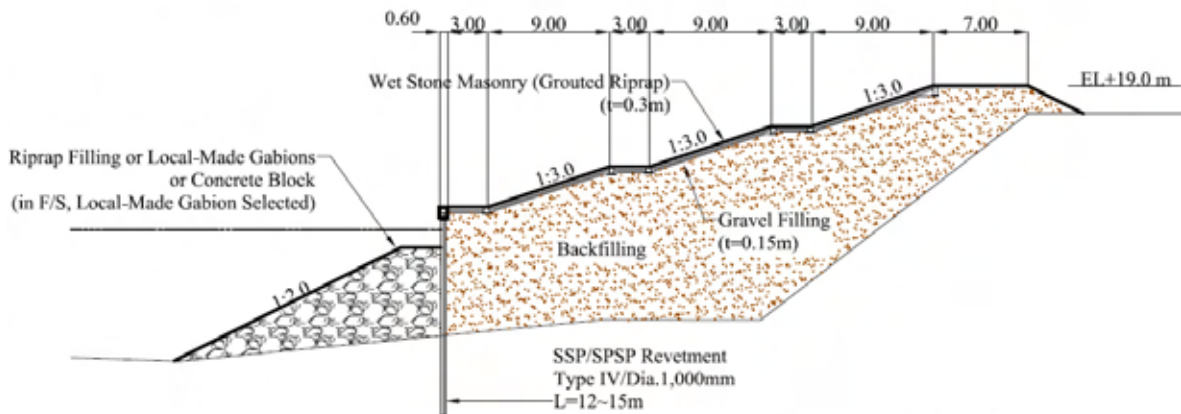
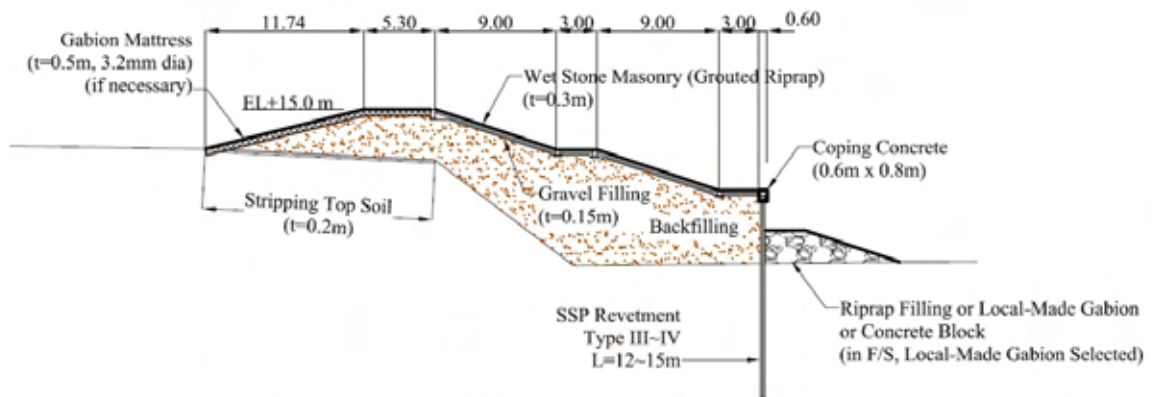


**STANDARD CROSS SECTION OF REVETMENT-1
(AT ALIBAGO SITE)**



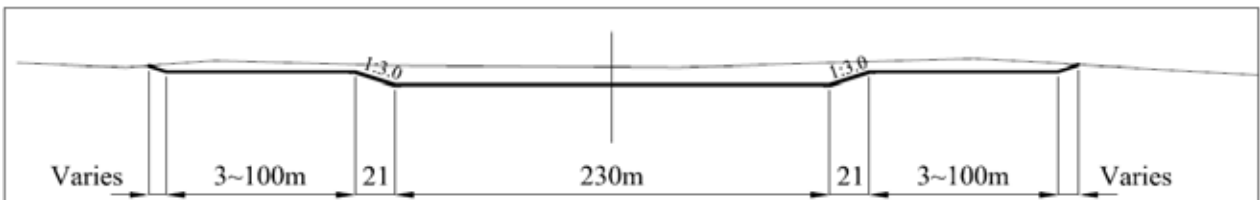
**STANDARD CROSS SECTION OF REVETMENT-2
(AT CATAGGAMAN SITE)**



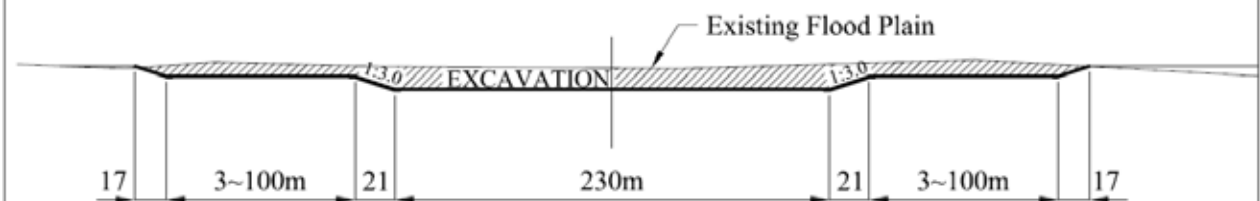
**STANDARD CROSS SECTION OF REVETMENT-3
(AT ENRILE SITE)**

THE PREPARATORY STUDY FOR
SECTOR LOAN FOR
DISASTER RISK MANAGEMENT
CTI Engineering International Co., Ltd.
Nippon Koei Co., Ltd

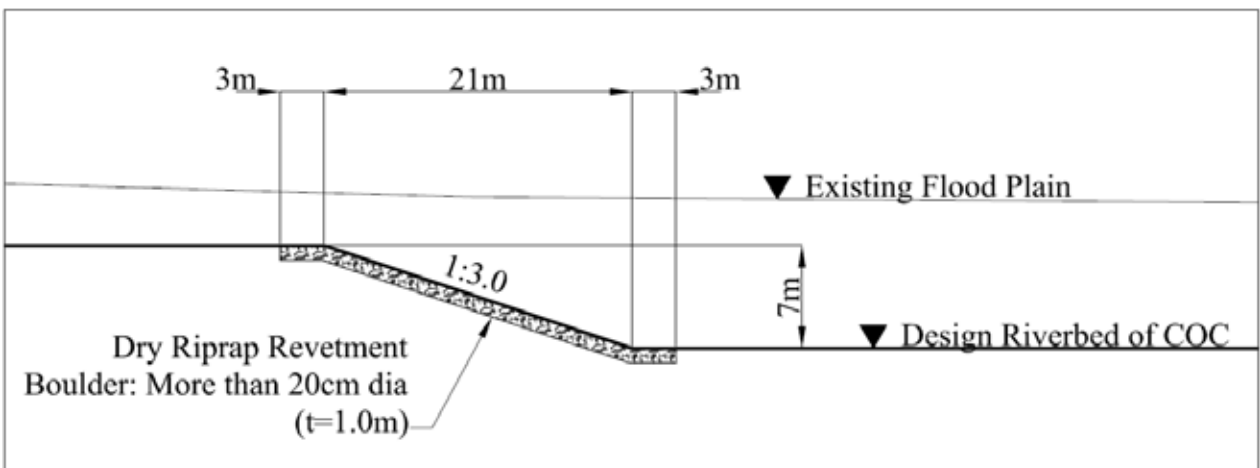
Figure 7.9
Typical Cross Sections of
Proposed Revetment Structure
at Each Site



STANDARD CROSS SECTION-1



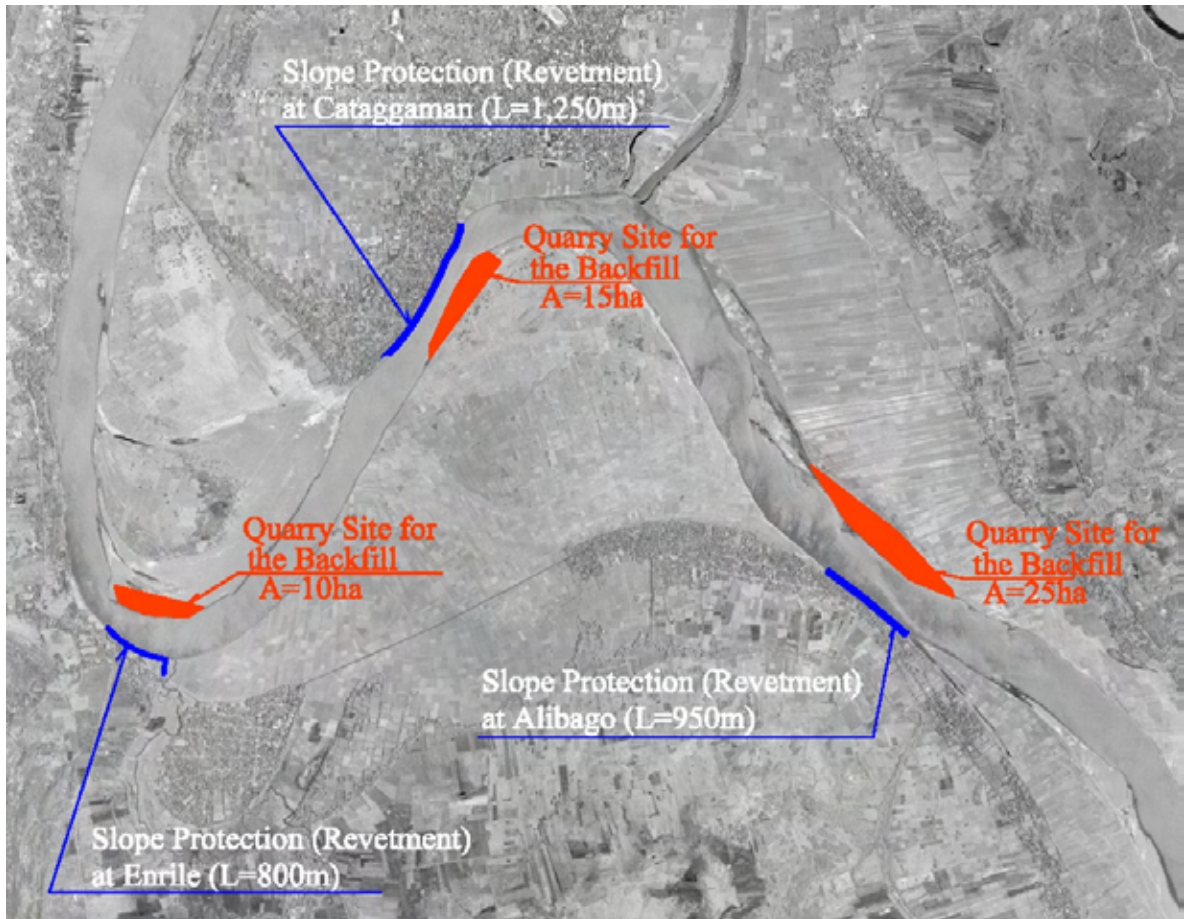
STANDARD CROSS SECTION-2 (DIVERSION POINT)



(Source: 2002 F/S)

THE PREPARATORY STUDY FOR
SECTOR LOAN FOR
DISASTER RISK MANAGEMENT
CTI Engineering International Co., Ltd.
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Figure 7.10
Typical Cross Sections of
Cut-Off Channel Proposed in 2002 F/S

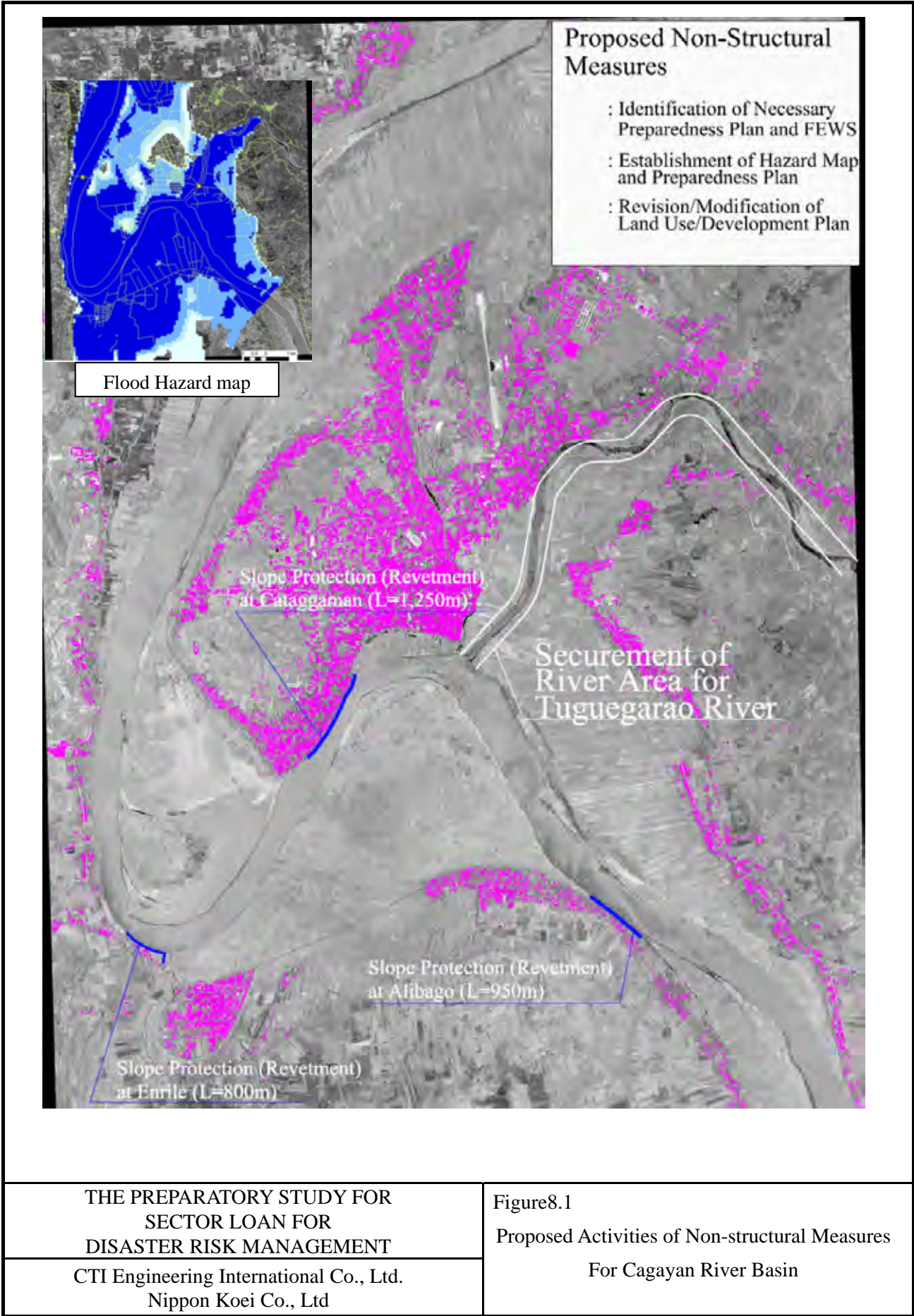


THE PREPARATORY STUDY FOR
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Figure 7.11

Proposed Quarry Sites for
 Proposed Revetment Construction



ANNEX

ANNEX PIIA 9-1

BIOLOGICAL SURVEY IN CAGAYAN RIVER

(1) Survey methodology

The survey was conducted based on 1) the eye-checking on the habitats/signs and 2) interview to the local residents.

(2) Collected data

(a) Flora

The reconnaissance survey reveals that the proposed project site is largely agricultural and vast tracks of lands are planted with different agricultural crops. Rice and corn are among the most dominant crops and considered to be the leading economically important plant species in the area. The Table below shows the different plant species that makes up the vegetation cover of the proposed project site.

Table 1 Collected Species in the Project Site (Flora)

Family	Scientific Name	Common Name	Ecological Status	Ecological and Economic Importance
Anacardiaceae	<i>Buchanania aborescens</i>	Balainghasai	Tree; depleted/endemic	Light construction material
	<i>Semecarpus cuneiformis</i>	Ligas	Tree; depleted/endemic	Fruites edible; medicinal value
	<i>Mangifera indica</i>	Mango	Tree; endemic; common	Cultivated for food; medicinal value; wood craft
Annonaceae	<i>Cananga odorata</i>	Ilang ilang	Tree; indigenous	Ornamental
Apocynaceae	<i>Astonia scholaris</i>	Dita; WHITE CHEESE WOOD	Smooth tree growing 6-20 meters; endemic	Medicinal; Pesticidal
Araliaceae	<i>Scheffera odorata</i>	Five fingers	Woody vine; endemic	Ornamental
Caricaceae	<i>Carica papaya</i>	Papaya	Shrub; endemic; common	Cultivated for food; medicinal value
Combretaceae	<i>Terminalia foetidissima</i>	Talisai gubat	Tree; common/Indigenous	Shade tree, ornamental, edible fruit
Cyatheaceae	<i>Cyathea sp.</i>	Fern	Common	Ornamental
Datisceae	<i>Octomeles sumatrans</i>	Binuang	Tree; common/endemic	Light construction; charcoal making
Euphorbiaceae	<i>Antidesma bunius</i>	Bignai	Deciduous tree; distributed in thickets, in towns and settlements, occasional in forests	Medicinal; food
Graminae	<i>Arundo donax</i>	Tambo	Grass; common	Handicrafts
	<i>Schizostachyum sp.</i>	Climbing bamboo	Bamboo; depleted	Ornamental purpose, ecological balance
Leeaceae	<i>Leea philippinensis</i>	Kaliantan	Shrub; endemic	Biodiversity
Meliaceae	<i>Azadirachta indica</i>	Neem tree	Tree; introduced	Pesticide;
Mimosaceae	<i>Leucaena diversifolia</i>	Ipil-ipil	Tree; common/Indigenous	Fuelwood; light construction material
Moraceae	<i>Ficus septica</i>	Hauili	Small tree; endemic	Wild crafted; medicinal value
	<i>Ficus stipulosa</i>	Balete	Tree; endemic	Medicinal; Ornamental (bonsai)
	<i>Artocarpus blancoi</i>	Antipol	Tree; common/Indigenous	Light construction
Moringaceae	<i>Moringa oleifera</i>	Malunggay; Horse raddish tree	Shrub; endemic; common	Cultivated for food; medicinal value

Family	Scientific Name	Common Name	Ecological Status	Ecological and Economic Importance
Musaceae	<i>Musa sapientum</i>	Banana	Shrub; endemic; common	Cultivated for food; medicinal value
Myrtaceae	<i>Psidium guajava</i>	Guava	Evergreen shrub; small tree; endemic	Medicinal; food
	<i>Syzygium cumini</i>	Duhat; Java plum	Tree; endemic	Medicinal; food
Palmae	<i>Cocos nucifera</i>	Coconut	Palm; common/exotic	Multipurpose, medicinal value
	<i>Caryota rumphiana</i>	Takipan	Palm; endemic	Ornamental
Polypodiaceae	<i>Nephrolepis sp.</i>	Fern	Fern; common	Ornamental
Rhizoporaceae	<i>Carallia brachiata</i>	Bakauan gubat	Tree; depleted	Tanning, dyeing, fuelwood/charcoal
Sapotaceae	<i>Palaquium philippinense</i>	Malak-malak	Tree; endemic	Light construction, medicinal value
Sterculiaceae	<i>Theobroma cacao</i>	Kakaw; cocoa	Small tree; introduced	Medicinal; food; wood craft
Verbenaceae	<i>Lantana camara</i>	Sapinit	Weed; common/exotic	Pesticidal; hedge plant, medicinal
	<i>Vitioipremna philippinensis</i>	Lingo-lingo	Tree; endemic	Heavy construction
Zingiberaceae	<i>Alpinia elegans</i>	Tagbak	Tree; indigenous	Ornamental

Small to medium sized trees with a diameter ranging from 10-20cm were found in the proposed project site. Such trees include hauili (*Ficus septica*), bayabas (*Psidium guajava*), ilang-ilang (*Cananga odorata*) and dita (*Alstonia scholaris*). Pioneer species such as antipolo (*Artocarpus blancoi*) were also observed thriving in the area. Some bignai trees (*Antidesma bunius*) were observed to be relatively abundant in this area. Bignai serves as bird feed but local residents reported that the fruits of bignai are edible and are good for wine and jam making. The river banks were planted with papaya, banana and other vegetables.

(b) Fauna

The table below shows the different animals that are still present and inhabits the proposed project site.

Table 2 Collected Species in the Project Site (Fauna)

Scientific Names	Common Names	Local Names	Family
Birds			
<i>Aethopyga pulcherrima decorosa</i>	Mountain sunbird		Nectariniidae
<i>Bubulcus ibis coromandus</i>	Cattle egret		Ardeidae
<i>Centropus viridis viridis</i>	Philippine coucal	Sabukot	Cuculidae
<i>Collocalia brevirostris whiteheadi</i>	Himalayan swiftlet		Apodidae
<i>Collocalia vanikorensis amelis</i>	Gray swiftlet		Apodidae
<i>Corvus macrorhynchus philippinus</i>	Large-billed crow	Uwak	Corvidae
<i>Cypsiurus parvus pallidior</i>	Palm swift		Apodidae
<i>Gallus gallus gallus</i>	Jungle fowl	Labuyo	Phasianidae
<i>Hypsipetes philippinus philippinus</i>	Philippine bulbul		Pycnonotidae
<i>Lonchura malacca jagori</i>	Chestnut mannikin	Mayang pula	Estrildidae
<i>Merops viridis americanus</i>	Chestnut-headed bee-eater		Meropidae

Scientific Names	Common Names	Local Names	Family
<i>Ninox philippensis centralis</i>	Philippine boobook owl		Strigidae
<i>Passer montanus malaccensis</i>	Tree sparrow	Maya	Ploceidae
<i>Phapitreron leucotis brevirostris</i>	White-eared brown fruit dove		Columbidae
<i>Pycnonotus goivier samarensis</i>	Yellow-vented bulbul	Tagulolla	Pycnonotidae
<i>Rallina eurizonides eurizonoides</i>	Phil. Banded crane	Tikling	Rallidae
<i>Rallus torquatus torquatus</i>	Barred rail	Tikling	Rallidae
<i>Rhipidura javanica nigritorquia</i>	Malaysian fantail		Monarchidae
<i>Treron pompadora canescens</i>	Pompadour green pigeon		Columbidae
<i>Turnix sylvatica celestinoi</i>	Striped button-quail	Pugo	Turnidae
Mammals			
<i>Macaca fascicularis</i>	Long-tailed macaque	Datag	Cercopithecidae
<i>Ptenochirus jagorii</i>	Musky fruit bat	Kwaknit	Pteropidae
<i>Cynopterus brachyotis</i>	Short nosed fruit bat		
<i>Rattus tanezumi</i>	Asian black rat	Dagang bukid	Muridae
<i>Rattus exulans</i>	Polynesian rat		Muridae
Reptiles			
<i>Gecko gekko</i>	Tockay gecko	Tuko	Gekkonidae
<i>Hemidactylus frenatus</i>	House gecko		
<i>Mabuya multifasciata</i>	Common brown skink	Bubuli	Scincidae
<i>Ophiophagus hannah</i>	King cobra	Cobra	Elaphidae
<i>Varanus salvator</i>	Common monitor lizard		
<i>Lycodon aulicus</i>	Common wolf snake		
<i>Python reticulatus</i>	Reticulated python	Sawa	Boidae/ Pythonidae
Amphibians			
<i>Bufo marinus</i>	Marine toad	Palaka	Bufo
<i>Rana magna</i>	Frog	Palakang bukid	

Two commensal species, the Asian Black Rat (*Rattus tanezumi*), regarded as a serious pest to agricultural crops and the Polynesian Rat (*Rattus exulans*), a medium to large-sized brown rat predominates Tuguegarao and Enrile. This commensal species was typical of any agricultural area, where it helps as a biological control to ground insect pests.

The presence of macaque (*Macaca fascicularis*) was also indicative of the importance of the project area relative to its surrounding communities. This primate requires a relatively large area to forage, but according to some local residents, these macaques were observed to tolerate disturbances since they are already accustomed to depend on agricultural crops for food. However, their number has dwindled these past years due to the rapid loss of their habitat as a direct result of land conversion from forest to into agricultural, residential, and commercial lands. Just the same, these monkeys, as local residents claim, were considered as pests because they feed on their agricultural crops such as corn, rice and other root crops.

The common short-nosed Fruit Bat (*Cynopterus brachyotis*) and the musky fruit bat (*Ptenochirus jagorii*) are still common in the area. These fruit bats are common native species because they can tolerate and survive in a wide range of habitat types that ranges from secondary growth plant cover to agricultural areas. These bats are very tolerant even with very small patches of forest growth, as long as fruit trees are present in the area. They are extremely important in seed dispersal for the regeneration of second growth

forest. Fruit bats are basically important for seed dispersal of fruit-bearing trees and they do not cause substantial damage to any agricultural crops.

Birds are among the many wildlife species that play an important role in the process of seed dispersal and the eventual regeneration of the second growth forests. It was observed that bulbuls and sunbirds and a number of doves and pigeons are quite abundant in both areas. Presence of these bird species suggests that fruit bearing plant species as well as seed-bearing plant species are still abundant in the area. These birds play an important role in the regeneration of second growth forests because of their ability to disperse seeds.

Two species of amphibian , a frog (*Rana magna*) and an introduced species of toad (*Bufo marinus*), were observed in the area. These common species were found in disturbed habitats and in agricultural areas. Some species of reptiles such as the Towkay gecko (*Gekko gecko*), the common house gecko (*Hemidactylus frenatus*), common ground skink (*Mabuya multifasciata*), common monitor lizard (*Varanus salvator*), common wolf snake (*Lycodon aulicus*), and the reticulated python (*Python reticulatus*) are still observed in the area. Most of the lizards and geckoes were found in households and within the vicinity of human settlements.

ANNEX PIIA_9-2

WATER QUALITY ANALYSIS (CAGAYAN)

(1) Sampling points

The sampling points are shown below.

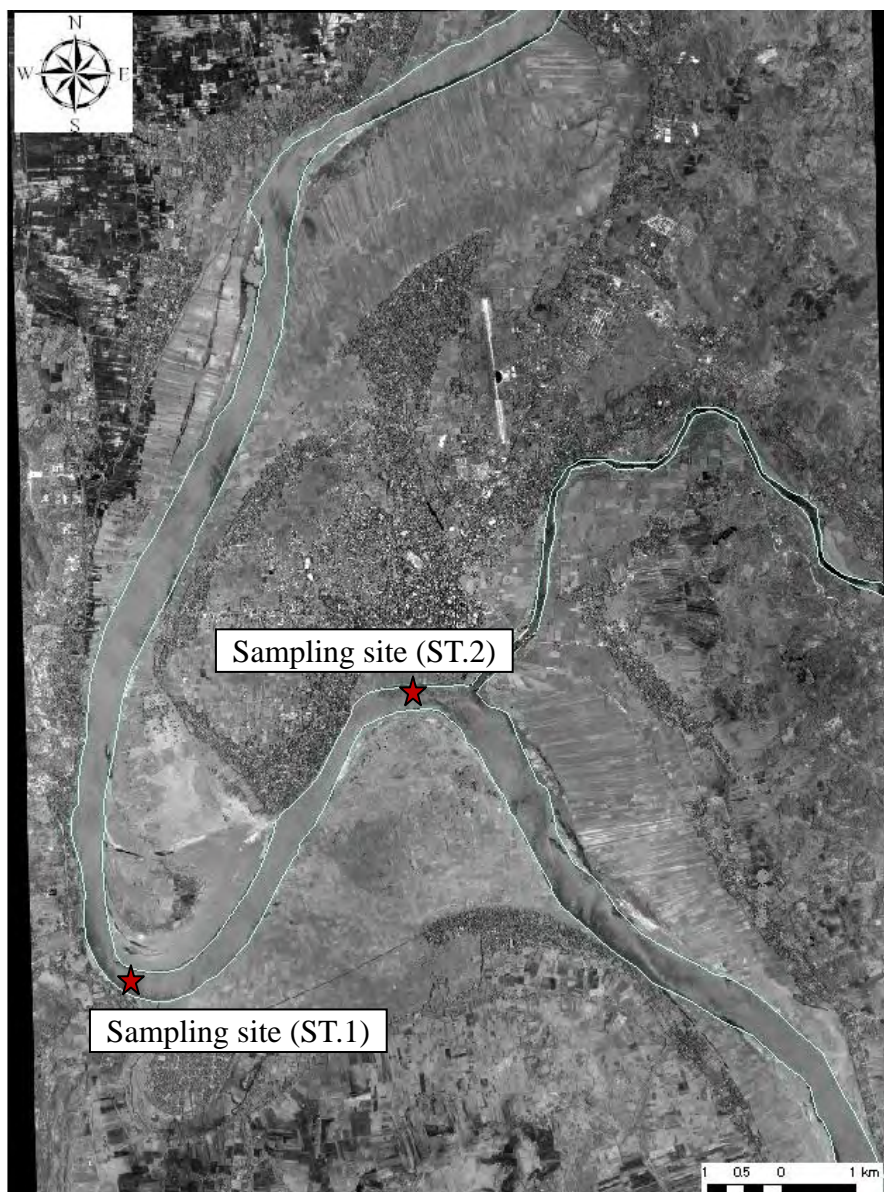


Figure 1 Sampling sites

(2) Collected data

The summary of the data is shown as below.

Table 1 Summary of Sampling Data (heavy metals)

(Unit: ppm)

Analysis	Sample 1	Sample 2	Class C waters	Method detection Limit
Total mercury	<0.0001	<0.0001	0.002	0.0001
Total Arsenic	0.03	<0.02	0.05	0.02
Total Cadmium	<0.002	<0.002	0.01	0.01

Analysis	Sample 1	Sample 2	Class C waters	Method detection Limit
Total Chromium	<0.005	<0.005	0.05 (hexavalent)	0.005
Total Lead	<0.01	<0.01	0.05	0.01
Total Cyanide	<0.01	<0.01	0.05	0.01

The sampling analysis data sheets are shown below.

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Sep. 28 2009 05:56PM P1

Results of Analyses

CRL-SN-09-1990
Page 1 of 6

Customer : Center for Environmental Studies and Management, Inc.
Address : Unit 206, UAG Building, Ortigas Ave., Greenhills, San Juan, Metro Manila
Attn. : Bethela Castro - Del Nero

Customer's Project : Disaster Risk Management

Date Sampled : 26-Jun-09
Date Received : 30-Jun-09
Matrix, Units : Water, mg/L
Analysts : TPS / JBC

*Cagayan ST-1. water
(1/2)*

Lab. No. : 25078-01
Sample I.D. : CAG ST 1 H₂O 62609

Analyses	Dates of Analyses	Results, as received	MDL	DLR
AAS - Cold Vapor (Total Mercury)	07/08/09	< 0.0001	0.0001	0.0001
Colorimetry - SDDC (Total Arsenic)	07/02/09	0.03	0.02	0.02
Flame AAS (Total Cadmium)	07/06/09	< 0.002	0.002	0.002
Flame AAS (Total Chromium)	07/06/09	< 0.005	0.005	0.005
Flame AAS (Total Lead)	07/03/09	< 0.01	0.01	0.01

MDL = Method Detection Limits

DLR = Detection Limits for Reporting (MDL x Dilution Factor)

References: Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 21st Edition.

Test Methods for Evaluating Solid Wastes, Vol 1A, USEPA, Third Edition / 1988 Annual Book of ASTM Standards, Volume 11.01
Varian / Perkin Elmer Analytical Methods, Flame Atomic Absorption Spectrophotometry

Reviewed By: *Chas C. Arroyo*
Chas C. Arroyo
Laboratory Manager
PRC License No.: 6701

Date: *7/28/09*

Approved By: *Maria Carmela Q. Capule*
Maria Carmela Q. Capule
Laboratory Director
PRC License No.: 7663

Date: *7/28/09*

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Result of Analysis

CRL-SN-09-1990
Page 2 of 6

Customer : Center for Environmental Studies and Management, Inc.
Address : Unit 206, UAG Building, Ortigas Ave., Greenhills, San Juan, Metro Manila
Attn. : Bethela Castro - Del Nero

Customer's Project : Disaster Risk Management

Date Sampled : 26-Jun-09
Date Received : 30-Jun-09
Date Analyzed : 15-Jul-09
Matrix, Unit : Water, mg/L
Analyst : NAP

*Cagayan ST-4 water
(2/2)*

Lab. No. : 25078-02
Sample I.D. : CAG ST 1 H₂O 62609 CN

Analysis	Result as received	MDL	DLR
Distillation - ISE (Total Cyanide)	< 0.01	0.01	0.01

MDL = Method Detection Limit

DLR = Detection Limit for Reporting (MDL x Dilution Factor)

Reference: Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 21st Edition.

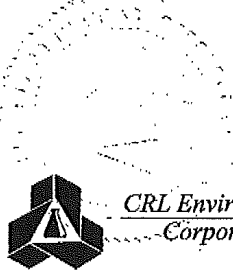
Reviewed By: *Chas C. Arroyo*
Chas C. Arroyo
Laboratory Manager
PRC License No.: 6701

Date: *7/28/09*

Approved By: *Maria Carmela Q. Capule*
Maria Carmela Q. Capule
Laboratory Director
PRC License No.: 7663

Date: *7/28/09*

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Results of Analyses

CRL-SN-09-1990
Page 4 of 6

Customer : Center for Environmental Studies and Management, Inc.
Address : Unit 206, UAG Building, Ortigas Ave., Greenhills, San Juan, Metro Manila
Attn. : Bethela Castro - Del Nero

Customer's Project : Disaster Risk Management

Date Sampled : 26-Jun-09
Date Received : 30-Jun-09
Matrix, Units : Water, mg/L
Analysts : TPS / JBC

*cagayan ST-2 water
(1/2)*

Lab. No. : 25078-04
Sample I.D. : CAG ST 2 H₂O 62609

Analyses	Dates of Analyses	Results, as received	MDL	DLR
AAS - Cold Vapor (Total Mercury)	07/08/09	< 0.0001	0.0001	0.0001
Colorimetry - SDDC (Total Arsenic)	07/02/09	< 0.02	0.02	0.02
Flame AAS (Total Cadmium)	07/06/09	< 0.002	0.002	0.002
Flame AAS (Total Chromium)	07/06/09	< 0.005	0.005	0.005
Flame AAS (Total Lead)	07/03/09	< 0.01	0.01	0.01

MDL = Method Detection Limits

DLR = Detection Limits for Reporting (MDL x Dilution Factor)

References: Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 21st Edition.

Test Methods for Evaluating Solid Wastes, Vol 1A, USEPA, Third Edition

Varian / Perkin Elmer Analytical Methods, Flame Atomic Absorption Spectrophotometry

Reviewed By: *Chas C. Arroyo*
Chas C. Arroyo
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PRC License No.: 6701

Date: *7/28/09*

Approved By: *Maria Carmela Q. Capule*
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Date: *7/28/09*

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Sep. 28 2009 05:59PM P5

Result of Analysis

CRL-SN-09-1990
Page 5 of 6

Customer : Center for Environmental Studies and Management, Inc.
Address : Unit 206, UAG Building, Ortigas Ave., Greenhills, San Juan, Metro Manila
Attn. : Bethela Castro - Del Nero

Customer's Project : Disaster Risk Management

Date Sampled : 26-Jun-09
Date Received : 30-Jun-09
Date Analyzed : 15-Jul-09
Matrix, Unit : Water, mg/L
Analyst : NAP

*cagayan ST-2 water
(3/2)*

Lab. No. : 25078-03
Sample I.D. : CAG ST 2 H₂O 62609 CN

Analysis	Result, as received	MDL	DLR
Distillation - ISE (Total Cyanide)	< 0.01	0.01	0.01

MDL = Method Detection Limit

DLR = Detection Limit for Reporting (MDL x Dilution Factor)

Reference: Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 21st Edition.

Reviewed By: *Chas C. Arroyo*
Chas C. Arroyo
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PRC License No.: 6701

Date: *7/15/09*

Approved By: *Maria Carmela O. Capule*
Maria Carmela O. Capule
Laboratory Director
PRC License No.: 7663

Date: *7/15/09*

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ANNEX PIIA_9-3

NOISE MEASUREMENT (CAGAYAN)

(1) Sampling date/points

Conducted date: July 16, 2009

Sampling points: (Figure 1 Sampling sites)

- (1) At Catagaman in Tugearao
- (2) At Alibago in Enrile
- (3) At Palua Norte

The noise sampling stations were positioned at the nearest residential community to determine the possible impact of noise during the construction period.

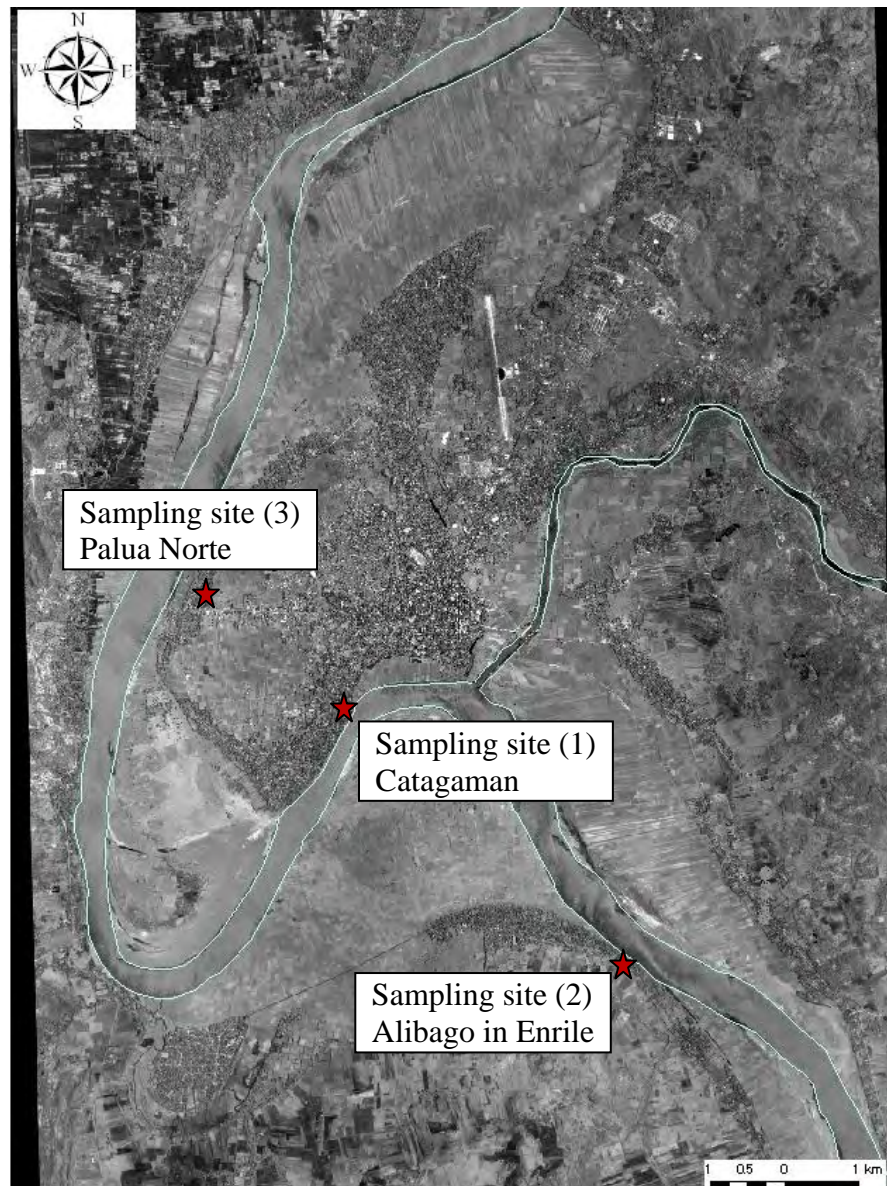


Figure 1 Sampling sites

(2) Measurement instrument

A precision type, digital sound level meter using the method prescribed in the implementing rules and regulations of PD 984. The instrument is also provided with an integral calibrator which allows the instrument to be calibrated to 94dB. The minimum and maximum of continuous readings were recorded in each station. The median values were then taken and compared with the DENR noise standards based on the 1978 Rules and Regulations of PD 984.

(3) Collected data

The measurement result is shown as below.

Table 1 Results of Noise Sampling

Station	Distance	Time	Min. (dBA)	Max. (dBA)	Median (dBA)	DENR Std. (dbA)	Category of Area	Remarks
Catagaman area								
	10 meters from planed revetment	Morning (6:40am)	40.4	71.2	55.8	50	Class AA	Exceeded
		Noon (12:00pm)	56	79	67.5	50	Class AA	Exceeded
		Evening (6:50pm)	51	74.6	62.8	50	Class AA	Exceeded
	15 meters from planed revetment	Morning (7:00am)	45	65	55	55	Class A	within
		Afternoon (11:45am)	56	72	64	55	Class A	Exceeded
		Evening (7:10pm)	40	75.6	57.8	55	Class A	Exceeded
Alibago Enrile								
	10 meters from planed revetment	Morning (8:10am)	43	55	49	55	Class A	within
		Afternoon (1:40pm)	42	63	52.5	55	Class A	within
		Evening (6:10pm)	44	56	50	55	Class A	within
	20 meters from planed revetment	Morning (7:50am)	46	56	51	55	Class A	within
		Afternoon (1:00pm)	43.5	65.5	54.5	55	Class A	within
		Evening (6:20pm)	43	56	49.5	55	Class A	within
Palua Norte								
	15 meters from planed revetment	Morning (8:50am)	43	56	49.5	55	Class A	within
		Afternoon (2:40pm)	45	54	49.5	55	Class A	within
		Evening (6:00pm)	45	55	50	55	Class A	within
	15 meters from planed revetment	Morning (9:20am)	43	71.2	57.1	55	Class A	Exceeded
		Afternoon (3:00pm)	49	71.2	60.1	55	Class A	Exceeded
		Evening (6:20pm)	42.4	67.5	54.95	55	Class A	within

The noise standards may be considered as Class A since the area is primarily used for residential purposes. Thus, the results of the sound level measurement are compared to the daytime standard for Class A area.

The samples were made at Alibago, Enrile, and Catagaman, Tuguegarao because there will be revetments built there at the Palua Norte, since the initial designs called for the inclusion of this area

There were some exceedances in the noise parameters because of the passing through of tricycles and jeepneys in the area which are often noisy and without noise retardants. In Enrile, however, tricycles were far and few and the major sound would be the sound of horse hooves.

(4) Noise Standard

The country implements an Environmental Quality Standard for noise in general areas as outlined in Presidential Decree (PD) 984, or the Pollution Control Law of the Philippines. The noise standards specify the allowable level of noise based on category of area as outlined Table 2.

Table 2 Environmental Quality Standards for Noise in General Areas

Category of Area	Daytime	Morning & Evening	Nighttime
AA	50 dB	45 dB	40 dB
A	55 dB	50 dB	45 dB
B	65 dB	60 dB	55 dB
C	70 dB	65 dB	60 dB
D	75 dB	70 dB	65 dB

Source: Official Gazette, 1978 Implementing Rules and Regulations of P.D. 984.

Legend:

Category of Area is as follows:

- AA - a section or contiguous area which require quietness such as area within 100 meters from school sites, nursery schools, hospitals, and special home for the aged.
- A - a section or contiguous area primarily used for residential purposes.
- B - a section or contiguous area primarily used as commercial area.
- C - a section primarily reserved as a light industrial area.
- D - a section primarily reserved as a heavy industrial area.

Division of 24-hour period is as follows:

- Morning - 5:00 AM to 9:00 AM
- Daytime - 9:00 AM to 6:00 PM
- Evening - 6:00 PM to 10:00 PM
- Nighttime- 10:00 PM to 5:00 AM.

ANNEX PIIA_9-4

LAND-SUE IN TUGEGARAO CITY (CAGAYAN RIVER BASIN)

Table 1 Land-use in Tugearao City

	Existing (circa 2001)		Proposed / Approved			
	Area (hectares): (1)	% of total	Area (hectares): (2)	% of total	Difference (3): (2) - (1)	Change (3)/(1) (%)
BUILT UP AREA						
Residential	1,313	11.52	2,465	21.63	+1,152	87.74
Commercial	123	1.08	238	2.09	+115	93.50
Institutional	170	1.49	190	1.67	+20	11.76
Industrial	30	0.26	82	0.72	+52	173.33
utilities	157	1.38	273	2.40	+116	73.89
Subtotal	1,793	(15.73)	3,248	(28.50)	+1,455	(81.15)
OTHER LAND CLASSIFICATION						
Agricultural Land	4,520	39.67	5,892	51.71	+1,372	30.35
Open Spaces	3,984	34.96	1,157	10.15	-2,827	-70.96
Creeks	1,098	9.64	1,098	9.64	+0	0.00
Subtotal	9,602	(84.27)	8,147	(71.50)	-1,455	-(15.15)
Total	11,395	(100.00)	11,395	(100.00)	+0	(0.00)

Table 2 Crop-Wise Land use of agriculture Land in Tugearao City

Crop	1994		1996		1998	
	Area (hectares)	% to total agri land	Area (hectares)	% to total agri land	Area (hectares)	% to total agri land
RICE	871.00	17.67	725.00	18.36	725.00	17.61
CORN	2,810.00	57.01	2,193.50	55.54	2,193.50	53.27
OTHER GRAINS	184.00	3.73	196.30	4.97	208.71	5.07
VEGETABLES						
LEAFY VEGETABLES	51.00	1.03	47.12	1.19	55.00	1.34
OTHER VEGETABLES	188.00	3.81	253.42	6.42	315.00	7.65
FRUITS	94.00	1.91	73.78	1.87	110.00	2.67
ROOT CROPS	278.04	5.64	121.76	3.08	130.50	3.17
OTHER COMMERCIAL CROPS	453.00	9.19	338.51	8.57	379.80	9.22
TOTAL	4,929.04	100.00	3,949.39	100.00	4,117.51	100.00

As one can see from the table, the area for each crop varies per year. This change are due to land conversion and the availability of the river banks for cultivation. The banks of the river are planted mostly to corn and may be available depending on the flooding of the river for that particular year.

About 71.22 % of Enrile's land is agricultural or 13,140 hectares of which 5,678 hectares is planted to crops while the rest is used for grazing land and water impounding projects. The main residential areas in the poblacion area occupies 118 hectares while the Lanna, Magalang East and Alibago residential areas cover 117 hectares. Other residential areas in cover an additional 300 hectares.

Area planted to rice is 3,534 hectares, divided into irrigated areas of 2,048 hectares as irrigated ricefields and 1,449 hectares rainfed. Areas planted to corn total 1,215.77 hectares. Peanuts are planted to 150 hectares of agricultural land while mungbean is planted in 20.15 hectares. There are likewise 60.78 hectares of tilapia fishponds. Total

land area to vegetables to 92.46 hectares and 457.5 hectares are planted to fruit trees. Most of the other land is used to graze cattle, of which ten farms are found in the area.

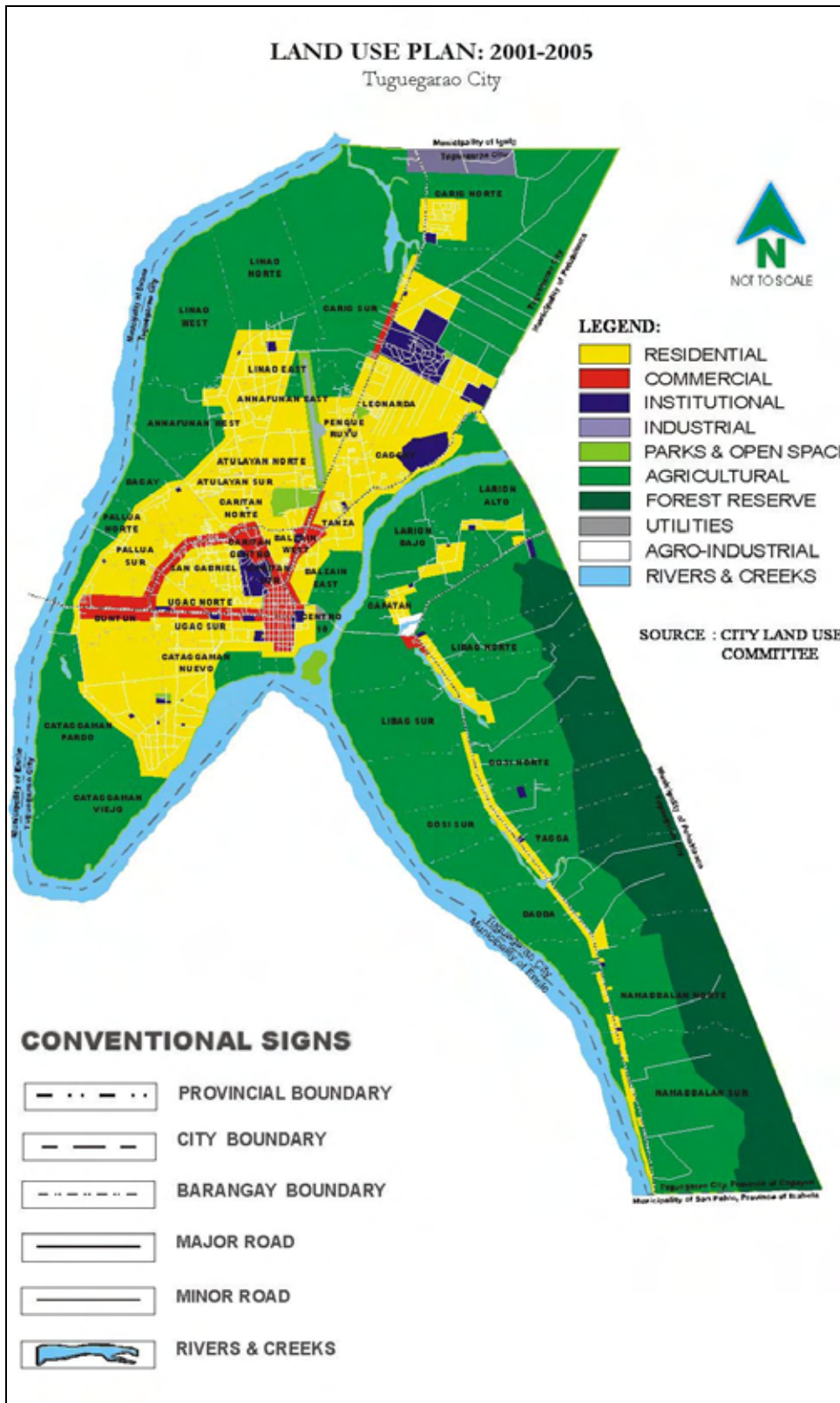


Figure 1 Land use Map in Tuguegarao City

ANNEX PIIA_9-5

**PROFILE OF PEOPLE IN/AROUND THE PROJECT SITE
IN CAGAYAN**

(a) Location of respondents

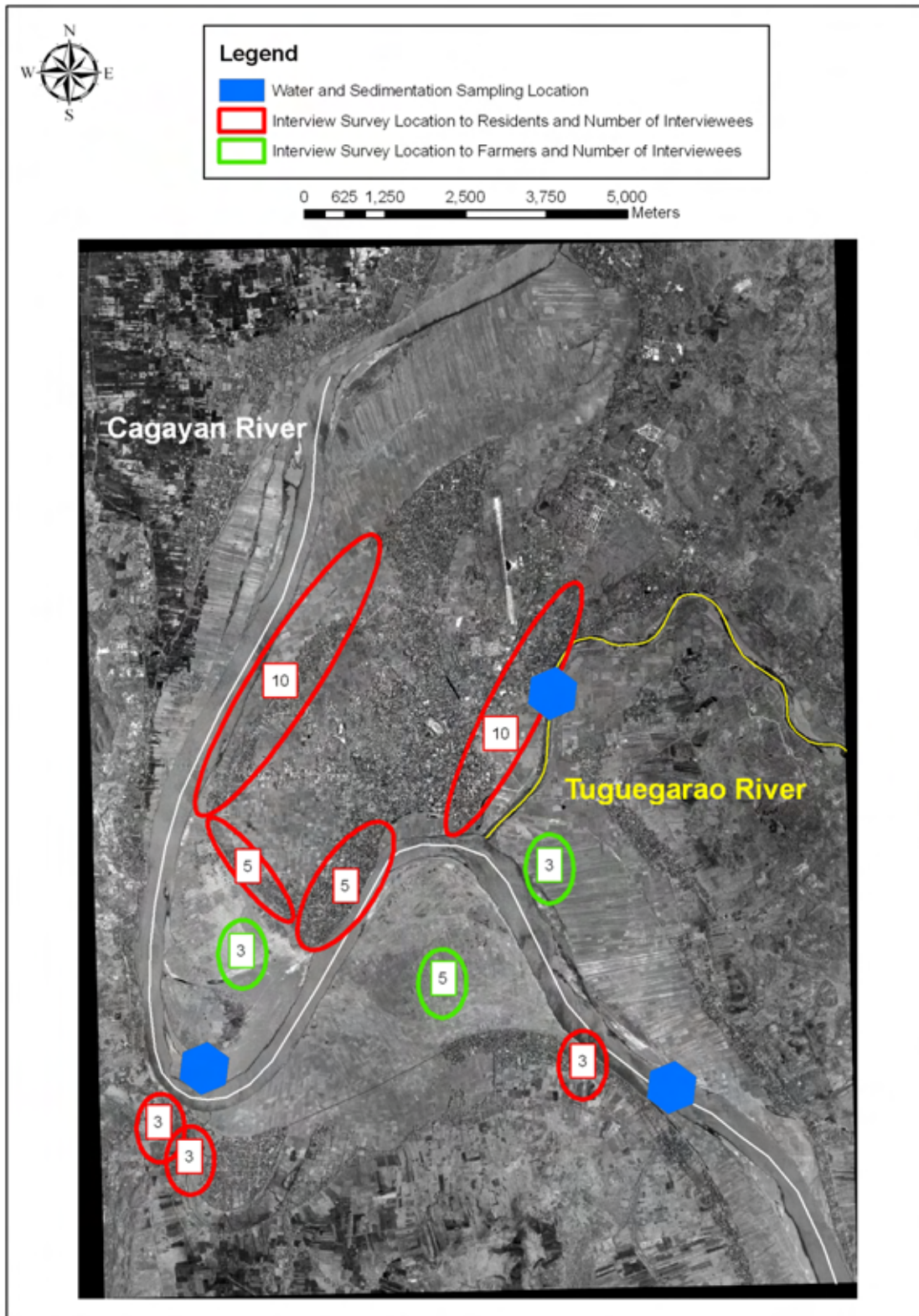


Figure 1 Location of Respondents

(b) Household (HH) heads and family

Gender and age of HH heads

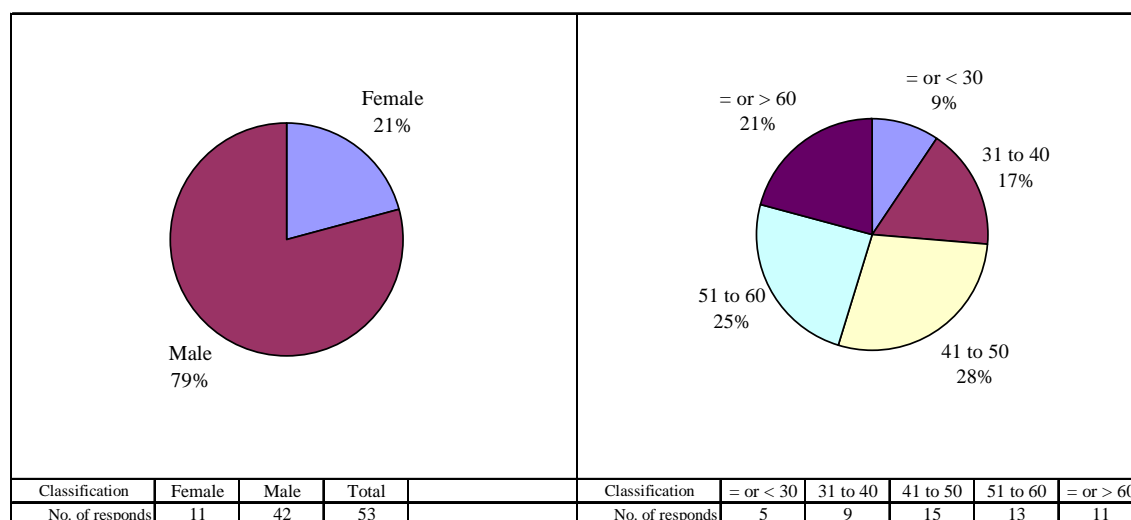
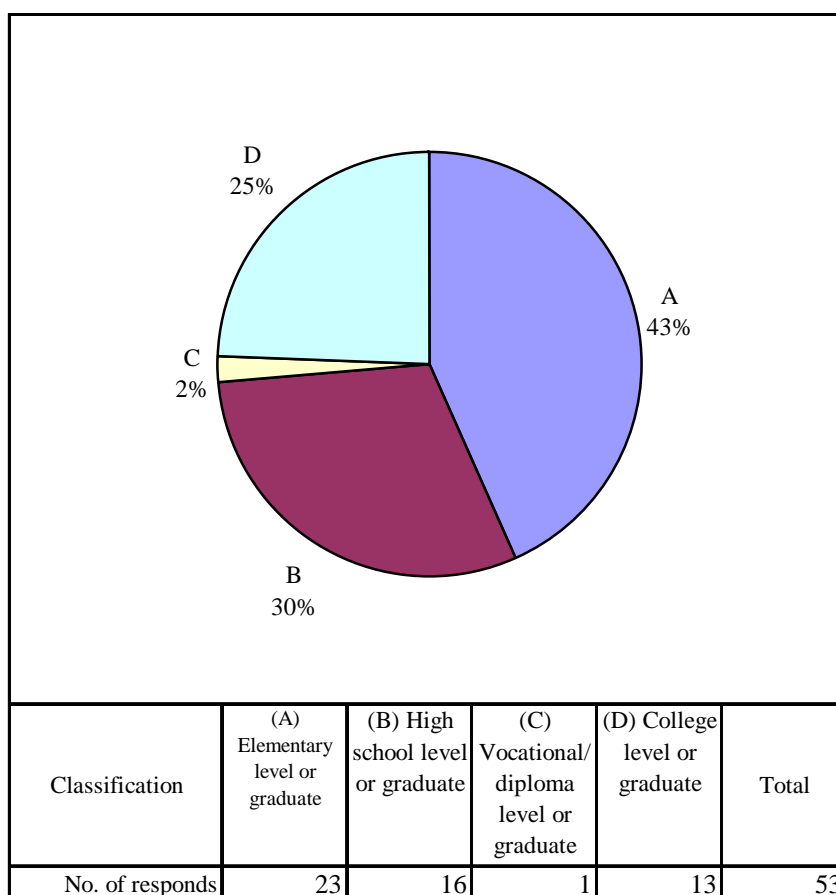


Figure 2 Gender and age of HH Heads

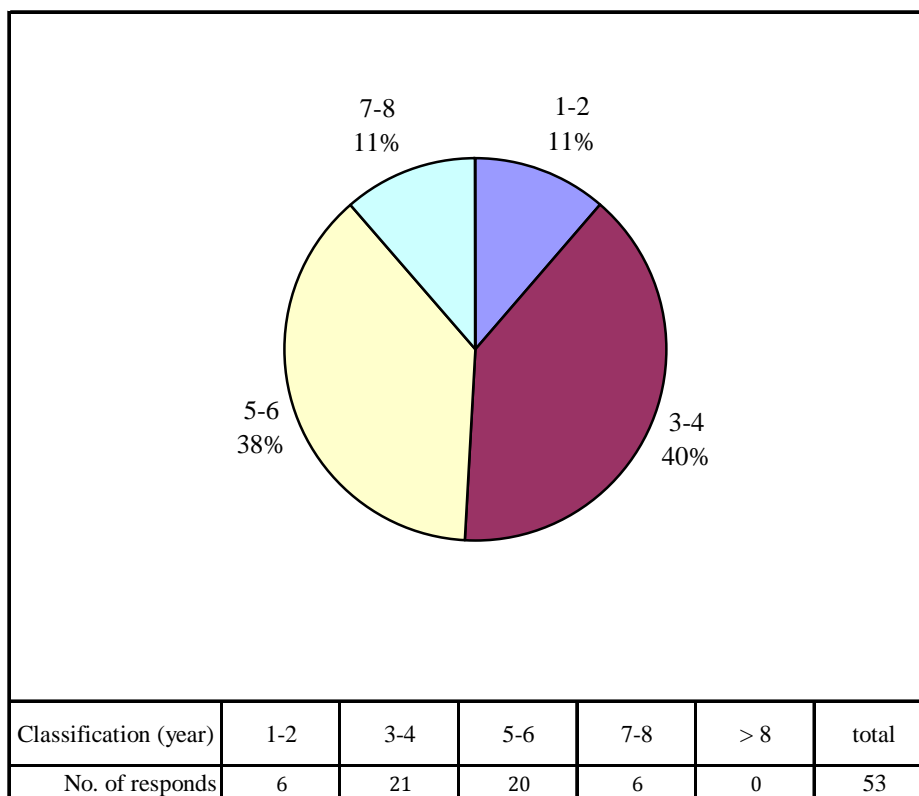
Education of HH heads



Source: JICA Study Team

Figure 3 HH Heads Education

Family composition

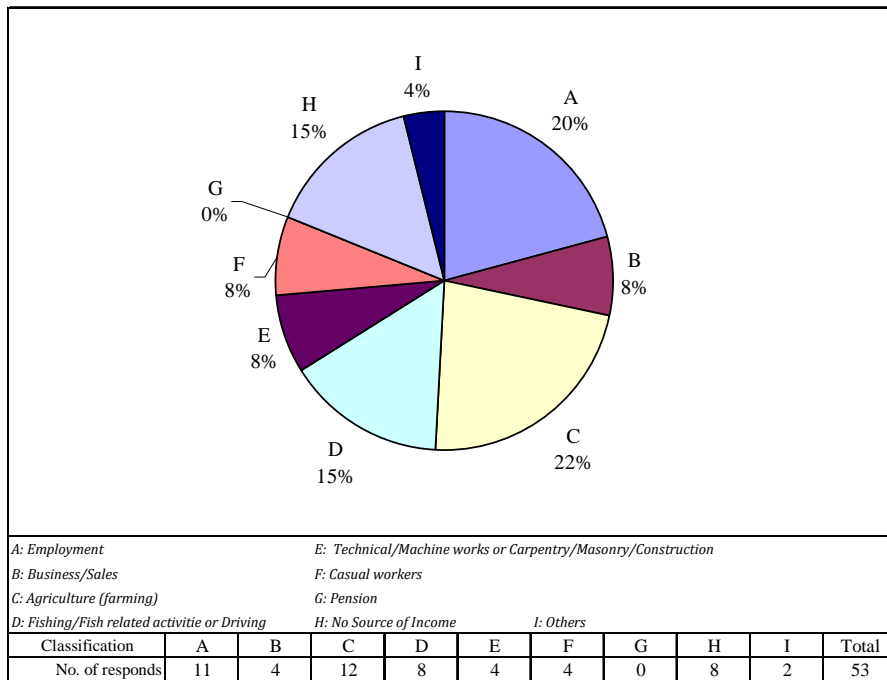


Source: JICA Study Team

Figure 4 Total Numbers of family Members

(c) Economic condition

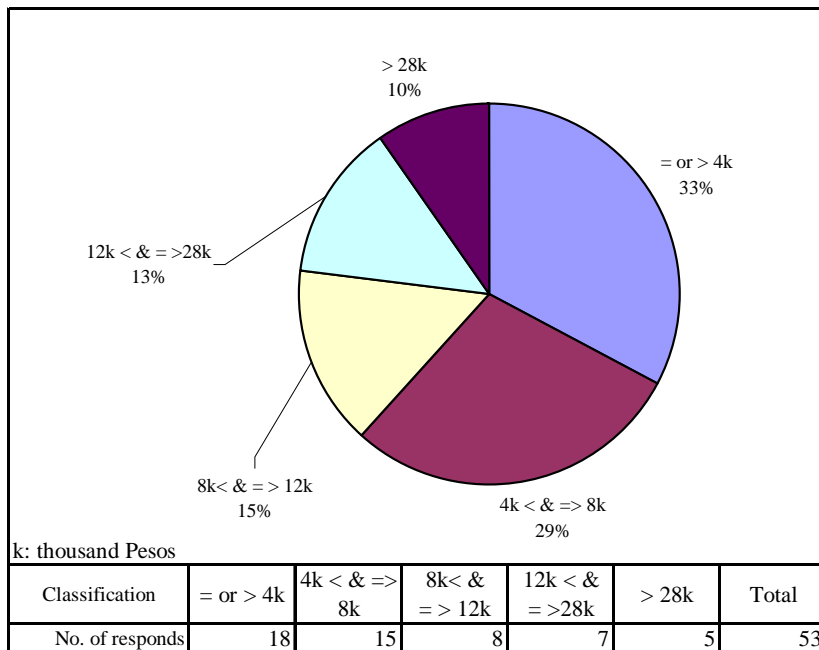
Income source of HH heads



Source: JICA Study Team

Figure 5 Income Source of HH Heads

Family income

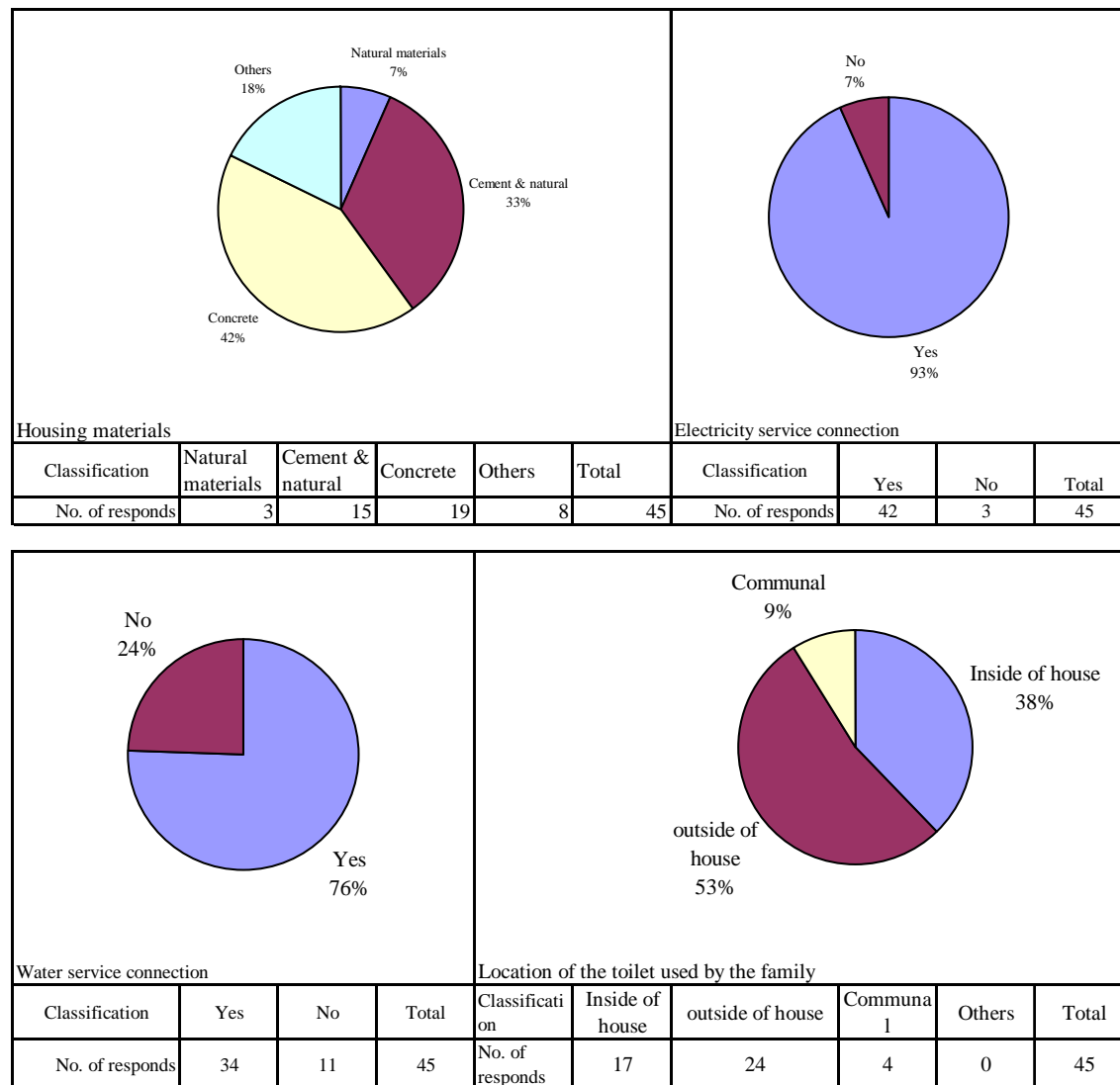


Source: JICA Study Team

Figure 6 Family Income per Month of Respondents

(d) Life condition of HHs

House size and material, Electricity, Water supply and Toilet location

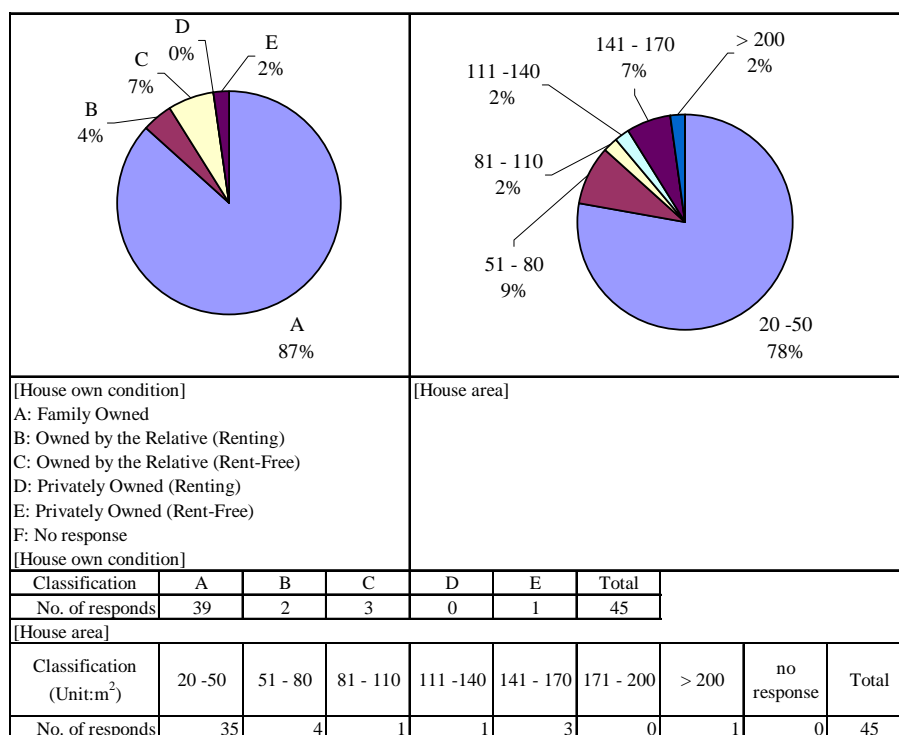


Source: JICA Study Team

Figure 7 Life Conditions of Residents

(e) Property

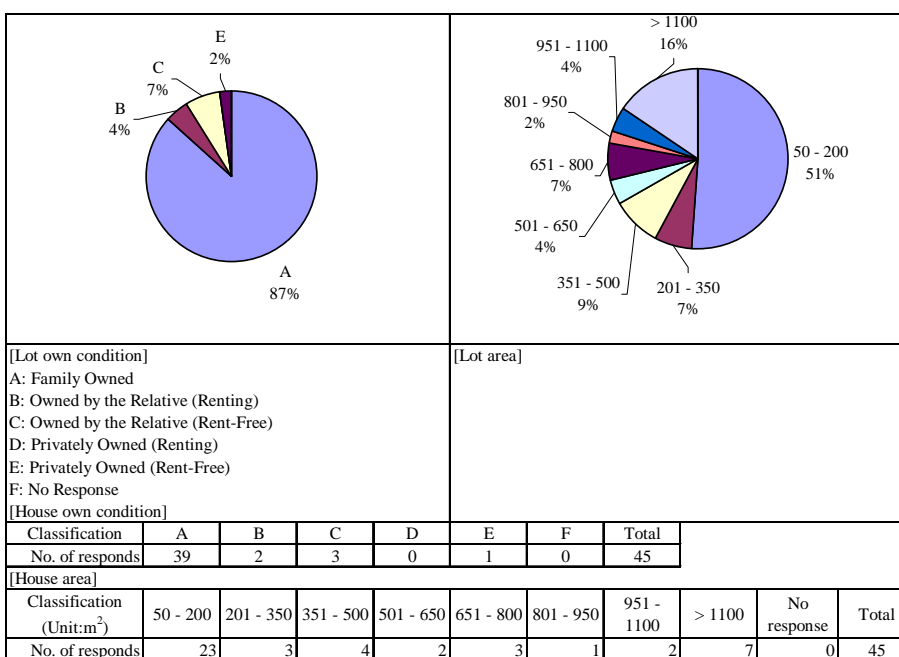
House ownership and size



Source: JICA Study Team

Figure 8 House ownership and size of Residents

Land ownership and size

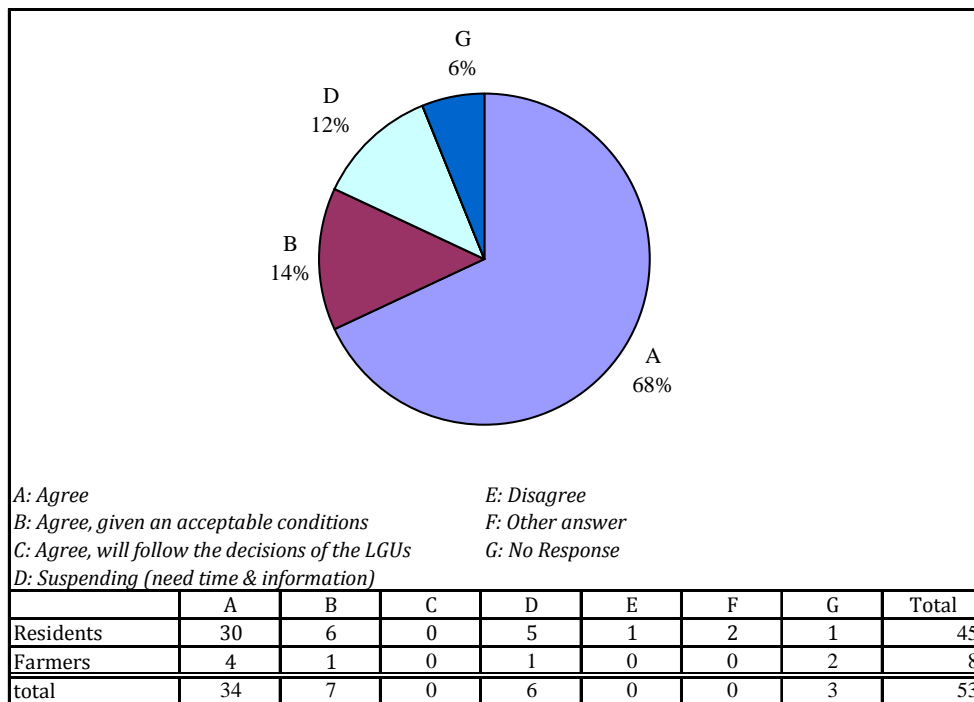


Source: JICA Study Team

Figure 9 House ownership and size of Residents

(f) **Opinion on the Project**

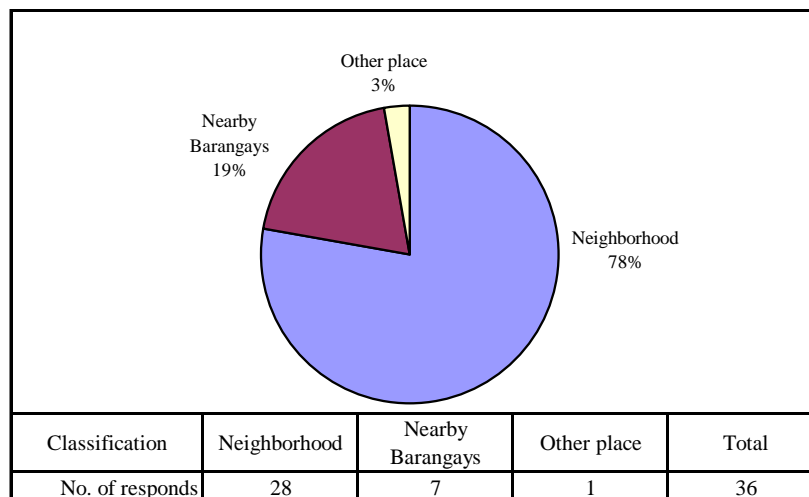
Opinion on relocation



Source: JICA Study Team

Figure 10 Opinion on relocation

Relocation site



Source: JICA Study Team

Figure 11 Opinion on relocation site

ANNEX PIIA_9-6

QUESTIONNAIRE FOR INTERVIEW SURVEY

ANNEX A

Questionnaire for Affected Households

QUESTIONNAIRE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SURVEY FOR THE PREPARATORY STUDY
FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT IN THE REPUBLIC OF THE PHILIPPINES

Magandang araw po sa inyo, ako po ay mula sa Center for Environmental Studies and Management, kasama ng grupo ng Japan International Cooperation Agency at CTI Engineering, International Co., Ltd na gumagawa ng pag-aaral tungkol sa Environmental and Social Impact Assessment Survey for the Preparatory Study for Sector Loan on Disaster Risk Management in the Republic of the Philippines. Nais ko pong malaman ninyo na ang mga impormasyong ibibigay ninyo sa amin sa panayam na ito ay gagamitin po namin sa pag-aaral at ang inyong katauhan gayundin ang inyong mga sagot ay ituturing naming lihim. Sa inyo pong pagsagot, tandaan po nating walang tama o maling sagot, kinakailangan lamang po namin ang inyong matapat na kasagutan.

Respondent No. _____

Interviewer: _____

Date of Interview: _____

Address _____ of
Interviewee: _____

Contact Number: _____

MGA TANONG PARA SA BAHAY LAMANG ANG APEKTADO NG PROYEKTO

Pangkalahatang Impormasyon (General Information)

1. Pangalan ng Respondent: _____

2. Edad: _____ Araw ng kapanganakan: _____
(mm/dd/year)

3. Kasarian: _____ babae _____ lalaki (paki-tsek)

4. Katayuang Sibil: _____ binata/dalaga _____ may-asawa _____ balo (paki-tsek)

5. Pinakamataas na antas ng pinag-aralan: _____

6. Pangunahing pinagkakakitaan/hanapbuhay: _____ (tukuyin)

7. Buwanang kita (Php) : _____

8. Iba pang pinagkakakitaan ng respondent: _____ Kita (Php):

9. Layo ng pinagtatrabahuhan: _____ Magkano ang pamasaha,
ilang sakay? ____ (kung angkop)

10. Saang katutubong grupo po kayo kabilang(kung angkop)?

Pangalan ng mga Kasama sa bahay	Edad	Kasarian	Estado sibil	Antas ng pinag-aralan	Pangunahing Hanapbuhay /Pinagkakakitaan	Buwanang kita	Layo ng Trabaho/Lugar /Fare Cost	Iba pang pinag-kakakit aan
(Head)								
Asawa								
Anak								
Anak								
Anak								
Anak								
Nakatatanda								
Mga May Kapansanan								
Kabuuang bilang ng miyembro ng pamilya:						Kabuuang kita ng pamilya:		

(Note to Enumerator: Ask specific level of education, source of income and income per month-then total the income on the space)

11. Anu-ano pa po ang mga uri ng hanapbuhay/pinagkakakitaan ang alam ninyong gawin bukod sa ginagawa ninyo sa kasalukuyan?

12. Anu-ano pong skills/kaalaman ang mayroon kayo ngayon?

13. Anu-ano pa pong skills/kaalaman ang gusto ninyong matutunan?

Struktura ng Bahay at Pamumuhay

14. Ang inyong bahay ay yari sa _____ pinagsama-samang materyales
_____ bahagyang sementado (kahoy at semento)

_____ kabuuang bahay ay sementado
_____ iba pa _____ (pakitukoy)

15. Pagmamay-ari ng lote/lupa at bahay:

Item	Kabuuang Sukat (m ²) ¹	Pag-aari ng pamilya ²	Pag-aari ng Kamag-anak ³		Pribadong Pag-aari ⁴	
			Rental (Php/mon)	Walang Rent/Libre	Rental (Php/mon)	Walang Rent/Libre
Lupa						
Bahay						

1 Sa sukat ng bahay: Kabuuang *floor area*

2 Pag-aari ng kahit sinong miyembro ng pamilya na nakatira sa iisang bahay.

3 Pag-aari ng kamag-anak na hindi kasama sa bahay

4Hindi kaano-ano ang may-ari, pakitukoy ang dahilan kung bakit walang bayad ang pagpapagamit ng lote at bahay

16. Kung pag-aari ang bahay at lote,magkano ang aktuwal na halaga ng mga ito?

Lote (Php) _____ Bahay (Php)_____

Household Utilities

17. Kayo po ay konektado sa suplay ng kuryente? _____ oo _____ hindi, bakit po?

18. Maari po bang malaman kung magkano ang huling pinagbayaran ninyo sa kuryente?
_____ (Php), kung wala, bakit po?

19. Kayo po ba ay konektado sa suplay ng tubig? _____ oo _____ hindi, bakit po?

20. Maari po bang malaman kung magkano ang huling pinagbayaran ninyo sa tubig?
_____ (Php),
kung _____ wala, _____ bakit _____ po?

21. Ang ginagamit na palikuran ng pamilya ay nasa:

_____ loob ng bahay (de-flush) _____ loob ng bahay (de-buhos)
_____ labas ng bahay, pamilya lamang ang gumagamit, _____(de-flush)
_____ (de-buhos)
_____ komunal; _____ (de-flush) _____ (de-buhos)

_____ iba pa, pakitukoy

Opinyon at Pananaw tungkol sa Proyekto

22. Nais po naming malaman kung nitong mga nakaraang taon/buwan ay nakaranas kayo ng pagbaha dito sa _____ inyong lugar? _____ oo hindi _____
23. Kung oo, kailan ninyo po huling naranasan ang pagbaha? Kailan ninyo naman po naranasan ang _____ pinakamalakas?
- Pinakahuling naranasan: Taon (_____), Pangalan ng bagyo (_____), Taas ng baha mula sa lupa (_____)cm
Pinakamalakas: Taon (_____), Pangalan ng bagyo (_____), Taas ng baha mula sa lupa (_____)cm
24. Kung tatantiyahin, gaano po kataas ang baha?
- _____ lampas bukong-bukong
_____ hanggang tuhod
_____ lampas tuhod
_____ iba pa, pakitukoy
25. Kinailangan ninyo po bang lumisan (*evacuate*) sa inyong tahanan dahil sa pagbaha? _____ oo _____ hindi
26. Kung oo, saan kayo tumuloy?
- _____ sa kamag-anak, katabing barangay
_____ sa kamag-anak, sa ibang bayan
_____ sa mga paaralan o evacuation centers
_____ iba pa, pakitukoy
27. Kung kakailanganin po na kayo ay lumipat ng lugar na tinutuluyan upang bigyang daan ang proyektong ito, kayo po ba ay:
- _____ Sang-ayon
_____ Sang-ayon kung katanggap-tanggap ang mga kondisyon
_____ Sang-ayon, (susundin ang desisyon ng Gobyerno, Pamunuan ng Barangay, Resulta ng Konsultasyon sa _____ Komunidad at iba pa).
_____ Pag-iisipan pa, kukuha ng mga impormasyon na makakatulong sa pag-de-decision
_____ Hindi sasang-ayon; _____ pakitukoy ang dahilan
-
-
-

_____ Iba _____ pa,
pakitukoy _____

Para sa mga sumang-ayon:

28. Kung kayo ay bibigyan ng pagkakataon na pumili ng lugar na inyong lilipatan ito ay sa:

_____ kapitbahayan
_____ katabing _____ barangay (na nasa bayan
rin), pakitukoy _____
_____ sa ibang bayan, pakitukoy
_____ sa ibang lugar, pakitukoy

29. Sa inyong palagay, gaano kalayo ang magiging distansya ng reloksyon upang maiwasan ang problema sa _____ trabaho o pagkakakitaan? (mga ilang sakay mula rito)

_____ walking distance
_____ isang sakay
_____ dalawang sakay
_____ tatlong sakay
_____ iba pa, pakitukoy

30. Kung sakaling mawalan kayo ng trabaho dahil sa paglipat, sasang-ayunan po ba ninyo ang pagpapalit ng _____ trabaho?

_____ oo, posible na makahanap ako ng trabaho
_____ oo, kung makakatanggap ako ng sapat na bokasyunal na kaalaman mula sa gobyerno
_____ hindi madaling sabihin sa ngayon
_____ iba pang dahilan,
pakitukoy _____

Magandang Araw at Maraming Salamat po!

NOTES:

ANNEX B

Questionnaire for Affected Tenants/Farmers

QUESTIONNAIRE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SURVEY FOR THE PREPARATORY STUDY FOR SECTOR LOAN ON DISASTER RISK MANAGEMENT IN THE REPUBLIC OF THE PHILIPPINES

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Tenant Farmer _____ Fish Cultivator

Respondent No. _____ (paki-tsek)

Interviewer: _____ Date of Interview: _____

Address of Interviewee: _____

Contact Number: _____

TANONG PARA SA TENANT FARMERS/FISH CULTIVATORS (OFF-SITE)

Pangkalahatang Impormasyon (General Information)

31. Pangalan ng Respondent: _____

32. Edad: _____ Araw ng kapanganakan: _____
(mm/dd/year)

33. Kasarian: _____ babae _____ lalaki (pakitsek)

34. Katayuang Sibil: _____ binata/dalaga _____ may-asawa _____ balo (paki-tsek)

35. Pinakamataas na antas ng pinag-aralan: _____

36. Pangunahing pinagkakakitaan/hanapbuhay: _____ (tukuyin)

37. Buwanang kita (Php) : _____

38. Iba pang pinagkakakitaan ng respondent: _____ Kita
(Php): _____

39. Layo ng pinagtatrabahuhan: _____ Magkano ang pamasaha, ilang sakay? ____ (kung angkop)

40. Saang katutubong grupo po kayo kabilang (kung angkop)?

Pangalan ng mga Kasama sa bahay	Edad	Kasarian	Estado sibil	Antas ng pinag-aralan	Pangunahing Hanapbuhay /Pinagkakakitaan	Buwanang kita	Layo ng Trabaho/Lugar /Fare Cost	Iba pang pinag-kaka kitaan
(Head)								
Asawa								
Anak								
Anak								
Anak								
Anak								
Nakatatanda:								
Mga May Kapansanan								
Kabuuang bilang ng miyembro ng pamilya:						Kabuuang kita ng pamilya:		

(Note to Enumerator: Ask specific level of education, source of income and income per month-then total the income on the space)

41. Anu-ano pa po ang mga uri ng hanapbuhay/pinagkakakitaan ang alam ninyong gawin bukod sa ginagawa ninyo sa kasalukuyan?

42. Anu-ano pong skills/kaalaman ang mayroon kayo ngayon?

43. Anu-ano pa pong skills/kaalaman ang gusto ninyong matutunan?

44. **Lawak ng Sakahan ng Magsasaka/Lawak ng Fishpond ng Fish Cultivator**
(kabuuang sakahan/fishpond at apektadong parte ng sakahan/fishpond na pag-aari ng apektadong magsasaka/fish cultivator)

Pakilagay ang mga impormasyong kinakailangan:

Kabuuang Sukat ng Sakahan/Fishpond (ha)			Sukat ng Apektadong Sakahan/Fishpond (ha)		
Pag-aari (Own-Operated)	Inuupahan (Tenant)	Kabuuang sukat	Pag-aari (Own-Operated)	Inuupahan (Tenant)	Kabuuang sukat

45. **Crop Cultivation of Farmland/Fishpond** (apektadong sakahan/fishpond ayon sa uri ng pananim at fishpond species ng apektadong magsasaka/fish cultivator)

Pakilagay ang mga impormasyong kinakailangan:

Pananim/Fishpond Species	Lawak ng Apektadong Sakahan/Fishpond (ha)	Lawak ng Produktibong Sakahan/Fishpond kada Taon (ha)			Uri ng Pananim/Fishpond species
		Kabuuang Lawak ng pinagkukunan ng Ani/Huli (kada anihan)	Panahon ng pag-ani/Pag-huli kada taon	Kabuuan	
Total					

Opinyon at Pananaw tungkol sa Proyekto

46. Nais po naming malaman kung nitong mga nakaraang taon/buwan ay nakaranas kayo ng pagbaha dito sa _____ inyong lugar? _____ oo hindi _____

47. Kung oo, kailan ninyo po huling naranasan ang pagbaha? Kailan ninyo naman po naranasan ang _____ pinakamalakas?

Pinakahuling naranasan: Taon (_____), Pangalan ng bagyo (_____), Taas ng baha mula sa lupa (_____)cm

Pinakamalakas: Taon (_____), Pangalan ng bagyo (_____), Taas ng baha mula sa lupa (_____)cm

48. Kung tatantiyahin, gaano po kataas ang baha?

_____ lampas bukong-bukong

_____ hanggang tuhod

_____ lampas tuhod

_____ iba pa, pakitukoy

49. Kinailangan ninyo po bang lumisan (*evacuate*) sa inyong tahanan dahil sa pagbaha?

_____ oo

_____ hindi

50. Kung oo, saan kayo tumuloy?

_____ sa kamag-anak, katabing barangay

_____ sa kamag-anak, sa ibang bayan

_____ sa mga paaralan o evacuation centers

_____ iba pa, pakitukoy

51. Kung sakaling maapektuhan ang inyong lupain upang bigyang daan ang proyektong ito, kayo po ba ay:

_____ Sang-ayon

_____ Sang-ayon kung katanggap-tanggap ang mga kondisyon

_____ Sang-ayon, (susundin ang desisyon ng Gobyerno, Pamunuan ng Barangay, Resulta ng Konsultasyon sa _____ Komunidad at iba pa).

_____ Pag-iisipan pa, kukuha ng mga impormasyon na makakatulong sa pag de-
desisyon

_____ Hindi sasang-ayon; pakitukoy ang dahilan

_____ Iba pa,
pakitukoy _____

52. Sa inyong pananaw, kinakailangan ba na magbago kayo ng pinagkakakitaan dahil sa nasakop ng proyekto ang _____ inyong sakahan/fishpond area?

_____ oo

_____ hindi

53. Kung oo, paano magiging possible ang pagpapalit ninyo ng trabaho?

_____ posibleng makahanap ng panibagong trabaho

_____ posible kung makatanggap ako ng sapat na bokasyunal na kaalaman mula sa gobyerno

_____ posible na maipagpatuloy ang pagsasaka kung mayroon ulit magpapasaka ng kanilang lupa

_____ possible na maipagpatuloy ang kasalukuyang pagsasaka/pag-aalaga ng isda sa pamamagitan ng pagpapalit ng sistema na angkop sa magiging gamit ng lupa, ito'y kung sakaling makatanggap ng tulong pinansyal mula sa gobyerno

_____ iba pang
dahilan _____

Magandang Araw at Maraming Salamat po!

ANNEX PIIA_9-7

SELF-SCREENING CHECKLIST (CAGAYAN)

ANNEX 2-7a
SCOPING and PROCEDURAL SCREENING CHECKLIST FOR ENVIRONMENTAL IMPACT STATEMENT (EIS)

B. TECHNICAL SCOPING CHECKLIST¹

NOTE: Attach list of issues raised by the attending community representatives during the Public Scoping (Annex 2-7c). Integrate the issues in the Technical Scoping Checklist below.

List of Key Environmental Issues	Relevance based on PD and Project Location ²				a) Basis of Assessment of Relevance; b) Proposed Method of Impact Assessment; c) Other Instructions per Project Phase?	Description of Environment	Required?	Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB CH?
	LS	LI	N	R						
1.0 THE LAND										
1.1 Land Use and Classification										
1.1.1. Change/Inconsistency in land use							✓			
1.1.2. Encroachment in Protected Area under NIPAS				✓			✓			
1.1.3. Encroachment in other ECAs				✓						
1.2 Geology/Geomorphology										
1.2.1. Change in surface landform /topography/terrain/slope				✓						

¹ This table has two major columns: Key environmental issues to be addressed, and the Description of Environment (primary or secondary data) based on one or more environmental issues identified. There is no one-to-one correspondence between the potential issue columns to the left and the baseline information to the right. These columns are provided to ensure the EIA Study focuses on the most relevant environmental issues. **LS = likely significant, LI = likely insignificant, NR = not relevant.** LS requires in depth quantitative analysis depending on the availability of mathematical methods. LI requires qualitative analysis. NR column is provided since there are listed impacts that may not be after all existent due to the nature of the project and location. During the EIA study, some project aspects may be discovered as significant and may be the basis of Additional Information in the review.

List of Key Environmental Issues	Relevance based on PD and Project Location ² LS = Likely Significant; LI = Likely Insignificant; NR = Not Relevant			Basis of Assessment of Relevance; a) Proposed Method of Impact Assessment; b) Other Instructions per Project Phase?			Description of Environment	Required?		Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB/CH?	
	LS	LI	NR	Y	N	Y		N					
1.2.2. Change in sub-surface/ underground geomorphology (e.g. underground mining)			✓				Regional/General Geological Map	✓					
1.2.3. Inducement of subsidence			✓				Geological Cross-Sections		✓				
1.2.4. Inducement of landslides or other natural hazards			✓				Sequence Stratigraphic Column of Rock Units		✓				
1.2.5.							Geomorphological Map		✓				
1.2.6.							g factor Contour Map for Rocks		✓				
1.2.7.							Seismicity Map		✓				
1.2.8.							Differential Settling Hazard Map		✓				
1.2.9.							Bathymetric and Morphostructural Map		✓				
1.2.10.							Results of Petrographic and Mineragraphic Analyses		✓				
1.2.11.							Results of Geochemical Analyses of Rock Samples		✓				
1.3. Pedology							Pedology						
1.3.1. Soil Erosion							Summary of Soil Investigation Report on soil type and quality	✓					
1.3.2. Change in soil quality (e.g. in irrigation areas)							Laboratory Results of Soil Sample Analysis	✓					
1.4. Terrestrial Biology							Erodibility Potential		✓				
1.4.1. Vegetation removal and loss of habitat							Terrestrial Biology						
1.4.2. Threat to existence of important							Flora and Fauna Species Inventory or Survey	✓					
							Summary of Endemicity		✓				

List of Key Environmental Issues	Relevance based on PD and Project Location? LS = Likely Significant; LI = Likely Insignificant; NR = Not Relevant				a) Basis of Assessment of Relevance; b) Proposed Method of Impact Assessment; c) Other Instructions per Project Phase?	Description of Environment	Required?		Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB CH?	
	LS	LI	N	R			Y	N			Y	N
local species												
1.4.3. Threat to abundance, frequency and distribution				✓		Conservation Status						
1.4.4. Hindrance to wildlife access				✓		Summary of Abundance, Frequency and Distribution Site Observation/ Transect Walk Map	✓					
2.0 THE WATER						THE WATER						
2.1 Hydrology/Hydrogeology						Hydrology/Hydrogeology						
2.1.1. Change in drainage morphology	✓					Topographic Map showing Drainage System	✓					
2.1.2. Change in stream, lake water depth						Regional Hydrogeologic Map						
2.1.3. Reduction in stream volumetric flow	✓					Streamflow Measurements/ Mean Monthly Flow Data	✓					
2.1.4. Inducement of flooding	✓											
2.1.5. Water resource competition												
2.1.6. Reduction/Depletion of groundwater flow				✓		Flood Peaks, Volumes, frequency rating curves and Stormwater flow estimates	✓					
2.2 Oceanography						Spring and Well Inventory and location map						
2.2.1. Change in circulation pattern				✓		Flow measurement location map	✓					
2.2.2. Change in bathymetry				✓		Oceanography						
2.2.3.						Predicted Tides	✓					
2.3 Water Quality						24-Hour Tidal Cycles	✓					
2.3.1. Groundwater pollution				✓		Surface Current System	✓					
						Water Quality						
						Physico-Chemical Characteristics of Wells and Springs	✓					

List of Key Environmental Issues	Relevance based on PD and Project Location? LS = Likely Significant; LI = Likely Insignificant; NR = Not Relevant				a) Basis of Assessment of Relevance; b) Proposed Method of Impact Assessment; c) Other Instructions per Project Phase?	Description of Environment	Required?		Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB CH?	
	LS	LI	N	R			Y	N			Y	N
2.3.2. Stream water pollution	✓					Physico-Chemical Characteristics of Inland Surface Waters	✓		Presence of heavy metals			
2.3.3. Lake water pollution			✓			Physico-Chemical Characteristics of Coastal Waters		✓				
2.3.4. Marine water pollution			✓			Bacteriological Characteristics of Wells and Springs		✓				
						Bacteriological Characteristics of Inland Surface Waters		✓				
						Bacteriological Characteristics of Coastal Waters		✓				
						Sampling Site Map		✓				
2.4 Freshwater Ecology												
2.4.1. Threat to abundance, frequency and distribution of species						Abundance of ecologically and economically important species	✓					
2.4.2. Loss of important species						Presence of Pollution indicator Species	✓					
2.4.3. Loss of habitat						Sampling Site Map		✓				
2.5 Marine Ecology												
2.5.1. Threat to abundance, frequency and distribution						Abundance of ecologically and economically important species		✓				
2.5.2. Loss of important species						Presence of Pollution indicator Species		✓				
2.5.3. Loss of habitat						Marine Resource Map		✓				
2.5.4.						Abundance/Densities/Distribution of mangroves, coral reefs, fishes, sea grasses, algae, seaweeds,	✓		Mangrove map			

List of Key Environmental Issues	Relevance based on PD and Project Location? LS = Likely Significant; LI = Likely Insignificant; NR= Not Relevant				a) Basis of Assessment of Relevance; b) Proposed Method of Impact Assessment; c) Other Instructions per Project Phase?	Description of Environment	Required?		Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB CH?	
	LS	LI	N	R			Y	N			Y	N
2.5.5.						plankton, etc						
3.0						Sampling Site Map		✓				
THE AIR												
3.1 Meteorology/Climatology												
3.1.1. Change in the local climate, e.g. local temperature			✓			Monthly Average Rainfall of the Area		✓				
3.1.2. Contribution to global greenhouse gas			✓			Climatological Normals/Extremes		✓				
						Wind Rose Diagrams						
						Frequency of Tropical Cyclones		✓				
3.2 Air Quality (& Noise)												
3.2.1. Air pollution			✓			Air Quality (& Noise)		✓				TSP, PM, SOx
3.2.2. Increase in noise			✓			Ambient concentrations of TSP, SO _x , NO _x , PM10, etc., 1-hour, 24-Hour Sampling		✓				
						Noise Levels		✓				
						Sampling Station Map (air and noise)		✓				
4.0 THE PEOPLE												
4.1.1. Displacement of settler			✓			Demography		✓				
4.1.2. Change in land ownership			✓			Settlement Map and Population Distribution Map		✓				
4.1.3. Displacement of property			✓			Population Growth Rate		✓				
4.1.4. Right-of-way conflict			✓			Number of Households and Household Size by Barangay		✓				
						Summary of Demographic data per Barangay to be directly affected:		✓				

List of Key Environmental Issues	Relevance based on PD and Project Location? LS = Likely Significant; LI = Likely Insignificant; NR= Not Relevant				a) Basis of Assessment of Relevance; b) Proposed Method of Impact Assessment; c) Other Instructions per Project Phase?	Description of Environment	Required?	Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB CH?	
	LS	LI	N	R						Y	N
4.1.5. In-migration						Land Area, Population, Population Density, Main Sources of Income, Gender and Age Composition, Literacy, Highest Educational Attainment, Employment Status	✓				
4.1.6. Presence of Indigenous People						Household Profile based on results of the Socio-Economic/Perception Survey	✓				
4.1.7. Cultural Change						Indigenous Peoples	✓				
4.1.8. Threat to public health						Health	✓				
4.1.9. Local benefits from the project						Morbidity and Mortality Rates (Infants and Adults) from Direct Impact Areas	✓				
						5-Year Trend in Morbidity and Mortality		✓			
						Notifiable Diseases in the Area including Endemic Diseases		✓			
						Local Health Resources (Government and Private)	✓				
						Environmental Health and Sanitation Profile: water supply, human excreta mgt, waste mgt and disposal systems and food hygiene	✓				
4.1.10. Threat to delivery of basic services						Water Supply and Demand					
						Power Supply and Demand					
4.1.11. Traffic congestion						Transportation/Traffic situation					
SUMMARY/HIGHLIGHTS OF TECHNICAL SCOPING										For Procedural	

List of Key Environmental Issues	Relevance based on PD and Project Location ² LS = Likely Significant; LI = Likely Insignificant; NR = Not Relevant				a) Basis of Assessment of Relevance; b) Proposed Method of Impact Assessment; c) Other Instructions per Project Phase?	Description of Environment	Required?	Proposed Methodology of Securing and Presenting Information; Other Considerations in EIA Study	Page in the EIA Document	Verified acceptable by EMB CH?
	LS	LI	N	R						
Screening										
Considering all project activities and phases, select the most critical Environmental Aspects (major sources of most significant impacts)	List of Associated Most Significant Environmental Issues/Stressors				Agreed EIA Approach in Impact Assessment and Mitigation on key environmental aspects and impacts/issues	Remarks	Page in EIA Document	Verified Acceptable by EMB CH?	Y	N
1										
2										
3										

C. ENVIRONMENTAL RISK ASSESSMENT

If the project has the following:		Required Study/Report	Y	N
1.	Facilities for the production or processing of organic or inorganic chemicals using: alkylation, amination by ammonolysis, carbonylation, condensation, dehydrogenation, esterification, halogenation and manufacture of halogens, hydrogenation, hydrolysis, oxidation, polymerization, sulphonation, desulphurization, manufacture and transformation of sulphur-containing compounds, nitration and manufacture of nitrogen-containing compounds, manufacture of phosphorus-containing compounds, formulation of pesticides and of pharmaceutical products, distillation, extraction, solvation	Risk Screening Study	Y	N
2.	Installations for distillation, refining or other processing of petroleum products.	Risk Screening Study	Y	N
3.	Installations for the total or partial disposal of solid or liquid substances by incineration or chemical decomposition	Risk Screening Study	Y	N
4.	Installations for the production or processing of energy gases, for example, LPG, LNG, SNG	Risk Screening Study	Y	N
5.	Installations for the dry distillation of coal or lignite	Risk Screening Study	Y	N
6.	Installations for the production of metals or non-metals by a wet process or by means of electrical energy	Risk Screening Study	Y	N
7.	Installations for the production of metals or non-metals by a wet process or by means of electrical energy	Risk Screening Study	Y	N
8.	Specific facilities or the use of certain processes listed in the Risk Thresholds Table below.	Risk Screening Study	Y	N
9.	Facilities that would use, manufacture, process or store hazardous materials in excess of Level 1 threshold inventory in Risk Thresholds Table below.	Hazard Analysis Study, and Emergency/ Contingency Plan based on the study and worst-case scenario.	Y	N

If the project has the following:		Required Study/Report	Y	N
10	Facilities that would use, manufacture, process or store hazardous materials in excess of <u>Level 2</u> threshold inventory in Risk Thresholds Table below.	Quantitative Risk Assessment (QRA) and Emergency/Contingency Plan based on the QRA		✓

Risk Thresholds Table

CATEGORY	LEVEL 1 (tons)	LEVEL 2 (tons)	CATEGORY	LEVEL 1 (tons)	LEVEL 2 (tons)
1. Explosives	10	50	7. Toxic substances (medium)	10	50
2. Flammable substances	5,000	50,000	8. Toxic substances (high)	5	20
3. Highly flammable substances	50	200	9. Toxic substances (very high)	0.2	1
4. Extremely flammable substances	10	50	10. Toxic substances (extreme)	0.001	0.1
5. Oxidizing substances	50	200	11. Unclassified (Type A)	100	500
6. Toxic substances (low)	50	200	12. Unclassified (Type B)	50	200

NEED FOR PUBLIC HEARING/CONSULTATION/SITE VISIT OR SITE/VALIDATION DURING EIA REVIEW

1) Proponent's Request	
2) EIARC Evaluation	
3) EMB Evaluation	

BASIS FOR RECOMMENDATION/DECISION

SCOPED BY: EIARC MEMBERS

NAME	EXPERTISE	SIGNATURE	NAME	EXPERTISE	SIGNATURE

EIA PERSONNEL REPRESENTATIVE DURING TECHNICAL SCOPING:

Signature over Printed name _____ Signature over Printed name

NOTED BY: EIARC Division Chief

Signature over Printed name _____ Signature over Printed name

REPRESENTATIVE/S OF THE EIA PREPARER:

Signature over Printed name _____

Signature over Printed name _____

ANNEX PIIA_9-8

**COMPARISON BETWEEN CONTENTS OF EIA REPORT FOR CATEGORY
“A” PROJECT IN FORMER JBIC GUIDELINE AND IEE REPORT IN PEIAS**

COMPARISON BETWEEN CONTENTS OF JBIC GUIDELINE AND LARRIPP

JBIC Guideline	IEER in PEIAS	Difference
<p>[Baseline data]</p> <ul style="list-style-type: none"> - Assesses the dimensions of the study area and describes relevant physical, biological and socio-economic conditions, including all changes anticipated before the project commences. - Additionally, takes into account current and proposed development activities within the project area but not directly connected to the project. - Data should be relevant to decisions about project site, design, operation, or mitigatory measures - The section indicates accuracy, reliability and sources of the data. 	<p>[Baseline data]</p> <ul style="list-style-type: none"> - Describe physical, biological environment conditions, cultural, socio-economical conditions and regal framework - Include alternative without project 	<p>None</p>
<p>[Environmental Impacts]</p> <ul style="list-style-type: none"> - Predicts and assesses the project’s likely positive and negative impacts, in quantitative terms to the extent possible. - Identifies mitigation measures and any negative environmental impacts that cannot be mitigated. - Explores opportunities for environmental enhancement. - Identifies and estimates the extent and quality of available data, essential data gaps and uncertainties associated with predictions - Specifies topics that do not require further attention. 	<p>[Environmental impacts]</p> <ul style="list-style-type: none"> - Predicts impacts on each project phase - Summarizes evaluation specific impacts; water, soil and air conditions - Evaluates specific socio-economy and cultural impacts 	<p>None</p>
<p>[Analysis of alternatives]</p> <ul style="list-style-type: none"> - Systematically compares feasible alternatives to the proposed project site, technology, design and operation including the “without project” situation in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training and monitoring requirements. - For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. - States the basis for selecting the particular project design proposed and offers justification for recommended emission levels and approaches to pollution prevention and abatement. 		<p>The comparison of alternatives is considered by the content of basic information.</p>

JBIC Guideline	IEER in PEIAS	Difference
[EMP] - Describes mitigation, monitoring and institutional measures to be taken during construction and operation to eliminate adverse impacts, offset them, or reduce them to acceptable levels.	[EMP] - Prepares the matrix, which includes mitigation measures, management cost estimation and responsibility. - Includes records of discussion with stakeholders. - Includes monitoring plan (if any), counter measures for unpredictable accidents, and responsible organization and minutes of agreement.	None
[Consultation] - Record of consultation meetings, including consultations for obtaining the informed views of the affected people, local NGOs and regulatory agencies.	[Stakeholders meeting] -All data/notes are attached to the main report.	
None	[Recommendation] - Write recommendation based on results of assessments for IEE targets projects. - DENR will take attention on these contents such as, list of mitigation measures to predicted impacts, prediction after taking measures.	JBIC guideline does not include recommendation.
Source: Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and social Considerations, April 2002		

Table 2 Comparison between contents of JBIC guideline and LARRIPP

JBIC Guideline	LARRIPP	Difference
Appropriate consideration must be given to vulnerable social groups, such as women, children, the elderly, the poor, and ethnic minorities, all of whom are susceptible to environmental and social impact and who may have little access to the decision-making process within society.	The consideration for the women, elderly is described in Chapter V as: “The women, elderly who are among the PAPs shall likewise be consulted and mobilized to participate in the consultation meeting, and discussed with them the socio-cultural implication of the Resettlement Action Plan.”.	LARRIPP adverts the importance of participation in the consultation ,meetings and discussion the RAP only,
The project proponents, etc. must make efforts to enable the people affected by the project, to improve their standard of living, income opportunities and production levels, or at least to restore them to pre-project levels.	LARRIPP describes as “iv. (skills training and other development activities) equivalent to PhP15, 000 per family per municipality will be provided in coordination with other government agencies, if the present means of livelihood is no longer viable and the PAF will have to engage in a new income activity.” in Chapter III A. 4. e.	None.

JBIC Guideline	LARRIPP	Difference
Appropriate participation by the people affected and their communities must be promoted in planning, implementation and monitoring of involuntary resettlement plans and measures against the loss of their means of livelihood.	The consideration for the women, elderly is described in Chapter V as: “The women, elderly who are among the PAPs shall likewise be consulted and mobilized to participate in the consultation meeting, and discussed with them the socio-cultural implication of the Resettlement Action Plan.”.	LARRIPP does not advert to the participation of PAPs to the planning. The monitoring results shall be report to PAPs but their participation is not.
Projects must comply with laws, ordinances and standards relating to environmental and social considerations established by the governments that have jurisdiction over the project site (including both national and local governments). They are also to conform to environmental and social consideration policies and plans of the governments that have jurisdiction over the project site.	LARRIPP describes in Chapter V. A.4 as “if also in this case they (PAPs) do not agree, the DPWH will promptly seek the services of Land Bank, DBP or an independent appraiser to determine the fair market value”. And the possibility of difference between the BIR zonal valuation and the fair market value shall be explained to PAPs at the beginning.	None.
People to be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by the project proponents, etc. in timely manner.	LARRIPP writes clearly as “Owners of structures who have full title, tax declaration, or who are covered by customary law (e.g. possessory rights, usufruct, etc.) or other acceptable proof of ownership.”	There is no description of assistance for the informal settlers.
In cases where sufficient monitoring is deemed essential for the achievement of appropriate environmental and social considerations, such as the projects for which mitigation measures should be implemented while monitoring their effectiveness, project proponents must ensure that project plans include monitoring plans which are feasible.	The objectives, scope, contents are described in Chapter VIII of LARRIPP. The monitoring is classified by the internal monitoring (by ESSO) and the external monitoring (by external institutions). The frequency, framework, etc. are described in detail.	None.

APPENDICES

**MINUTES OF THE MEETING
FIRST STAKEHOLDERS' MEETING
THE PREPARATORY STUDY FOR SECTOR LOAN ON
DISASTER RISK MANAGEMENT**

Crown Hotel Conference Hall
Tuguegarao City, Region II
June 9, 2009

Attendance:

Government of Tuguegarao City

- | | | |
|------------------------------|---|-------------------|
| 1. Hon. Julio C. Liggayu | - | Vice Mayor Enrile |
| 2. Mr. Wilson P. Gaffud | - | SB Member -Enrile |
| 3. Mr. Leon A. Callangan Jr. | - | SB Member-Enrile |
| 4. Mr. Hononato M. Carag Jr. | - | SB Member-Enrile |
| 5. Mr. Vergilio A. Mamauag | - | SB Member-Enrile |
| 6. Mr. Melecio A. Buslig | - | SB Member-Enrile |
| 7. Ms. Magdalena P. Palattao | - | PDO-III-PPDO |
| 8. Mr. Marcelo C. Soriano | - | PDO-III-PPDO |
| 9. Ms. Angela B. Abidua | - | AO-II |
| 10. Ms. Maria Fe Villania | - | CPDC |
| 11. Ms. Sylvia M. Tonaryo | - | HRMO-III |
| 12. Mr. Emission Mataagunan | - | Clerk-SB |
| 13. Ms. Fehcitas A. Tuliño | - | Clerk III |
| 14. Mr. Romeo B. Battuy | - | SB Member-Enrile |
| 15. Mr. E. Camora | - | HRMO-III |
| 16. Ms. Yimanda L. Pamitta | - | HRMO-II |

DPWH

- | | | |
|------------------------------|---|-------------|
| 1. Engr. E. Agustin Jr. | - | DPWH-II |
| 2. Engr. CM Santos | - | DPWH-II |
| 3. Engr. Jerry Fano | - | DPWHN-FCSEC |
| 4. Engr. Zoisimo L. Balisi | - | DPWH-II |
| 5. Engr. Crisogono T. Decena | - | DPWH-II |

Other Agency

- | | | |
|--------------------------------|---|-----------|
| 1. Mr. Gresal W. Tapulno | - | NEDA |
| 2. Ms. Susan P. Danao | - | Economist |
| 3. Mr. Ronante V. Regino | - | NEDA |
| 4. Engr. Reynaldo L. Victorina | - | NEDA |

JICA Study Team w/ Local Consultants

- | | | |
|-------------------------|---|--|
| 1. Kazuto SUZUKI | - | Structural Engineer |
| 2. Dr. Lope R. Villenas | - | Institutional and Organization, O&M Specialist |

Local Consultant Conducting IEE

- | | | |
|-------------------------------|---|--------------------------------|
| 1. Ms. Bethela Castro-DelNero | - | Environmental Specialist, CESM |
|-------------------------------|---|--------------------------------|

Academe / Religious / NGO's – Non-Government Organization / PO's – People's Organization

1. None

Communities

1. None

Abbreviations

1. PPDO – Provincial Planning Development Office
2. PPDC – Provincial Planning Development Coordinators
3. PSWDO – Provincial Social Welfare and development Office
4. MPDO – Municipal Planning Development Office
5. MPDC – Municipal Planning Development Coordinators
6. MENRO – Municipal Environmental and Natural Resource Office
7. MSWDO – Municipal Social Welfare and Development Office
8. NWRB – National Water Resource Board
9. NEDA - National Economic and Development Authority
10. PDO-Deputized Provincial Officers
11. CPDC-City Planning and Development Coordinator
12. HRMO-Human Resource Management Office
13. FCSEC-Flood Control and Sabo Engineering Center
14. NEDA-National Economic and Development Authority
15. CESM-Center for Environmental Studies and Management

Proceedings:

The Stakeholder's Meeting, facilitated by Engr. Elmer Camarao, formally started at around 2:00 in the afternoon with an Invocation. This was followed shortly by Opening Prayer and singing of the Philippine National Anthem.

Mr. Eugenio R. Pipo (DPWH Regional Director) introduced the JICA and its Study Team. He stressed out that the focus of the study is to concentrate on most pressing issues. He hopes that after the meeting, everybody will be enlightened on the purpose of the project which is the mitigation of Tuguegarao's flooding occurrences and by doing so, it will eventually uplift the condition of the people living along the risk areas, as well as the whole Tuguegarao.

Engr. Elmer C. Camarao the City Engineer introduced all participants from other National Agencies and Local Government Representatives. After which, Engr. Maria Guillen gave the welcome remarks.

Brief of Engr. Jerry Fano, DPWH PMO-FCSEC

Engr. Jerry Fano of DPWH PMO-FCSEC made a brief address remark on the Sector Loan Project.

The Philippine experience high rainfall every year and the frequency of typhoon occurrences in the country is about 20 per year.

He said that JICA is re-strategizing and is focusing on prioritizing the core and most disaster prone areas.

He hopes that this meeting will be a venue of exchange of ideas, and meeting of minds. If this city is willing for an equity, meaning there will be equal sharing, co-ownership, then they are on their way to the success of this project. He then proceeded to introduce Mr. Kazuto Susuki to present the Study.

Presentation of Mr. Kazuto SUZUKI: The Preparatory Study for Sector Loan on Disaster Risk Management in the Republic of the Philippines

He presented the objective, flow of project, operation maintenance activities, the need to deal with ROW issues, the conditionality of the Sector Loan, etc. Harmonization is very essential.

Mr. Kazuto SUZUKI of JICA Preparatory Study Team presented the Study contents and its progress based on the results in the Steering Committee Meeting dated April 28, 2009. Before Mr. SUZUKI started his presentation, he expressed his thanks to various government and organizations that has extended support to the Study since the very beginning and also to the participants.

Mr. SUZUKI mentioned that the study includes the conduct of Feasibility Study on the Cagayan River Flood Mitigation Project, which would concentrate into built-up areas, such as City Proper of Tuguegarao and the high risk area of Enrile.

He continued his presentation about the current status of flood control projects conducted by DPWH during the past 33 years. He addressed that some projects have induced the lowering benefit and effectiveness against flood resulting from (1) the Delay of Construction due to ROW acquisition procedure problem and Cost Overrun, and (2) Lack of O&M activities for

river structures completed by such projects. In this connection, Mr. Suzuki emphasized that the cooperation and initiatives of LGUs in the Project are absolutely imperative for the Project, to wit; (1) due effort for ROW acquisition by the concerned LGUs, (2) harmonized Project implementation between DPWH and LGUs, and (3) development and enhancement of flood management capacity for concerned organizations.

According to Mr. SUZUKI, the study team also gathered some information regarding the existing river alignment and cross sectional shapes, land-use and development in the project site. Aside from this, he also reiterated the status or situation of the river channels, some major cause of flooding in the project site and the basic concept in formulating the mitigation plan including the proposed structural and non-structural measures to be presented in expected succeeding stakeholders' meetings.

With regards to the mitigation that needs to be undertaken, the Study Team aims to propose the following:

For non-structural measures:

- (1) measures for river channel that includes community-based flood mitigation and restraint of illegal land occupation in the river area;
- (2) measures for basin that includes land use control and control of disorderly land development; and
- (3) measures for damage mitigation that includes development and dissemination of flood hazard map, establishment of evacuation and flood fighting & preparedness against flood and unification of related agencies for flood mitigation.

For the structural measures the team identified potential mitigation measures against flood and these are:

- (1) widening of river channel improvement,
- (2) construction of flood protection dike, and
- (3) construction of dredging of riverbed.

Open Forum

An Open Forum was conducted after the presentations facilitated by Angela Abique, moderator. Some of the important concerns and issues raised during the open forum were the following:

- 1. Question:** *Hon. Julio C. Liggayu* of Enrile said he is very grateful for this study. However, he recalled that about 10 years ago, a similar activity was conducted in the area and until now, it hasn't materialized yet. He asked JICA how long will it take until the project will be implemented this time. If it will take another 10 years, Enrile is in danger of being wiped out. His concern is not only to save corn fields but provincial roads as well. They have already passed many resolutions, in fact there was supposed to be a 32M project but funds was not released by central office. He is hoping that this study will not take long and will be implemented soon. (*Hon. Julio C. Liggayu, Vice Mayor Of Enrile*)

Answer: The people have to understand that Cagayan River is very large and that an integrated river basin project will mean very large cost and will need a very large budget. The problems of ROW JICA had been encountering the past 33 years with previous projects was reiterated. Hence, JICA had to re-strategize how proponent agencies will improve project activities, hence, sector loan was created. If LGU-DPWH take effort how to deal with the ROW, maybe by 2011, the project will commence subject to clearance of some issues. (*Mr. Kazuto Suzuki, JICA Study Team*).

Mr. Alijandro Sosa, PMO-MPFCP II gave a short description of the project's timeframe:

- FS, 1st stage – till November
- Come up with materials for sector loan – 1 yr
- Approval – detailed design: 1 yr
- Bidding –
- Total – may take 3 yrs

Engr. Melanio C. Briosos, Assistant RD of DPWH, said that the 32 M funds Hon. Julio C. Liggayu mentioned earlier was not released, but hopefully, it will be included in the 2010 National Budget.

Engr. Maria Fe Villania informed the crowd that the 1st flood control project they conducted is in Catagaman, which is a very vulnerable area. In fact it has changed over the years. They followed the designs that was proposed in the 2002 FS and put a new design last year (concrete blocks). (*Engr. Maria Fe Villania, City Planning officer*).

On ROW issues: they are just waiting advice from NHA, but to date, about 48 families had already signed a waiver.

On the proposed widening of the river zone, she was a bit surprised/struck by how wide Mr. Suzuki is proposing for the easement area, this may pose a big problem for people with real properties.

- 2. Comments:** Engr. Reginaldo Victorino from NEDA-X said that there are a lot of information and reports available at NEDA X that would be useful for the Study Team. He also gave inputs and suggestions for the conduct of the flood control studies (i) it is true that flood control is given a low priority by the national government; (ii) status of the national flood masterplan has been taken into continuous note; (iii) he appreciate it very much that the Cagayan River was one of the selected river basin for the sector loan; (iv) NEDA have several documents that would assist the study. (*Engr Reginaldo Victorino from NEDA*)

3. Question - Engr. Emilio Matanggihan, City Engineer of Tuguegarao said that a copy the 2001 FS Flood Control Project of the Lower Cagayan River was given to them wherein about 800m was identified as priority projects in Catagaman area. He wanted to suggest to fast track the project, not to conduct the preparatory study and jump to construction already.

4. Answer - Engr. Maria Fe Villania, City Planning officer corrected him and said that this study is for the sector loan and not for the whole project.

Engr. Melanio C. Briosos clarified that this sector loan is not part or connected with the previous 2001 FS of the Cagayan River. This Preparatory Study will be concentrated to Tuguegarao City and its core high risk areas only and will not include the whole stretch of Cagayan River. Clarification by **Engr. Melanio C. Briosos, Assistant RD of DPWH.**

In addition, Mr. Kazuto Suzuki said that the project will be divided into 4 phases but cannot consider the construction of diversion channel due to high cost. This study will concentrate on the construction of dikes and other protection works of high risk core areas only. It will make use of the 2001 masterplan and adopt some very good ideas but will not entirely follow it. Rest assured, he will not force his ideas to the LGUs. (**Mr. Kazuto Suzuki of JICA Study Team**)

5. Comments - Ms. Yoko Nomura added that JICA has a limited budget but their ultimate aim is to mitigate flood issues in order lessen human damage. Therefore, before sector loan approval, JICA wants to address/focus on sectoral issues i.e. ROW and maintenance. (**Ms. Yoko Nomura JICA Project Formulation Adviser**)

She gave the 3 components of Preparatory Study:

1. Choose high risk areas
2. Establish disaster response fund
3. Identify difficulties, before during and after the implementation of flood control to smoothly implement project.

6. Comments Ms. Maria Fe Villania informed the audience and the JICA Study Team that aside from flood, another source of danger is earthquake at intensity of 7.5 at the Sierra Madre which is able to trigger landslide that can bury the whole City down, therefore this should be taken into consideration in the study also. (**Ms. Maria Fe Villania, City Planning Officer**)

Engr. Alijandro Sosa said that the Cagayan River Basin ranked at the top of DPWH's priorities for disaster risk mitigation. But the policy of DPWH is equitable distribution on LUZVIMIN so they

have to choose one River Basin per area. Cagayan River Basin was chosen for Luzon. (*Engr. Alijandro Sosa PMO-MPFCP II*)

- 7. Comments** - Angela Abique said that as of now, Tuguegarao is willing to give 10% equity. Maybe after discussion with the Mayor and other officials, they can be able to increase it. (*Angela Abique, Open Forum Moderator*)

Engr. Jerry Fano emphasized the good things that transpired during this meeting and that his expectations, the 2C's (Cooperation and Coordination) were met. So all in all, it was a good meeting. He also said that DPWH is already grateful for the 10% equity and will not ask for more. (*Engr. Jerry Fano, DPWH-PMO-FCSEC*)

Mr. Kamoto Minoru gave a concluding remark that this preparatory study for sector loan is a new study concept. It will concentrate to protect core areas and it is not a holistic masterplan. It will consider the most effective and urgent works to prevent flooding. (*Mr. Kamoto Minoru , JICA Adviser*)

Engr. Briosos, the Assistant RD of DPWH close and mark the meeting. He thanked the JICA Representatives and he pleaded for assistance from the LGU especially for the resettlement action plan.

Prepared by:

Kazuto SUZUKI
Structural Engineer
JICA Preparatory Study Team

(1st Revision)
Revised by

(2nd Revision)
Revised by

Approved by

**MINUTES OF THE MEETING
SECOND STAKEHOLDERS' MEETING
THE PREPARATORY STUDY FOR SECTOR LOAN ON
DISASTER RISK MANAGEMENT**

Crown Hotel Conference Hall
Tuguegarao City, Region II
August 11, 2009

Government of Tuguegarao City

- | | | |
|-------------------------|---|--------------------------------|
| 1. Timoteo Alan | - | Assistant Provincial Engr. PEO |
| 2. Leo C. Bassig | - | LGU-Enrile MIPDC |
| 3. Wilsen P. Gaffuig | - | SB Member of Enrile |
| 4. Julio C. Laggayu | - | Vice Mayor of Enrile |
| 5. Virgilio A. Mamuag | - | SB Member of Enrile |
| 6. Leon A. Callangan Jr | - | SB Member of Enrile |
| 7. Romeo B. Battung | - | Provincial Office |
| 8. Melecio A. Buslig | - | SB Member/ Enrile |
| 9. Angela B. Abiqui | - | Adm. Officer V |
| 10. James P. Ferrer | - | Provincial Engr. III |
| 11. Richard B. Pastor | - | Provincail Engr. II |
| 12. Delfin T. Ping | - | Tuguegarao Mayor |
| 13. Regina D. Carrau | - | PDO III |
| 14. Edwin T. Rosales | - | Pronicial Engr. |
| 15. Sylvia M. Tamayao | - | HRMO I |
| 16. Felicitas A Tuliao | - | Clerk III |
| 17. Noli Agatep | - | Computer Operator |
| 18. Robbert Turingan | - | Enrile Mayor |
| 19. Kaye E. Aggabao | - | LGU-Emrile |
| 20. Emilio Matangun | - | LGU-Tuguegarao |

DPWH

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|------------------------|---|--------------------------|
| 1. Crisogono T. Decena | - | Engr. III DPWH Region II |
| 2. Zoisimo L. Balisi | - | Engr. V DPWH Region II |
| 3. Michael T. Alpasan | - | Engr. IV PMO-FCSEC DPWH |
| 4. Cesar M. Baquira | - | DPWH-CTDEO |
| 5. Joselito T. Arao | - | DPWH-CTDEO |
| 6. Edmund B. del Vira | - | DPWH-Region II |

Other Agency

- | | | |
|---------------------------|---|-------------------------|
| 5. Melanio C. Briosos | - | ARD NEDA |
| 6. Gresal Tapugao | - | Sr. EDS-RDC |
| 7. Ramoncito V. Reginaldo | - | Sr. EDS-RDC |
| 8. Jose Armand Araneta Jr | - | ARD – OCD II |
| 9. Glenn P. Palor | - | OCD – Operation Officer |

JICA Study Team w/ Local Consultants

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|-----------------------|---|---------------------|
| 3. Kazuto SUZUKI | - | Structural Engineer |
| 4. Antonio P. Basilio | - | JICA |

Local Consultant Conducting IEE

2. Ms. Bethela Castro-DelNero - Environmental Specialist, CESM
3. Aldwin Camance - CESM Team Leader
- 4.

Academe / Religious / NGO's – Non-Government Organization / PO's – People's Organization

2. None

Communities

8. None

Abbreviations

16. PPDO – Provincial Planning Development Office
17. PPDC – Provincial Planning Development Coordinators
18. PSWDO – Provincial Social Welfare and development Office
19. MPDO – Municipal Planning Development Office
20. MPDC – Municipal Planning Development Coordinators
21. MENRO – Municipal Environmental and Natural Resource Office
22. MSWDO – Municipal Social Welfare and Development Office
23. NWRB – National Water Resource Board
24. NEDA - National Economic and Development Authority
25. PDO-Deputized Provincial Officers
26. CPDC-City Planning and Development Coordinator
27. HRMO-Human Resource Management Office
28. FCSEC-Flood Control and Sabo Engineering Center
29. NEDA-National Economic and Development Authority
30. CESM-Center for Environmental Studies and Management
31. RDC- Regional Development Council
32. OCD- Office of Civil Defense

PROCEEDINGS:

The Stakeholder's Meeting formally started at around 1:30 in the afternoon with invocation and the singing of the Philippine National Anthem. It is followed by the presentation of the project by the JICA Preparatory Study Team.

Mr. Kazuto Suzuki of the JICA Preparatory Study Team presented the basic concepts of structural measures and the required activities for the implementation to LGUs. He discussed about the basic concept of flood control measures protecting only the core areas, its precise concept and structural alternative. He also emphasized the required responsibilities and activities of the LGU should the project will be implemented and this will be entered into a Memorandum of Agreement (MOA) between the said LGU and DPWH. The MOA will contain the responsibilities of the LGU in land acquisition and relocation activities, establishment of Disaster Risk Management Committee, setting up of a Query Window, modification of Comprehensive Land Use Plan, livelihood programs for relocated families, operation and maintenance activities and execution of non-structural measures.

After his presentation, he showed the proposed design of the flood mitigation structural measures using an Aerial Photography to better explain the concept of the proposed design. **Mayors Delfin Ting of Tuguegarao** and **Robert Turingan of Enrile** actively participated in the discussion and recommendation of probable design. The two (2) Mayors suggested that the

project should concentrate on the construction of revetment or river slope protection works for critical eroded areas by river flow. The two (2) mayors also suggested that a channel should be cut-off and dredged to recourse and divert the flow of river water. This will be more effective than just constructing a dike to selected areas. Mr. Suzuki's concern is the effect of this design to the downstream area and the overall implication of this design to the surrounding towns as well as to the costs, yet he is willing to consider the 2 mayor's proposal. Mayor Ting estimated only a total project cost of about PhP 600M and assured the Team that there are no ROW problems in the area. Further discussions followed until it was suggested by the CESM Team that both parties (The Mayors and JICA Study Team) will come up with cost estimates of their proposed designs then compare which is more beneficial and cost-effective (still within the Sector Loan budget). This should be backed-up with further studies and modeling, taking into consideration the elevation and on its over-all effect to the environment and the people.

Engr. Aldwin Camance of the Environmental Study Team presented the progress of the environmental and social survey for the project. He discussed the project planning cycle, the legal framework of the Philippine Environmental Impact Assessment (PEIA), the social acceptability and public participation of affected stakeholders, as well as the legal basis of resettlement under the Philippine Law System. He presented the objective of the study and the scope of the environmental survey. He also gave a brief overview on the different factors that contributes to the occurrence of flooding especially in a river ecosystem.

The meeting concluded with Ms. Bethela DelNero's gratitude remarks to the delegates.

Prepared by:

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JICA Preparatory Study Team

(1st Revision)
Revised by

(2nd Revision)
Revised by

Approved by

**MINUTES OF THE MEETING
THIRD STAKEHOLDERS' MEETING
THE PREPARATORY STUDY FOR SECTOR LOAN ON
DISASTER RISK MANAGEMENT**

Crown Hotel Conference Hall
Tuguegarao City, Region II
October 13, 2009

Government of Tuguegarao City

- | | | |
|--------------------------|---|---------------------------|
| 21. Leo C. Bassig | - | LGU-Enrile MPDC |
| 22. Leon A. Callangan Jr | - | SB Member of Enrile |
| 23. Romeo B. Battung | - | LGU Enrile |
| 24. Robbert Turingan | - | Enrile Mayor |
| 25. Roderick A. Allan | - | Staff/Municipal of Enrile |
| 26. Dominic Lalimag | - | SB Member Enrile |
| 27. Restituto Vargas | - | PSWDO |
| 28. Christopher Laragas | - | PSWDO |
| 29. Enrico T. Camilag | - | SB Member |
| 30. Henorato M. Carag | - | LGU Enrie |

DPWH

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|-----------------------------|---|---------------------------------|
| 7. Crisogono T. Decena | - | Engr. III DPWH Region II |
| 8. Zoisimo L. Balisi | - | Engr. V DPWH Region II |
| 9. Grecile Christopher Damo | - | Engr. IV PMO-FCSEC DPWH |
| 10. Joselito T. Arao | - | DPWH-CTDEO |
| 11. Susan P. Danao | - | DPWH-Economist |
| 12. Sylvia M. Tamayao | - | DPWH-HRMO-I |
| 13. Felicitas A. Tuliao | - | DPWH-Clerk III |
| 14. Melanio C. Briosos | - | Asst. Regional Director DPWH-II |
| 15. Elmer C. Camarao | - | DPWH- HRMO III |
| 16. Quirico Capiral | - | DPWH-DEO |

Other Agency

- | | | |
|------------------------|---|--------------|
| 10. Melanio C. Briosos | - | ARD NEDA |
| 11. Leo L. Bunag | - | PAGASA |
| 12. George C. Canapi | - | DENR |
| 13. Mario Trinidad | - | PDCC-Cagayan |

JICA Study Team w/ Local Consultants

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|------------------|---|---------------------|
| 5. Kazuto SUZUKI | - | Structural Engineer |
|------------------|---|---------------------|

Local Consultant Conducting IEE

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|-------------------------------|---|--------------------------------|
| 5. Ms. Bethela Castro-DelNero | - | Environmental Specialist, CESM |
| 6. Aldwin Camance | - | CESM Team Leader |

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47. CESM-Center for Environmental Studies and Management
48. RDC- Regional Development Council
49. OCD- Office of Civil Defense

Proceedings:

The third stakeholders meeting commenced with a prayer and the singing of the Philippine national anthem.

The assistant regional director introduced Mr. Kazuto Suzuki and the rest of the JICA study team present. The city government officials of Tuguegarao were conspicuously absent in the meeting although the Catagaman community had a representative. Representatives from other government units such as DENR, PAGASA and NEDA were also mentioned. He welcomed everyone in attendance and discussed a brief overview of the meeting.

The first presenter, Mr. Kazuto Suzuki explained the basics of the sector loan project. Tuguegarao city was the area being protected and posted the 2008 land use photos and CLUPS which had the location of fields and residential areas. The projections for 10 and 25 year periods were displayed as he discussed about diking systems and cut off channels. These diking systems and cut-off channels were said to be effective in protecting city and municipal areas. But Mr. Kazuto Suzuki stressed that budget is limited. He then later showed how inundation varies with and without the project.

Subsequently, Mr. Kazuto Suzuki gave a detailed description of the revetment areas and its specifications followed by his recommendations and requirements. A memorandum of agreement was also brought up which deal with implementation, land acquisition, relocation and construction. He stressed the importance of responsibilities of each party so the project moves forward smoothly.

The next presenter, Mr. Aldwin Camance began his presentation with the discussion of the cost of the project. For the whole project the total is said to be 10 Billion Pesos which if spread out leaves 1 Billion Pesos for this project in Tuguegarao. He described the inundation

areas and the projection models for certain period of years based on historical records. The revetment and quarry areas for the project were also clarified. He emphasized that flooding in the area will not change but erosion will be controlled.

Question:

How will u transport the excavated material to the other side considering that the soil and sediments that will be used for the Enrile and Alibago revetments will come from Tuguegarao while the soils and sediments to be used for the Catagaman revetments will come from Enrile?

RESPONSE:

Trucking the excavated materials so that only soils and sediments from the Tuguegarao side will be used for the Catagaman revetments and only soils and sediments from the Enrile side will be used for the Alibago and Enrile revetments will be considered but this will mean about 50,000 trips by truck for the three revetments. The amount of dust that will be released plus the amount of fuel that will be used if trucking will be the method of transferring of the excavated materials instead of barging should be taken into consideration since this will not only exacerbate the environmental impact of the project but will also contribute further to GHG emissions. At most, there should be an agreement between the municipality of Enrile and the City of Tuguegarao as to how this will be done, whether by barge or by truck.

It was likewise clarified that the excavation was not merely to provide foundation for the revetments but also to ensure that the river width at the revetments remain the same. Hence, there may be a need to continually excavate in the future due to the effects of sedimentation and deposition which narrows the river. These should be included in the MOA between the DPWH and the local government units involved.

Issue:

The main issue raised was the speed by which the loan may be processed and approved by both the government of the Philippines and Japan because the stakeholders already need the structural interventions built at the soonest possible time.

RESPONSE:

The response of the JICA Study Team was that every effort was being done to expedite the release of funds but the approval process cannot be shortened since this was a loan agreement that has to be agreed upon by both parties. The JICA Study Team may be able to submit the feasibility study by January which will need to be approved by the ICC Cabinet Committee which will take another 2 months. The advent of the May elections makes the situation quite unclear as to how long the process will take. At most, the team is looking at two years for project approval.

Mr. Grecile Christopher Damo of the DPWH talked about the river basins which are part of the sector loan and some structural and non-structural method. He mentioned that everything follows the process and gave it two years before implementation considering that they also want this project to be implemented as soon as possible.

Issue:

They already have a project regarding flood control in the Tuguegarao Cagayan River area with the ICC way back in 2003. They asked if it would be possible to table this as an update of the previous project

RESPONSE:

That would be difficult if not impossible because this project and that project are different in scope and probably under different loan stipulations. This will have to be packaged as a different project and will have to go the same method of approval by the ICC-CC.

Closing and Conclusion:

The project stakeholders basically did not disagree with the designs and conclusions presented in the meeting even if the core areas will not be saved from flooding. As long as the critical areas of Alibago, Enrile, and Catagaman are spared the effects of river erosion which they suffer every year, they want the project to start as soon as possible.

Prepared by:

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Revised by

(2nd Revision)
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