

EXECUTIVE SUMMARY

Environmental Management Plan

The Impact Assessment and Environmental Management Plan outline the various goals and objectives of environmental management and in planning activities to assure environmental protection. The development of policies, plans, guidelines, provision of training, monitoring systems, clear targets, the conduct of audits and external liaison activities are included in this plan. This plan also includes the identification of specific measures, which are identified in relation to the various activities. The action plan is not necessarily complete since problems may arise as operations go through the years, but they are set out as being the currently considered best practices. The progress of the implementation of this plan will be monitored to ensure environmental protection.

The key to an effective EMP is the establishment of proper management system and institutional mechanism, which will ensure the implementation of the measures and oversee the monitoring of parameters relevant to the EMP.

Recapitulating Sec. 2.4.8 of the IEER, Entity to be accountable for environmental management in the area: Sta. Clara Power Corporation through its Pollution Control Officer (PCO) will be doing mitigating measures to ensure the proper management of the resources found in the project area. The management is responsible for accomplishing the commitments in the EMP and EMoP.

Summary of Baseline Characterization Key Environmental Impacts and Management & Monitoring Plan and EMF & EGF Commitments

The Environmental Management Plan outlines the various goals and objectives of environmental management and in planning activities to assure environmental protection. The development of policies, plans, guidelines, provision of training, monitoring systems, clear targets, the conduct of audits and external liaison activities are included in this plan. This plan also includes the identification of specific measures, which are identified in relation to the various activities. The action plan is not necessarily complete since problems may arise as operations go through the years, but they are set out as being the currently considered best practices. The progress of the implementation of this plan will be monitored to ensure environmental protection.

The key to an effective EMP is the establishment of proper management system and institutional mechanism, which will ensure the implementation of the measures and conduct of timely monitoring activities.

Table 1. Key environmental impacts

Key Project Activities per Phase	Environmental Components and Significant Impacts	Main Mitigating Measures
Operation Phase		
Solid Waste Generation	Land – Contamination of area	Garbage segregation scheme and proper disposal of wastes
Hazardous Waste Generation	Land – Contamination of surface	Proper storage and disposal to be implemented
Domestic Wastewater Generation	Water – Contamination of soil, and surface water	Wastewater will be courseed through septic tanks installed within the facility prior to disposal to the wastewater treatment facility
Abandonment Phase		
Solid Waste Generation	Land – Volume of solid waste generated	Provide a system of segregating, recycling and labeling the unusable materials from proper disposal

The Environmental Monitoring Plan outlines the monitoring activities to ensure guidance of the tasks that will prevent the occurrences of possible dilemmas of each phases of the project.

Table 2. Key management & monitoring Plan

Key Environmental Aspects per Project Phase	Impacts per Environmental Sector	Parameters to be Monitored	Estimated Cost
Construction Phase			
Land	Solid waste generation during construction stage	Volume of solid waste generated	Part of the project cost
Land	Generation of hazardous wastes	Volume of hazardous wastes generated	Part of the project cost
Water	Wastewater generation	BOD, COD, TSS	Part of the project cost
Operation Phase			
Land	Solid waste generation	Volume of solid wastes generated	Part of the project cost
Water	Sludge from septic tank	Volume of sludge	PhP 10,000
Land	Generation of hazardous wastes	Volume of hazardous wastes generated	PhP 50,000
Abandonment Phase			
Land	Solid waste generation	Garbage	PhP 10,000

BASIC PROJECT INFORMATION

PROJECT NAME : **Lower Caturiran Mini Hydropower Plant**

PROJECT LOCATION : **Naujan, Oriental Mindoro**

PROponent NAME : **Sta. Clara Power Corporation**

PROponent ADDRESS : **Highway 54 Plaza, EDSA, Mandaluyong City**

CONTACT PERSON : **Cesar M. Soriano**

CONTACT NUMBER :

 Telephone Number : **(02) 451-2809**

 Mobile Number : **0919-823-8901**

E-MAIL ADDRESS : **cms26012004@yahoo.com**

CONSULTANT : **Environmental Counselors, Inc.**

CEO / CHAIRMAN : **Antonio S. Tria**

CONSULTANT'S ADDRESS : **Unit E, 9th Floor, Strata 100, F. Ortigas Jr. Ave., Ortigas Center, Pasig City**

CONTACT NUMBERS :

 Telephone Number : **(02) 637-6626 to 27**

 Mobile Number : **0917-586-9424**

E-MAIL ADDRESS : **eci_services@yahoo.com**

Sta. Clara Power Corporation (SCPC) plans to construct an 8MW Mini Hydro Power Plant (Run-of-River System) along Caturiran River in Naujan, Oriental Mindoro. The power plant has been issued with a Certificate of Non-Coverage (CNC) with reference number CNC-4B-043-4110-ORMIN-2007 dated April 23, 2007 and upgraded to ECC No. **R4B 1301 – 0007 issued March 7, 2013.**

INSTITUTIONAL PLAN FOR EMP IMPLEMENTATION

- A governing body will be responsible for supervising the conduct of the various monitoring to be performed in the project area and surrounding vicinities
- As part of the institutional plan, the proponent shall assure that all the equipment's are always in good condition and operating properly to maintain existing condition of the working environment.
- Proper maintenance of the equipment to avoid unnecessary accidents that may lead to the loss of lives and properties will be strictly implemented.
- Proper use of safety gadgets and protective measures to insure the safety of the workers will also be implemented.
- There will be program or guidelines that will be adopted to prevent uncontrolled emissions that may cause air pollution in the immediate vicinity.
- The designated Pollution Control Officer is in charge of the implementation of the environmental management and monitoring programs.
- It is also the responsibility of the Proponent to participate in any forum or meeting in the Barangay or locality for the implementation of rules and regulations regarding the preservation of ecology and do its share to promote goodwill among local residents.

ENVIRONMENTAL MANAGEMENT PLAN

Summary Matrix of Proposed Mitigation and Enhancement Measures, Estimated Cost and Responsibilities

ASPECT / ACTIVITY	IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURE	COST OF MITIGATION OR ENHANCEMENT	INSTITUTIONAL PLAN	SCHEDULE	GUARANTEES
CONSTRUCTION PHASE						
Earth Moving and site preparation	Increase in dust generation due to clearing, civil works and earthmoving activities	<ul style="list-style-type: none"> Regular watering of unpaved roads or exposed soils / ground Set-up temporary fence around the construction area 	PhP150,000 (regular watering to prevent dust)	Strict compliance of the ECC and included in the monitoring plan of the company	During construction period	<ul style="list-style-type: none"> Cost is part of the project and part of the contractors agreement
	Erosion from exposed cuts and landslides due to earthmoving and excavation activities	<ul style="list-style-type: none"> Conduct construction activities during dry season Reduce exposure of opened cut 		Strict compliance of the ECC and included in the monitoring plan of the company	During construction period	<ul style="list-style-type: none"> Cost is part of the project and part of the contractors agreement
Enhancement Programs		<ul style="list-style-type: none"> Establishing Green Buffer Zone in Plant Area Co-manage the protection and development of the watershed with the ICCs/IPs Planting of appropriate tree species of equivalent area environmentally affected by the project. In coordination with PENRO/CENRO 	Php 150,000 (Other Environment Programs in other SDP or MOAs such as NCIP MOA applies)	ECC/EMP NCIP MOA	During construction and Operation Period	<ul style="list-style-type: none"> Stipulations Memorandum of Agreements (NCIP MOA) ECC Conditions

Environmental Management Plan

Environmental Management Plan (EMP)
L. Catuiran Hydroelectric Power Plant Project

ASPECT / ACTIVITY	IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURE	COST OF MITIGATION OR ENHANCEMENT	INSTITUTIONAL PLAN	SCHEDULE	GUARANTEES
Solid Waste Generation	Sedimentation/siltation of drainage or waterways from unconfined stockpiles of soil and other materials	<ul style="list-style-type: none"> Set-up temporary silt trap/ponds to prevent siltation Proper stockpiling of spoils (on flat areas & away from drains) Spoils generated shall be used as back-filling materials 		Strict compliance of the ECC and included in the monitoring plan of the company	During construction period	<ul style="list-style-type: none"> Cost is part of the project and part of the contractors agreement
Wastewater generation	Pollution of nearby water body due to disposal of construction wastes (domestic wastes included)	<ul style="list-style-type: none"> Set-up temporary disposal areas within the construction area & properly dispose the solid wastes. Set up adequate temporary toilet facilities Strictly require the contractor & its workers to observe proper waste disposal and sanitation 	PhP50,000 (for septic tanks installation)	Strict compliance of the ECC and included in the monitoring plan of the company	During construction period	<ul style="list-style-type: none"> Cost is part of the project and part of the contractors agreement
Noise Generation	Noise pollution caused by vibration of machines and other equipments	<ul style="list-style-type: none"> Provide noise control measures such as insulator, muffler and silencer Conduct construction during daytime 	PhP100,000 (for noise control services)	Strict compliance of the ECC and included in the monitoring plan of the company	During construction period	<ul style="list-style-type: none"> Cost is part of the project and part of the contractors agreement
Hiring of workers	Generation of employment Increase in the incidence of accidents	<ul style="list-style-type: none"> Hiring priority shall be given to qualified local residents Strictly require the contractor and its workers to follow safety rules and regulations during construction Provision of safety gears for construction workers 	Included in the project cost PhP500,000	Strict compliance of the ECC and included in the monitoring plan of the company	During construction period	<ul style="list-style-type: none"> Cost is part of the project and part of the contractors agreement

Environmental Management Plan

Environmental Management Plan (EMP)
L. Caluiran Hydroelectric Power Plant Project

ASPECT / ACTIVITY	IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURE	COST OF MITIGATION OR ENHANCEMENT	INSTITUTIONAL PLAN	SCHEDULE	GUARANTEES
OPERATION'S PHASE						
a) Solid Waste Generation	Contamination and Reduction of aesthetic in the Area	<ul style="list-style-type: none"> Initiate a waste segregation program for biodegradable and non biodegradable before the disposal of solid wastes to solid waste storage area Coordinate with private / local garbage collector for proper disposal Proper disposal to be implemented through hazardous waste treater accredited by EMB. 	PhP100,000 (provision of solid waste storage area)	Strict compliance of all measures and the ECC	Daily or on the spot segregation with the use of individual waste bags for each type of waste	<ul style="list-style-type: none"> Include task in the scope of works of the PCO. Included in the operations plan of the company
b) Generation of Hazardous Waste	Contamination of Surface/ Ground water	Proper disposal to be implemented through hazardous waste treater accredited by EMB.	PhP200,000 (for handling of hazardous waste and temporary storage area)	PCO will monitor	Monthly	<ul style="list-style-type: none"> Included in the operations plan and part of the project cost
e) Domestic Wastewater Generation	Contamination of soil, and surface water from domestic use	Wastewater from the domestic use will be coursed through septic tanks installed within the facility	Part of the project cost	Strict compliance of all measures and the ECC	During Operations Phase	Included in the operations plan and part of the project cost.
d) Hiring of workers for the operations and maintenance of the facility	Increase employment & business opportunities for residents of nearby areas	Preference will be given to local residence		Management		Included in the operations plan and part of the project cost
	Social and Cultural problems with the workers due to the difference in their backgrounds	Management shall aide these workers to prevent untoward incidents due to individual differences that may arise between workers of the facility	Part of the cost of the project	To be initiated by the company and strict compliance with the ECC	During operation phase	<ul style="list-style-type: none"> Included in the operations plan and part of the project cost

ASPECT / ACTIVITY	IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURE	COST OF MITIGATION OR ENHANCEMENT	INSTITUTIONAL PLAN	SCHEDULE	GUARANTEES
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Environmental Management Plan

	Part of the project cost	Management	During operation phase	Included in the operations plan and part of the project cost
e) Safety measures during the Operations and Maintenance of the facility and equipment	<ul style="list-style-type: none"> Occupational risk to workers 	Strict compliance of all measures and the ECC	During operations phase	Included in the operations plan and part of the project cost
	<ul style="list-style-type: none"> Provision of exit ways, fire doors, duct systems, protective and warning systems Enforce of safety measures for workers: wearing of protective mask Management will carefully plan the facility as well as its rehabilitation Provisions of protective and warning systems, fire fighting equipment and detection system 			
f) Maintenance of Installed machines/equipments	<ul style="list-style-type: none"> Improper maintenance of the whole facility & equipment such as power generator, computers and others that may result to stoppage of operations or possible injury to persons Possible accidents due to natural hazards 	Strict compliance of all measures and the ECC	During operations phase	Included in the operations plan and part of the project cost
	<ul style="list-style-type: none"> Indoor/outdoor pollution in the process and the adjacent community Vibration caused by machine operation Improper maintenance of the whole facility and equipment that may result possible injury to person case possible accidents due to natural hazards 			

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Environmental Management Plan (EMP)
L. Catuiran Hydroelectric Power Plant Project

ASPECT / ACTIVITY	IMPACT DESCRIPTION	MITIGATION/ ENHANCEMENT MEASURE	COST OF MITIGATION OR ENHANCEMENT	INSTITUTIONAL PLAN	SCHEDULE	GUARANTEES
ABANDONMENT PHASE						
a) Solid Waste Generation due to clearing of building sites	<ul style="list-style-type: none"> Solid waste generation that may reduce aesthetics of the area 	<ul style="list-style-type: none"> SCPC contractors will provide a system of segregating recycling and labeling the unusable materials for proper disposal Coordinate with the proper local government unit or contract it to persons involved in disposing such waste for proper disposal 	PhP10,000 per month*	To be initiated by the company and operations personnel	As soon as abandonment phase starts	On the spot segregation of wastes, handling and disposal of materials with the use of proper containers to prevent any untoward incident.
Socio-Economic						
Closing of Operations	Loss of jobs of personnel employed in the company	Outplacement or referral system will be in place before retrenchment and closure of the company.	PhP10,000*	To be initiated by the company	One month prior to retrenchment or closure.	Management shall aid or assist the displaced employees. Under the Labor Code of the Philippines, a month notice should be given prior to retrenchment or closure.

Environmental Monitoring Plan (EMoP) with Environmental Quality Performance Levels

Environmental Management Plan
Lower Catuiran Hydroelectric Power Plant Project

V. ENVIRONMENTAL MONITORING PLAN (EMoP) with ENVIRONMENTAL QUALITY PERFORMANCE LEVELS

Key Environmental Aspects per Project Phase	Potential Impacts Per Environmental Sector	Parameter to be monitored	Sampling and Measurement Plan		Lead Person	Annual Estimated Cost	EQPL Management Scheme							
			Method	Frequency			Location	EQPL Range						
								Alert	Action	Limit	Alert	Action	Limit	
Construction Phase														
Land, Air	Earth moving activities and site preparation	Air Quality deterioration from exposed cuts and landslides due to earthmoving and excavation activities	<ul style="list-style-type: none"> • Air Quality Monitoring • Regular watering of unpaved roads or exposed soils / ground • Remove soil from tires of trucks and equipment before leaving the area • Hauling trucks should be covered with canvas or other material • Set-up temporary fence around the construction area • Conduct construction activities during dry season • Reduce exposure of opened cuts • Installation of barrier nets 	During construction period	Construction area	Part of the project cost	Company Management and Project Contractor							
Land	Solid Waste Generation that may reduce the aesthetics of the area	Solid waste generated during construction phase that may cause	<ul style="list-style-type: none"> • Proper stockpiling of soils on flat area away from the drainage. • Adequate 	During construction phase	Construction area	Part of the project cost	Company Management and Project Contractor							

**Environmental Monitoring Plan (EMoP) with
Environmental Quality Performance Levels**

			segregation and disposal of solid wastes shall strictly be implemented.																	
		Sedimentation/siltation of drainage or water ways from unconfined stockpiles of soil and other materials	Regular watering of exposed soils in the river sides in the construction site.	During construction phase	Construction area	Company Management and Project Contractor	Part of the project cost													
		Dust generation during the construction stage	<ul style="list-style-type: none"> Set up adequate toilet facilities Strictly require the contractor & its workers to observe proper waste disposal and sanitation 	During construction phase	Construction area	Company Management and Project Contractor	Part of the project cost													
Water	Wastewater generation	Pollution of nearby water body due to disposal of construction wastes (domestic)	Priority will be given to nearby residents but still it is the prerogative of the contractor	During construction phase	Construction area	Company Management and Project Contractor	Part of the project cost													
People	Hiring of workers	Generation of employment	<ul style="list-style-type: none"> Provision of exit ways, fire doors, duct systems. protective and warning systems Enforce of safety measures for workers; provision of protective gears such as face 	During construction phase	Construction area	Company Management and Project Contractor	Part of the project cost													
People	Accidents	Possible injury/accident																		

**Environmental Monitoring Plan (EMoP) with
Environmental Quality Performance Levels**

**Environmental Management Plan
Lower Caluiran Hydroelectric Power Plant Project**

Operation Phase																				
Land	Solid Waste Generation that may reduce the aesthetics of the area	Volume of Solid waste	mask, safety uniform, safety shoes, helmet, and gloves and other sufficient tools and equipment Strict regular monitoring of the equipment during the operations of the Plant	Regular monitoring during plant operations	Waste storage area	Company Management and Project PCC	Part of the project cost													
Land	Accidents that may occur should the dam collapse	Factors that may cause the dam to collapse	<ul style="list-style-type: none"> Initiate a waste segregation scheme and Coordination with private and local garbage collector for proper disposal 	Regular monitoring during plant operations	Dam and installed flushing gates	Company Management	Part of the project cost													
		Flash floods that may occur when	<ul style="list-style-type: none"> Regular monitoring of the dam for cracks or anything that may cause the dam to collapse Installation of flushing gates that will allow the stored water to be released should the situation forced it to do so 	Regular monitoring during plant operations																
			Regulated release of stored water																	

**Environmental Monitoring Plan (EMoP) with
Environmental Quality Performance Levels**

Air and Noise	Air quality deterioration from release of emission from chimney and installed standby generator set	Air and Noise Quality	Ambient Air and Noise Quality Monitoring	Annually	In the Accredited Laboratory	Company Management and Project PCO	*P40,000.00						
Water	Contamination of surface water from domestic use	Wastewater for Domestic purposes	Wastewater for domestic use will be coursed through the septic tank installed within the facility prior to disposal to the existing storm drainage lines	Regular monitoring	Installed in the Facility	Company Management and Project PCO	Part of the project cost						
People	Occupational risk to workers in case of natural calamities or any untoward accidents	Health & Safety Plan	<ul style="list-style-type: none"> • Equipment and machinery will properly maintain. • Provision of protective and warning systems, fire fighting equipment and detection systems • Provision of exit ways, fire doors 	Permanent	Within the plant premises	Company Management and Project PCO	PhP50,000/annum (for periodic emergency drills)						
People	Hiring of workers/plant personnel	Employment Profile	The profile of the company's workers should be monitored regularly to ensure that local hiring would be prioritized.	Periodic	Within the adjacent communities	Company Management thru Human Resource Division	PhP25,000/annum (periodic check by DOLE)						
Abandonment Phase													

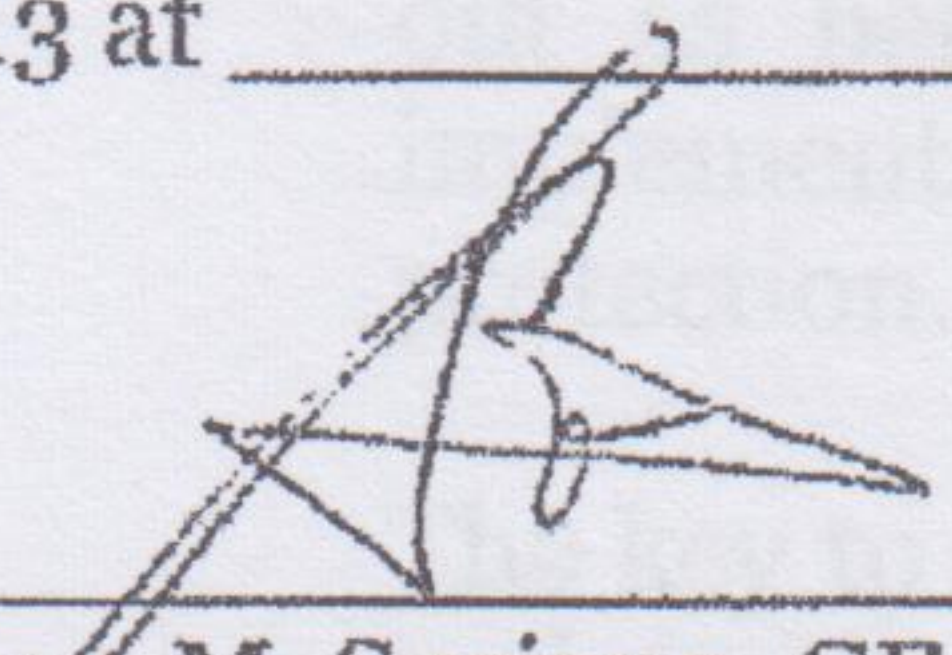
SWORN ACCOUNTABILITY STATEMENT OF THE EMP PREPARER

EXECUTIVE SUMMARY

This is to certify that all information in the enclosed Updated Environmental Management Plan of the proposed 8.0 MW Lower Catuiran Hydro Electric Plant Project located at Barangay Malvar, Naujan, Oriental Mindoro, are true, correct and complete. Should we learn of any information which would make the enclosed EMP Report inaccurate, we shall bring said information to the attention of the Environmental Management Bureau (EMB) or the appropriate EMB Regional Office.

We hereby bind ourselves jointly and solidarily with the proponent for any penalties that may be imposed arising from any misinterpretation or failure to state material information in the enclosed EMP Report.

In witness whereof, we hereby set our hands this _____ day of _____
2013 at _____.



Cesar M. Soriano, CE
Pollution Control Officer
Sta Clara Power Corp
Highway 54 Plaza, EDSA
Mandaluyong City

Before me this _____ day of _____, 2013 at _____
personally appeared Cesar M. Soriano with PRC Lic. No. 57055 issued on Dec. 11, 1989 valid until Oct. 5, 2014, issued at Manila City, in his capacity as Project Development Officer/PCO and acknowledged to me that this EMP Report is his voluntary act and deed, and the voluntary act and deed of the entity he represents. This document which consists of ___ pages including the page, on which this acknowledgement is written, is an Environmental Management Plan Report.

Doc. No. _____
Page No. _____
Book No. _____
Series of 2013

SWORN ACCOUNTABILITY STATEMENT OF THE PROPONENT

This is to certify that all the information and commitments in the Environmental Management Plan (EMP) Report for the proposed 8.0 MW Lower Catuiran Hydro Electric Plant Project located at Barangay Malvar, Naujan, Oriental Mindoro, are true, accurate and complete. Should we learn of any information, which would make the EMP Report inaccurate, we shall bring said information to the attention of the DENR Regional Office concerned.

We hereby bind ourselves jointly and solidarily to any penalty that may be imposed arising from any misrepresentation or failure to state material information in this EMP Report.

It witness whereof, we hereby set our hands this _____ day of _____ at _____.

ASISCLO T. GONZAGA
President – Sta Clara Power Corp.

ACKNOWLEDGEMENT

BEFORE ME this _____ day of _____, 2013 at _____, personally appeared **Asisclo T. Gonzaga** with Community Tax Certificate No. _____ issued on _____, 2013 at Manila in his capacity as President – Sta Clara Power Corporation, and acknowledged to me that this EMP Report is his voluntary act and deed, of the entity she represents. This document, which consists of ___ pages, including the page on which this acknowledgement is written is an EMP Report.

Witness my hand and seal on the place and date above written.

Notary Public

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Book No. _____
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