

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Bontoc Multi-Purpose Cooperative (BCCI Piggery)
Methane Recovery and Power Generation Project

Ref. No. 5979-0008
CPA-22 Methane Recovery and Combustion with Renewable Energy Generation from Anaerobic Animal
Manure Management Systems under the Land Bank of the Philippines' Carbon Finance Support Facility

June 2019

LIST OF ACRONYMS

BOD	Biological Oxygen Demand
CDM	Clean Development Mechanism
CFSF	Carbon Finance Support Facility
CMR	Compliance Monitoring Report
CSR	Corporate Social Responsibility
DENR	Department of Environment and Natural Resources
DNA	Designated National Authority
DO	Dissolved Oxygen
DOE	Designated Operational Entity
DP	Discharge Permit
ECC	Environmental Compliance Certificate
EMB	Environmental Management Bureau
EMF	Environmental Monitoring Fund
EPMD	Environmental Program and Management Department
ERPA	Emissions Reduction Purchase Agreement
ESMP	Environmental and Social Management Plan
ESSF	Environmental and Social Safeguards Framework
LBP	Land Bank of the Philippines
MOA	Memorandum of Agreement
MRF	Methane Recovery Facility
MSDS	Materials Safety Data Sheet
PCO	Pollution Control Officer
P.D.	Presidential Decree
PoA	Program of Activity
PPE	Personal Protective Equipment
PTO	Permit to Operate
R.A.	Republic Act
SMR	Self-Monitoring Report
SPA	Subproject Agreement
TSD	Treatment / Storage / Disposal
TSS	Total Suspended Solids
WTF	Water Treatment Facility

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PURPOSE OF THE DOCUMENT

This Environmental and Social Management Plan (ESMP) is prepared as part of the requirements of the Safeguards Framework for Clean Development Mechanism (CDM) projects implemented under the Carbon Finance Support Facility (CFSF) of the Land Bank of the Philippines (LBP). The Environmental and Social Safeguards Framework (ESSF) was developed to ensure the establishment of protection, compliance, and mitigation measures for relevant environmental and social aspects of projects under the CDM program which covers the Methane Recovery and Power Generation Projects in pig farms.

Scope

Since the Methane Recovery and Power Generation Project is a key component of the Bontoc Multi-Purpose Cooperative's wastewater treatment facility (WWTF) – which handles the primary waste (manure) produced by its operations – this ESMP thus encompasses the operations of the entire farm described herein

1 PROJECT SUMMARY

The Methane Recovery and Power Generation Project of Bontoc Multi-Purpose Cooperative (hereafter referred to as BCCI Piggery) owned by Bontoc Multi-Purpose Cooperative Inc., is an initiative developed under LANDBANK's CFSF. Its goal is to capture greenhouse gases, particularly methane from piggery wastewaters that would otherwise dissipate into the atmosphere, and convert them into electrical energy.

1.1 Proponent Profile

Proponent: Bontoc Multi-Purpose Cooperative Inc.
Business Address: Gomez Street, Poblacion, Bontoc, Southern Leyte
Chairman of Board of Directors: Renato M. Tindugan
General Manager: Ninnoh Rechie K. Demegillo

Farm Name: BCCI Piggery.
Project Site: Brgy. Talisay, Bontoc, Southern Leyte
Farm Coordinates: 10.36388889, 124.96805556

Project Type: Livestock Project
Philippine Standard
Industrial Classification: 0145 - Hog Farming

Contact Persons **BCCI Piggery.**
Farm Manager: Mr. Joseph Faelnar
Telephone No.: 0917-6318173
Pollution Control Officer: Mr. Joseph Faelnar
Telephone No.: 0917-6318173

LANDBANK

Lending Programs

Management Group: Emellie V. Tamayo
Designation: Head / First Vice President
Telephone No.: (632) 405-7309
Fax No.: (632) 528-8542

Environmental Program

Management Department: Prudencio E. Calado III
Designation: Head / Assistant Vice President
Telephone No.: (632) 405-7339
Fax No.: (632) 528-8484

1.2 Pig Farm Profile

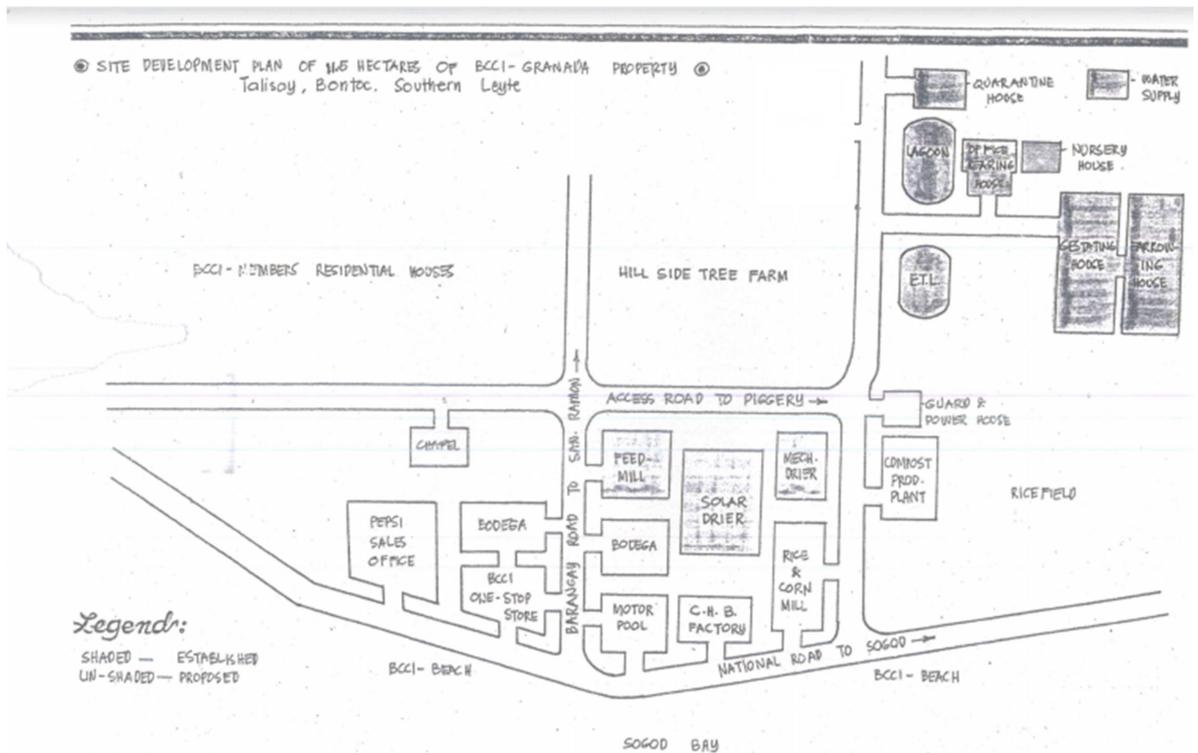


Figure 1. Site layout of BCCI Piggery.

Farm area:	35,400 m ²
Production:	Farrow-to-Finish
Housing type:	Conventional
Capacity:	3,000 heads
Average population:	1,354 heads (As of March 2019)
No. of Employees:	12
Operating hours:	24

BCCI Piggery. is business engaged in hog breeding and raising. Currently, it is able and licensed (as per its Environmental Compliance Certificate) to house a total pig population of 3,000 heads confined to an area of 35,400 m².

Facilities constructed at BCCI Piggery are: pig houses (6), administrative office (1), rest rooms, biodigester facility (1), clarifying lagoon (1), hazardous waste storage room (1), materials recovery facility (1), groundwater extraction wells (2) and overhead water tanks (2).

Water for the Farm’s operations is sourced from 2 groundwater extraction wells located onsite and stored in 2 overhead water tanks.

As of the site visit on February 7, 2019, pig wastes are being directed to the site’s biodigester system. The farm currently utilizes electricity produced by the biodigester for approximately 2 to 4 hours per day, depending on the amount of methane available.

The Farm is powered by the local electricity concessionaire, Southern Leyte Electric Cooperative (SOLECO), when they do not use biogas for electricity.

BCCI Piggery is currently unable to accommodate the full 3,000 head population as stated in their ECC due to the farm's expansion being under negotiations with the local government.

1.3 Project Description

The project covers the operation and installation of an anaerobic digester system and its ancillary facilities, including post-treatment wastewater lagoons and a biogas-powered electricity generation system. These are collectively referred to as the farm's methane recovery facility (MRF).

1.3.1 Components and Design

BCCI Piggery's wastewater treatment process is as follows:

- *Pre-Treatment*, which involves the breaking down of relatively large digestible particles in wastewaters prior to entering the reactors;
- *Anaerobic digestion*, or the disintegration of biodegradable materials in the wastewaters through biological processes facilitated by microbes which thrive in the conditions promoted by the reactor; and
- *Post-Treatment* of biogas, effluent, and sludge resulting from anaerobic digestion.

The farm's wastewater treatment facility is composed of drainage canals, a collection tank, an underground concrete biodigester, a steel methane collection tank, multi-chambered clarifying lagoons and sludge drying beds.

The biodigester, by design, is able to accommodate wastes for up to 3,000 heads and capture enough methane to power the project facilities with a net energy requirement of zero. The design and layout of the WWTF are in the construction plans in Appendix A. Properties and specifications of the WWT-MRFs, including capacities, outputs, and efficiencies, will be detailed in the succeeding version of this ESMP (see Section 4).

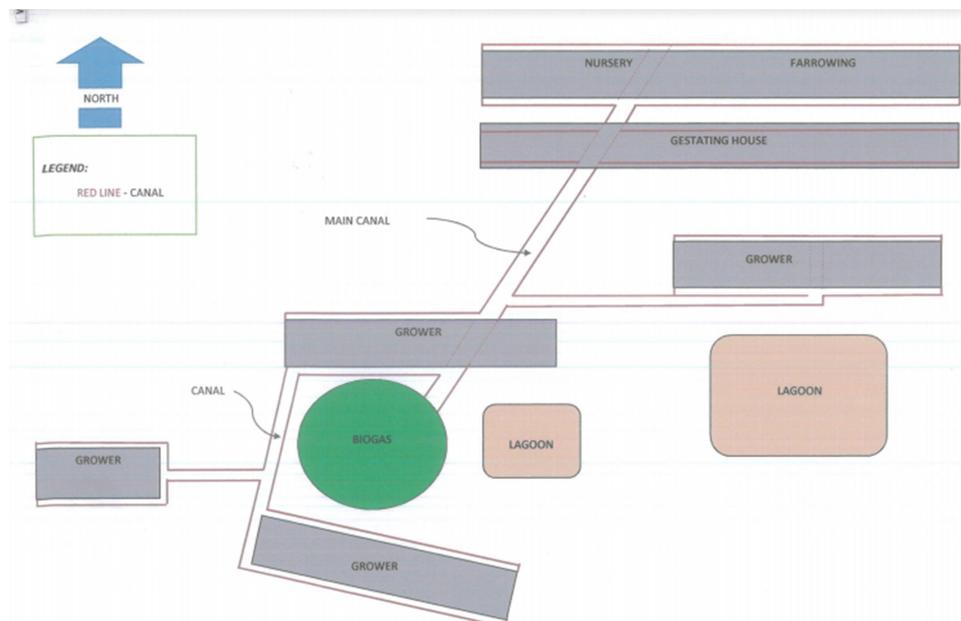


Figure 2. Floor plan of the drainage system of BCCI Piggery



Clarifying lagoons



Methane storage tank

Table 1 presents the particular processes and components involved in the treatment of wastewaters in the Farm.

Table 1. Specifications of BCCI's Wastewater Treatment Facility-Methane Recovery Facility

Phase	Process	Component	No. of Units	Description / Equipment	
Pre-treatment	settling	Pre-settling storage tank	1	-not specified-	
Anaerobic treatment	anaerobic digestion / fermentation	Biogas reactor fermentation chamber	1	1,060 m ³	
Post-treatment	Biogas	scrubber system	1	-not specified-	
		generator set	1	150 kVa	
	Effluent	clarification (settling, aeration)	Water recovery system	2	12 m x 12 m x 1.2 m
	Sludge	drying	drying bed	1	Concrete construction, multi-chambered

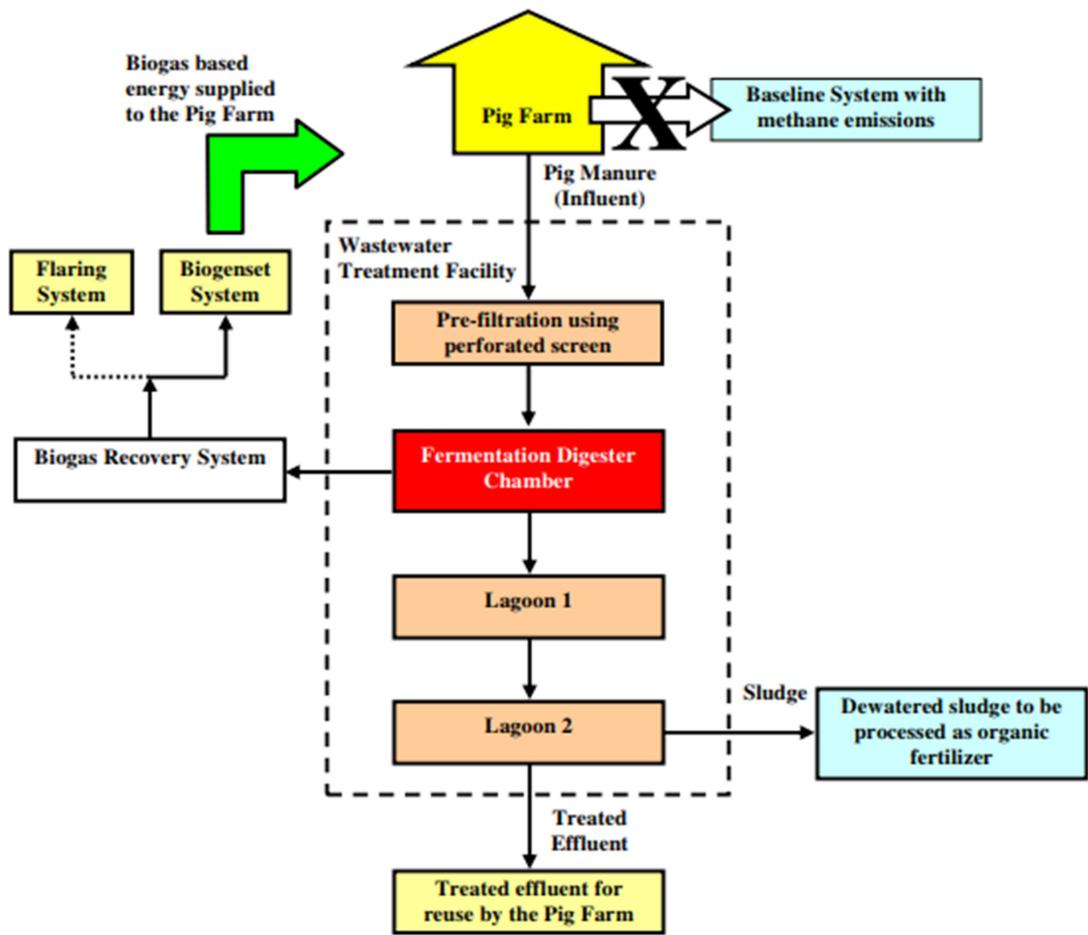
1.3.2 Operation

Wastewater from the pig sheds are channeled to a covered drainage system constructed beneath and around the pig sheds. Wastewaters flow through the drainage system towards the concrete underground biodigester. A system of screens ensures that solids are unable to enter the biodigester system. Concrete slabs serve as covers for the drainage system to prevent rainwater from entering and can be removed for maintenance purposes.

The biodigester processes the wastewater through anaerobic digestion to produce methane. The methane is channeled via blowers to the methane containment tank. The pressure build-up within the containment tank allows the methane to flow through a series of scrubbers and to the biogas generator set for conversion to electricity.

The effluent from produced by the biodigester is then directed to a lagoon for drying. The sludge is removed manually and then used as fertilizer for the farm.

The figure below illustrates the processes involved in wastewater treatment and methane recovery:



1.4 Existing Environmental Conditions in the Farm

BCCI Piggery is a 35,300 m² facility located in Brgy. Talisay, Bontoc, Southern Leyte.



Figure 3. Map of the Philippines showing the location of Bontoc, Southern Leyte.

1.4.1 Land Classification and Use

The land on which the farm is situated is classified as an agro-industrial zone. The farm is surrounded by wooded areas and low-density residential areas.



Figure 4. Map of Barangay Talisay showing the location of BCCI Piggery (highlighted in green)

1.4.2 Climate

Köppen-Geiger system classifies the climate in Bontoc as tropical, with rainfall even in the dry season. The area has an average annual temperature of 27.0 °C and an average annual precipitation of 2882 mm

1.4.3 Topography and Soil

The farm is located in an area that is flat, primarily composed of tropical grass

1.4.4 Water Resources

The closest body of water to BCCI Piggery is Sogod Bay, located approximately 200 meters east. Sogod Bay is a major fishing ground for the coastal municipalities surrounding the bay.

1.4.5 Natural Hazards

As per the Landslide and Flood Susceptibility Maps of Sogod Quadrangle, Southern Leyte, Philippines, the farm is located in an area has a low susceptibility to landslide and prone to flooding. The general location of the farm is not susceptible to storm surges, though according to project NOAH, areas approximately 100 to 200 meters northeast to south of the site have a high storm surge hazard rating.

1.4.6 People and Communities

No residential areas are located in the immediate vicinity of the farm. The farm has had difficulty in expanding their operations due to the concern of the local government of foul odor from pig manure affecting the nearby communities (approximately 200 meters south). As of the last site visit in February 2019, the farm is in negotiations with the local government with regards to the expansion of their operations.

2 ENVIRONMENTAL DUE DILIGENCE

2.1 Impact Assessment

2.1.1 Positive Impacts

The Project improves BCCI Piggery's method of handling and disposing pig manure and liquid waste. At present, the biodigester functions as the Farm's main wastewater treatment facility, significantly improving the quality of and minimizing foul smell from its effluent. And, more importantly, by providing a mechanism to capture methane and use it as a source of energy, the Project has been helping the Farm abate its overall greenhouse gas emission. With a capacity for 3,000 heads, the Project is estimated to reduce greenhouse gas emissions equivalent to 2,983 tCO₂e over the duration of the project.

Also, having been included in the CDM program, the farm has the opportunity to earn monetary incentives by selling their carbon credits.

2.1.2 Negative Impacts

Certain aspects of the pig farms' and the project's operations inevitably result in potential harm to the environment, including generation wastewaters; hazardous and non-hazardous wastes; air pollutants; foul odors, noise, dust and other nuisance; and depletion of natural resources. These pose inherent risks to environmental quality and natural ecosystems and to health and safety of workers, communities, and livestock.

2.2 Due Diligence

BCCI Piggery is compliant to all the regulatory safeguards as shown in the succeeding tables, as enforced by the Philippine government, demonstrating due diligence of the Proponent.

2.2.1 Legal Framework

BCCI Piggery operates in the context of laws prescribing the regulatory safeguards in the tables below:

Table 2. Environmental documents and statutory requirements regulating the operations of BCCI Piggery.

Document	Particulars	
Environmental Compliance Certificate (ECC)	Reference No.	ECC-R08-1502-0028
	Issuing Agency	DENR-EMB Region 8
	Date of Issuance	March 2, 2015
	Validity	- no expiration -
	Conditions	<ul style="list-style-type: none"> • area of operation: 35,300 sqm • maximum population: 3,000 heads • milling rate of 2,000 kg per hour (feed mill operations)
Discharge Permit for Water Pollution Source / Control Facilities	Reference No.	18-DP-G-0864-0075
	Issuing Agency	DENR EMB Region 8
	Date of Issuance	July 16, 2018
	Validity	July 16, 2019
	Conditions	<ul style="list-style-type: none"> • effluent wastewater flow 50 cu.m per day • submission of self monitoring report
Permit to Operate Air Pollution Source Control Installations	Reference No.	15-POA-E-0864-0130
	Issuing Agency	DENR-EMB Region 8
	Date of Issuance	Ineligible
	Validity	Ineligible
	Conditions	<ul style="list-style-type: none"> • One unit Hammer Mill • One unit Vertical Feed Mixer • One unit 150 KVA Mitsubishi generator set with muffler
Hazardous Waste Generator ID	Registration No.	GR-R8-64-00012
	Approving Agency	DENR-EMB Region 8
	Date of Approval	May 9, 2017
	Validity	NA
	Conditions	<ul style="list-style-type: none"> • D406 Lead compound • J201 containers previously containing toxic chemical substance • D407 Mercury and Mercury compounds • I101 used industrial oil including sludge
Water Permit	Reference No.	(For Application)
	Issuing Agency	National Water Resources Board
PCO Accreditation Certificate	Accreditation No.	2016-RVIII-0118
	Issuing Agency	DENR-EMB Region 8
	Date of Issuance	September 9, 2016
	Validity	September 9, 2019

Table 3. Permits ensuring the safety of BCCI Piggery.'s facilities and operation

Document	Particulars	
Business Permit	Permit No.	AVAILABLE and UP TO DATE
	Issuing Agency	
	Date of Issuance	
	Validity	
	Prerequisites	<ul style="list-style-type: none"> • Building Permit • Occupancy Permit • Zoning Clearance • Fire Clearance

		• Sanitary permit
Zoning Clearance	Registration No.	AVAILABLE and UP TO DATE
	Approving Agency	
	Date of Approval	
	Validity	
	Prerequisites	• Inspection of facility
	Conditions	•
Fire Clearance	Accreditation No.	AVAILABLE and UP TO DATE
	Issuing Agency	
	Date of Issuance	
	Validity	
	Prerequisites	• Microbial water analysis • Pest control • Health certificate of employees
	Conditions	•
Sanitary Permit	Reference No.	AVAILABLE and UP TO DATE
	Issuing Agency	•
	Date of Issuance	•
	Validity	•
	Prerequisites	•
	Conditions	•

2.2.2 Preventive and Mitigating Actions for Major Negative Impacts and Risks

Wastewaters

- ▭ Surfacewater contamination is prevented by treating all pig wastewaters in the WWTFs. The WWTF is kept in optimal working condition through regular inspection and maintenance activities. This ensures that effluents meet Class C quality standards set by EMB.
- ▭ Biodigesters have been constructed with durable materials.
- ▭ .
- ▭ Technical specifications and actual performance of the WWTF-MRF will be determined to know the system's efficiency. Information on these will enable the farm to optimize its operations and improve (or maintain) the WWTF-MRF's performance.

Hazardous Wastes

- ▭ The farm is registered as hazardous waste generator and is able to dispose through accredited TSD (transport, storage, disposal) providers.
- ▭ Currently, pig carcasses and potentially hazardous wastes are placed in a mortality pit (repurposed septic tank).

Odor

- ▭ Treatment in the WWTF-MRF has significantly abated odors coming from effluents.
- ▭ Trees have been planted within and around the farm.
- ▭ The biogas collection system has been constructed with durable materials and is kept in good working condition through regular inspection and maintenance activities.

↵

Groundwater Depletion

- ↵ Water conservation measures are being implemented in the farm.
- ↵ The farm will secure a Water Permit to comply with existing regulations and recompense for its consumption of groundwater.

2.2.3 Environmental Management and Monitoring Plan

Table 3 summarizes the measures intended to address the environmental impacts and risks identified in Section 2.1.2. Adequate training will be given to concerned employees to ensure that the content of this environmental management plan will be properly carried out.

Table 3. Environmental Management and Monitoring Plan of BCCI

IMPACT	SOURCE / ACTIVITY	MEASURES	STATUS			MONITORING METHOD	FREQUENCY	PARAMETER / INDICATOR	RESPONSIBLE ENTITY	REPORTING TO	Cost, Php
			Existing / Current Practice	For Implementation / Under Construction	Adoption Under Review						
A. Wastewater											
a.1 generation of wastewater	pig raising	water conservation strategies treatment of wastewater in WWTF	✓			quantify wastewater production	monthly	volume of wastewater produced	PCO	Farm Manager	
a.2 generation of domestic wastewater	general farm activities	water conservation strategies sewage septic tanks sewage disposal and hauling by accredited hauler	✓ ✓ ✓			check siphoning and hauling records	every 5 years	volume of sewage hauled	PCO	Farm Manager	Siphoning costs
B. Solid Waste											
b.1 generation of manure, sludge	pig raising, feed wastage, WTF	minimize feed wastage - fixed feeding schedule; treatment of manure in WWTF sludge used as soil conditioner	✓ ✓ ✓			quantify (dried) sludge produced	monthly	amount of sludge produced	biodigester operators	PCO	Feed costs
b.2 generation of (non-infectious) carcasses, blood	injuries, adverse environmental conditions, etc.	observe sound pig raising practices and biosecurity measures carcass disposal burial in mortality pit	✓ ✓			weigh disposed materials	Daily, or as needed	weight of materials disposed	maintenance staff / haulers	PCO	Php 50,000 for staff salaries
b.3 generation of general solid wastes	general farm activities	waste segregation provides adequate collection bins, storage area in strategic locations reduce, reuse, recycle of materials	✓ ✓ ✓			weigh solid wastes disposed of (recyclables and residuals)	every hauling	weight / details on wastes generated, stored, and disposed of	Farm personnel	PCO	
C. Hazardous Materials											
c.1 generation of hazardous, toxic wastes	facilities' operation and maintenance	monitor resource usage to avoid expiration of chemicals, etc. disposal through accredited TSD reusing, recycling certain materials (for various construction and maintenance activities)	✓ ✓ ✓			quantify each type of hazardous waste produced / stored and disposed of (check hazardous waste manifests)	every hauling and disposal	quantity of each hazardous waste type stored and disposed	PCO	Farm manager	Disposal and hauling costs Php 50,000 for staff salaries
c.2 generation of infectious, pathological wastes, carcasses	veterinary activities, infections, outbreaks	carcass disposal through burial in mortality pit pathological / infectious materials disposed in mortality pit	✓ ✓								
D. Air Pollution											
d.1 generation of biogas	anaerobic digestion	capturing through biodigesters and combustion using biogas-fueled engine	✓			record electric meter reading of biogas gensets	daily	kWh produced	biodigester operator	Farm manager	Project cost
d.2 generation of air pollutants	stand-by generator sets (fossil fuel combustion)	operate machineries according to manufacturer's instruction regular inspection and preventive maintenance of equipment	✓ ✓			review inspection and maintenance record	monthly every 200 running hours	number and details of machinery issues noted running hours	PCO	Farm manager	testing fees
E. Risk of Environmental Degradation											
e.1 (risk of) surface water and groundwater quality degradation, disruption of soil properties, contamination	e.1.1 wastewater collection, transport, treatment, disposal	operates WWTF as prescribed	✓			effluent sampling and testing by an EMB-accredited laboratory	quarterly - more frequently during rainy seasons	effluent quality indicators: BOD, TSS, ammonia, phosphate (must meet standards for Class C effluent)	PCO	Farm manager	Testing fees
		regular inspection and preventive maintenance of WWTF; regular desludging	✓								
		maintainance of vegetation (filter strips) around lagoons	✓								
		ensures effluents meet EMB standards^	✓								
	e.1.2 sludge management, storage, leachate	drying of sludge and using it as soil amendment	✓			review inspection and maintenance record	monthly - more frequent during rainy seasons	number and details of leak / breach incidents	biodigester operator	PCO	Php 5,000 maintenance costs
		regular inspection and preventive maintenance of drying bed	✓								
		maintainance of vegetation (filter strips) around drying bed	✓								
	e.1.3 pathological wastes, carcass disposal, leachate	established vegetative filter strips around disposal site	✓			review inspection and maintenance record	monthly - more frequent during rainy season	number and details of leak / breach incidents	maintenance staff / haulers	PCO	Php 5,000 maintenance costs
	e.1.4 handling, transport, storage, disposal of hazardous and infectious materials	uses materials according to registered use / manufacturer's instruction	✓			review inspection and maintenance record	weekly	number and details of leak / breach incidents	maintenance staff / haulers	PCO	
		use of suitable containers with labels	✓								
provides secured collection and storage area		✓									
regular inspection of storage, disposal facilities		✓									
will make MSDS available on-site of use			✓								
will develop and observe safety protocols			✓								
will install appropriate signage, warnings			✓								
will provide spill kits on storage areas			✓								
will prepare a contingency response plan		✓									
e.2 (risk of) pollution from fugitive biogas	biogas collection, storage, combustion	operates MRF as prescribed regular inspection (leak test) and preventive maintenance of MRF	✓ ✓			review inspection and maintenance record	monthly	number and details of leak / breach incidents (odor detection)	biodigester operator	PCO	
F. Health and Safety – Anaerobic Digester System											
			✓								

			✓								
			✓								
			✓								
G. Health and Safety – General Farm Operations											
f.1 odor - nuisance, discomfort, health issues	f.1.1 pig houses, manure	regular cleaning of pig houses and maintenance of drains	✓			review complaints register	every two weeks - more frequent during typhoon (windy) season	number and details of odor complaints	PCO	Farm manager	Disposal and hauling costs Php 50,000 for staff salaries
		maintains existing vegetation	✓								
		provision and use of appropriate PPE	✓								
	f.1.2 WTF, effluent, MRF	gas trapping and combustion through MRF	✓								
		will ensure adequate retention time of wastewaters in the biodigester is achieved	✓								
		regular inspection and preventive maintenance of WWTF-MRF	✓								
		provision and use of appropriate PPE	✓								
	f.1.3 decomposing materials (sludge and organic solids)	ensure sludge pile is well aerated, prevent waterlogging	✓								
		provision and use of appropriate PPE	✓								
	f.1.4 decomposing materials (placental materials and carcasses)	disposal through burial, composting	✓								
		prevent leakage of leachate in disposal sites (see e.1.3)	✓								
		provision and use of appropriate PPE	✓								
f.2 noise - nuisance, discomfort	f.2.1 pigs	Fixed feeding schedule	✓			review complaints register	monthly	number and details of noise complaint	PCO	Farm manager	Feed costs Php 4,000 for change oil services and general maintenance
		provision and use of appropriate PPE	✓								
		Maintains existing vegetation, will plant trees	✓								
	f.2.2 vehicles, machineries	operate equipment, machineries according to manufacturer's instruction	✓								
		regular inspection and preventive maintenance of machineries	✓								
		generator sets are fitted with mufflers	✓								
		provision and use of appropriate PPE	✓								
f.3 dust - nuisance, discomfort, health issues	f.2.1 pig houses, feed handling	limits dust-generating activities during day time, low wind movement (as much as it is practical)	✓			review complaints register	quarterly - more frequent during typhoon (windy) season	number and details of dust complaints	PCO	Farm manager	Php 50,000 for staff salaries
		tunnel ventilation system prevents dust build up	✓								
	f.2.2 composting areas, dried compost handling	use of appropriate containers, barriers	✓								
		damping of dried materials	✓								
		limit dust-generating activities during day time and low wind movement (as much as it is practical)	✓								
		provision and use of appropriate PPE	✓								
	f.2.3 vehicles, machineries	sealing and damping of unpaved roads	✓								
		limits vehicular speed on unsealed roads	✓								
		operates feedmill in an enclosed area	✓								
		limit dust-generating activities during day time, low wind movement (as much as it is practical)	✓								
		provision and use of appropriate PPE	✓								
f.4 pest and vermin proliferation / infestation - nuisance, health issues	decomposing materials and sources of odors	implement odor control measures (see f.1)	✓			review inspection results records and complaints register	monthly - more frequent during rainy season	number and details of incidents, complaints	supervisors	PCO	Php 5,000 maintenance costs
		implement pest, vermin control measures (use of baits and traps)	✓								
		observes good housekeeping practices	✓								
		regular inspection of farm facilities, surroundings	✓								
f.5 health hazards, (risk of) contracting infectious diseases, sustaining injuries, livestock outbreak	handling, transport, storage of hazardous and infectious materials, movement of carrier pests and vermin, handling of ill pigs	adequate training on handling of hazardous, infectious materials	✓			review incident reports, inspection records and complaints register, results of employees' regular health checks	monthly	number and details of illness, injury incidents, complaints	PCO	Farm manager	Php 50,000 for staff salaries
		provision and use of appropriate equipment for handling and storage of hazardous and infectious materials	✓								
		enforce, observe biosecurity measures, health and safety protocols	✓								
		observe measures for safe handling of hazardous and infectious materials (see e.1.3 & e.1.4)	✓								
		implement pest and vermin control measures (see f.4)	✓								
		regular inspection of farm facilities, surroundings	✓								
f.6 explosion, fire hazard	biogas collection, storage, combustion	WWTF-MRF constructed with durable materials	✓			review inspection and maintenance records, incident reports, complaints register	monthly	number and details of explosion, fire incidents	PCO	Farm manager	
		operates WWTF-MRF according to design	✓								
		regular monitoring of pressure within the MRF system	✓								
		regular inspection (leak test) and preventive maintenance of MRF	✓								
		restricts access to MRF	✓								
		prohibits ignition sources (smoking) near MRF	✓								
		will install signage and warnings			✓						
		reporting and recording of explosion, fire incidents			✓						
f.7 drowning hazard	open ponds, lagoons, tanks	restrict access to WTF, install fences			✓	review incident reports	monthly	number and details of drowning incidents	Admin officer	PCO	
		install signage and warnings			✓						
		reporting and recording of drowning incidents			✓						
f.8 freshwater depletion	pig raising and general farm activities	water conservation strategies			✓	quantify volume of freshwater consumption	monthly	volume of freshwater consumed	admin officer	Farm manager	
		effluent recycling	✓								

f.9 consumption of non-renewable resource (fossil fuels for power)	pig raising and general farm activities	energy conservation strategies	✓			estimate power consumption from billing for electricity	monthly	kWh consumed	admin officer	Farm manager	
		use of energy-efficient equipment	✓								
		uses electricity generated using biogas	✓								
		pig buildings have concrete walls and roofing, providing efficient insulation against ambient heat	✓								
f.11 (risk of) erosion	rainwater runoff	plant various tree species and vegetation along roads and slopes	✓			review inspection records	monthly - more frequent during rainy season	number and details of erosion incidents	Admin officer	Farm manager	

BOD Biological Oxygen Demand
 MSDS Materials Safety Data Sheet
 PCO Pollution Control Officer
 PPE Personal Protective Equipment
 SMR Self-Monitoring Report
 TSD Treatment, Storage, Disposal
 TSMD Technical Support and Monitoring Department
 TSS Total Suspended Solids

2.2.4 Contingency Response

Below is an overview of BCCI Piggery's current preparation and action plan in response to the following:

- a. Fire
 - Fire extinguishers are available at strategic locations around the farm. Pig houses are also equipped with water taps from which water for putting out fire can be sourced.
- b. Earthquake
 - The open grounds at the exterior of the farm are designated as evacuation areas for when an earthquake occurs.
- c. Outbreak
 - In the event of a livestock outbreak, quarantine measures are instinctively applied. Movement of humans and animals in and out of the farm is restricted and instructions from the farm's consultant veterinarian are carried out.
- d. Power outage
 - Should there be power interruption, a diesel-fueled standby generator is able to supply the farm's electricity needs, in addition to the biogas genset.
- e. Health emergencies
 - First aid kits are readily available on site for minor injuries. Farm personnel also have access to vehicles which can be used for transporting cases needing more advanced medical care.

In the interim, BCCI Piggery hereby commits to develop a more comprehensive contingency preparedness and response plan that will address incidents of fire; natural hazards (typhoon, earthquake); outbreak; health emergencies; and environmental emergencies (leaks and spills of wastewaters and hazardous wastes, WWTF-MRF system breakdowns). This plan will be appended in the succeeding version of this ESMP.

2.2.5 Occupational Health and Safety

In addition to the health and safety measures presented in Table 3, BCCI Piggery will develop a more comprehensive health and safety risk management plan which will deal with general occupational health and safety issues associated with work in the farm. Health complaints and accidents will be recorded in a register and will serve as indicators of the plans effectiveness, together with results of workers' annual health check-ups. This plan will be appended in the succeeding version of this ESMP

2.2.6 Biosecurity

The particulars of the farms' biosecurity protocol will be appended in the succeeding version of this ESMP.

2.4 **Monitoring, Reporting and Auditing**

The proponent will perform the monitoring plan in Table 3 and conduct regular inspection of its facilities not only for internal purposes but also to satisfy the requirements of the Environmental Management Bureau (EMB) for periodic self-monitoring reports (SMR). In addition, assessments will also be initiated during or immediately after incidents that may have compromised the integrity of the farm's facilities, especially the WWTF-MRF, and caused the release of pollutants in the environment. A registry of such incidents and other environmental emergencies and accidents will be maintained in the farm and its details reported in the SMR.

The SMR will contain the results of audits on the farm's environmental performance in terms of resource utilization, waste management, regulatory compliance, and fulfillment of environmental commitments among others. This document will be tendered to EMB quarterly. LBP-EPMD (Environmental Program and Management Department) will also be provided with copies of this document for reference and review purposes.

The owner and the farm's Pollution Control Officer (PCO), Mr. Joseph Faelnar, have been tasked to ensure that the farm is compliant with pertinent environmental regulations, including those listed in Table 3, and is performing its environmental commitments, including the implementation of this ESMP.

During the implementation of the CDM Program, LBP-EPMD will conduct monitoring activities in the farm at least twice a year to help the proponent execute, identify gaps in, and improve and update this management plan.

3 SOCIAL DUE DILIGENCE

Below are some of the Proponents efforts to ensure that BCCI Piggery. does not infringe upon the social rights of its employees and the Farm's host community.

3.1 Consultation and Participation

Prior to construction, the Proponent, together with LBP-EPMD, identified the Project's stakeholders who were afterwards invited, through letters and notices, to a consultative meeting for the Project's establishment on September 14, 2015. The stakeholder consultation was attended by 22 individuals from various institutions including farm representatives, Landbank personnel, and barangay officials.

All relevant information, especially those that pertain to the Project's environmental and social impacts, were communicated to the stakeholders during the consultations. Issues and queries raised all satisfactorily addressed by the Proponent and the other presenters. (see Appendix X for the minutes of the consultations)

3.2 Grievance Redress Mechanism

The Farm's manager, Mr. Joseph Faelnar, is hereby designated to be the main contact person for stakeholders regarding grievances, feedbacks, and queries related to the Project. He is also to be in charge of ensuring that the details of complaints and the actions made to address the same will be recorded truthfully. Such information shall be part of the regular monitoring report for the Project and will be made available to relevant stakeholders.

Issues not resolved at the Project level (by the Proponent) will be raised to the following third party institutions for arbitration and possible resolution:

- Office of the Barangay Chairman
All complaints shall be initially entertained and attempted to be resolved in the *barangay* where the Farm is situated. The *barangay* concerned will facilitate the negotiation process and LBP-EPMD will ensure that the complainant is properly represented.
- Municipal Office
Should no agreement be reached at the *barangay* level, the matter will be elevated to a municipal government office. Depending on the nature of the complaint, grievances may be addressed to the Municipal Health Office, Agriculturist Office, Environment and Natural Resources Office, or any relevant municipal agency.
- LBP
LBP through EPMD will take part on the resolution process only after the aggravated party has gone through the previous levels and finds the decisions rendered there unacceptable. EPMD will coordinate with the Proponent to ensure that issues regarding the latter's project are resolved to the best interest of the complainant.

To further ensure the Proponent's accountability, contact details of the Farm's management and LBP-EPMD shall be provided to stakeholders during consultations and through postings at public notice boards (including at the Farm's main gate). For the Project of BCCI Piggery., the following individuals will serve as grievance administrators:

- Prudencio E. Calado III
Head/Assistant Vice President, LBP-EPMD
Telephone No.: (632) 405-7339
Fax No.: (632) 528-8484
- Mr. Joseph Faelnar
Farm Manager, BCCI Piggery
Telephone No.: 0917-6318173

3.3 Information Disclosure

This ESMP and other relevant information regarding the Project will be published in LANDBANKS's website where it can be readily accessed by the public. Printed copies of this document will be submitted to DENR-EMB Region 8 and will also be available in Barangay Talisay's office, in LANDBANK's library (1598 M.H. Del Pilar cor Dr. J. Quintos St., Malate, Manila, Philippines), and in World Bank's Infoshop.

3.4 **Equal Opportunity**

BCCI Piggery is an equal opportunity employer, not regarding gender, age, disability, and ethnicity in evaluating and hiring potential employees. Presently, the Farm's roster is consisted of 12 employees (11 males and 1 female). Male workers are assigned to tasks such as animal handling, facility maintenance and machine operations. The female employee is assigned to the administrative office.

3.5 **Resettlement**

The Project is located inside the premises owned by Bontoc Multi-Purpose Cooperative, a private property. No individual was displaced for nor were there any indigenous peoples affected by the establishment of the Farm and the Project.

3.6 **Others**

Employees of BCCI Piggery receive standard basic salary (at the minimum), 13th month pay, sick and vacation leaves, as well as SSS (social security) and HDMF (housing loan) privileges.

4 ESMP REVIEW AND UPDATING

This ESMP shall be reviewed and updated as needed to keep pace with and adapt to changes and developments related to the Project. The Farm's manager and PCO shall initiate and lead this initiative in consultation with relevant Farm personnel and Project partners.

5 INSTITUTIONAL ARRANGEMENTS

5.1 **The Proponent**

The Proponent, in the person of Mr. Joseph Faelnar, will be responsible in all aspects of the Project, including the implementation of this ESMP. He will shoulder all costs associated with the construction and operation of the Project, internal monitoring activities, and meeting various statutory requirements. Specifically, he shall cause the accomplishment of the following:

- exercise environmental and social due diligence in implementing the Project
- incorporate sound practices in environmental, health, and safety management
- comply with relevant national and local laws and satisfy regulatory obligations
- perform diligent environmental and system monitoring
- prepare and submit on schedule accurate monitoring reports to EMB and LBP
- cooperate with the LBP and other regulatory agencies by providing assistance and correct and relevant information regarding the Project and its environmental performance for reference, review, and monitoring purposes
- promote transparency by maintaining open lines of communication with project stakeholders and giving them access to relevant information
- initiate resolution of conflicts that may arise as a result of the Project's operation
- disseminate all relevant information to stakeholders

The Proponent, in close coordination with LBP, shall implement the Project based on LBP's ESSF and on the agreed activities and timelines stipulated in the MOA and subproject agreement (SPA) between the said entities.

5.2 **LANDBANK**

LBP shall serve as the financial and technical intermediary for the CDM Program of Activity (PoA) under which the Project of BCCI Piggery is being implemented. It shall provide the Proponent carbon and investment finance assistance for the installation of an anaerobic wastewater treatment facility equipped with a biodigester and methane-fueled power generator. Moreover, it shall act as the entity in charge of project validation and verification activities, and of collation of relevant information and monitoring data for the undertakings mentioned. Specifically, LANDBANK, through EPMD, shall:

- make available financing facilities to the Proponent, subject to existing lending policies of LBP
- coordinate and facilitate communications and transactions between the Proponent and World Bank or other Carbon Buyers, Designated Operational Entity (DOE), and when necessary, with other project partners
- administer the agreements (MOA, SPA) forged between LBP and the Proponent
- provide technical support and relevant trainings to farm owners and personnel in partnership with donors and other institutions
- ensure compliance of the Project and its proponent with the rules governing PoAs and with its commitments in the MOA and SPA
- ensure compliance of the Project and its proponent with relevant standards and regulations and environmental commitments by conducting on-site monitoring and evaluation and desk reviews
- provide assistance to the Proponent in complying with statutory requirements for the Project
- ensure the Project's sustainability by monitoring the long-term implementation of the safeguards specified in this ESMP and its environmental performance in general
- gather, collate, and review pertinent information and documents (including safeguard instruments, reports, and permits and clearances) concerning the Project
- participate in conflict resolution initiated by the Proponent
- prepare and submit monitoring reports to World Bank regularly
- satisfy its obligations under the Emissions Reduction Purchase Agreement (ERPA) between LBP and World Bank

LBP shall assist the Proponent in its implementation of the Project based on LBP's Safeguards Framework and on the agreed activities and timelines stipulated in the MOA and SPA.

5.3 **Department of Environment and Natural Resources**

The Department of Environment and Natural Resources (DENR) is the primary government institution mandated to manage and protect the Philippines' environment and natural resources. It is also the Designated National Authority (DNA) of the CDM Program in the Philippines. As DNA, its main role is to review and endorse PoAs to the United Nations Framework Convention on Climate Change (UNFCCC).

5.3.1 Environmental Management Bureau

Through the EMB, DENR sanctions and regulates the activities of the Project by means of various legal instruments. EMB also leads (whether or not as part of an MMT) the periodic compliance and impact monitoring of the Project, including the fulfillment of commitments stated in this ESMP. Prior to construction, EMB was the agency tasked to review and evaluate the environmental soundness of the Project and authorize its establishment through the issuance of an Environmental Compliance Certificate (ECC).

5.4 World Bank

The World Bank is the main Carbon Buyer of the Project, but will also serve as an advisor to LPB in carrying out the latter's responsibilities as the coordinating and managing entity for CDM projects. The Bank will conduct regular monitoring, audits, and appraisal reviews on the Project's safeguard performance against its established policies as well as provide technical guidance to LBP and to the Proponent.

6 SUB-PROJECT ACCOUNTABILITY

In line with Section 3.02 on *Sub-Project Development and Operation by the Sub-Project Entity*, Item (q) of the Sub-Project Purchase Agreement (SPA) signed by the Farm Management, stating that the Sub-Project Entity (Farm Management) agrees and undertakes to:

- (q) implement and operate the Sub-Project in compliance with the World bank Operational Policies, including without limitation and as applicable, the Environmental Management Plan, Resettlement Plan, Indigenous Peoples Plan, and any other requirement resulting from the application of the World Bank Operational Policies.

Having signed the SPA, the Farm Management is accountable to comply with the commitments stated in this document.

Appendices



**SENICA ENGINEERING &
CONSTRUCTION**

Poblacion, Carmen, Cebu Cell No. (0921) 8388 712
E-mail address: fgsenicajr@yahoo.com

General Contractor • Engineering Design • Estimate • Planning & Scheduling • Fabrication

January 27, 2014

For the attention of **Mr. Nestor Bonotan,**

**SUBJECT : 1) INSTALLATION OF THE PROPOSED ONE (1) UNIT OF 12.0
MTS. OUTSIDE DIAMETER. (1,060 CU. MTS.) BIOGAS REACTOR
DIGESTER FERMENTATION CHAMBER (REACTOR).
2) WATER RECOVERY 12.0 MTS. X 12.0 MTS X 1.2 MTS. HEIGHT.**

Dear Sir,

Further to our recent conversation, we are pleased to submit our offer for the above mentioned project.

**A. OUR PRICE: ONE MILLION, NINE HUNDRED NINETY EIGHT
THOUSAND, EIGHT HUNDRED NINETY EIGHT PESOS ONLY.
(P1,998,898.00)** for the construction / installation of one (1) unit 12.0 mts. outside
diameter (1,060 cu. mts.) Biogas reactor fermentation chamber and Water Recovery
12.0 mts x 12.0 mts. x 1.2 mts. This includes the supply of materials, labor and
technical supervision.

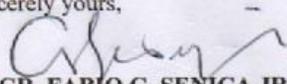
B. TERMS AND CONDITIONS:

1. 50% down payment upon signing the contract for Manpower Mobilization.
2. Owner will provide temporary facilities for the workmen and supervisor.
3. Owner will provide potable water and electricity for the construction.
4. Owner will take charge of all excavation works and backfilling.
5. Duration of construction is one hundred fifty (150) working days.

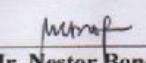
C. VALIDITY OF THIS QUOTATION: Fifteen (15) day only.

Thank you for giving us the opportunity to quote on your requirements and we look forward to your further instruction.

Sincerely yours,


ENGR. FABIO G. SENICA JR.
Proprietor

CONFORME:


Mr. Nestor Bonotan

Appendix B. Health and Safety Risks Management Plan of BCCI Piggery.

Hazard	Possible Harm	Source / Cause	Prevention / Minimization	Person/s Responsible
physical				
Noise	discomfort, hearing damage	pig squeals	<ul style="list-style-type: none"> - pigs consistently feed to prevent stress - PPEs (ear protection) 	Farm Personnel
		running machineries and vehicles	<ul style="list-style-type: none"> - install noise-control devices, when applicable - regular equipment inspection and maintenance - equipment housed in enclosed structure - shifting - signage and warnings - PPEs (ear protection) 	Farm Manager Farm Personnel
vibration	discomfort, ergonomic and nerve injuries, fatigue	running machineries	<ul style="list-style-type: none"> - ensure all loose equipment are securely placed - regular equipment inspection and maintenance - signage and warnings 	Farm Manager Farm Personnel
electricity	shock, electrocution, burns	faulty machineries and power lines	<ul style="list-style-type: none"> - get services of a licensed electrician - consult equipment manual - regular equipment inspection and maintenance 	Farm Manager Farm Personnel
		improper use (or servicing) of electrical equipment	<ul style="list-style-type: none"> - restrict access to equipment - signage and warnings - train staff (consult equipment manual) - ensure electricians are provided with proper PPEs for working with electrical equipment (insulated gloves, boots, etc.) 	
heat	burns	running machineries (hot surfaces, vapors, liquids)	<ul style="list-style-type: none"> - use insulation where possible - install machine guards - signage and warnings - ensure workers wear proper PPE such as long sleeved shirts. 	Farm Manager Farm Personnel
	discomfort, heat exhaustion, heat stroke	working in enclosed spaces with limited ventilation	<ul style="list-style-type: none"> - adequate hydration and rest breaks 	Farm Manager
dust	irritation, respiratory distress / diseases	Feeds, ambient dust	<ul style="list-style-type: none"> - calm work pacing to avoid exciting the pigs - thorough cleaning of indoor spaces - PPEs (mask) 	Farm Personnel
poor lighting	eye strain, can't see hazards	unlit / inadequately lit areas	<ul style="list-style-type: none"> - install light sources - carry portable light sources - majority of work done in the daytime 	Farm Manager
chemical				
harmful gases, dust, vapors (inhalation)	discomfort (odor), asphyxiation, poisoning, respiratory distress / diseases	degrading organic wastes	<ul style="list-style-type: none"> - measures for odor control (see Table 5) - signage and warning labels - train staff (handling hazardous substances and wastes and working in confined spaces; review MSDS / product information sheets) - PPEs (mask) - ensure first aid kits are readily available 	Farm Manager PCO
		hazardous substances (cleaning and pest control chemicals, veterinary medicines, fuels, hazardous wastes, etc.)		
		fuel burning (machineries, vehicles)		
		fugitive gases	<ul style="list-style-type: none"> - regular inspection and maintenance of biogas system 	Farm Manager PCO

hazardous substances (contact, ingestion)	irritation, burns, poisoning, skin problems	hazardous substances (cleaning and pest control chemicals, veterinary medicines, fuels, hazardous wastes, etc.)	<ul style="list-style-type: none"> - proper labeling, containers, and storage - restrict access to chemical and hazardous waste storage - train staff (handling hazardous substances and wastes; review MSDS / product information sheets) - only competent staff should administer veterinary medicines - ensure first aid kits are readily available - PPEs (gloves, eye glasses) 	Farm Manager PCO
biological				
pathogens / infectious agents, toxins and other products	various infectious diseases, parasites, irritation	pathological materials / tissues	<ul style="list-style-type: none"> - proper disposal of animal and veterinary wastes (see Table 5) - quarantine measures - good housekeeping practices (disinfection) - practice hygienic practices (especially hand hygiene) - workers' regular health examination - train staff (animal handling, proper waste handling and disposal) - PPEs (gloves, etc) 	Veterinarians (on-call) PCO
		sick animals		
		animal excretions and fluids		
		manure (wastewaters)		
		Sludge		
		veterinary wastes (especially sharps)		
		potential disease carriers (objects, people, dust)		
		insects, pests, vermin	<ul style="list-style-type: none"> - proper disposal of odororous wastes (see Table 5) - good housekeeping practices - keep an acceptable number of cats at the farm - pest control 	Farm Personnel PCO
ergonomic				
ergonomic stress	ergonomic injuries	repetitive actions, forceful exertions, sustained awkward posture	<ul style="list-style-type: none"> - use aid of appropriate equipment for lifting/moving heavy objects - use of proper lifting techniques - buddy system - job rotation / adequate rest (in between tasks) 	Farm Manager Farm Personnel
		improper use of equipment	<ul style="list-style-type: none"> - train staff (consult manuals) 	Farm Manager Farm Personnel
		use of faulty equipment	<ul style="list-style-type: none"> - repair or replace equipment 	Farm Manager Farm Personnel
other accidents and contingencies				
slips, trips, falls	injuries, wounds, contusions	spills (slips)	<ul style="list-style-type: none"> - proper maintenance of walkways - daily safety briefings and regular trainings - barricading of work areas - PPEs 	Farm Manager Farm Personnel
		various objects, debris (trips)		
		heights, slips (falls)		
entanglement	injuries, wounds, strangulation	machineries	<ul style="list-style-type: none"> - install machine guards - tie back long hair - wear long sleeve shirts - avoid wearing loose-fitting clothes and personal accessories - regular equipment inspection and maintenance 	Farm Manager Farm Personnel
blows, punctures	injuries, wounds, contusions	pig handling	<ul style="list-style-type: none"> - animal restraints - ensure enough space to maneuver - train staff (animal handling techniques) - wear appropriate PPE (boots, gloves etc) 	Farm Personnel
Sharps	sharps injuries, wounds	veterinary activities, waste handling	<ul style="list-style-type: none"> - ensure only trained personnel conduct veterinary activities - PPEs (gloves, goggles) 	Farm Manager PCO
fires	Burns	faulty electrical systems, explosions, fugitive gases, accidental ignition	<ul style="list-style-type: none"> - comply with requirements and regulations of fire authorities - provide adequate and proper (multipurpose) fire protection equipment - designate smoking areas away from digester, gas tanks, and electrical equipment and storage of combustible materials (compost, sludge, chemicals)) - regular clearing of vegetation near farm structures - signage and warnings - train staff (on contingency plan and proper equipment use) - regular inspection and maintenance of electrical systems and equipment 	Farm Manager Farm Personnel

blast	blast injuries	excessive pressure in biodigester, fugitive gases, contained gases in confined spaces, fires	<ul style="list-style-type: none"> - keep sources of heat, including machineries, at a safe distance from biogas facility - prohibit smoking and use of cellphones around biogas system and gas storage facilities - regular inspection and maintenance of MRF - signage and warnings - consider the purchase of gas monitoring equipment 	Farm Manager Farm Personnel
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**BONTOC MULTI-PURPOSE COOPERATIVE (BCCI) – PIGGERY FARM
CLEAN DEVELOPMENT MECHANISM (CDM)
Methane Recovery and Combustion from Animal Waste Management System
Stakeholders' Consultation
ABC Session Hall, Poblacion, Bontoc, Southern Leyte
September 14, 2015**

Name	Organization / Affiliation	Address	Contact Details (contact num. / email)	Signature
ELYN LAMPON B	LGU - RTH	LGU Bontoc		
JOSE RESTITUTO A. MILAGROS	BOD - BCCI	BONTOC, SO. LEYTE	09177234289	
OOLUTIN	Gen Mgr - BCCI	Bontoc	09176318160	
EMMA K. AGUILAR	Brgy. Kagawad	Talisay, Bontoc	09212039137	
MARIA PAZ C. LAZAGA	Brgy. Kagawad	Talisay, Bontoc	09059243177	
AWAN C. MOROT	" "	" "	09074419596	
BRENDA L. RAFAUE	Brgy. Secretary	Talisay, Bontoc So. Leyte	09094579410	
LWID DUE FLORES	Brgy. Kagawad	" "		
DANIEL J. NAYANAN	Brgy. Kagawad	" "		
RAMON MAGSILATE	PUNONG PUNY	TRUSTY BONTOC	09062132822	
CANDOLITH E. VEGROÑO	PROV. SANITARIAN INSPECTOR	PROV. HEALTH OFFICE	09368413199	
EVA C. PAVAZA	LGU BONTOC	BONTOC		
AMELITO SERRERA JR.	LANDBANK OF THE PHILS.	TACLOBAN CITY	09178662056	
ENRIQUE G. SALARES	LANDBANK	TACLOBAN	09176323660	
FABIO G. SENICA	M. S.E.C.	CEBU CITY	09399137272	
JOSE C. DIAZ, JR	LBP - ERM D	LBP Head Office	09202977607	

<TRUSTY>

MINUTES OF STAKEHOLDERS' CONSULTATION

What:	Stakeholders' Consultation on Clean Development Mechanism (CDM) for the Proposed Methane Recovery and Combustion System (Biogas Project) of Bontoc Multi-Purpose Cooperative (BCCI) – Piggery Farm
When:	September 14, 2015, 1:30PM – 5:00PM
Where:	ABC Session Hall, Poblacion, Bontoc, Southern Leyte
Organized by:	Bontoc Multi-Purpose Cooperative (BCCI)

REGISTRATION OF PARTICIPANTS

1. Registration of participants was opened at 1:30PM. Actual conduct of Stakeholders' Consultation activity started at 2:30PM to allow for the arrival and attendance of as many participants as possible.
2. Seven (7) community members from Barangay Talisay attended the activity, including the following important personages:
 - a.) Barangay Captain Ramon Maglinte;
 - b.) Barangay Councillors: Ms. Emma Aguilar, Ms. Maria Paz Lazaga, Mr. Allan Mosot, Mr. Lloyd Dee Flores, and Mr. Samuel Navarrosa;
 - c.) Barangay Secretary: Ms. Brenda Rafalle;
3. Mr. Randolph Logroño, Provincial Sanitary Inspector, represented the Provincial Health Office of Leyte;
4. Ms. Elyn Lampong, of the Rural Health Unit (RHU), represented the municipal government of Bontoc, Southern Leyte;
5. Engr. Fabio Senica Jr., President of Senica Engineering & Construction (SEC), the company contracted to install the biogas system at the BCCI Piggery Farm. Engr. Senica designed the biogas system installed.
6. Attendees from Land Bank of the Philippines included the following:
 - a.) Mr. Enrique Salares – Account Officer, Leyte Lending Center; and
 - b.) Mr. Jose C. Diaz, Jr. and Mr. Amelito L. Segarra Jr. – Program Officers, EPMD;
7. Total attendance to the activity is twenty-eight (28) pax, including organizers Ms. Obdulia Luzon (BCCI General Manager) and BCCI staff; and community members of Barangay San Ramon, Barangay Casao, and Barangay Poblacion in Bontoc, Southern Leyte.

OPENING PROGRAM

8. Opening Prayer was led by Ms. Merlinda Villamor, as well as the introduction of participants and speakers.
9. Mr. Enrique Salares, Account Officer from LBP Leyte Lending Center, welcomed all the participants and thanked them for taking the time and effort to attend the Stakeholders' Consultation. In his message, Mr. Salares stressed the commitment of LBP for environmental protection in its projects, and ensuring environmental awareness of its stakeholders, emphasizing these as the main reasons for conducting the Stakeholders' Consultation activity.

ABOUT THE CLEAN DEVELOPMENT MECHANISM (CDM) AND CARBON FINANCE SUPPORT FACILITY (CFSF)

10. Mr. Jose Diaz, Jr. discussed topics on Climate Change and CDM and Mr. Amelito Segarra Jr. presented Landbanks' CFSF, respectively.
11. The following were the highlights of the topics presented:
 - a.) The general overview of the CDM process to be implemented by LBP with the World Bank (WB), as regards validation to Carbon Credits, issuance of CERs (emission reduction



- certificates), and the corresponding trading of the certificates for these CERs at the negotiated carbon market price with WB;
- b.) The United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol, as that which gave rise to the CDM--- were mentioned to participants to explain why outside institutions (i.e. WB) and several developed countries are interested in 'purchasing' Carbon Credits or CERs from developing nations;
 - c.) Basic concepts on Climate Change and Greenhouse Gas emissions, in relation to Global Warming and its perceived effects, were also discussed;
 - d.) Carbon Credits and issuance of CERs were emphasized to require accurate and regular reporting of methane gas production data from operating biogas digesters, and validation and documentation of the reported data by designated authorities;
 - e.) LBP as a government institution not only with a mandate for countryside development, but with a clear vision for ensuring and implementing environmental compliance and environmental protection initiatives;
 - f.) LBP to provide institutional assistance as regards CDM validation processes and required documentation, and technical assistance.

PROJECT DISCUSSION

12. Engr. Fabio Senica Jr. explained in local vernacular to the participants of the activity the fundamental principles and the environmental benefits of operating a biogas digester at BCCI Piggery Farm:

- a.) Engr. Senica explained that animal waste (pig manure + liquid waste) from the pig houses of the farm will be diverted and collected into biodigester chamber/reactor, where components of the animal waste material will, through the introduction of microorganisms, be converted to methane gas. In effect, the liquid waste will be rendered safe for disposal to the outside environment ("**with BOD [biological oxygen demand] levels below existing environmental standards**").
- b.) Engr. Senica emphasized that he has worked on similar biodigester system projects in other piggery farm locations in the Philippines, making a point of his success rate and experience in installing facilities that function as designed. He also noted that biodigester system projects are not necessarily limited to handling hog waste, but may be applicable to other livestock waste such as coming from chickens, cows, carabaos, or even goats.
- c.) Among the benefits of having a biogas digester system installed at the farm that Engr. Senica discussed included the following: farm operational cost reduction potential (from conversion of methane gas to energy source for piggery operations); cleaner production (lesser flies observed; no foul odor emanating from processed liquid output from biodigester facility); fertilizer source (processed liquid output from biodigester is enriched with nutrients; may be used as liquid fertilizer for farm crops); natural pesticide source (Engr. Senica also considers the processed liquid output from biodigester facility a natural pesticide); source of animal feed (Engr. Senica stated that sludge collected from the biodigester may be harvested and mixed as component to traditional hog feeds); and better waste management (of animal waste and wastewater produced from piggery operations).
- d.) Engr. Senica also explained in basic terms what CH₄ is, why it is harmful to the environment, and how it can be converted as an energy source that can be utilized for piggery farm operations.
- e.) Engr. Senica did not go into details as regards the technical design of the biogas digester system that he installed at BCCI Piggery Farm. However, he presented photos showing examples of similar projects that he has completed in other areas, hoping to convey to participants through the magnitude of his projects the intended impacts of these biogas digester systems to mitigating waste impacts from piggery farms.

Senica Jr.

OPEN FORUM/ISSUES AND CONCERNS

13. The participants were then given the chance to raise questions, issues, or concerns regarding the Biogas System project at BCCI Piggery Farm located in Barangay Talisay, Bontoc, Southern Leyte.

Questions, Issues, or Concerns Raised	Responses Provided
<p>Mr. Ramon Maglinte, barangay captain of Barangay Talisay (where the BCCI Piggery Farm is located) opened the discussions with a query on where the other piggery farms being assisted by LandBank are usually situated.</p> <p><i>("yung mga tinutulungan ninyo na projects, 'yung location nila saan?")</i></p> <p>Mr. Maglinte stated that he started with his line of questioning, because the primary complaint that he has been receiving from the community members of the barangay is the foul smell emanating from the piggery farm. He further expressed that perhaps one resolution to this issue is relocating the BCCI Piggery Farm to a different location, still within Barangay Talisay, but at least more than 1 kilometer away from any residential dwelling.</p>	<p>Mr. Diaz, Program Officer of LandBank, answered the question saying that some of the piggery projects assisted by LandBank (in Bulacan or Cavite areas), due to urban development and construction of subdivisions in previously vacant lands, eventually came to be within the vicinity of some residential areas. But Mr. Diaz explained that being in such a location should not necessarily be a cause for concern among residents. Installation of a biogas digester system is one action that ensures impacts from piggery activities, such as foul odor, are reduced or mitigated.</p> <p>Mr. Diaz has mentioned that this has been the case in LBP-assisted piggery projects in Bulacan and Cavite, saying that biogas digester systems effectively improved waste management in these projects, thereby also mitigating foul smell impacts, and giving residents within the area no cause for complaints.</p>
<p>Ms. Brenda Rafalle, Barangay Secretary, asked that as a resident of Barangay Talisay actually being able to experience first-hand foul smell coming from the piggery farm--- perhaps the biogas digester installed was not working properly?</p>	<p>Engr. Senica firmly explained that the biogas digester system that he has constructed and installed for the farm is functioning as designed. He supported this claim with the observation that less flies have been noted at the farm (not totally eliminated), saying this can be construed as the biogas facility was performing its function of improving waste impacts from farm operations.</p> <p>There was general agreement on this observation among the stakeholders present.</p>

Senica

Questions, Issues, or Concerns Raised	Responses Provided
<p>The main issue raised (against the continued operation of the piggery farm), as expressed by Mr. Maglinte and Ms. Rafalle, is the foul smell that is still regularly experienced, especially by residents situated within the farm's vicinity.</p>	<p>a.) Engr. Senica suggested that perhaps, the issue is not a technical issue (i.e. related to biogas digester), but an operational one (i.e. related to cleaning processes being implemented at the pig houses). He further suggested ways for the farm management to deal with this issue, such as: observing feeding times and excretion times of pigs, and making necessary adjustments in housekeeping practices implemented; and use of additives or organic components in feeds that are known to reduce the foul-smell quality of hog faeces generated.</p> <p>b.) Mr. Randolph Logroño, Provincial Sanitary Inspector of the Provincial Health Office, expressed his view that the foul smell being complained about is most probably caused by animal waste not immediately cleaned up from the pig houses. He suggested that the farm management would do well to consider seeking technical assistance (e.g. attending courses) on proper maintenance and sanitary upkeep of pig houses in the farm.</p> <p>c.) Mr. Diaz explained that foul odors from activities such as hog-raising cannot be expected to be totally eliminated; however, with proper housekeeping (in addition to technological applications, such as the biogas digester system installed), waste management is greatly improved and foul smell impacts greatly reduced.</p> <p>d.) Ms. Obdulia Luzon, BCCI General Manager, expressed willingness to resolve the issue of smell with the barangay captain and the community members, and requested that there be full representation from BCCI, from the local government, and from the ranks of the barangay community, should there be a need for extensive monitoring and validation of specific complaints regarding foul smell associated with BCCI Piggery Farm operations. She expressed hope that with earnest cooperation among the stakeholders concerned, the main issue can be resolved.</p>

Doni dlf

14. After the Open Forum, Mr. Jose Diaz Jr., of LBP-EPMD, enjoined the community members to help in dispelling any misinformation that may be encountered outside of the Stakeholders' Consultation activity, and help spread correct information more about the positive aspects and benefits expected from the biogas system project at BCCI Piggery Farm.
15. The barangay officials and community health workers expressed their concurrence for the Biogas Project of BCCI Piggery Farm; and more importantly, expressed willingness to coordinate and cooperate with the farm management in finally resolving the issue of foul smell associated with the farm operations.

CLOSING REMARKS

16. Ms. Luzon delivered some short closing remarks. She duly thanked participants of this activity, especially the community members of Barangay Talisay, for taking the time and effort to attend and actively join in the discussions. The Stakeholders' Consultation activity was then formally ended at 5:00PM of the same day.



MS. OBDULIA O. LUZON

General Manager
Bontoc Multi-Purpose Cooperative
Poblacion, Bontoc, Southern Leyte



Republic of the Philippines
BONTOC MULTI-PURPOSE COOPERATIVE (BCCI)

Gomez St., Poblacion, Bontoc, Southern Leyte
Main Office Contact # (053) 382-3097
E-mail add: bccicoop@yahoo.com.ph

August 28, 2015

DR. EDMUNDO R. VILLA
Provincial Health Officer
Maasin City Provincial Hospital
Dungon, Maasin City

Dear Sir:

Warm Greetings!

We at the Bontoc Multi-Purpose Coop (BCCI), in cooperation with the Land Bank of the Philippines, will conduct a Stakeholders' Consultation for our proposed Biogas Project to be held on September 14, 2015, 1:30 PM, at the ABC Session Hall, Poblacion, Bontoc, Southern Leyte.

Key points on Clean Development Mechanism (CDM) and in-depth information on the project, such as Environmental Management Plan and Sustainable Development benefits, will be presented. An open forum will be held after the presentation to allow participants to raise inquiries and clarification on the proposed Biogas Project.

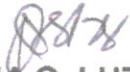
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Should you need more information or confirmation of your attendance, please feel free to inquire at contact numbers (053) 382 3097 and (053) 382 3008.

We hope to receive your favorable reply to this invitation.

Thank you.

Sincerely yours,


OBDULIA O. LUZON
General Manager
BCCI


8/28/15



Republic of the Philippines
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August 28, 2015

MR. RANDOLH LOGRONIO
Provincial Sanitary Inspector
Maasin City Provincial Hospital
Dungon, Maasin City

Dear Sir:

Warm Greetings!

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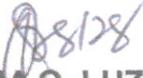
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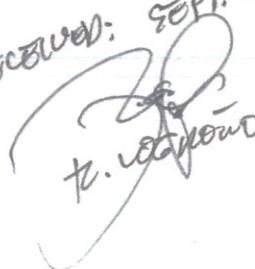
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Thank you.

Sincerely yours,


OBDULIA O. LUZON
General Manager
BCCI

Received: SEPT. 2, 2015
11:36 AM

T. Logronio



Republic of the Philippines
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August 28, 2015

MS. JOCELY SUMABAT
Barangay Captain
Brgy. Casao, Bontoc, Southern Leyte

Dear Madam:

Warm Greetings!

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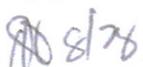
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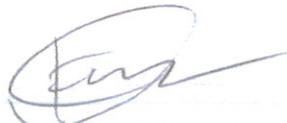
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Thank you.

Sincerely yours,


OBDULIA O. LUZON
General Manager
BCCI


Francisco S. Pacl Jr.



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August 28, 2015

MR. RAMON MAGLINTE
Barangay Captain
Brgy. Talisay, Bontoc, Southern Leyte

Dear Sir:

Warm Greetings!

We at the Bontoc Multi-Purpose Coop (BCCI), in cooperation with the Land Bank of the Philippines, will conduct a Stakeholders' Consultation for our proposed Biogas Project to be held on September 14, 2015, 1:30 PM, at the ABC Session Hall, Poblacion, Bontoc, Southern Leyte.

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Thank you.

Sincerely yours,


OBDULIA O. LUZON
General Manager
BCCI





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August 28, 2015

MR. CECILIO TANTOY

Barangay Captain
Brgy. San Ramon, Bontoc, Southern Leyte

Dear Madam:

Warm Greetings!

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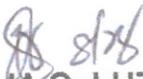
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Sincerely yours,


OBDULIA O. LUZON
General Manager
BCCI

Renate Rodas



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August 28, 2015

MRS. RIZALITA BULABOS
Municipal Agricultural Officer
Municipality of Bontoc, Southern Leyte

Dear Madam:

Warm Greetings!

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General Manager
BCCI

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August 28, 2015

HON. MATIAS MERVYN RUALES

Municipal Mayor
Municipality of Bontoc
Bontoc, Southern Leyte

Dear Sir:

Warm Greetings!

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General Manager
BCCI

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August 28, 2015

HON. PEDRO V. FUSTANES

Municipal Vice- Mayor
Municipality of Bontoc
Bontoc, Southern Leyte

Dear Sir:

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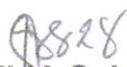
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General Manager
BCCI

afm - 8-28-2015



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August 28, 2015

ENGR. RODRIGO C. TOMAUB
MPDC Department Head, Municipality of Bontoc
Poblacion, Bontoc, Southern Leyte

Dear Sir:

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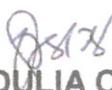
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BCCI

aejn - 8-28-2015



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Main Office Contact # (053) 382-3097
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August 28, 2015

DR. EVA C. PADALAPAT
Municipal Health Officer
Municipality of Bontoc, Southern Leyte

Dear Madam:

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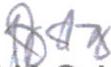
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OBDULIA O. LUZON
General Manager
BCCI

aepr - 8-28-2015



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August 28, 2015

HON. CLEOFE V. ABENION
Municipal Environmental Officer
Municipality of Bontoc, Southern Leyte

Dear Madam:

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OBDULIA O. LUZON
General Manager
BCCI

Rep - 8-28-2015

Stakeholders' Consultation on Clean Development Mechanism (CDM)

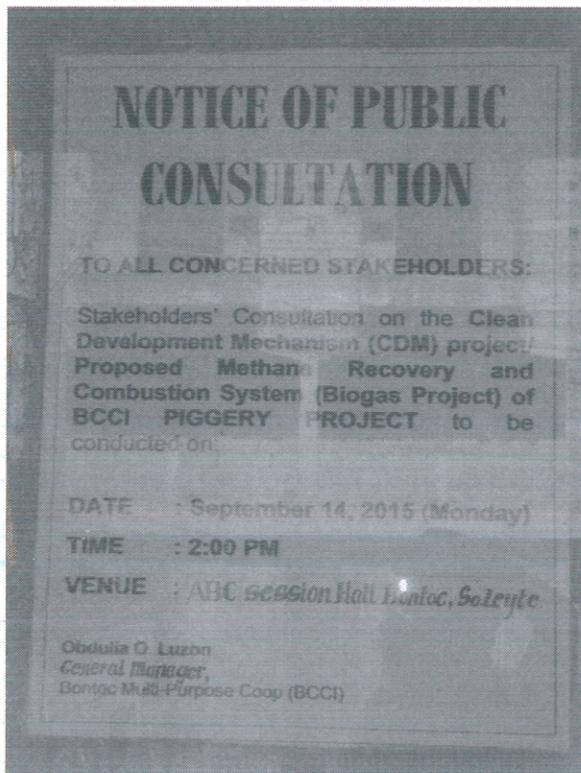
“Proposed Methane Recovery and Combustion System (Biogas Project) of BCCI Piggery Project”

September 14, 2015, 1:30PM
Sangguniang Bayan Hall, Bontoc, Southern Leyte

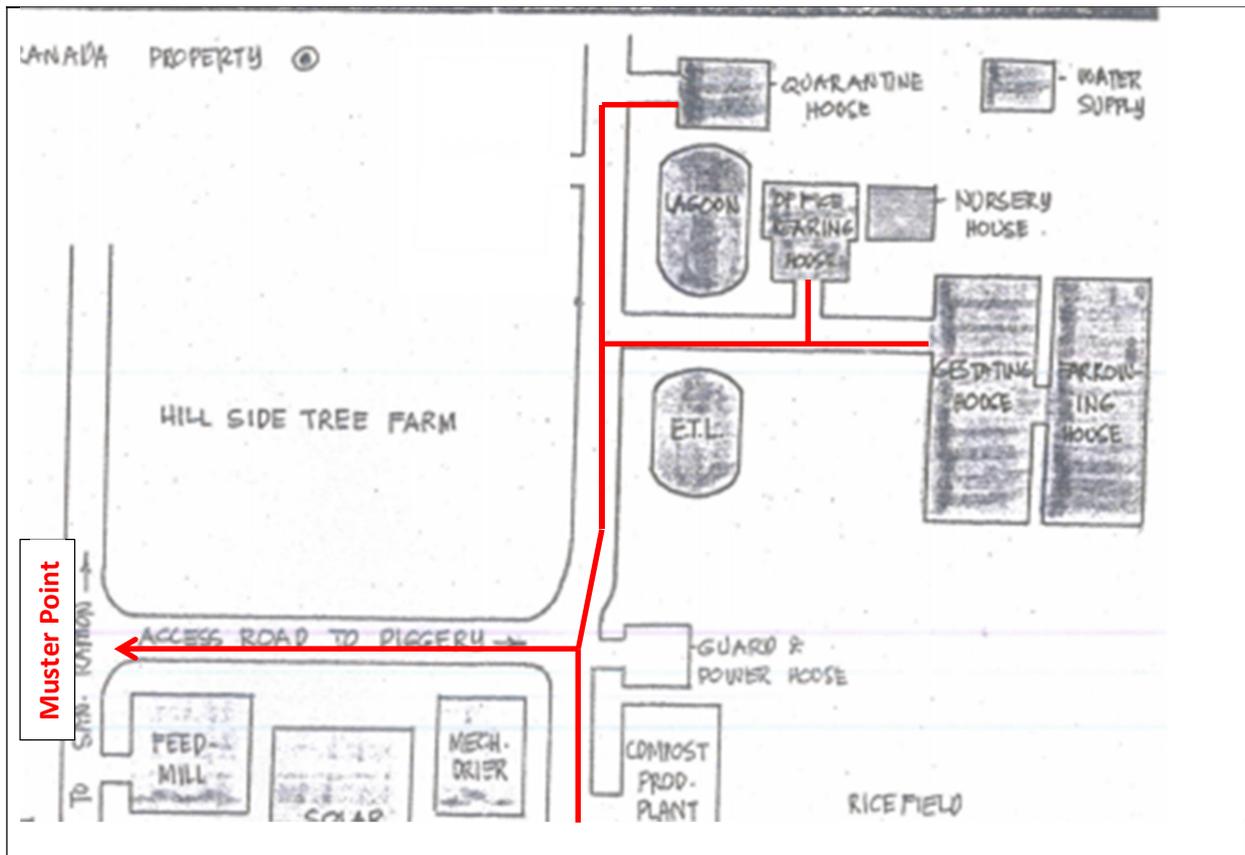
PROGRAM

Activity / Agenda	Time	Remarks
Registration of Participants	1:30 – 2:00 PM	
<u>Opening Program</u> Opening Prayer/ Introduction of Participants/ Welcome Messages	2:00 – 2:30 PM	<i>To be facilitated by BCCI</i>
<u>About CDM and CFSF</u> Climate Change/ Clean Development Mechanism/ Carbon Finance Support Facility	2:30 – 3:30 PM	<i>To be presented by Land Bank of the Philippines</i>
<u>Project Discussion</u> Biogas Project/ Environmental Management Plan and Benefits	3:30 – 4:00 PM	<i>To be presented by BCCI</i>
Open Forum	4:00 – 4:30 PM	<i>To be facilitated by BCCI</i>
Closing Remarks	4:30 – 4:45 PM	

Photos, NOTICE OF PUBLIC CONSULTATION



Appendix D. Site Evacuation Plan



BCCI Point Persons:

Farm Manager and PCO: Joseph Faelnar 0917 631 8173

Biodigester and GenSet Supplier: Ernie's Biogas Waste Management and Technology, 044-805-6650

Local Emergency Contact Details:

Bontoc Municipal Police: 0917-305-5175

Bureau of Fire Protection, Southern Leyte: 053-570-8286

Sogod District Hospital: 053-382-2118