chirping
17	Brgy. Bani Multi-purpose Complex	2208H	53.8	57.9	44.4	51.6	people talking
18	Plant Site (Coal Yard)	2204H	62.1	67.3	59.1	62.9	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 quiet-ness (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

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Multipartite Monitoring Committee
First Quarter, 2010

AMBIENT NOISE MONITORING
EVENING TIME
March 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1821H	66.7	66.7	56.9	60.9	people talking
2	Purok Percaloha (Junction)	2018H	52.4	56.9	51.7	53.5	
3	Edillor's Residence (150m. From Gate	2114H	52.1	66.5	49.1	55.0	insects chirping
4	EPDC Building	2113H	51.3	65.6	47.2	53.9	dog barking
5	C-Square (Benguet Loading Area)	2112H	51.3	51.3	48.7	49.8	insects chirping
6	Resettlement Site	2108H	55.4	56.9	54.3	55.4	dog barking
7	Highway, waiting shed of Resettlement	2045H	56.9	64.8	55.8	60.1	dog barking
8	Puerto Asinan	2048H	79.8	79.8	60.3	72.8	tricycle
9	Sitio Atob, Purok Tanguile	2050H	52.1	56.6	51.3	53.4	people talking
10	Masinloc Town Plaza	2056H	60.7	61.1	56.9	59.4	people talking
11	Bani National High School, (Annex), Taltal	2032H	71.6	71.9	67.8	69.7	tricycle
12	Brgy. Lauis (Junction to Binabalian)	2038H	52.1	75.3	48.7	60.1	people talking
13	Lauis Elementary School	2040H	60.3	63.3	58.4	60.6	radio
14	Purok Bangal-Duhok (Junction)	2027H	55.9	60.7	52.4	56.7	people talking
15	Bani Elementary School, Bani	2026H	59.2	59.6	57.3	58.2	jeep
16	Bani National High School, Bani	2024H	57.3	59.6	54.3	57.0	tricycle
17	Brgy. Bani Multi-purpose Complex	2025H	67.4	67.4	58.1	62.0	people talking
18	Plant Site (Coal Yard)	2017H	62.6	62.6	53.9	57.0	

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 quiet-ness (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

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Multipartite Monitoring Committee
First Quarter 2010

OCCUPATIONAL NOISE MONITORING
March 25, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	2029H	57.9	69.9	52.7	59.7	
2	Turbine Floor	2028H	87.6	87.9	86.8	87.3	
3	Laboratory Building	2012H	66.9	68.8	66.2	67.2	
4	Administration Building (Lobby)	2014H	54.2	75.9	51.6	62.1	
5	Coal Handling	2104H	68.8	74.1	51.9	60.9	
6	Ash Handling	2033H	68.4	71.1	67.7	68.8	
7	Machine Shop	2040H	68.4	76.4	65.8	67.4	
8	Water Treatment Control Room	2037H	63.9	74.4	62.8	64.8	
9	Boiler Feed Pump Unit #1	2026H	95.1	96.2	92.1	94.5	
10	Boiler Feed Pump Unit #2	2023H	96.6	96.6	90.9	94.0	
11	Circulating Water Pump Intake #1	2021H	93.6	94.3	91.7	93.0	
12	Circulating Water Pump Intake #2	2020H	91.7	92.1	87.2	90.2	
13	Smoke Stack (CEM Control Room)	2035H	61.3	65.1	60.2	62.6	
14	Generator Transformer Unit #1	2017H	77.1	76.6	75.9	76.6	
15	Generator Transformer Unit #2	2018H	75.6	81.6	94.1	76.2	
16	Guard House (Main Gate)	2109H	53.1	55.3	47.8	50.0	
17	230kV GIS (Switchyard)	2016H	69.2	69.9	68.4	69.0	
18	Coal Yard	2106H	57.6	60.6	55.3	56.2	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH	DOLE
	Threshold Limit Values	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

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Multipartite Monitoring Committee
First Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	3/23/10	3/23/10	3/22/10	3/22/10	3/23/10	3/22/10	-
Time of Sampling	1645H	1400H	0815H	0839H	1414H	1530H	-
pH	7.73	7.07	8.08	8.02	7.71	7.34	6.5 - 8.5
Conductivity, mSiemens / meter	0.164	1.750	0.266	0.262	0.561	3	-
Turbidity, NTU	2	0	2	5	4	3	5
Dissolved Oxygen, ppm	6.40	1.38	5.26	4.79	2.03	5.77	-
Temperature, °C	29.0	28.5	31.2	31.3	31.7	31.2	-
Salinity, %	0.00	0.08	0.01	0.01	0.02	0.17	-

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 Dstrict
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 Multi-Partite Monitoring Team

DENR Representative (s)

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Multipartite Monitoring Committee
First Quarter, 2010

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	3/23/2010	3/23/2010	3/23/2010	-
Time of Sampling	1020H	1050H	1001H	-
pH	7.82	7.69	7.47	6.5 - 8.5
Conductivity, mSiemens / cm.	0.556	23.80	53.4	-
Turbidity, NTU	3	2.0	2.0	-
Dissolved Oxygen, ppm	8.94	7.22	6.42	5 minimum
Temperature, °C	27.8	29.95	28.2	-
Salinity, %	0.01	1.18	3.27	-

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 Multi-Partite Monitoring Team

DENR Representative (s) _____

PAMB Representative (s) _____

MGU Representative (s) _____

BGU Representative (s) _____

PGU Representative (s) _____

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Multipartite Monitoring Committee
First Quarter, 2010

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
March 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	1130H	7.45	0.970	2	1.44	27.1	0.04
MO-1: Bani Point (After Ash Disposal Area)	0940H	6.87	0.676	6	1.43	26.7	0.02
MO-2: Bani (NPC Nursery)	1030H	7.92	0.801	5	1.32	26.9	0.02
MO-3: Between Corafer And Duhok	1045H	7.33	0.771	42	1.17	27.0	0.02
MO-5: Bani (PNP Patrol Base)	1140H	6.57	1.100	3	1.14	28.0	0.04
MO-6: Bani	0955H	6.72	3.860	3	1.20	27.7	0.19
MOW-1: Bani (near Sedimentation Basin)	1020H	7.98	1.610	4	2.95	26.6	0.07
MOW-2: Bani (along embankment)	1055H	7.81	2.110	27	1.28	27.7	0.06
MOW-3: Bani (near warehouse)	NO WATER						

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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

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Multipartite Monitoring Committee

First Quarter, 2010

MARINE WATER MONITORING (IN-SITU ANALYSIS)

March 23, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1213H	7.84	57.4	1	6.78	29.6	3.82	
M2	1221H	7.83	57.9	3	6.18	32.4	3.86	
M3	1239H	7.87	57.7	3	6.17	30.2	3.84	
M4	0845H	7.81	57.9	7	5.63	29.6	3.87	
M5	0836H	7.81	57.2	5	5.58	29.3	3.80	
M6	0853H	7.25	56.9	2	6.52	29.3	3.73	
M7	0911H	7.83	57.9	1	5.51	29.8	3.86	
M8	0928H	7.83	58.1	1	6.90	29.6	3.87	
M9	1044H	7.82	58.8	5	6.12	31.2	3.91	
M10	1100H	7.82	58.3	2	5.61	30.9	3.88	
M11	1119H	7.87	57.8	1	5.45	29.7	3.84	
M12	1134H	7.87	57.7	3	5.80	29.8	3.84	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:

1. Monitoring Stations

M-1: Between Lauis 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. 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) _____

PGU Representative (s) _____

MPPCL Representative (s) _____

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
First Quarter, 2010

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	3/25/2010	3/25/2010	3/25/2010	3/23/2010	3/23/2010	-
Time of Sampling	1022H	0910H	1435H	1736H	1730H	-
pH	7.02	NO	8.19	7.72	7.67	6.0 - 9.0
Conductivity, mSiemens/cm.	1.76		1.32	58.00	1.00	-
Turbidity, NTU	15	SAMPLE	21	13	2	-
Dissolved Oxygen, ppm	5.84		7.50	6.39	4.82	-
Temperature, °C	31.0	(EMPTY)	36.5	35.7	27.3	-
Salinity, %	0.07		0.06	3.85	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 MPPCL Multi-Partite Monitoring Team

DENR Representative (s) _____

PAMB Representative (s) _____

MGU Representative (s) _____

BGU Representative (s) _____

PGU Representative (s) _____

MPPCL Representative (s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

Department of Environment and Natural Resources

MRS. VEDINIA BUGARIN-PERALTA
PENRO Focal Person For Environment

MRS. MARY O. HULLANA
Forester/Protected Area Superintendent

Protected Area Management Board

MRS. OLIVE E. GREGORIO
Member

Municipal Government Unit

MR. RAMON I. EGUITA
Draftsman I
Masinloc, Zambales

MR. ROY E. BORJA
MAO Staff
Palauig, Zambales

Barangay Government Unit

KAG. LEONARDA T. DOMA
Kagawad ng Barangay

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Masinloc Power Partners Company Limited
Environmental Section

MR. HARRIS A. SUNE
Environmental Mgmt. Specialist

MRS. ANTONIA V. LOPEZ
Environmental Manager -PCO

MR. JORGE A. AQUINO
Chemist

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

SO_2 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	1330H-1430H	06/21/10	1.00	29.0	762.1	0.0066	0.0594	0.11	DENR A. O. 14 s. 1993 340 ug/Ncm
	1438H-1538H	06/21/10	1.00	29.0	762.1	0.0758	0.0594	1.28	
Inhobol	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0412	0.0592	0.70	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0066	0.0592	0.11	
Candelaria	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0066	0.0592	0.11	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0066	0.0592	0.11	
Palauig	1453H-1553H	06/21/10	1.00	30.0	762.1	0.3871	0.0592	6.54	
	1556H-1656H	06/21/10	1.00	30.0	762.1	0.3179	0.0592	5.37	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

MPPCL Representative(s) _____

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AES PHILIPPINES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

NO_2 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	1330H-1430H	06/21/10	1.00	29.0	762.1	0.0165	0.0594	0.28	DENR A. O. 14 s. 1993 260 ug/Ncm
	1438H-1538H	06/21/10	1.00	29.0	762.1	0.0199	0.0594	0.34	
Inhobol	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0098	0.0592	0.17	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0098	0.0592	0.17	
Candelaria	1438H-1538H	06/22/10	1.00	30.0	762.1	0.0232	0.0592	0.39	
	1543H-1643H	06/22/10	1.00	30.0	762.1	0.0098	0.0592	0.17	
Palauig	1453H-1553H	06/21/10	1.00	30.0	762.1	0.0232	0.0592	0.39	
	1556H-1656H	06/21/10	1.00	30.0	762.1	0.0165	0.0592	0.28	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, 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) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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	1330H-1430H	06/21/10	540.3	539.9	0.70	29.0	762.1	0.40	41.56	9.63	DENR A. O. 14 s. 1993 300ug/Ncm
	1438H-1538H	06/21/10	543.6	543.0	0.80	29.0	762.1	0.60	47.49	12.63	
Inhobol	1438H-1538H	06/22/10	548.6	547.4	0.75	30.0	762.1	1.20	44.38	27.04	
	1543H-1643H	06/22/10	547.3	546.5	0.80	30.0	762.1	0.80	47.34	16.90	
Candelaria	1438H-1538H	06/22/10	549.9	548.2	0.70	30.0	762.1	1.70	41.42	41.04	
	1543H-1643H	06/22/10	549.0	548.1	0.70	30.0	762.1	0.90	41.42	21.73	
Palauig	1453H-1553H	06/21/10	541.6	540.8	0.60	30.0	762.1	0.80	35.50	22.53	
	1556H-1656H	06/21/10	543.9	543.0	0.60	30.0	762.1	0.90	35.50	25.35	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010
SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2011H-2111H	06/21/10	1.00	25.00	762.1	0.1795	0.0602	2.9836	DOH 5000ug/Ncm
	2116H-2216H	06/21/10	1.00	25.00	762.1	0.2141	0.0602	3.5587	
Admin. Building	2032H-2132H	06/21/10	1.00	22.00	762.1	0.1450	0.0608	2.3859	
	2135H-2235H	06/21/10	1.00	21.00	762.1	0.1104	0.0610	1.8104	
WWT Control Room	0915H-1015H	06/21/10	1.00	28.00	762.1	0.1104	0.0596	1.8535	
	1018H-1118H	06/21/10	1.00	29.00	762.1	0.2833	0.0594	4.7721	
Coal Handling Control Room	0913H-1013H	06/21/10	1.00	23.00	762.1	0.1450	0.0606	2.3940	
	1018H-1118H	06/21/10	1.00	23.00	762.1	0.1795	0.0606	2.9635	
Chemical Laboratory	2056H-2156H	06/21/10	1.00	23.00	762.1	0.3871	0.0606	6.3910	
	2200H-2300H	06/21/10	1.00	22.00	762.1	0.4563	0.0608	7.5081	
Mechanical Shop	0901H-1001H	06/21/10	1.00	29.00	762.1	0.0412	0.0594	0.6940	
	1003H-1103H	06/21/10	1.00	29.00	762.1	0.0758	0.0594	1.2768	
Ash Handling Control Room	0925H-1025H	06/21/10	1.00	28.00	762.1	0.1104	0.0596	1.8535	
	1028H-1128H	06/21/10	1.00	29.00	762.1	0.1795	0.0594	3.0236	
Turbine Floor	2010H-2110H	06/21/10	1.00	34.00	762.1	0.1795	0.0584	3.0737	
	2115H-2215H	06/21/10	1.00	34.00	762.1	0.2487	0.0584	4.2586	

FORMULA:

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

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

Notes:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2011H-2111H	06/21/10	1.00	25.00	762.1	0.1065	0.0602	1.7702	DOH 6000ug/Ncm; DOLE 9000ug/Ncm
	2116H-2216H	06/21/10	1.00	25.00	762.1	0.0131	0.0602	0.2177	
Admin. Building	2032H-2132H	06/21/10	1.00	22.00	762.1	0.0199	0.0608	0.3274	
	2135H-2235H	06/21/10	1.00	21.00	762.1	0.0332	0.0610	0.5444	
WWT Control Room	0915H-1015H	06/21/10	1.00	28.00	762.1	0.0131	0.0596	0.2199	
	1018H-1118H	06/21/10	1.00	29.00	762.1	0.0098	0.0594	0.1651	
Coal Handling Control Room	0913H-1013H	06/21/10	1.00	23.00	762.1	0.0266	0.0606	0.4392	
	1018H-1118H	06/21/10	1.00	23.00	762.1	0.0064	0.0606	0.1057	
Chemical Laboratory	2056H-2156H	06/21/10	1.00	23.00	762.1	0.0502	0.0606	0.8288	
	2200H-2300H	06/21/10	1.00	22.00	762.1	0.0333	0.0608	0.5479	
Mechanical Shop	0901H-1001H	06/21/10	1.00	29.00	762.1	0.0199	0.0594	0.3352	
	1003H-1103H	06/21/10	1.00	29.00	762.1	0.0401	0.0594	0.6755	
Ash Handling Control Room	0925H-1025H	06/21/10	1.00	28.00	762.1	0.0266	0.0596	0.4466	
	1028H-1128H	06/21/10	1.00	29.00	762.1	0.0401	0.0594	0.6755	
Turbine Floor	2010H-2110H	06/21/10	1.00	34.00	762.1	0.0401	0.0584	0.6867	
	2115H-2215H	06/21/10	1.00	34.00	762.1	0.0434	0.0584	0.7432	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Second Quarter, 2010

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	2011H-2111H	06/21/10	541.8	541.4	0.60	25.00	762.1	0.40	36.10	11.08	
	2116H-2216H	06/21/10	551.4	551.1	0.70	25.00	762.1	0.30	42.11	7.12	
Admin. Building	2032H-2132H	06/21/10	551.8	551.3	0.70	22.00	762.1	0.50	42.54	11.75	DOH
	2135H-2235H	06/21/10	548.9	548.3	0.70	21.00	762.1	0.60	42.69	14.06	
WWT Control Room	0915H-1015H	06/21/10	536.7	536.2	0.70	28.00	762.1	0.50	41.69	11.99	2000*ug/Ncm*
	1018H-1118H	06/21/10	536.1	535.5	0.70	29.00	762.1	0.60	41.56	14.44	
Coal Handling Control Room	0913H-1013H	06/21/10	540.9	540.4	0.60	23.00	762.1	0.50	36.34	13.76	
	1018H-1118H	06/21/10	538.0	537.3	0.80	23.00	762.1	0.70	48.46	14.45	
Chemical Laboratory	2056H-2156H	06/21/10	546.9	546.8	0.57	23.00	762.1	0.10	34.32	2.91	DOLE
	2200H-2300H	06/21/10	549.3	548.3	0.62	22.00	762.1	1.00	37.88	26.40	
Mechanical Shop	0901H-1001H	06/21/10	533.2	532.1	0.71	29.00	762.1	1.10	42.04	26.16	1000*ug/Ncm*
	1003H-1103H	06/21/10	536.3	535.8	0.71	29.00	762.1	0.50	42.04	11.89	
Ash Handling Control Room	0925H-1025H	06/21/10	541.9	540.9	0.60	28.00	762.1	1.00	35.74	27.98	
	1028H-1128H	06/21/10	535.2	534.1	0.65	29.00	762.1	1.10	38.59	28.51	
Turbine Floor	2010H-2110H	06/21/10	535.7	535.0	0.70	34.00	762.1	0.70	40.88	17.12	
	2115H-2215H	06/21/10	543.4	542.8	0.70	34.00	762.1	0.60	40.88	14.68	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

AMBIENT NOISE MONITORING
MORNING TIME
June 24, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0722H	66.3	69.3	64.4	66.7	Tricycle
2	Purok Percaloha (Junction)	0721H	59.9	74.9	57.3	62.0	
3	Edillor's Residence (150m. From Gate	0724H	64.4	64.4	60.3	62.1	Tricycle
4	EPDC Building	0725H	61.4	62.9	58.8	60.5	
5	C-Square (Benguet Loading Area)	0726H	66.7	73.4	59.9	66.7	Dog
6	Resettlement Site	0733H	53.6	56.9	52.8	54.6	
7	Highway, waiting shed of Resettlement	0734H	62.6	64.8	60.3	62.8	Jeep
8	Puerto Asinan	0737H	62.2	88.1	53.2	77.8	Tricycle
9	Sitio Atob, Purok Tanguile	0738H	52.1	52.1	48.7	50.9	
10	Masinloc Town Plaza	0745H	66.9	67.8	64.7	66.1	Tricycle
11	Bani National High School, (Annex), Taltal	0801H	70.3	80.8	57.2	72.8	Truck, vehicle
12	Brgy. Lauis (Junction to Binabalian)	0809H	43.3	69.2	41.4	58.5	Birds
13	Lauis Elementary School	0812H	55.3	56.8	54.2	55.5	
14	Purok Bangal-Duhok (Junction)	0820H	64.3	72.2	49.3	63.0	Tricycle, radio
15	Bani Elementary School, Bani	0821H	52.3	53.4	48.2	51.0	Chicken
16	Bani National High School, Bani	0822H	52.3	53.8	49.7	51.1	
17	Brgy. Bani Multi-purpose Complex	0823H	63.6	66.9	62.4	64.4	Truck
18	Plant Site (Coal Yard)	0719H	62.9	64.8	61.8	63.3	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	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

AMBIENT NOISE MONITORING
DAYTIME
June 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1404H	68.6	68.6	49.1	53.6	
2	Purok Percaloha (Junction)	1401H	53.9	50.9	59.6	51.9	
3	Edillor's Residence (150m. From Gate	1405H	82.1	29.8	52.8	23.9	Tricycle
4	EPDC Building	1407H	49.1	50.9	48.3	48.8	
5	C-Square (Benguet Loading Area)	1408H	53.9	56.6	49.4	50.7	
6	Resettlement Site	1411H	47.9	52.1	47.2	48.1	
7	Highway, waiting shed of Resettlement	1427H	64.8	50.8	62.6	67.4	Tricycle
8	Puerto Asinan	1432H	80.9	87.3	55.4	79.1	Tricycle
9	Sitio Atob, Purok Tanguile	1434H	68.6	74.9	56.9	68.9	Vehicle, tricycle
10	Masinloc Town Plaza	1441H	61.8	74.2	56.6	64.5	Tricycle
11	Bani National High School, (Annex), Taltal	1415H	58.8	59.6	55.8	57.4	Motorcycle
12	Brgy. Lauis (Junction to Binabalian)	1419H	64.4	67.1	47.6	56.2	
13	Lauis Elementary School	1422H	56.9	69.7	55.8	63.6	Tricycle
14	Purok Bangal-Duhok (Junction)	1503H	61.4	70.1	59.6	65.5	Tricycle
15	Bani Elementary School, Bani	1504H	49.8	52.1	47.9	49.4	
16	Bani National High School, Bani	1505H	62.2	62.2	47.9	51.4	
17	Brgy. Bani Multi-purpose Complex	1506H	51.7	52.4	47.6	49.8	
18	Plant Site (Coal Yard)	1400H	61.4	59.9	55.1	56.6	

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	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

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MASINLOC POWER PARTNERS COMPANY LIMITED
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AMBIENT NOISE MONITORING
NIGHT TIME
June 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2213H	51.7	51.7	49.8	50.8	
2	Purok Percaloha (Junction)	2212H	53.2	53.2	51.3	52.1	Insect
3	Edillor's Residence (150m. From Gate	2302H	52.8	55.1	52.4	53.1	Insect
4	EPDC Building	2301H	59.6	66.7	54.7	60.0	Dog
5	C-Square (Benguet Loading Area)	2300H	58.4	58.4	57.3	57.7	Insect
6	Resettlement Site	2257H	53.6	53.2	51.3	52.0	Insect
7	Highway, waiting shed of Resettlement	2237H	49.8	50.2	49.1	49.3	
8	Puerto Asinan	2239H	50.9	53.6	49.8	51.0	
9	Sitio Atob, Purok Tanguile	2241H	68.6	68.6	60.7	64.5	Tricycle
10	Masinloc Town Plaza	2248H	62.2	63.7	59.2	61.1	People talking
11	Bani National High School, (Annex), Taltal	2225H	58.1	79.4	54.7	69.0	Insect
12	Brgy. Lauis (Junction to Binabalian)	2230H	56.6	67.8	50.2	59.1	Dog
13	Lauis Elementary School	2234H	53.6	54.7	50.2	52.1	Insect
14	Purok Bangal-Duhok (Junction)	2219H	64.4	82.7	51.3	71.1	Tricycle
15	Bani Elementary School, Bani	2218H	77.2	75.7	52.4	64.5	Vehicle
16	Bani National High School, Bani	2217H	50.6	62.2	49.4	53.1	Insect
17	Brgy. Bani Multi-purpose Complex	2216H	70.1	78.7	68.2	75.7	Car
18	Plant Site (Coal Yard)	2210H	65.2	65.6	64.4	65.0	Insect

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

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Second Quarter, 2010

AMBIENT NOISE MONITORING
EVENING TIME
June 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2013H	56.6	63.3	53.2	56.1	People talking
2	Purok Percaloha (Junction)	2011H	53.9	65.2	52.4	54.9	Insects
3	Edillor's Residence (150m. From Gate	2103H	51.7	55.1	50.9	51.9	Television
4	EPDC Building	2102H	77.9	81.3	53.6	68.1	Dog barking
5	C-Square (Benguet Loading Area)	2100H	61.1	61.1	52.4	56.2	Tricycle
6	Resettlement Site	2057H	52.8	53.9	51.3	52.3	Insects
7	Highway, waiting shed of Resettlement	2038H	60.3	60.3	54.3	57.7	Jeep
8	Puerto Asinan	2040H	55.8	69.3	50.2	54.8	Television
9	Sitio Atob, Purok Tanguile	2041H	62.6	74.9	60.3	64.7	Dog barking
10	Masinloc Town Plaza	2047H	66.7	70.8	61.8	66.0	Tricycle
11	Bani National High School, (Annex), Taltal	2023H	55.5	58.8	54.7	56.5	Insects
12	Brgy. Lauis (Junction to Binabalian)	2028H	55.4	78.7	49.4	65.6	Dog barking
13	Lauis Elementary School	2031H	68.2	75.3	51.3	62.2	Dog barking
14	Purok Bangal-Duhok (Junction)	2018H	55.4	55.8	53.9	55.0	Insects
15	Bani Elementary School, Bani	2017H	55.4	67.8	54.7	59.3	Horn
16	Bani National High School, Bani	2016H	59.9	67.8	51.3	56.4	Insects
17	Brgy. Bani Multi-purpose Complex	2015H	56.9	58.4	51.7	53.8	Crying baby
18	Plant Site (Coal Yard)	2008H	62.9	62.9	60.3	61.6	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	Evening Time Noise Level (1800H to 2200H)
Class AA-area which requires quiet-ness (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

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Multipartite Monitoring Committee
Second Quarter 2010

OCCUPATIONAL NOISE MONITORING
June 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1643H	64.8	64.8	61.4	61.5	
2	Turbine Floor	1642H	88.4	88.8	87.7	88.1	
3	Laboratory Building	1658H	62.6	62.6	61.8	61.9	
4	Administration Building (Lobby)	1700H	56.6	67.1	53.6	57.9	
5	Coal Handling	1544H	76.8	70.1	57.7	66.1	
6	Ash Handling	1635H	71.2	69.7	67.8	68.6	
7	Machine Shop	1537H	67.1	73.8	65.2	67.6	
8	Water Treatment Control Room	1539H	65.2	69.3	64.4	65.8	
9	Boiler Feed Pump Unit #1	1638H	96.7	97.1	95.6	96.2	
10	Boiler Feed Pump Unit #2	1639H	91.8	93.3	91.4	92.3	
11	Circulating Water Pump Intake #1	1649H	90.3	95.9	89.2	93.6	
12	Circulating Water Pump Intake #2	1648H	90.7	90.3	88.1	90.3	
13	Smoke Stack (CEM Control Room)	1542H	65.2	65.6	61.8	63.3	
14	Generator Transformer Unit #1	1652H	76.1	76.4	75.7	75.9	
15	Generator Transformer Unit #2	1651H	76.1	76.4	75.3	75.7	
16	Guard House (Main Gate)	1548H	49.4	49.4	47.9	48.4	
17	230kV GIS (Switchyard)	1653H	73.1	74.9	69.7	71.0	
18	Coal Yard	1546H	56.6	56.6	53.9	54.7	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH	DOLE
	Threshold Limit Values	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

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DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	6/22/10	6/22/10	6/21/10	6/21/10	6/22/10	6/21/10	-
Time of Sampling	1006H	1417H	1020H	1140H	1457H	1435H	-
pH	6.67	6.95	8.22	8.23	7.57	7.70	6.5 - 8.5
Conductivity, mSiemens / meter	0.202	3.390	0.253	0.249	0.546	4	-
Turbidity, NTU	4.5	0	0	0	3.0	4.0	5
Dissolved Oxygen, ppm	9.28	1.28	4.67	4.54	2.15	5.13	-
Temperature, °C	26.9	29.3	28.7	27.2	31.1	24.8	-
Salinity, %	0.00	0.17	0.00	0.00	0.02	0.21	-

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 Dstrict
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) _____

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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	6/22/2010	6/22/2010	6/22/2010	-
Time of Sampling	1037H	1059H	1018H	-
pH	7.80	7.65	7.03	6.5 - 8.5
Conductivity, mSiemens / cm.	0.460	9.88	7.58	-
Turbidity, NTU	9.0	12.0	70.0	-
Dissolved Oxygen, ppm	5.73	9.05	6.42	5 minimum
Temperature, °C	28.2	29.0	27.7	-
Salinity, %	0.01	0.41	0.31	-

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

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GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
June 23, 2010

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O_2 ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1321H	7.48	0.728	3	0.74	28.1	0.01
MO-1: Bani Point (After Ash Disposal Area)	1037H	7.09	0.170	0	0.91	28.4	0.03
MO-2: Bani (NPC Nursery)	1110H	8.03	0.687	1	1.04	28.1	0.02
MO-3: Between Corafer And Duhok	1140H	7.43	1.610	7	0.91	28.7	0.07
MO-5: Bani (PNP Patrol Base)	1330H	6.81	1.590	0	1.33	28.1	0.07
MO-6: Bani	1046H	6.83	5.620	4	1.11	28.8	0.29
MOW-1: Bani (near Sedimentation Basin)	1101H	7.90	1.370	4	1.07	28.0	0.06
MOW-2: Bani (along embankment)	1122H	6.99	0.679	18	1.07	28.9	0.02
MOW-3: Bani (near warehouse)	No Water						

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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

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MARINE WATER MONITORING (IN-SITU ANALYSIS)
June 22, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1014H	8.08	56.08	1.0	5.43	31.3	3.78	
M2	1000H	8.02	56.07	3.0	5.60	33.2	3.70	
M3	0947H	7.95	55.07	2.0	5.24	30.7	3.71	
M4	1314H	8.06	55.10	1.0	5.35	30.8	3.66	
M5	1322H	8.06	54.80	3.0	5.76	30.8	3.63	
M6	1304H	8.06	55.80	3.0	5.30	31.7	3.71	
M7	1247H	7.99	49.90	12.0	5.60	31.3	3.29	
M8	1236H	7.81	27.60	36.0	5.55	30.5	1.72	
M9	1200H	8.02	55.00	3.0	5.30	31.1	3.65	
M10	1142H	7.99	56.70	3.0	5.87	31.4	3.73	
M11	1111H	8.06	55.80	1.0	5.96	30.8	3.70	
M12	1100H	8.07	55.90	2.0	5.50	30.7	3.71	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:
1. Monitoring Stations
M-1: Between Lauis 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. mS/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees celsius

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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	6/23/2010	6/23/2010	6/23/2010	6/22/2010	6/22/2010	-
Time of Sampling	1338H	1303H	1030H	1130H	1147H	-
pH	6.08	7.46	7.17	7.79	7.69	6.0 - 9.0
Conductivity, mSiemens/cm.	2.02	1.27	1.39	58.40	2.07	-
Turbidity, NTU	10	16	1.0	11.0	7.0	-
Dissolved Oxygen, ppm	6.37	5.63	4.47	5.48	4.03	-
Temperature, °C	34.5	34.1	31.7	37.2	26.2	-
Salinity, %	0.09	0.05	0.06	3.57	0.09	-

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

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Multipartite Monitoring Committee
Third Quarter, 2010

Department of Environment and Natural Resources

MRS. VEDINIA BUGARIN-PERALTA
PENRO/Focal Person For Environment

MRS. MARY O. HULLANA
Forester I

Protected Area Management Board

MRS. OLIVE E. GREGORIO
Member

Municipal Government Unit

MR. RAMON I. EGUITA
Draftsman I
Masinloc, Zambales

Barangay Government Unit

KAG. LEONARDA T. DOMA
Kagawad ng Barangay

AES
Masinloc Power Partners Company Limited
Environmental Section

MR. HARRIS A. SUNE
Environmental Mgmt. Specialist

MRS. ANTONIA V. LOPEZ
Environmental Manager -PCO

MR. JORGE A. AQUINO
Chemist

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Third Quarter, 2010

SO_2 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	1352H-1452H	09/20/10	1.00	29.0	763.6	0.0719	0.0595	1.21	DENR A. O. 14 s. 1993 340 ug/Ncm
	1453H-1553H	09/20/10	1.00	30.0	763.6	0.0383	0.0593	0.65	
Inhobol	1410H-1510H	09/21/10	1.00	34.0	763.6	0.1054	0.0585	1.80	
	1515H-1615H	09/21/10	1.00	33.0	763.6	0.1054	0.0587	1.80	
Candelaria	1632H-1732H	09/21/10	1.00	31.0	763.6	0.0000	0.0591	ND	
	1734H-1834H	09/21/10	1.00	31.0	763.6	0.0000	0.0591	ND	
Palauig	1512H-1612H	09/20/10	1.00	31.0	763.6	0.1054	0.0591	1.78	
	1614H-1714H	09/20/10	1.00	31.0	763.6	0.1390	0.0591	2.35	

FORMULA:

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

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

NOTE:

1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

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Multipartite Monitoring Committee
Third Quarter, 2010

NO_2 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	1352H-1452H	09/20/10	1.00	29.0	763.6	0.0189	0.0595	0.32	DENR A. O. 14 s. 1993 260 ug/Ncm
	1453H-1553H	09/20/10	1.00	30.0	763.6	0.0121	0.0593	0.20	
Inhobol	1410H-1510H	09/21/10	1.00	34.0	763.6	0.0019	0.0585	0.03	
	1515H-1615H	09/21/10	1.00	33.0	763.6	0.0087	0.0587	0.15	
Candelaria	1632H-1732H	09/21/10	1.00	31.0	763.6	0.0053	0.0591	0.09	
	1734H-1834H	09/21/10	1.00	31.0	763.6	0.0087	0.0591	0.15	
Palauig	1512H-1612H	09/20/10	1.00	31.0	763.6	0.0155	0.0591	0.26	
	1614H-1714H	09/20/10	1.00	31.0	763.6	0.0155	0.0591	0.26	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C

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MGU Representative(s) _____

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Multipartite Monitoring Committee

Third Quarter, 2010

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	1352H-1152H	09/20/10	555.2	553.6	0.85	29.0	763.6	1.60	50.32	31.80	
	1453H-1553H	09/20/10	555.3	553.4	0.85	30.0	763.6	1.90	50.15	37.89	DENR A. O. 14
Inhobol	1410H-1510H	09/21/10	541.1	540.9	0.70	34.0	763.6	0.20	40.77	4.91	
	1515H-1615H	09/21/10	547.8	547.7	0.80	33.0	763.6	0.10	46.75	2.14	
Candelaria	1632H-1732H	09/21/10	543.4	543.4	0.70	31.0	763.6	0.00	41.17	ND	s. 1993
	1734H-1834H	09/21/10	543.1	543.0	0.70	31.0	763.6	0.10	41.17	2.43	300*ug/Ncm*
Palauig	1512H-1612H	09/20/10	554.8	554.6	0.60	31.0	763.6	0.20	35.29	5.67	
	1614H-1714H	09/20/10	557.0	556.7	0.60	31.0	763.6	0.30	35.29	8.50	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

MPPCL Representative(s) _____

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010
SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2030H-2130H	09/20/10	1.00	24.00	763.6	0.0719	0.0605	1.1887	DOH 5000*ug/Ncm*
	2138H-2238H	09/20/10	1.00	24.00	763.6	0.0719	0.0605	1.1887	
Admin. Building	2045H-2145H	09/20/10	1.00	20.00	763.6	0.0383	0.0613	0.6247	
	2150H-2250H	09/20/10	1.00	20.00	763.6	0.1054	0.0613	1.7191	
WWT Control Room	0923H-1023H	09/20/10	1.00	20.00	763.6	0.0000	0.0613	ND	
	1026H-1126H	09/20/10	1.00	20.00	763.6	0.0000	0.0613	ND	
Coal Handling Control Room	0918H-1018H	09/20/10	1.00	24.50	763.6	0.3403	0.0604	5.6357	
	1020H-1120H	09/20/10	1.00	24.00	763.6	0.3738	0.0605	6.1801	
Chemical Laboratory	0909H-1009H	09/20/10	1.00	24.00	763.6	0.0383	0.0605	0.6332	
	1015H-1115H	09/20/10	1.00	24.00	763.6	0.0048	0.0605	0.0794	
Mechanical Shop	2045H-2145H	09/20/10	1.00	27.00	763.6	0.1390	0.0599	2.3213	
	2147H-2247H	09/20/10	1.00	28.00	763.6	0.1390	0.0597	2.3291	
Ash Handling Control Room	0920H-1020H	09/20/10	1.00	27.00	763.6	0.2061	0.0599	3.4419	
	1021H-1121H	09/20/10	1.00	28.00	763.6	0.2396	0.0597	4.0147	
Turbine Floor	2032H-2132H	09/20/10	1.00	36.00	763.6	0.2061	0.0581	3.5452	
	2136H-2236H	09/20/10	1.00	36.00	763.6	0.2396	0.0581	4.1214	

FORMULA:

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

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

Notes:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2030H-2130H	09/20/10	1.00	24.00	763.6	0.0053	0.0605	0.0876	
	2138H-2238H	09/20/10	1.00	24.00	763.6	0.0053	0.0605	0.0876	
Admin. Building	2045H-2145H	09/20/10	1.00	20.00	763.6	0.0053	0.0613	0.0864	
	2150H-2250H	09/20/10	1.00	20.00	763.6	0.0087	0.0613	0.1419	DOH
WWT Control Room	0923H-1023H	09/20/10	1.00	20.00	763.6	0.0087	0.0613	0.1419	6000*ug/Ncm*
	1026H-1126H	09/20/10	1.00	20.00	763.6	0.0053	0.0613	0.0864	
Coal Handling Control Room	0918H-1018H	09/20/10	1.00	24.50	763.6	0.0358	0.0604	0.5929	
	1020H-1120H	09/20/10	1.00	24.00	763.6	0.0358	0.0605	0.5919	
Chemical Laboratory	0909H-1009H	09/20/10	1.00	24.00	763.6	0.0155	0.0605	0.2563	DOLE
	1015H-1115H	09/20/10	1.00	24.00	763.6	0.0257	0.0605	0.4249	9000*ug/Ncm*
Mechanical Shop	2045H-2145H	09/20/10	1.00	27.00	763.6	0.0257	0.0599	0.4292	
	2147H-2247H	09/20/10	1.00	28.00	763.6	0.0257	0.0597	0.4306	
Ash Handling Control Room	0920H-1020H	09/20/10	1.00	27.00	763.6	0.0290	0.0599	0.4843	
	1021H-1121H	09/20/10	1.00	28.00	763.6	0.0290	0.0597	0.4859	
Turbine Floor	2032H-2132H	09/20/10	1.00	36.00	763.6	0.0155	0.0581	0.2666	
	2136H-2236H	09/20/10	1.00	36.00	763.6	0.0189	0.0581	0.3251	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/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) _____

MPPCL Representative(s) _____

AES

MASINLOC POWER PARTNERS COMPANY LIMITED

Multipartite Monitoring Committee

Third Quarter, 2010

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	2030H-2130H	09/20/10	546.7	546.6	0.70	24.00	763.6	0.10	42.34	2.36	
	2138H-2238H	09/20/10	546.1	546.0	0.70	24.00	763.6	0.10	42.34	2.36	
Admin. Building	2045H-2145H	09/20/10	550.4	550.3	0.57	20.00	763.6	0.10	34.74	2.88	DOH
	2150H-2250H	09/20/10	553.3	553.2	0.57	20.00	763.6	0.10	34.74	2.88	
WWT Control Room	0923H-1023H	09/20/10	552.6	552.0	0.57	20.00	763.6	0.60	34.74	17.27	2000*ug/Ncm*
	1026H-1126H	09/20/10	552.5	551.9	0.57	20.00	763.6	0.60	34.74	17.27	
Coal Handling Control Room	0918H-1018H	09/20/10	542.4	541.7	0.70	24.50	763.6	0.70	42.27	16.56	
	1020H-1120H	09/20/10	544.0	543.4	0.70	24.00	763.6	0.60	42.34	14.17	
Chemical Laboratory	0909H-1009H	09/20/10	552.4	552.1	0.70	24.00	763.6	0.30	42.34	7.09	DOLE
	1015H-1115H	09/20/10	552.1	551.8	0.70	24.00	763.6	0.30	42.34	7.09	
Mechanical Shop	2045H-2145H	09/20/10	553.4	552.9	0.70	27.00	763.6	0.50	41.92	11.93	1000*ug/Ncm*
	2147H-2247H	09/20/10	551.1	550.4	0.70	28.00	763.6	0.70	41.78	16.76	
Ash Handling Control Room	0920H-1020H	09/20/10	543.4	542.5	0.60	27.00	763.6	0.90	35.93	25.05	
	1021H-1121H	09/20/10	543.5	541.4	0.65	28.00	763.6	2.10	38.79	54.13	
Turbine Floor	2032H-2132H	09/20/10	544.7	544.3	0.70	36.00	763.6	0.40	40.69	9.83	
	2136H-2236H	09/20/10	547.8	547.6	0.70	36.00	763.6	0.20	40.69	4.91	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

BGU Representative(s) _____

MPPCL Representative(s) _____

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

AMBIENT NOISE MONITORING
MORNING TIME
September 23, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0804H	51.9	58.7	47.1	51.3	
2	Purok Percaloha (Junction)	0802H	48.9	66.9	47.1	58.7	
3	Edillor's Residence (150m. From Gate	0852H	64.3	68.8	52.7	59.1	tricycle
4	EPDC Building	0851H	62.1	65.8	42.9	57.6	roster crow
5	C-Square (Benguet Loading Area)	0850H	65.1	69.2	55.3	63.9	tricycle
6	Resettlement Site	0848H	67.3	74.4	46.7	66.5	noisy people
7	Highway, waiting shed of Resettlement	0829H	63.9	68.1	62.8	64.9	vehicle
8	Puerto Asinan	0831H	69.6	76.7	67.3	72.2	music
9	Sitio Atob, Purok Tanguile	0833H	69.2	76.7	55.7	66.9	vehicle
10	Masinloc Town Plaza	0839H	66.2	79.3	64.7	72.1	vehicle
11	Bani National High School, (Annex), Taltal	0816H	63.6	72.6	59.1	63.5	noisy people
12	Brgy. Lauis (Junction to Binabalian)	0822H	66.2	69.9	64.7	67.4	vehicle
13	Lauis Elementary School	0824H	60.2	78.2	57.2	65.7	vehicle
14	Purok Bangal-Duhok (Junction)	0811H	59.8	65.1	49.3	58.1	radio
15	Bani Elementary School, Bani	0810H	49.7	53.4	45.6	49.0	
16	Bani National High School, Bani	0809H	71.8	81.6	69.9	76.0	tricycle
17	Brgy. Bani Multi-purpose Complex	0805H	64.7	70.3	60.2	63.6	tricycle
18	Plant Site (Coal Yard)	0800H	50.1	67.3	45.2	57.8	

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 Category	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

AMBIENT NOISE MONITORING
DAYTIME
September 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1437H	62.8	63.9	59.4	62.3	vehicles
2	Purok Percaloha (Junction)	1431H	47.9	48.3	42.2	47.4	
3	Edillor's Residence (150m. From Gate	1439H	69.9	71.1	54.9	65.1	dog barking
4	EPDC Building	1445H	48.6	53.4	43.3	46.9	television
5	C-Square (Benguet Loading Area)	1446H	43.3	43.7	40.7	42.0	
6	Resettlement Site	1450H	59.4	62.8	52.3	57.4	cement mixer
7	Highway, waiting shed of Resettlement	1452H	64.3	66.2	62.4	64.2	tricycle
8	Puerto Asinan	1526H	73.3	83.1	65.1	76.5	vehicle
9	Sitio Atob, Purok Tanguile	1528H	75.6	81.9	51.6	70.9	tricycle
10	Masinloc Town Plaza	1530H	68.8	74.4	66.2	69.9	tricycle
11	Bani National High School, (Annex), Taltal	1455H	59.4	68.1	53.8	61.7	motorcycle
12	Brgy. Lauis (Junction to Binabalian)	1515H	57.6	71.1	56.4	61.1	tricycle
13	Lauis Elementary School	1518H	64.4	69.9	59.8	63.2	truck
14	Purok Bangal-Duhok (Junction)	1539H	53.4	53.4	42.6	46.8	
15	Bani Elementary School, Bani	1600H	75.0	75.2	57.6	69.8	noisy kids
16	Bani National High School, Bani	1605H	50.2	58.7	47.4	52.0	noisy kids
17	Brgy. Bani Multi-purpose Complex	1606H	53.8	60.9	52.3	59.1	tricycle
18	Plant Site (Coal Yard)	1429H	54.2	63.6	46.7	55.6	

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	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Third Quarter, 2010

AMBIENT NOISE MONITORING
NIGHT TIME
September 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2215H	57.9	62.1	48.9	55.2	
2	Purok Percaloha (Junction)	2212H	48.6	53.1	47.4	48.4	
3	Edillor's Residence (150m. From Gate	2308H	63.2	63.2	53.4	59.2	insects
4	EPDC Building	2306H	68.8	69.2	58.7	63.6	dog barking
5	C-Square (Benguet Loading Area)	2305H	44.1	52.3	42.6	45.1	
6	Resettlement Site	2302H	42.9	59.2	41.4	47.8	
7	Highway, waiting shed of Resettlement	2242H	71.8	72.2	63.6	66.9	cars
8	Puerto Asinan	2244H	68.8	75.3	66.3	71.0	tricycle
9	Sitio Atob, Purok Tanguile	2246H	53.1	56.5	43.5	48.6	
10	Masinloc Town Plaza	2252H	59.1	63.2	54.2	58.1	
11	Bani National High School, (Annex), Taltal	2227H	53.4	81.9	52.3	68.3	ringtone
12	Brgy. Lauis (Junction to Binabalian)	2234H	47.8	53.8	45.2	49.7	
13	Lauis Elementary School	2237H	51.9	51.9	43.7	47.4	
14	Purok Bangal-Duhok (Junction)	2221H	48.6	58.7	45.9	49.9	
15	Bani Elementary School, Bani	2220H	44.4	80.8	42.9	70.2	car
16	Bani National High School, Bani	2219H	49.7	58.3	49.4	48.2	
17	Brgy. Bani Multi-purpose Complex	2218H	46.3	58.3	43.7	48.5	
18	Plant Site (Coal Yard)	2210H	58.7	61.7	53.4	55.7	

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 quiet-ness (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) _____

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AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter, 2010

AMBIENT NOISE MONITORING
EVENING TIME
September 21, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2015H	53.4	73.3	51.6	61.0	tricycle
2	Purok Percaloha (Junction)	2012H	50.4	51.2	48.9	50.3	
3	Edillor's Residence (150m. From Gate	2017H	56.8	61.7	50.5	59.0	vehicle
4	EPDC Building	2018H	60.2	74.1	55.3	64.0	people talking
5	C-Square (Benguet Loading Area)	2019H	47.1	51.6	41.0	46.4	
6	Resettlement Site	2022H	53.8	69.2	51.2	59.4	people talking
7	Highway, waiting shed of Resettlement	2024H	59.1	59.1	55.7	57.6	vehicle
8	Puerto Asinan	2042H	55.3	72.9	52.7	65.2	vehicle
9	Sitio Atob, Purok Tanguile	2043H	59.4	66.6	57.9	61.5	tricycle
10	Masinloc Town Plaza	2049H	72.9	73.7	66.9	70.8	people talking
11	Bani National High School, (Annex), Taltal	2027H	55.7	57.9	55.3	56.5	
12	Brgy. Lauis (Junction to Binabalian)	2032H	61.7	73.7	54.2	63.3	motorcycle
13	Lauis Elementary School	2035H	57.2	59.4	43.7	52.4	dog barking
14	Purok Bangal-Duhok (Junction)	2107H	48.9	57.6	48.9	53.2	
15	Bani Elementary School, Bani	2108H	47.4	51.2	45.2	46.9	
16	Bani National High School, Bani	2109H	45.6	53.8	44.1	46.3	
17	Brgy. Bani Multi-purpose Complex	2110H	67.7	68.8	48.6	53.5	people talking
18	Plant Site (Coal Yard)	2010H	54.9	63.2	53.8	56.3	

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 Category	Evening Time Noise Level (1800H to 2200H)
Class AA-area which requires quiet-ness (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) _____

MPPCL Representative(s) _____

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Third Quarter 2010

OCCUPATIONAL NOISE MONITORING
September 22, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1643H	63.6	64.3	56.8	59.9	
2	Turbine Floor	1642H	88.7	89.1	87.9	88.3	
3	Laboratory Building	1620H	56.8	64.3	54.9	56.9	
4	Administration Building (Lobby)	1656H	56.8	57.9	54.6	55.6	
5	Coal Handling	1608H	62.8	64.3	56.3	61.0	
6	Ash Handling	1709H	71.8	80.4	69.6	71.8	
7	Machine Shop	1613H	74.1	74.8	73.5	73.6	
8	Water Treatment Control Room	1610H	65.2	65.4	64.3	64.7	
9	Boiler Feed Pump Unit #1	1639H	95.8	96.2	93.6	94.9	
10	Boiler Feed Pump Unit #2	1646H	91.3	94.3	90.2	92.8	
11	Circulating Water Pump Intake #1	1650H	93.9	96.2	88.7	92.0	
12	Circulating Water Pump Intake #2	1649H	91.3	93.2	87.9	91.1	
13	Smoke Stack (CEM Control Room)	1706H	63.6	68.4	59.1	62.8	
14	Generator Transformer Unit #1	1654H	75.9	78.9	75.6	77.0	
15	Generator Transformer Unit #2	1652H	75.6	75.6	74.1	74.8	
16	Guard House (Main Gate)	1625H	45.9	63.9	43.3	53.3	
17	230kV GIS (Switchyard)	1655H	69.2	79.7	67.7	71.9	
18	Coal Yard	1607H	47.8	56.1	44.4	48.4	

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) _____

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Third Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	9/21/10	9/21/10	9/21/10	9/21/10	9/21/10	9/21/10	-
Time of Sampling	1557H	1845H	2001H	1955H	1635H	1509H	-
pH	7.65	7.61	7.85	7.33	7.72	8.15	6.5 - 8.5
Conductivity, mSiemens / meter	0.102	1.440	0.319	0.327	0.669	1	-
Turbidity, NTU	1	0	0	0	1	1	5
Dissolved Oxygen, ppm	6.21	7.27	7.54	6.13	7.61	8.44	-
Temperature, °C	27.3	27.9	27.7	29.3	29.2	28.7	-
Salinity, %	0.000	0.004	0.001	0.001	0.002	0.004	-

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 Dstrict
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) _____

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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	9/21/2010	9/21/2010	9/21/2010	-
Time of Sampling	1030H	1120H	1020H	-
pH	8.08	8.02	7.50	6.5 - 8.5
Conductivity, mSiemens / cm.	0.535	6.46	38.5	-
Turbidity, NTU	3	7	7	-
Dissolved Oxygen, ppm	9.40	6.04	6.75	5 minimum
Temperature, °C	27.3	30.2	30.3	-
Salinity, %	0.001	0.024	0.255	-

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) _____

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GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
September 22, 2010

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O_2 ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1340H	7.03	1.020	2	1.12	27.0	0.04
MO-1: Bani Point (After Ash Disposal Area)	1009H	6.54	0.502	2	1.39	27.4	0.02
MO-2: Bani (NPC Nursery)	1105H	8.28	0.760	6	1.30	27.5	0.03
MO-3: Between Corafer And Duhok	1120H	7.20	0.797	1	0.55	27.9	0.00
MO-5: Bani (PNP Patrol Base)	1400H	6.99	0.910	1	1.31	28.0	0.04
MO-6: Bani	1036H	6.85	9.400	4	0.78	28.5	0.52
MOW-1: Bani (near Sedimentation Basin)	1106H	7.95	1.370	0	2.71	27.9	0.06
MOW-2: Bani (along embankment)	1146H	7.05	1.990	18	0.39	28.4	0.09
MOW-3: Bani (near warehouse)	1350H	6.78	1.460	25	0.66	28.30	0.06

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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) _____

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MARINE WATER MONITORING (IN-SITU ANALYSIS)
September 21, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1054H	8.08	55.5	14	6.37	30.7	3.68	
M2	1039H	8.05	55.4	1	5.36	32.2	3.69	
M3	1028H	8.02	55.5	5	5.60	31.4	3.68	
M4	1323H	8.09	54.7	2	6.44	31.2	3.64	
M5	1331H	8.11	54.9	2	7.30	31.1	3.64	
M6	1318H	8.08	54.8	2	6.70	31.2	3.64	
M7	1301H	8.10	54.4	3	7.34	31.2	3.61	
M8	1249H	7.90	24.5	5	5.78	30.7	1.51	
M9	1228H	8.10	55.3	4	5.72	31.4	3.67	
M10	1210H	7.99	55.4	1	5.81	31.6	3.67	
M11	1142H	8.10	55.0	7	6.13	30.7	3.64	
M12	1132H	8.12	55.6	13	5.53	31.0	3.68	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:
1. Monitoring Stations
M-1: Between Lauis 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. mS/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. °C - degrees celsius

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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	9/22/2010	9/21/2010	9/21/2010	9/22/2010	9/22/2010	-
Time of Sampling	1445H	1149H	1200H	1325H	1510H	-
pH	7.62	7.34	8.05	7.91	7.64	6.0 - 9.0
Conductivity, mSiemens/cm.	1.720	1.120	1.260	57.700	1.760	-
Turbidity, NTU	6	22	22	13	4	-
Dissolved Oxygen, ppm	6.91	5.72	6.03	6.85	3.31	-
Temperature, °C	33.5	32.3	30.3	38.0	29.9	-
Salinity, %	0.080	0.003	0.003	3.830	0.080	-

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) _____

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PENRO/Focal Person For Environment

MRS. MARY O. HULLANA
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Protected Area Management Board

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Environmental Manager -PCO

MR. JORGE A. AQUINO
Chemist

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Fourth Quarter, 2010

SO_2 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	1434H-1534H	12/06/10	1.00	31.0	762.8	0.0383	0.0590	0.65	DENR A. O. 14 s. 1993 340 ug/Ncm
	1536H-1636H	12/06/10	1.00	31.0	762.8	0.0719	0.0590	1.22	
Inhobol	1626H-1726H	12/07/10	1.00	29.0	762.8	0.0048	0.0594	0.08	
	1730H-1830H	12/07/10	1.00	29.0	762.8	0.0048	0.0594	0.08	
Candelaria	1400H-1500H	12/07/10	1.00	30.0	762.8	0.0000	0.0592	ND	
	1505H-1605H	12/07/10	1.00	31.0	762.8	0.0000	0.0590	ND	
Palauig	1510H-1610H	12/06/10	1.00	32.0	762.8	0.0000	0.0588	ND	
	1615H-1715H	12/06/10	1.00	32.0	762.8	0.0000	0.0588	ND	

FORMULA:

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

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

NOTE:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, 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) _____

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Multipartite Monitoring Committee
Fourth Quarter, 2010

NO_2 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	1434H-1534H	12/06/10	1.00	31.0	762.8	0.0155	0.0590	0.26	DENR A. O. 14 s. 1993 260 ug/Ncm
	1536H-1636H	12/06/10	1.00	31.0	762.8	0.0121	0.0590	0.20	
Inhobol	1626H-1726H	12/07/10	1.00	29.0	762.8	0.0257	0.0594	0.43	
	1730H-1830H	12/07/10	1.00	29.0	762.8	0.0290	0.0594	0.49	
Candelaria	1400H-1500H	12/07/10	1.00	30.0	762.8	0.0121	0.0592	0.20	
	1505H-1605H	12/07/10	1.00	31.0	762.8	0.0121	0.0590	0.20	
Palauig	1510H-1610H	12/06/10	1.00	32.0	762.8	0.0121	0.0588	0.21	
	1615H-1715H	12/06/10	1.00	32.0	762.8	0.0121	0.0588	0.21	

FORMULA:

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

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

Note:
1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, lit./min.
6. P - pressure, mmHg
7. T - temperature, °C

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Multipartite Monitoring Committee

Fourth Quarter, 2010

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	1434H-1534H	12/06/10	556.8	555.9	0.70	31.0	762.8	0.90	41.17	21.86	DENR A. O. 14 s. 1993 300ug/Ncm
	1536H-1636H	12/06/10	565.6	564.2	0.70	31.0	762.8	1.40	41.17	34.00	
Inhobol	1626H-1726H	12/07/10	568.3	567.5	0.60	29.0	762.8	0.80	35.52	22.52	
	1730H-1830H	12/07/10	567.7	566.9	0.60	29.0	762.8	0.80	35.52	22.52	
Candelaria	1400H-1500H	12/07/10	564.3	563.9	0.60	30.0	762.8	0.40	35.41	11.30	
	1505H-1605H	12/07/10	564.2	563.8	0.70	31.0	762.8	0.40	41.17	9.72	
Palauig	1510H-1610H	12/06/10	568.0	566.7	0.50	32.0	762.8	1.30	29.31	44.35	
	1615H-1715H	12/06/10	567.5	566.2	0.60	32.0	762.8	1.30	35.17	36.96	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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) _____

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Fourth Quarter, 2010
SO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2100H-2200H	12/06/10	1.00	24.00	762.8	0.0000	0.0604	ND	DOH 5000*ug/Ncm*
	2202H-2302H	12/06/10	1.00	24.00	762.8	0.2732	0.0604	4.5213	
Admin. Building	2105H-2205H	12/06/10	1.00	20.00	762.8	0.0048	0.0612	0.0784	
	2207H-2307H	12/06/10	1.00	20.00	762.8	0.1054	0.0612	1.7208	
WWT Control Room	0935H-1035H	12/06/10	1.00	20.00	762.8	0.3067	0.0612	5.0074	
	1037H-1137H	12/06/10	1.00	20.00	762.8	0.4073	0.0612	6.6498	
Coal Handling Control Room	0940H-1040H	12/06/10	1.00	24.50	762.8	0.1725	0.0603	2.8596	
	1043H-1143H	12/06/10	1.00	24.00	762.8	0.1390	0.0604	2.3004	
Chemical Laboratory	0925H-1025H	12/06/10	1.00	24.00	762.8	0.5080	0.0604	8.4071	
	1030H-1130H	12/06/10	1.00	24.00	762.8	0.4744	0.0604	7.8511	
Mechanical Shop	2102H-2202H	12/06/10	1.00	27.00	762.8	0.9105	0.0598	15.2205	
	2205H-2305H	12/06/10	1.00	28.00	762.8	0.9776	0.0596	16.3967	
Ash Handling Control Room	0942H-1042H	12/06/10	1.00	27.00	762.8	0.7093	0.0598	11.8571	
	1045H-1145H	12/06/10	1.00	28.00	762.8	0.8099	0.0596	13.5839	
Turbine Floor	2049H-2149H	12/06/10	1.00	36.00	762.8	0.9105	0.0581	15.6771	
	2154H-2254H	12/06/10	1.00	36.00	762.8	0.8099	0.0581	13.9450	

FORMULA:

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

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

Notes:
1. SO2 samples were analyzed using Colorimetric Method (Pararosaniline)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of SO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C

DENR Representative(s) _____

PAMB Representative(s) _____

PGU Representative(s) _____

MGU Representative(s) _____

BGU Representative(s) _____

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Multipartite Monitoring Committee

Fourth Quarter, 2010

NO_2 ANALYSIS

OCCUPATIONAL AIR QUALITY MONITORING RESULTS									
MONITORING STATION	TIME	DATE	Vi li./min	T °C	P mmHg	Wt ug	Vr Ncm	CONC'N ug/Ncm	STANDARD
Central Control Room	2100H-2200H	12/06/10	1.00	24.00	762.8	0.0392	0.0604	0.6487	
	2202H-2302H	12/06/10	1.00	24.00	762.8	0.0460	0.0604	0.7613	
Admin. Building	2105H-2205H	12/06/10	1.00	20.00	762.8	0.0290	0.0612	0.4735	
	2207H-2307H	12/06/10	1.00	20.00	762.8	0.0290	0.0612	0.4735	DOH
WWT Control Room	0935H-1035H	12/06/10	1.00	20.00	762.8	0.0121	0.0612	0.1976	6000*ug/Ncm*
	1037H-1137H	12/06/10	1.00	20.00	762.8	0.0087	0.0612	0.1420	
Coal Handling Control Room	0940H-1040H	12/06/10	1.00	24.50	762.8	0.0087	0.0603	0.1442	
	1043H-1143H	12/06/10	1.00	24.00	762.8	0.0222	0.0604	0.3674	
Chemical Laboratory	0925H-1025H	12/06/10	1.00	24.00	762.8	0.0290	0.0604	0.4799	DOLE
	1030H-1130H	12/06/10	1.00	24.00	762.8	0.0257	0.0604	0.4253	9000*ug/Ncm*
Mechanical Shop	2102H-2202H	12/06/10	1.00	27.00	762.8	0.0460	0.0598	0.7690	
	2205H-2305H	12/06/10	1.00	28.00	762.8	0.0426	0.0596	0.7145	
Ash Handling Control Room	0942H-1042H	12/06/10	1.00	27.00	762.8	0.1137	0.0598	1.9007	
	1045H-1145H	12/06/10	1.00	28.00	762.8	0.1104	0.0596	1.8517	
Turbine Floor	2049H-2149H	12/06/10	1.00	36.00	762.8	0.1036	0.0581	1.7838	
	2154H-2254H	12/06/10	1.00	36.00	762.8	0.0968	0.0581	1.6667	

FORMULA:

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

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

Notes:

1. NO2 samples were analyzed using Colorimetric Method (Griess Saltzmann)
2. ug/Ncm- microgram per normal cubic meter
3. Wt - weight of NO_2, ug.
4. Vr - volume at normal condition, Ncm
5. Vi - volumetric flow rate, m^3/min.
6. P - pressure, mmHg
7. T - temperature, °C
8. ND - non-detectable

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Multipartite Monitoring Committee
Fourth Quarter, 2010
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	2100H-2200H	12/06/10	566.9	566.7	0.60	24.00	762.8	0.20	36.25	5.52	
	2202H-2302H	12/06/10	552.0	551.8	0.70	24.00	762.8	0.20	42.30	4.73	
Admin. Building	2105H-2205H	12/06/10	565.3	564.0	0.60	20.00	762.8	1.30	36.75	35.37	DOH
	2207H-2307H	12/06/10	549.0	547.9	0.65	20.00	762.8	1.10	39.81	27.63	
WWT Control Room	0935H-1035H	12/06/10	551.5	551.0	0.70	20.00	762.8	0.50	42.87	11.66	2000*ug/Ncm*
	1037H-1137H	12/06/10	549.4	548.8	0.70	20.00	762.8	0.60	42.87	13.99	
Coal Handling Control Room	0940H-1040H	12/06/10	544.7	543.6	0.70	24.50	762.8	1.10	42.23	26.05	
	1043H-1143H	12/06/10	544.4	543.8	0.70	24.00	762.8	0.60	42.30	14.19	
Chemical Laboratory	0925H-1025H	12/06/10	538.6	537.1	0.70	24.00	762.8	1.50	42.30	35.46	DOLE
	1030H-1130H	12/06/10	539.8	538.2	0.70	24.00	762.8	1.60	42.30	37.83	
Mechanical Shop	2102H-2202H	12/06/10	570.6	569.8	0.57	27.00	762.8	0.80	33.89	23.60	1000*ug/Ncm*
	2205H-2305H	12/06/10	567.3	565.7	0.57	28.00	762.8	1.60	33.78	47.37	
Ash Handling Control Room	0942H-1042H	12/06/10	538.8	537.3	0.62	27.00	762.8	1.50	37.28	40.23	
	1045H-1145H	12/06/10	543.3	542.0	0.57	28.00	762.8	1.30	33.78	38.48	
Turbine Floor	2049H-2149H	12/06/10	575.8	574.9	0.80	36.00	762.8	0.90	46.46	19.37	
	2154H-2254H	12/06/10	549.1	548	0.80	36.00	762.8	1.10	46.46	23.67	

FORMULA:

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

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

$$Wt = Wfp - Wf$$

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, m^3/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.

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

AMBIENT NOISE MONITORING
MORNING TIME
December 9, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	0740H	66.7	68.1	60.5	64.0	tricycle passing by
2	Purok Percaloha (Junction)	0738H	46.3	59.1	42.2	52.5	
3	Edillor's Residence (150m. From Gate	0848H	53.2	56.2	48.3	50.9	
4	EPDC Building	0847H	53.2	53.9	50.6	51.6	
5	C-Square (Benguet Loading Area)	0846H	58.8	58.8	47.2	53.6	
6	Resettlement Site	0842H	59.9	61.8	59.6	60.1	
7	Highway, waiting shed of Resettlement	0809H	67.5	69.1	63.3	65.1	dog barking
8	Puerto Asinan	0812H	52.1	57.3	48.3	54.0	
9	Sitio Atob, Purok Tanguile	0814H	55.8	63.7	55.1	58.4	
10	Masinloc Town Plaza	0820H	76.1	77.9	73.4	75.8	tricycle passing by
11	Bani National High School, (Annex), Taltal	0756H	60.7	64.4	59.2	62.6	tricycle passing by
12	Brgy. Lauis (Junction to Binabalian)	0801H	58.1	58.1	54.3	56.5	
13	Lauis Elementary School	0804H	61.7	78.9	61.3	67.0	van passing by
14	Purok Bangal-Duhok (Junction)	0751H	70.3	75.3	64.4	70.1	tricycle passing by
15	Bani Elementary School, Bani	0748H	61.1	66.3	59.6	63.4	tricycle passing by
16	Bani National High School, Bani	0744H	57.6	61.3	53.8	57.2	
17	Brgy. Bani Multi-purpose Complex	0743H	66.2	69.2	65.1	66.3	people talking
18	Plant Site (Coal Yard)	0735H	47.8	50.8	40.7	45.2	

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	Morning Time Noise Level (0600H to 0900H)
Class AA-area which requires quiet-ness (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)

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

AMBIENT NOISE MONITORING
DAYTIME
December 8, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1521H	58.3	61.3	53.8	58.6	
2	Purok Percaloha (Junction)	1517H	66.9	70.3	64.7	67.5	tricycle passing by
3	Edillor's Residence (150m. From Gate	1631H	65.1	74.8	64.5	71.7	tricycle passing by
4	EPDC Building	1629H	54.6	55.3	50.3	52.8	
5	C-Square (Benguet Loading Area)	1628H	51.6	56.1	40.7	49.2	
6	Resettlement Site	1626H	51.6	55.7	50.8	53.5	
7	Highway, waiting shed of Resettlement	1603H	68.8	79.1	67.7	72.5	tricycle passing by
8	Puerto Asinan	1606H	56.4	66.2	51.6	57.8	
9	Sitio Atob, Purok Tanguile	1607H	60.6	62.4	58.7	60.3	
10	Masinloc Town Plaza	1614H	69.6	69.6	68.1	68.7	
11	Bani National High School, (Annex), Taltal	1535H	62.1	63.9	55.3	59.3	
12	Brgy. Lauis (Junction to Binabalian)	1555H	54.9	59.4	53.8	56.0	
13	Lauis Elementary School	1558H	62.4	64.7	62.1	62.7	
14	Purok Bangal-Duhok (Junction)	1529H	58.3	58.3	48.6	62.9	
15	Bani Elementary School, Bani	1528H	52.7	67.3	49.6	57.6	
16	Bani National High School, Bani	1521H	52.3	53.1	47.8	50.0	
17	Brgy. Bani Multi-purpose Complex	1523H	55.7	55.7	52.7	53.6	
18	Plant Site (Coal Yard)	1516H	54.9	58.7	54.2	56.0	

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	Daytime Noise Level (0900H to 1800H)
Class AA-area which requires quiet-ness (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

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

AMBIENT NOISE MONITORING
NIGHT TIME
December 8, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	1039H	57.4	75.9	47.8	61.6	car passing by
2	Purok Percaloha (Junction)	1035H	49.3	49.3	44.8	47.0	
3	Edillor's Residence (150m. From Gate	1139H	54.8	55.7	49.3	58.2	
4	EPDC Building	1137H	68.1	76.7	66.6	68.4	insects chirping
5	C-Square (Benguet Loading Area)	1136H	55.3	59.8	54.2	58.0	insects chirping
6	Resettlement Site	1132H	46.3	52.7	39.9	44.7	insects chirping
7	Highway, waiting shed of Resettlement	1109H	52.3	55.3	42.9	44.3	
8	Puerto Asinan	1113H	59.8	60.9	42.6	52.1	dog barking
9	Sitio Atob, Purok Tanguile	1114H	59.8	60.6	45.9	51.3	car passing by
10	Masinloc Town Plaza	1120H	52.3	63.2	49.3	55.7	people talking
11	Bani National High School, (Annex), Taltal	1057H	52.1	53.4	45.6	47.5	tricycle passing by
12	Brgy. Lauis (Junction to Binabalian)	1107H	54.6	54.6	44.4	47.1	
13	Lauis Elementary School	1103H	54.6	54.2	40.7	44.7	
14	Purok Bangal-Duhok (Junction)	1045H	49.7	74.4	44.1	63.8	people talking
15	Bani Elementary School, Bani	1044H	44.8	54.9	42.2	46.8	
16	Bani National High School, Bani	1043H	51.9	77.8	47.4	64.4	people talking
17	Brgy. Bani Multi-purpose Complex	1042H	48.9	74.8	44.8	63.0	people talking
18	Plant Site (Coal Yard)	1033H	48.9	68.1	45.6	56.0	

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 quiet-ness (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

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

AMBIENT NOISE MONITORING
EVENING TIME
December 7, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBA				REMARKS
			SPL	Max.	Min.	LEQ	
1	Purok Little Baguio (Junction)	2045H	58.7	70.9	54.2	60.3	people talking
2	Purok Percaloha (Junction)	2043H	52.8	53.2	50.9	52.1	
3	Edillor's Residence (150m. From Gate	2153H	50.4	55.3	46.7	50.1	
4	EPDC Building	2150H	49.7	51.9	46.3	48.8	
5	C-Square (Benguet Loading Area)	2147H	68.4	75.6	47.8	67.0	insects chirping
6	Resettlement Site	2146H	49.3	55.7	43.3	48.2	
7	Highway, waiting shed of Resettlement	2116H	72.6	77.8	69.9	74.0	vehicles passing by
8	Puerto Asinan	2120H	62.8	73.3	60.9	67.4	motorcycle passing by
9	Sitio Atob, Purok Tanguile	2122H	64.7	65.1	50.4	58.8	motorcycle passing by
10	Masinloc Town Plaza	2129H	62.8	62.8	58.3	59.9	tricycle passing by
11	Bani National High School, (Annex), Taltal	2059H	60.6	71.8	54.6	64.0	motorcycle passing by
12	Brgy. Lauis (Junction to Binabalian)	2105H	61.7	78.9	41.3	70.1	tricycle passing by
13	Lauis Elementary School	2108H	69.9	75.2	65.4	71.4	tricycle passing by
14	Purok Bangal-Duhok (Junction)	2052H	54.6	74.1	47.1	68.8	dog barking
15	Bani Elementary School, Bani	2051H	68.4	71.4	53.1	62.0	tricycle passing by
16	Bani National High School, Bani	2049H	51.2	52.7	50.1	51.1	tricycle passing by
17	Brgy. Bani Multi-purpose Complex	2048H	77.8	77.8	60.6	70.5	tricycle passing by
18	Plant Site (Coal Yard)	2040H	59.2	59.8	55.7	56.9	

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 quiet-ness (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

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter 2010

OCCUPATIONAL NOISE MONITORING
December 8, 2010

NO.	MONITORING STATION	TIME	NOISE LEVEL, dBa				REMARKS
			SPL	Max.	Min.	LEQ	
1	Central Control Room	1731H	62.1	62.1	54.2	58.4	
2	Turbine Floor	1730H	84.6	85.3	84.2	84.7	
3	Laboratory Building	1746H	62.4	78.9	61.7	64.7	
4	Administration Building (Lobby)	1743H	52.3	80.1	50.4	62.8	
5	Coal Handling	1712H	56.8	78.9	52.7	65.8	
6	Ash Handling	1722H	69.2	72.2	68.1	69.1	
7	Machine Shop	1745H	64.7	68.1	61.7	63.6	
8	Water Treatment Control Room	1716H	64.3	65.8	63.9	64.5	
9	Boiler Feed Pump Unit #1	1727H	83.8	90.2	83.4	85.2	
10	Boiler Feed Pump Unit #2	1725H	95.8	96.6	93.2	94.9	
11	Circulating Water Pump Intake #1	1737H	76.3	76.3	71.8	73.2	
12	Circulating Water Pump Intake #2	1738H	95.8	95.8	89.8	93.1	
13	Smoke Stack (CEM Control Room)	1720H	57.2	74.8	55.3	59.5	
14	Generator Transformer Unit #1	1740H	75.9	76.3	74.8	75.5	
15	Generator Transformer Unit #2	1739H	75.2	75.2	74.1	74.8	
16	Guard House (Main Gate)	1700H	63.6	63.6	60.1	61.8	
17	230kV GIS (Switchyard)	1741H	68.4	86.4	65.8	69.0	
18	Coal Yard	1709H	51.6	79.3	45.2	65.2	

Occupational Standards

Duration/day (Hours)	SOUND LEVEL, dBA	
	DOH	DOLE
	Threshold Limit Values	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

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Multipartite Monitoring Committee
Fourth Quarter, 2010

DOMESTIC WATER QUALITY MONITORING (IN-SITU ANALYSIS)

Monitoring Stations	MWD	RES	LAB	GH	CWD	PWD	DOH AO NO. 26As. PNSDW 2007
Date of Sampling	12/9/10	12/6/10	12/6/10	12/6/10	12/9/10	12/6/10	-
Time of Sampling	1130H	1645H	2020H	2011H	1205H	1609H	-
pH	7.71	7.06	7.70	7.70	7.60	7.50	6.5 - 8.5
Conductivity, mSiemens / meter	0.167	1.230	0.257	0.252	0.538	2	-
Turbidity, NTU	5	5	1	1	4	1	5
Dissolved Oxygen, ppm	6.37	3.86	4.50	5.31	1.48	5.21	-
Temperature, °C	25.5	26.1	29.3	27.5	30.3	26.2	-
Salinity, %	0.00	0.05	0.00	0.00	0.02	0.07	-

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 Dstrict
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) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

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	12/7/2010	12/7/2010	12/7/2010	-
Time of Sampling	1030H	1110H	1000H	-
pH	8.46	8.34	7.57	6.5 - 8.5
Conductivity, mSiemens / cm.	0.268	10.60	17.10	-
Turbidity, NTU	2.5	3.0	4.4	-
Dissolved Oxygen, ppm	7.42	5.07	7.54	5 minimum
Temperature, °C	26.13	29.5	27.7	-
Salinity, %	0.02	0.05	0.08	-

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

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PAMB Representative (s) _____

PGU Representative (s) _____

MGU Representative (s) _____

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MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

GROUNDWATER QUALITY MONITORING (IN-SITU ANALYSIS)
December 8, 2010

Monitoring Stations	Sampling Time	pH	Cond. mSiemens/cm.	Turbidity NTU	Dissolved O_2 ppm	Temp. °C	Salinity %
MD-1: Near Main Gate, Right	1209H	7.08	1.020	4	0.95	27.60	0.04
MO-1: Bani Point (After Ash Disposal Area)	1042H	6.34	0.532	8	1.13	26.80	0.02
MO-2: Bani (NPC Nursery)	1123H	8.11	0.746	0	1.02	27.50	0.03
MO-3: Between Corafer And Duhok	1423H	7.56	0.354	17	0.34	27.80	0.01
MO-5: Bani (PNP Patrol Base)	1224H	6.75	1.180	0	0.58	28.00	0.05
MO-6: Bani	1053H	6.81	6.700	7	1.04	28.50	0.35
MOW-1: Bani (near Sedimentation Basin)	1117H	7.80	1.870	2	1.53	27.60	0.08
MOW-2: Bani (along embankment)	1140H	7.10	1.380	12	0.33	28.10	0.06
MOW-3: Bani (near warehouse)	1204H	6.59	1.570	10	1.63	28.20	0.07

NOTES:

1. No DENR limits for groundwater
2. mSiemens/cm - milliSiemens per centimeter
3. NTU - Nephelometric Turbidity Unit
4. O_2 - 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)

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Multipartite Monitoring Committee
Fourth Quarter, 2010

MARINE WATER MONITORING (IN-SITU ANALYSIS)
December 7, 2010

STATIONS	Sampling Time	pH	Cond. mS/cm	Turbidity NTU	D.O. ppm	Temp. °C	Salinity %	Remarks
M1	1405H	7.92	56.70	1	5.65	30.1	3.77	
M2	1345H	7.09	58.90	1	6.05	31.7	3.93	
M3	1340H	7.20	58.70	6	5.60	31.0	3.91	
M4	1653H	7.95	58.40	2	6.56	30.1	3.89	
M5	1703H	7.92	58.40	2	5.96	29.6	3.89	
M6	1640H	7.92	58.30	5	6.20	30.4	3.89	
M7	1629H	7.94	58.30	3	7.24	30.1	3.89	
M8	1614H	7.83	57.50	5	6.79	30.1	2.39	
M9	1543H	7.93	58.60	1	6.21	30.4	3.91	
M10	1530H	7.90	58.60	3	6.31	30.6	3.91	
M11	1450H	7.99	58.80	1	5.84	30.2	3.92	
M12	1510H	7.94	58.60	1	6.25	30.0	3.91	
DENR AO#34, s.1990(Class SC)		6.0-8.5	-	-	5 min.	-	-	

NOTES:
1. Monitoring Stations
M-1: Between Lauis 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. 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) _____

MPPCL Representative (s) _____

AES
MASINLOC POWER PARTNERS COMPANY LIMITED
Multipartite Monitoring Committee
Fourth Quarter, 2010

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	12/8/2010	12/82010	12/7/2010	12/8/2010	12/8/2010	-
Time of Sampling	1030H	1455H	1130H	1237H	1500H	-
pH	7.01	8.41	8.09	7.79	7.74	6.0 - 9.0
Conductivity, mSiemens/cm.	10.20	1.27	1.75	58.90	1.58	-
Turbidity, NTU	1.0	20.0	10.0	12.0	7.0	-
Dissolved Oxygen, ppm	6.81	9.71	5.10	6.50	4.88	-
Temperature, °C	31.2	31.4	28.2	36.9	28.6	-
Salinity, %	0.57	0.05	0.01	3.91	0.07	-

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
9. * - No discharge during the monitoring (Sample was taken inside the basin)

DENR Representative(s)

PAMB Representative (s)

PGU Representative (s)

MGU Representative (s)

BGU Representative (s)

MPPCL Representative (s)

Masinloc Power Partners Company Limited

ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

As of December 2010

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 METEROLOGY 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 ^{o}C Min. Temp. = 12.2 ^{o}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 or 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.	2.3.1 MCFTPP will utilize a screw type coal unloader to eliminate dust dispersion during coal unloading. 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. 2.3.3 Water sprayers will be installed at coal stockyard. 2.3.4 The height of fall of coal from stacker shall be made as low as possible during stacking. 2.3.5 Reclaimers/stackers shall be operated only at wind speed lower than 5 mps. 2.3.6 Planting of trees around MCFTPP to serve as wind breakers.	Installed and operational. Installed and operational. Installed and operational. Being implemented. Being implemented. To date 55,436 trees have been planted.
2.4 Spontaneous combustion may occur at the coal stockyard emitting smoke and smoldering smell.	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. 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. 2.4.3 Regular re-piling and water sprinkling of coal file shall be undertaken to prevent spontaneous combustion.	Being implemented. Being implemented. Being implemented.

IMPACTS	MITIGATING MEASURES	STATUS
	2.4.4 Coal pile portion where spontaneous combustion occurs shall be compacted by bulldozer.	Being implemented.
2.5 MCFTPP will emit SO2, NO and air particulates in the environment.	2.5.1 MCFTPP will utilize 100% imported coal with low sulfur and ash content to reduce SO2, NO2 and air particulate emission.	Being implemented.
Emission levels of SO2, NOx and air particulates are within DENR standard.	2.5.2 MCFTPP will utilize a stack of 150 m high for maximum dispersion of SO2, NO2 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 Nox releases by 25-30%, or to less than 400 ppm at the boiler outlet.	
	2.5.5 Regular monitoring of ambient SO2, NO2 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 Candelaria.
2.6 Dust may be dispersed during ash transport, unloading and at the ash disposal area.	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.	2.7.1 Use of low noise equipment installation of soundproof washes and doors; indoor installation of fans, pumps, compressor and motors.	Being implemented.
	2.7.2 Operation of coal stockyard and ash disposal area shall be done only during daytime.	Regular ambient & occupational noise level monitoring is conducted regularly; data shows compliance to DOH & DOLE requirements.
	2.7.3 Regular monitoring of noise levels in population centers near MCFTPP during plant operation.	Multipartite monitoring is conducted quarterly.
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.	3.1.1 Revetment around the reclaimed area shall be constructed prior to start of reclamation.	Implemented
	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.	Revetment and embankment already constructed. Stabilization of slopes by sodding/planting completed. Revegetation is a continuing activity.
3.2 Possible contamination of Oyon Bay and groundwater due to the operation of ash disposal system.	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.	Monitoring of plant effluent is regularly conducted.
	3.2.2 The ash disposal area will be provided with sedimentation basin and embankment.	Completed
	3.2.3 The NW embankment of ash disposal area shall be lined with empervious material such as clay to avoid groundwater contamination.	Completed.
	3.2.4 Five (5) deep walls shall be constructed at the northern portion of ash disposal area for the monitoring of groundwater quality.	Implemented.

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 0.06 mg/l shall be adopted to ensure a residual chlorine concentration of 0.02 to 0.05 mg/l. at the outfall is expected.	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 TERRESTIAL 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.	Implemented
4.2 The emission of SO2, NO2 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.	Completed

IMPACTS	MITIGATING MEASURES	STATUS
5.0 AQUATIC ECOLOGY 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.	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. 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.	Completed 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.
5.2 The discharge of treated effluent may cause ecological effects to the aquatic system at Oyon Bay.	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.	Completed.
	5.2.2 Biological studies at the discharge area will be undertaken during MCFTPP operation to determine possible effects of thermal effluent chlorination.	Permanent coral quadrat deployed near the discharge area. Biological monitoring is a continuing activity by the MM group.
5.3 The chlorination of cooling water may cause ecological effects to the aquatic system at Oyon Bay	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.	Being implemented.
5.4 The cooling water system will cause entrainment and impingement of marine organisms.	5.4.1 Velocity cap at the intake structure of the cooling water system will be installed to reduce entrapment of fishes. 5.4.2 Entrapment of fishes at the intake structure will be monitored during MCFTPP Operation.	Implemented.
5.5 The operation of ash disposal system may cause ecological effects to the aquatic system at Oyon Bay.	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.	Operational.

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 estruarine 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.	Completed Completed
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.	Completed
6.3 The influx of migrant construction workers will induce the proliferation of service establishments (food eateries, 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 MCFTPP to be spearheaded by NAPOCOR's Community Relations Department will be created to formulate and implement public information activities during plant operation.	Implemented The Community Relations Officer regularly coordinates with host communities re: community-related programs thru its Corporate Social Responsibility Program

IMPACTS	MITIGATING MEASURES	STATUS
6.6 The operation of MCFTPP will mean an additional 600 MW to the Luzon grid.		MPPCL 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	Implemented.
peace and order, sanitary condition of temporary camps and others.	practices. 7.1.2 Conduct of health and safety seminar to all construction personnel. 7.1.3 Provision for a construction camp at the site with safe drinking water supply, adequate sewage facilities and solid waste disposal facilities. 7.1.4 Provision for medical staff at site during construction to conduct routine physical examination and to attend to medical emergencies. 7.1.5 Provision for adequate security staff to ensure peace and order in the camp during construction.	 Implemented. Implemented. Implemented. Implemented.
7.2 Plant personnel and the general public near MCFTPP will be exposed to dust, noise, SO2, NO2 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 or SO2, NO2, dust and noise to levels within DENR ambient standards. 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. 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 MCFTPP.	Continuing.
	7.2.7 Implementation of Industrial Health and Occupational Safety Audit Program at MCFTPP 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 10

INCIDENT RECORDS	2010												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
AES													
First Aid	1	1	0	0	0	1	0	0	0	0	0	0	**3**
Recordables	0	0	0	0	0	0	0	0	1	0	0	0	**1**
LTA	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Contractors													
First Aid	8	2	1	0	0	2	0	1	0	0	0	0	**14**
Recordables	0	1	0	0	0	0	0	0	0	0	0	0	**1**
LTA	0	0	0	0	0	0	0	0	0	0	0	0	**0**

NEAR MISSES Per Category A/B

			2010										
Particulars	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**
Total	111	261	382	60	77	329	65	79	75	77	64	68	83
Cat - A	95	247	368	42	46	204	43	52	51	67	51	55	69
Cat - B	16	14	14	18	31	125	22	27	24	10	13	13	14
Cat A - Closed	52	227	366	10	22	63	21	24	19	26	24	24	25
Cat B - Closed	13	14	14	6	21	71	14	26	19	10	9	10	10
% Closed Cat A	55%	92%	99%	24%	48%	31%	49%	46%	37%	39%	47%	44%	36%
% Closed Cat B	81%	100%	100%	33%	68%	57%	64%	96%	79%	100%	69%	77%	71%
% Overall Closed	59%	92%	99%	27%	56%	41%	54%	63%	51%	47%	52%	50%	42%
Walkdown	40	37	48	29	32	34	33	40	41	36	39	39	36